Kofax Communication Server

TC/MWA-MX Technical Manual

Version: 10.2.0

CONTENTS

1. About Message Wait Agent for Exchange Server

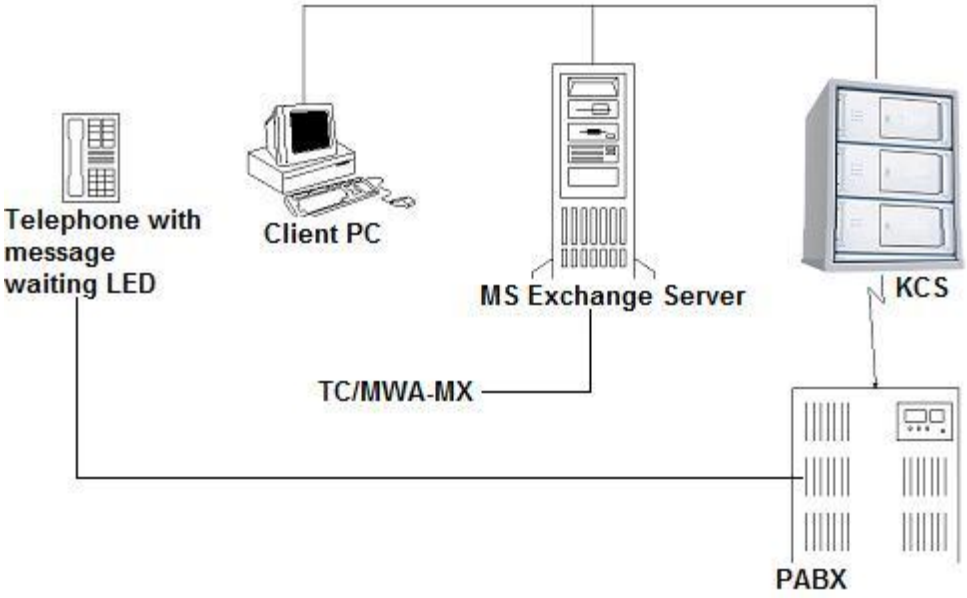
In today's office environment the need to get information quickly and easily grows rapidly. Unified messaging helps customers to satisfy this need. The Message Waiting Agent for Exchange (TC/MWA-MX) provides a fast notification on a device of choice whenever new mail has arrived.

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

1.1 Positioning, Advantage, Strength

- The Message Waiting Agent offers faster access to new information.
- A device of choice delivers the information to the user.
- E.g., the message waiting signal on your telephone turns on as new messages arrive.
- This agent is fully server based and there is no need to install any client software.
- The initialisation strings that TC/MWA-MX sends to KCS are fully configurable via a property page in Active Directory Users and Computers.

1.2 Structure of the Product



The Message Waiting Agent is integrated as a server-based sub service of the TCSRV minimizing network traffic and keeping server performance high.

It consists of two parts:

- The first part is a DLL that is used to configure TC/MWA-MX per user settings. These settings can be changed via Active Directory Users and Computers. This DLL adds a property page to the user properties.
  The user settings are stored in one of the user's extension attribute strings in Active Directory (default: extension attribute 1).

- The second part is the TCMWAMX.exe, which is used to poll the mailboxes every X seconds, where X is configurable via the windows registry. The program reads the user configuration from the Global Address List and checks the number of unread messages in the user's inbox. Message waiting notifications are sent to the Kofax Communication Server.

2. Functionality

The user is automatically notified when there are new messages waiting for him. This is done via a message that is posted to KCS. The notification mechanism depends on the address of this KCS message: e.g., a LED on the user's phone is turned on if new email is waiting, or he receives a SMS message via his GSM phone. The administrator can configure content and destination of the notification message. He can also activate or deactivate notifications on a per user basis via the TC/MWA-MX property page.

The Message Waiting ON notification (MWON) is triggered whenever message waiting is off and a new mail arrives.

The Message Waiting OFF notification (MWOFF) is triggered whenever message waiting is on and either at least one new mail is read or when all new mails are read (configurable).

By default, the message wait agent handles only those mailboxes that are on the same mailbox server (Exchange 2007) or belong to the same client access server / array (Exchange 2010 or 2013) as the agent's own mailbox. It is possible to configure additional Exchange servers that shall be polled, - and optionally a single message wait agent instance can serve all users in the Exchange organization.

2.1 Unicode Support

TC/MWA-MX does not support Unicode. For example, the registry values like Options\MWONSubject or MWOFFText cannot contain Unicode values.

3. Prerequisites

- Microsoft Exchange Server version 2007, 2010, 2013 or 2016.
- Operating system for TCMWAMX process: Windows Server 2008 – 2012.
- The TCMWAMX process cannot run on the Exchange server. It must be installed on another computer and must use an account with full permissions on the user mailbox stores.
- KCS user account used to post MWON/OFF events (e.g. the standard TCLINK user).
- A special Message Wait Agent license is needed. Licenses are counted per TCOSS system.
- For performance reasons, it is recommended to use a dedicated fax line for message waiting send orders to PABXes.
- KCS shadow users are not necessary.

4. Installation

The installation of TC/MWA-MX is part of the KCS Setup.

4.1 Preparation for Installation

Create a KCS user account for the agent. As an alternative, you can use an existing user account, e.g. the standard TCLINK user.

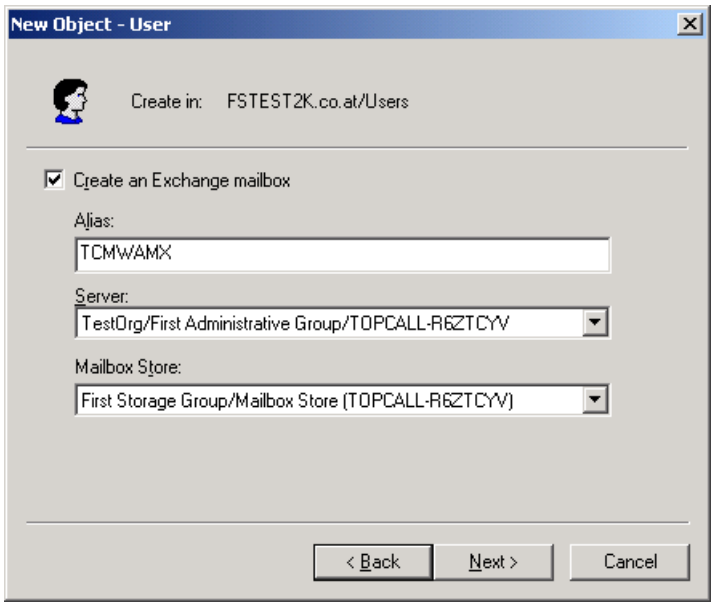
Windows messaging components (Extended MAPI)

TC/MWA-MX needs Windows Messaging to access the Exchange server.

The latest version of the stand-alone MAPI (ExchangeMapiCdo.EXE, downloadable from Microsoft web site) must be installed on the TC/MWA-MX machine.

Creating the TCMWAMX user:

Log on as a domain administrator and start “Active Directory Users and Computers”. Create a new user (for example: TCMWAMX). Make sure this user has an Exchange mailbox.



Granting permissions to mailbox stores:

This user will be the TCMWAMX process user. It needs full access to all mailbox stores of the server.

To configure this via the Exchange Management Console, use the following command:

```
get-MailboxDatabase -Server <server> | add-ADPermission -User <user> -AccessRights
"GenericAll"
```

In the above example, <server> is a placeholder for the Exchange server name (simple server name, no FQDN), and <user> stands for the name of the TCMWAMX process user.

Therefore, for server “EX07” and user “TCMWAMX” the command would be:

```
get-MailboxDatabase -Server "EX07" | add-ADPermission -User "TCMWAMX" -AccessRights
"GenericAll"
```

Additional (local) permissions:

Additionally, the user must have the right to log on as a batch job and be member of the local Administrators group.

Exchange Web Services (EWS)

For Exchange server 2013 and 2016, TC/MWA-MX can communicate to the Exchange server using EWS.

Set configuration for EWS

To connect a user to the Exchange server using EWS:

1. Configure impersonation for all users in an organization. See the following link to configure impersonation.

   https://msdn.microsoft.com/en-us/library/office/dn722376(v=exchg.150).aspx.

2. To add the impersonation permission to enable a specific user account to impersonate all other users, use the following command.

```
New-ManagementRoleAssignment -name:impersonationAssignmentName -
Role:ApplicationImpersonation -User
```

Example:

The following example shows how to configure impersonation to enable a specific user account to impersonate all other users.

```
New-ManagementRoleAssignment -Name:TCMWA_EWS -Role:ApplicationImpersonation -User:
"kcstest16\TCMWAMX"
```

4.2 Setup

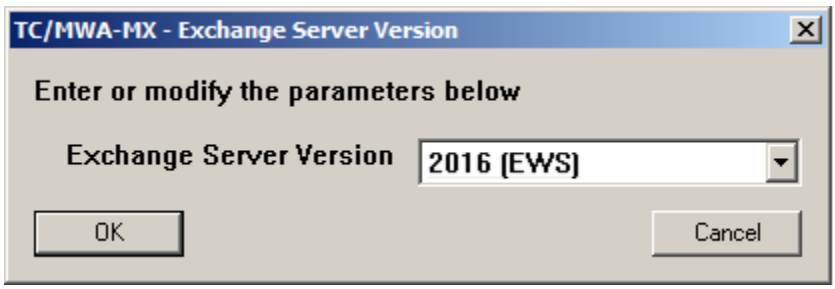
Log on as a domain administrator. Domain admin permissions are needed for registering the configuration panel in Active Directory.

No special Exchange permissions are needed.

The following possibilities are made configurable within the KCS setup to guarantee the functionality of the TC/MWA-MX.

4.2.1 Exchange Server Version

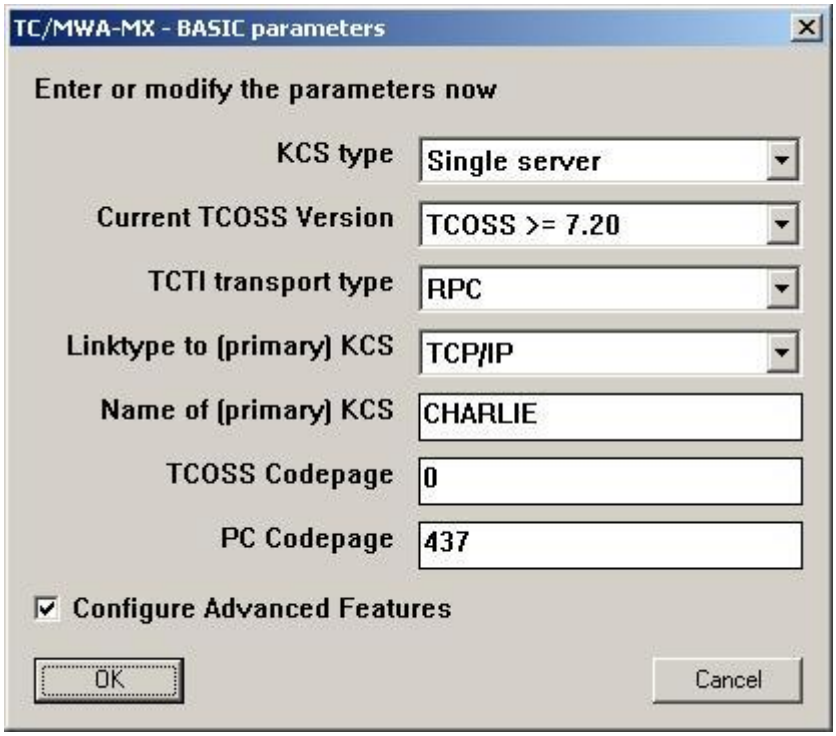
Setup must know whether the TC/MWA-MX mailbox is on an Exchange 2007, 2010, 2013, 2013 (EWS) or 2016 (EWS) server. Please choose the correct version.



Enter the exchange server url in the **EWS Server URL** field and click **OK**.

4.2.2 TCOSS Server

The following Setup screen is the same for TC/LINK and for TC/MWA.



KCS type: Available choices are “Single Server” and “Tandem (Alternative Path)”.

Current TCOSS version: Please choose the best matching alternative:

- “TCOSS >= 7.20.00” or
- “TCOSS >= 7.08.00” or
- “TCOSS < 7.08.00”

Note: TC/MWA-MX is not supported with TCOSS versions below 7.08.00.

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

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

Name of (primary) KCS: (Registry: *TOPCALL\Path, TOPCALL\Server*) Enter the computer name or the TCP/IP address in dotted format (e.g. 165.27.144.111).

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

Specify the installation code page of the KCS System. For example:

- 0 (TCOSS CODEPAGE 0, default)
- 1 (TCOSS CODEPAGE 1)
- 932 (JAPANESE)

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

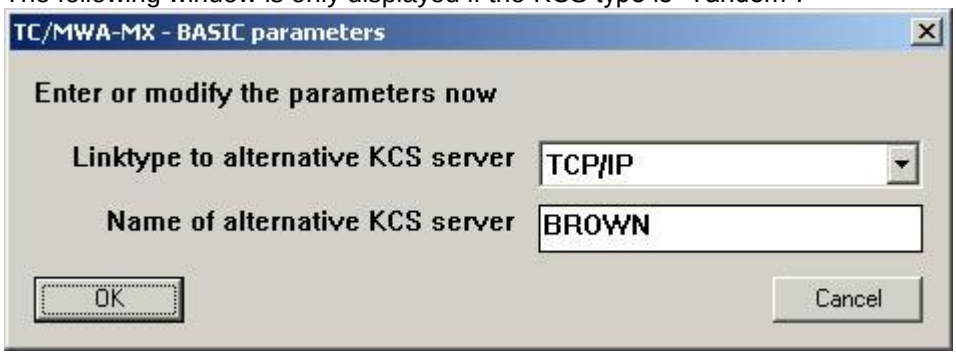
This is the code page for the text messages coming from and going to the Mail system. Examples:

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

Configure advanced features: not relevant for TC/MWA-MX

4.2.3 Alternative TCOSS Server (Optional)

The following window is only displayed if the KCS type is “Tandem”:

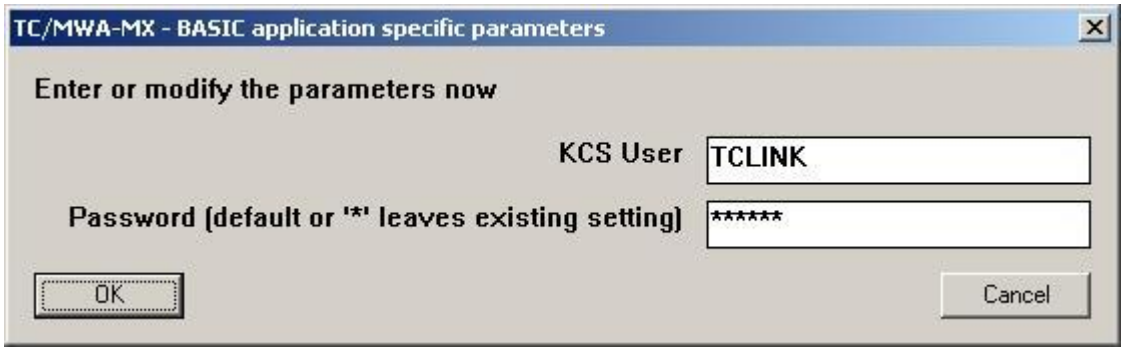


Linktype to alternative KCS server: (Registry: *TOPCALL\Path*) Used only with KCS tandem systems.

Name of alternative KCS server: (Registry: *TOPCALL\Path*) Used only with KCS tandem systems.

Note: To allow alternative routing, registry value *TOPCALL\Path* can contain alternative paths separated by ‘|’ characters, for example “TCP/IP,CHARLIE|TCP/IP,BROWN”.

4.2.4 KCS User



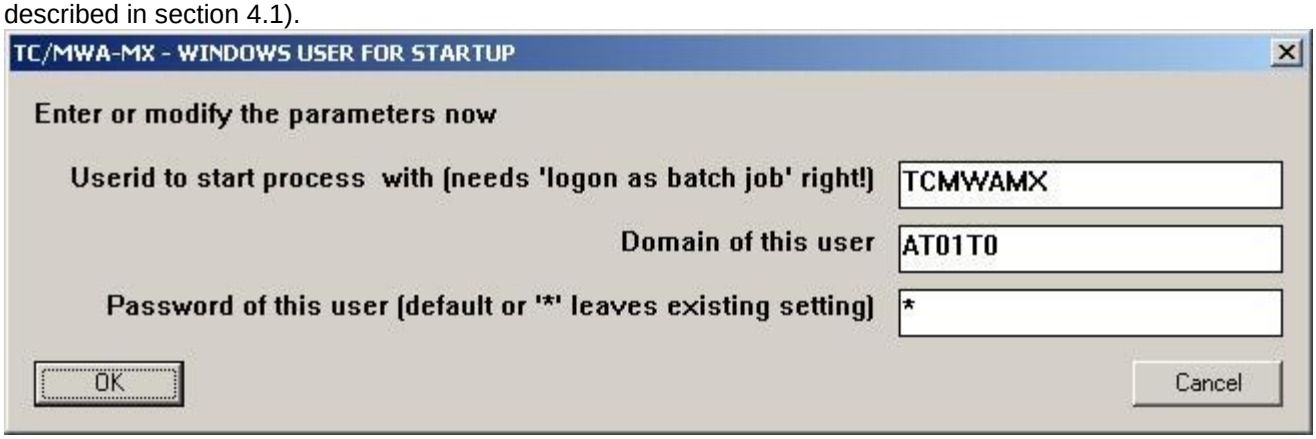
KCS User: (Registry: TOPCALL\User) Used for login to the Kofax Communication Server.

Password: (Registry: TOPCALL\Internal) Password of this KCS user.

Setup stores the password in encrypted format. If the password is changed after setup, the new password can be written to the registry as plain text and TC/MWA-MX will encrypt it again..

4.2.5 Windows User Id

With all Exchange versions, TC/MWA-MX must run as a dedicated user (the user account created as described in section 4.1).

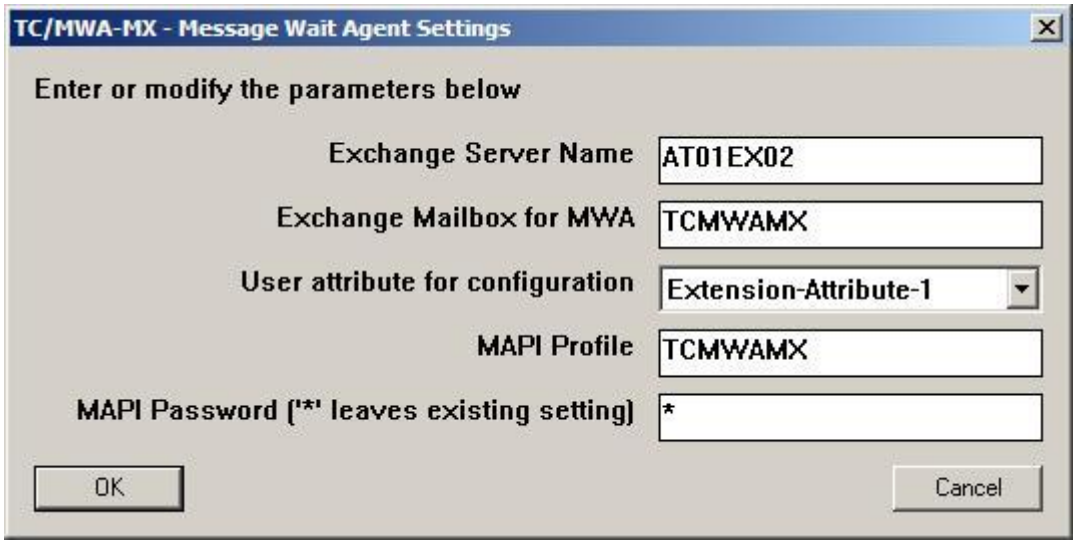


Userid (registry: *UserId*): Windows user account used by TC/MWA-MX.

Domain (registry: *Domain*): Domain for this user account

Password (registry: *Password*): Password for this user account (is stored encrypted).

4.2.6 Exchange Settings



Exchange Server Name (registry: *Options\MXServer*, part of *Options\ServerDN*):
With Exchange 2007, this is the name of the server hosting the MWA mailbox.
With Exchange 2010, this is the name of the client access server or client access array.
With Exchange 2013, this is the fully qualified name of the client access server or client access array.

Exchange Mailbox for MWA (registry: *Options\MWADN*):
The directory name of the Exchange mailbox created for the agent.

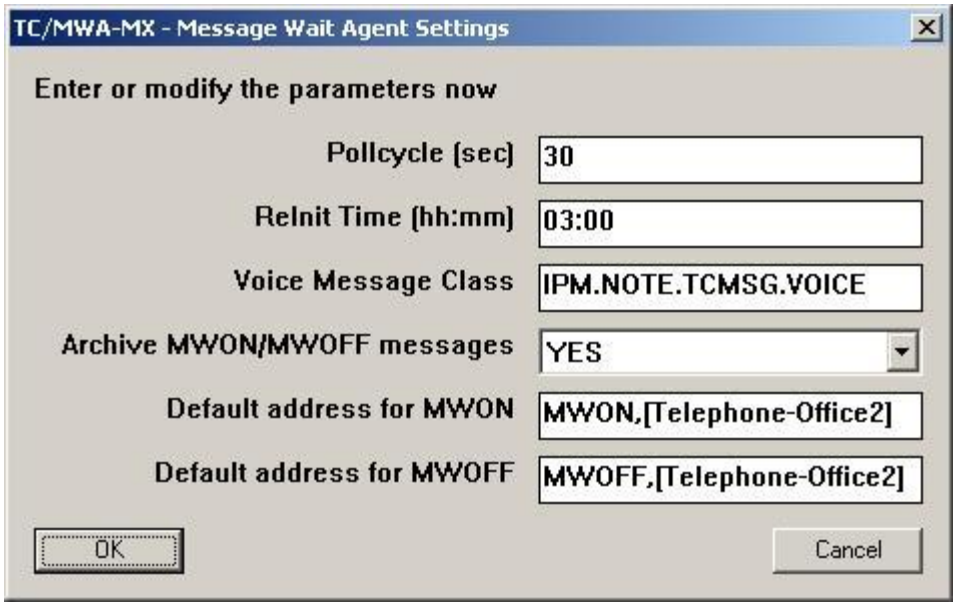
Enter the name of the mailbox you created via Active Directory Users and Computers (see section 4.1).

User Attribute for Configuration (registry: *Options\ConfigAttribute*):
Here you can choose in which user attribute the MWA settings shall be stored. Select one of 15 extension attributes or choose the extensionData attribute. Default: Extension-Attribute-1.
Extension attributes are automatically exported to the Exchange Global Address List.
Attribute extensionData is a legacy option (for upgrading existing installations) and should not be used with new installations.

MAPI Profile (registry: *Options\MAPIProfile*):
Profile used by the agent (will be created automatically, if not yet existing).

MAPI Password (registry: *Options\MAPIPassword*):
Currently not used, reserved for future use.

4.2.7 Options



Pollcycle (sec) (registry: *General\PollCycle*):
Amount of time between polling cycles (default is 30 seconds)

ReInit Time (registry: `Options\ReInit`):
The time of the automatic reinitialization of the TC/MWA-MX (default is 03:00 AM)

Voice Message Class (registry: `Options\MsgClassVoice`):
Message class for Voice messages (default: IPM.NOTE.TCMSG.VOICE)

Archive MWON/MWOFF messages (registry: `Options\Termination`):
Choose YES if message wait messages shall be stored in the KCS short term archive (default: YES)

Default address for MWON (registry: `Options\MWONDefault`):
Default destination for MWON messages, in format *<Service>,<Number>*

Default address for MWOFF (registry: `Options\MWOFFDefault`):
Default destination for MWOFF messages, in format *<Service>,<Number>*

<u>Syntax for MWONDefault and MWOFFDefault:</u>

```
<Service>,<Number>
```

<Service>: any KCS service

<Number>: phone number or address string, may contain a placeholder (enclosed between [] characters) for a part of a mailbox property.

<u>Placeholder Syntax:</u>

Format	Example	Description
[<PropertyName>]	[Telephone-Office2]	Take the complete content of the specified mailbox property
[-xx <PropertyName>]	[-4 Telephone-Office2]	Take the last xx characters of the specified mailbox property
[+xx <PropertyName>]	[+3 Telephone-Office2]	Take the first xx characters of the specified mailbox property

<PropertyName>: The Common-Name of a mailbox property, e.g. “Telephone-Mobile”, “Telephone-Office1” etc. Only text properties are allowed.

Setup installs a file MAPIPROP.TXT in the application directory. This comma-separated text file contains a list of valid Exchange properties and their MAPI property tags. TC/MWA-MX uses this file for expansion of placeholders. Therefore, it is also possible to create a shortname for a property. For example, you can replace the line “*Telephone-Home2, 0x3A09001E”* with

“Home, 0x3A09001E” and define a default address “*MWON,[Home]*” instead of “*MWON,[Telephone-Home]*”.

The services used in the default addresses have to be created manually on KCS (if required). No automatic creation of KCS dependencies (like in TCLINK) is done.

Note:

Changes of mailbox properties (and changes to MAPIPROP.TXT) are not immediately recognized by TC/MWA-MX. The changes are only recognized after the daily ReInit or a restart of TC/MWA-MX.

Some properties (*Telephone-Office2, Telephone-Home2*) are multi string properties. With multi string properties, the MWA always uses the first configured value.

4.2.8 Objects Installed by Setup

Setup installs the TC/MWA-MX property sheet, which is available when editing the user profile in “Active Directory Users and Computers”. Setup installs this property page on the local computer only. It can be installed manually on other computers (see below).

By default, the user interface is in English and only installed for US English locale.

If the property sheet is to be displayed in a different language, you need to know the locale ID of this language. On the next page, there is a list of locale IDs for different languages.

To enable the property sheet for a different language, open a command prompt and run the following command:

```
C:\TOPCALL\TCMWAMX\TCMWXE2K.EXE <locale-id> <extension-attribute-number>
```

In the above example, <locale-id> is a placeholder for the language identifier that can be retrieved from the table below. To enable the property sheet for German language, using extension attribute 1 for configuration data, type:

```
C:\TOPCALL\TCMWAMX\TCMWXE2K.EXE 0407 1
```

Make sure to always specify both parameters of TCMWXE2K.exe and to use the same extension attribute number for all languages. If you do not specify the <extension-attribute-number>, user configuration will be stored in *extensionData*.

When changing the extension attribute number after initial Setup, you have to adjust registry value *HKLM\Software\Topcall\TCMWAMX\Options\ConfigAttribute*.

You can localize the GUI by translating the language file TCMW0409.LNG (Setup installs this file to the Windows directory). After translation rename the file, replacing “0409” with the numeric locale id of the selected language.

The TC/MWA-MX property page tries to open the language file for the user’s default locale. If this file is not available, the default language file TCMW0409.LNG (for US English) will be used.

The user’s default language is stored in registry key *HKCU\ControlPanel\International\Locale*.

The following list of language identifiers is taken from the MSDN library of October `:

0x0436 Afrikaans
0x041c Albanian
0x0401 Arabic (Saudi Arabia)
0x0801 Arabic (Iraq)
0x0c01 Arabic (Egypt)
0x1001 Arabic (Libya)
0x1401 Arabic (Algeria)
0x1801 Arabic (Morocco)
0x1c01 Arabic (Tunisia)
0x2001 Arabic (Oman)
0x2401 Arabic (Yemen)
0x2801 Arabic (Syria)
0x2c01 Arabic (Jordan)
0x3001 Arabic (Lebanon)
0x3401 Arabic (Kuwait)
0x3801 Arabic (U.A.E.)
0x3c01 Arabic (Bahrain)
0x4001 Arabic (Qatar)
0x042c Azeri (Latin)
0x082c Azeri (Cyrillic)
0x042d Basque
0x0423 Belarussian
0x0402 Bulgarian
0x0455 Burmese
0x0403 Catalan
0x0404 Chinese (Taiwan)
0x0804 Chinese (PRC)
0x0c04 Chinese (Hong Kong SAR, PRC)
0x1004 Chinese (Singapore)
0x1404 Chinese (Macau SAR)
0x041a Croatian
0x0405 Czech
0x0406 Danish
0x0413 Dutch (Netherlands)
0x0813 Dutch (Belgium)
0x0409 English (United States)
0x0809 English (United Kingdom)
0x0c09 English (Australian)
0x1009 English (Canadian)
0x1409 English (New Zealand)
0x1809 English (Ireland)
0x1c09 English (South Africa)
0x2009 English (Jamaica)
0x2409 English (Caribbean)
0x2809 English (Belize)
0x2c09 English (Trinidad)
0x3009 English (Zimbabwe)
0x3409 English (Philippines)
0x0425 Estonian
0x0438 Faeroese
0x0429 Farsi
0x040b Finnish
0x040c French (Standard)
0x080c French (Belgian)
0x0c0c French (Canadian)
0x100c French (Switzerland)
0x140c French (Luxembourg)
0x180c French (Monaco)
0x0407 German (Standard)
0x0807 German (Switzerland)
0x0c07 German (Austria)
0x1007 German (Luxembourg)
0x1407 German (Liechtenstein)
0x0408 Greek
0x040d Hebrew
0x040e Hungarian
0x040f Icelandic
0x0421 Indonesian
0x0410 Italian (Standard)
0x0810 Italian (Switzerland)
0x0411 Japanese
0x0860 Kashmiri (India)
0x043f Kazakh
0x0412 Korean
0x0812 Korean (Johab)
0x0426 Latvian
0x0427 Lithuanian
0x0827 Lithuanian (Classic)
0x042f Macedonian
0x043e Malay (Malaysian)
0x083e Malay (Brunei Darussalam)
0x0458 Manipuri
0x0414 Norwegian (Bokmal)
0x0814 Norwegian (Nynorsk)
0x0415 Polish
0x0416 Portuguese (Brazil)
0x0816 Portuguese (Standard)
0x0418 Romanian
0x0419 Russian
0x0c1a Serbian (Cyrillic)
0x081a Serbian (Latin)
0x0459 Sindhi
0x041b Slovak
0x0424 Slovenian
0x040a Spanish (Traditional Sort)
0x080a Spanish (Mexican)
0x0c0a Spanish (Modern Sort)
0x100a Spanish (Guatemala)
0x140a Spanish (Costa Rica)
0x180a Spanish (Panama)
0x1c0a Spanish (Dominican Republic)
0x200a Spanish (Venezuela)
0x240a Spanish (Colombia)
0x280a Spanish (Peru)
0x2c0a Spanish (Argentina)
0x300a Spanish (Ecuador)
0x340a Spanish (Chile)
0x380a Spanish (Uruguay)
0x3c0a Spanish (Paraguay)
0x400a Spanish (Bolivia)
0x440a Spanish (El Salvador)
0x480a Spanish (Honduras)
0x4c0a Spanish (Nicaragua)
0x500a Spanish (Puerto Rico)
0x0430 Sutu
0x0441 Swahili (Kenya)
0x041d Swedish
0x081d Swedish (Finland)
0x0444 Tatar (Tatarstan)
0x041e Thai
0x041f Turkish
0x0422 Ukrainian
0x0420 Urdu (Pakistan)
0x0820 Urdu (India)
0x0443 Uzbek (Latin)
0x0843 Uzbek (Cyrillic)
0x042a Vietnamese

Installing the TC/MWA-MX property page on other computers

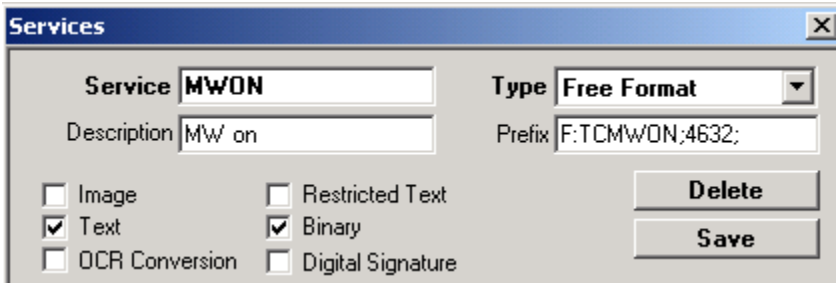
To install the property page on another computer:

- Copy the appropriate DLL to any directory on this computer:
  For 32-bit Windows, copy TCMWAMX2.DLL.
  For 64-bit Windows, copy TCMWAMX64.DLL.
- Open a command prompt, change to this directory and register the DLL via the utility REGSVR32. For example: “regsvr32 tcmwamx2.dll”.
- Copy the file TCMW0409.LNG or a translated version of it to the Windows directory.

4.2.9 Objects Installed by Setup on TCOSS

Setup does not install any objects on the TCOSS server: no automatic creation of KCS dependencies. You have to set them up manually.

For example, to create services in TCfW, select Services from the Admin menu.

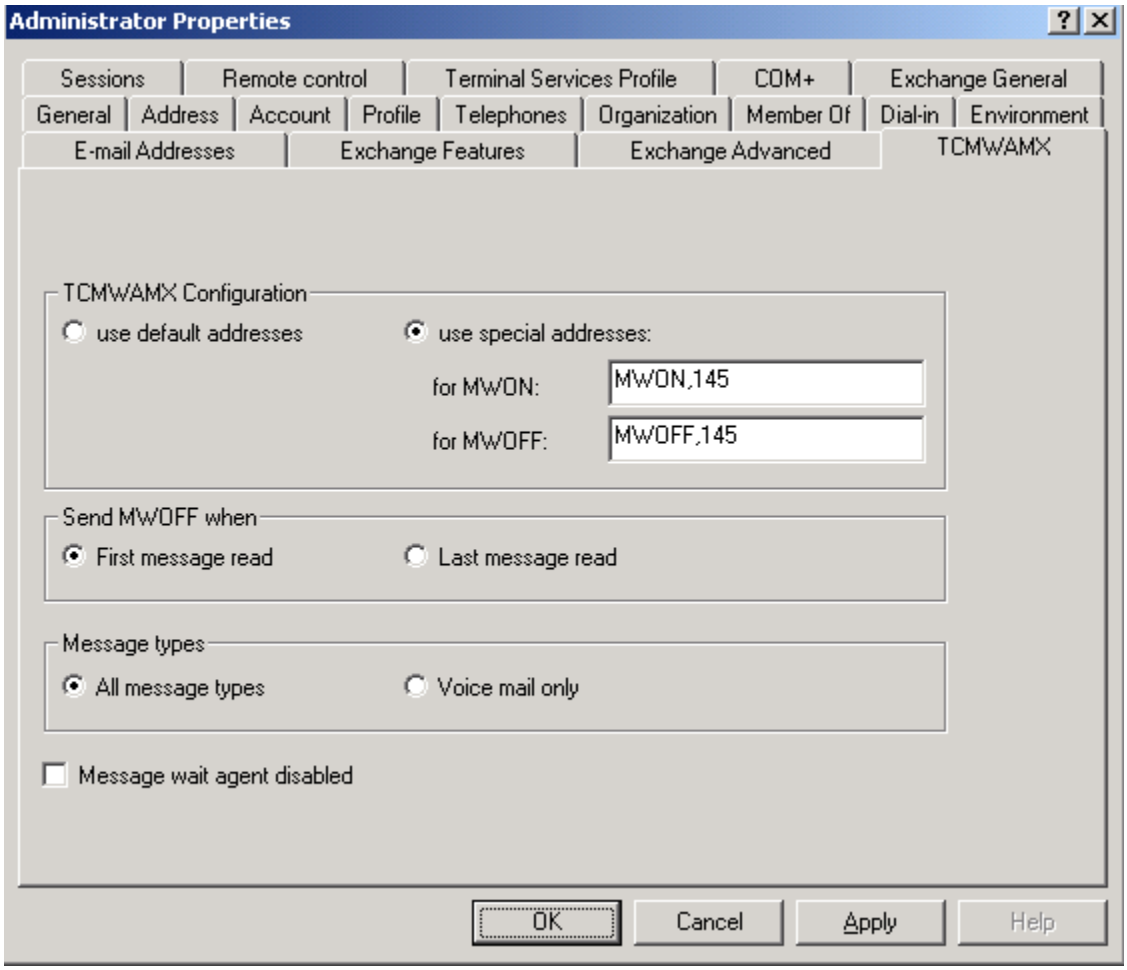


To create events, select User Profiles from the Admin menu.

Activ	Event:	Service	Number:	Archive	Auto	Regi	Delivery type	Sender	Filter
X	MsgWait On	MWON	4630,	Always	X				
X	MsgWait Off	MWOFF	4630,	Always	X				

4.3 Per-User Configuration

After installing the TC/MWA-MX for the first time, the message wait functionality is disabled for all users. This means that an administrator must manually edit all Exchange user profiles belonging to the Exchange server and enable the agent and configure the desired settings.



Within the Message Waiting property page (part of the mailbox properties in Admin), you can configure the options for this user:

Addressing:
Configure the destination addresses for MWON and MWOFF messages.

use default addresses:
The TC/MWA-MX uses default configuration settings, configured in registry values *MWONDefault* and *MWOFFDefault*. Each of these registry values contains the command sent to the PABX and a placeholder for the phone extension (reference to a mailbox property).

use special addresses:
The TC/MWA-MX sends MWON and MWOFF messages to specific addresses. The address entered here must be in syntax “Service,Number”. The number may contain a placeholder for a mailbox property (like in the default addresses).

Send MWOFF when:
Here you can define whether the MWOFF message is sent when the first unread message is opened (default) or when the last unread message is opened.

Message types:
Define whether the MWA handles only Voice messages or all message types (default).

Note:

Detection of Voice messages requires TC/VoiceMail and TC/LINK-MX. TC/MWA-MX must be configured to use the same message class for Voice messages as TC/VoiceMail and TC/LINK-MX do.

Registry keys defining the Voice message class:

Product	Registry Key
TC/MWA-MX	Options\MsgClassVoice
TC/LINK-MX	Exchange\MsgClassVoice
TC/VoiceMail	SPI\Exchange\ExVoiceMsgClass

Message waiting agent disabled:
This is the default operation mode for all users after first setup.

To activate changes immediately (e.g.: Activation/Deactivation of Exchange users) the TC/MWA-MX has to be restarted.

5. Maintenance

5.1 Registry Keys

The TC/MWA-MX uses the following Registry Keys below *HKLM\Software\Topcall\TCMWAMX*

Name	Type	Default	Description
UserId	SZ		Windows user id
Domain	SZ		Windows domain
Password	SZ		Windows password
Tracelevel	DWORD	0	Trace level
General\PollCycle	DWORD	30	Polling cycle in seconds
Topcall\Server	SZ		KCS name
Topcall\Path	SZ		KCS path
Topcall\User	SZ		KCS user for TC/MWA-MX
Topcall\Internal	SZ		Password of KCS user
Options\ConfigAttribute	SZ	1	Extension attribute holding the MWA configuration (1-15), or empty string for using extensionData. Must match the second parameter of TCMWXE2K.exe.
Options\ServerDN	SZ		Distinguished name of the Exchange server (not needed with Exchange 2010)
Options\MWADN	SZ	TCMWAMX	Name of the TC/MWA-MX mailbox
Options\MAPIProfile	SZ	TCMWAMX	Name of the MAPI profile used by the TC/MWA-MX
Options\MAPIPassword	SZ		MAPI password
Options\ReInit	SZ	03:00	Time of day for automatic reinitialization (00:00 to 23:59)
Options\MWONDefault	SZ	“MWON,[Telephone-Office2]”	Default PABX command for MWON messages. May include a placeholder for the phone number
Options\MWOFFDefault	SZ	“MWOFF,[Telephone-Office2]”	Default PABX command for MWOFF messages. May include a placeholder for the phone number
Options\PropFile	SZ	MAPIPROP.TXT	Name of comma-separated file with Exchange mailbox properties (for placeholder expansion)
Options\Termination	DWORD	0xF3	Default termination for send orders (default: ARC_NEG, ARC_POS, DEL_ENV_NEG, DEL_ENV_POS, DEL_ENTRY_NEG, DEL_ENTRY_POS)
Options\MXHomeServers	REG_MULTI_SZ		Defines additional mailbox servers (Exchange 2007) or client access servers (Exchange 2010, 2013) that shall be polled for information. The server defined in registry value MXServer is always polled. A line with only an asterisk (*) tells TC/MWA-MX to handle mailboxes on any server.
Options\MWONSubject	SZ	MWON	Subject for MWON messages
Options\MWOFFSubject	SZ	MWOFF	Subject for MWOFF messages
Options\MWONText	SZ		Text for MWON messages
Options\MWOFFText	SZ		Text for MWOFF messages
Options\MXSiteDN	SZ		Used for logon parameters (not needed for Exchange 2010 and 2013)
Options\MXServer	SZ		Used for logon parameters
Options\MXVersion	SZ	2010	Version of the Exchange server defined in MXServer. Possible values: 2007, 2010, 2013, 2016
Options\MsgClassVoice	SZ	IPM.NOTE.TCMSG.VOICE	Exchange message class for voice messages
Options\ServerUrl	DWORD	https://<hostname>/ews/exchange.asmx	The url to establish connection with Exchange Server with EWS. Where <hostname> is the server address of the exchange.
RpcProxyServerFlags	DWORD	1	This value is a bit field, the following bit masks are defined: 0x1 - enable usage of RPC via HTTP 0x2 - enable SSL 0x10 - ignore certificate errors
RpcProxyServerAuth	DWORD	0x10	This value describes the authentication scheme to use for RPC over HTTP. Possible values: 0x01 (RPC_C_HTTP_AUTHN_SCHEME_BASIC) 0x02 (RPC_C_HTTP_AUTHN_SCHEME_NTLM)

			0x10 (RPC_C_HTTP_AUTHN_SCHEME_NEGOTIATE)
RpcPacketAuth	DWORD	0x0A	This value describes the authentication scheme to use for RPC. Possible values: 0x0 (RPC_C_AUTHN_NONE) 0x09 (RPC_C_AUTHN_GSS_NEGOTIATE) 0x0A (RPC_C_AUTHN_WINNT)

5.1.1 Description of Termination Settings

Description	Value	Bit Number
Delete entry positive	1	Bit 0 LSB (note 4)
Delete entry negative	2	Bit 1
Create notification for positive sending	4	Bit 2
Create notification for negative sending	8	Bit 3
Delete envelope (message) for positive sending	16	Bit 4
Delete envelope (message) for negative sending	32	Bit 5
Archive message for positive sending	64	Bit 6
Archive message for negative sending	128	Bit 7
Create backreception for positive sending	256	Bit 8
Create backreception for negative sending	512	Bit 9
Remove envelope as soon as possible (note 1)	2048	Bit 11
Send message as registered	4096	Bit 12
Instant (note2)	8192	Bit 13
Create a read notification (note 3)	16384	Bit 14
Create a non-read notification (note 3)	32768	Bit 15 MSB (note 5)

Note1:
The setting remove envelope as soon as possible is principally not used as this would mean that the message itself is immediately removed from the TCOSS server, is not part of the short term archive anymore and there is no way to access such a message (it simply does no longer exist)

Note2:
By using the Instant flag the status of the message is immediately changed to "sent". Might be used e.g. for incoming events to printers where the status of the message is immediately set to "sent" without other status messages in between like "message sent to printer" or "message currently being printed"

Note 3:
Read notification and non-read notifications are not implemented and therefore not used.

Note 4:
LSB, term used as "least significant bit" or the bit with the lowest corresponding decimal value

Note 5:
MSB, term used as "most significant bit" or the bit with the highest corresponding decimal value

The value 33 HEX is binary 00110011, which means no archiving is done, while the value F3 is binary 11110011, which means that positive and negative send attempts are archived.

5.2 Error Handling

If the TC/MWA-MX looses its connection to KCS or to Exchange, it tries to reconnect three times. If it is still not possible to make the connection at this time it goes to idle mode for ten polling cycles and then tries to reconnect.

After a successful restart, MWON/OFF events are sent for each mailbox, to recover from missed status changes. Thus, the reception of duplicated MWON/OFF messages is possible.

Note:
If the message wait functionality is disabled for all mailboxes on the server, TC/MWA-MX stops and logs an error ("No mailboxes could be opened. Shutting down.").

5.3 Event Log

The TC/MWA-MX writes the following messages to the event log:

Type	Message	Reason	Parameters
Information	The MWA is starting		
Information	The MWA started successfully		
Information	The MWA is stopping		
Information	The MWA stopped		
Warning	Mailbox %1 cannot be opened	The MAPI-call for opening the inbox of this user failed	%1: mailbox name
Warning	Cannot send to %1 (error %2)	The MWA cannot send a message	%1: destination address %2: TCSI error code
Error	Registry key %1 cannot be opened		%1: registry key
Error	MAPI Logon / Exchange Logon failed	The MAPI profile used by the MWA is not configured properly or the Exchange server is not running	
Error	The Exchange message store cannot be opened	TC/MWA-MX cannot open the Exchange Private Store	
Error	Connection with message store has been lost	The thread communicating with the Exchange server receives no response. Maybe the Exchange server is not running	
Error	MX Service %1 not answering		%1: service name
Error	Logon to TOPCALL server failed with error %1 (%2)		%1: TCSI error code %2: error description
Error	No valid license	License key has expired of TCOSS version is below 7.08.00	
Error	No mailboxes could be opened. Shutting down.	No mailboxes could be opened. Check registry key Options\ServerDN. Check if MWA is enabled for any mailbox.	

5.4 Trace File

The TC/MWA-MX supports the following trace levels:

Tracelevel 0: Only errors and events logged to the application log will be written to the trace file.

Tracelevel 1: Additionally, MAPI functions calls, calls to shared DLLs and beginning/ending of threads will be written to the trace file.

Tracelevel 2: Maximum Tracelevel; Every call, every construction/destruction of an object (if possible with parameters) will be written to the trace file.

At tracelevel 2, every MWON or MWOFF message is traced in the following format:
MWATC::MWATCSendW: (*text***,***service***,***number***,***subject***,***termination***)**

5.5 Automatic Reinitialization

The TC/MWA-MX keeps a list of the mailboxes to be polled. This list is reinitialized once per day to get rid of deactivated / deleted mailboxes and to update the list of mailboxes with newly configured / activated mailboxes. The time can be configured in the registry key *Options\ReInit*; default is 3:00 AM. The administrator can achieve the same effect by manually stopping and restarting the service.

5.6 Use TCfW to View Messages Sent by TC/MWA-MX

The agent uses the KCS user id specified during setup for sending MWON / MWOFF messages. As a default, the messages are archived, so they are available in the TCOSS outbox of the TC/MWA-MX user.

6. Performance

Performance tests were made on the following configuration: Pentium II, 400 MHZ, 128 MB RAM.

Startup:

The TC/MWA-MX opens all mailboxes during its startup routine. Therefore, there is a linear correlation between startup time and number of users. On the test system, startup time was approximately 0.5 seconds per mailbox.

Mailbox polling:

There is a linear correlation between polling time and number of users. On the test system, mailbox polling needed 1.6 seconds for 500 mailboxes.

Sending of messages:

Sending a message that turns the telephone LED on or off takes 54 to 59 msec.

This means: If the status of 500 user mailboxes changes simultaneously (no new mail -> new mail available), the complete poll cycle takes about 31 seconds (1.6 sec to check the mailboxes, 29.5 sec to post messages to the KCS.

7. Restrictions

- Exchange logs a security event (ID 1016) for every mailbox that is opened by TC/MWA-MX. This Exchange feature cannot be suppressed.
- Use the KCS Monitor to start TC/MWA-MX. Starting TC/MWA-MX interactively is only possible if logged in as the TCMWAMX user specified during Setup, and only if this user has been granted full access to all mailboxes.

8. Hints

8.1 Multiple TC/MWA-MX instances on One Computer

It is technically possible to install several instances of TC/MWA-MX on one workstation:

Install the first instance using the default Setup. For each additional instance do the following:

Changes in DEFAULTS.INI, section [TCMWAMX_INSTANCE]:

- Change the value RegistrySubkeyName, e.g. from TCMWAMX to TCMWAMX2.

Then start Setup to install the additional instance.

Example:

DEFAULTS.INI for first instance (no changes required)

```
[TCMWAMX_INSTANCE]
RegistrySubkeyName=TCMWAMX
```

DEFAULTS.INI for second instance (changes are bold)

```
[TCMWAMX_INSTANCE]
RegistrySubkeyName=TCMWAMX2
```

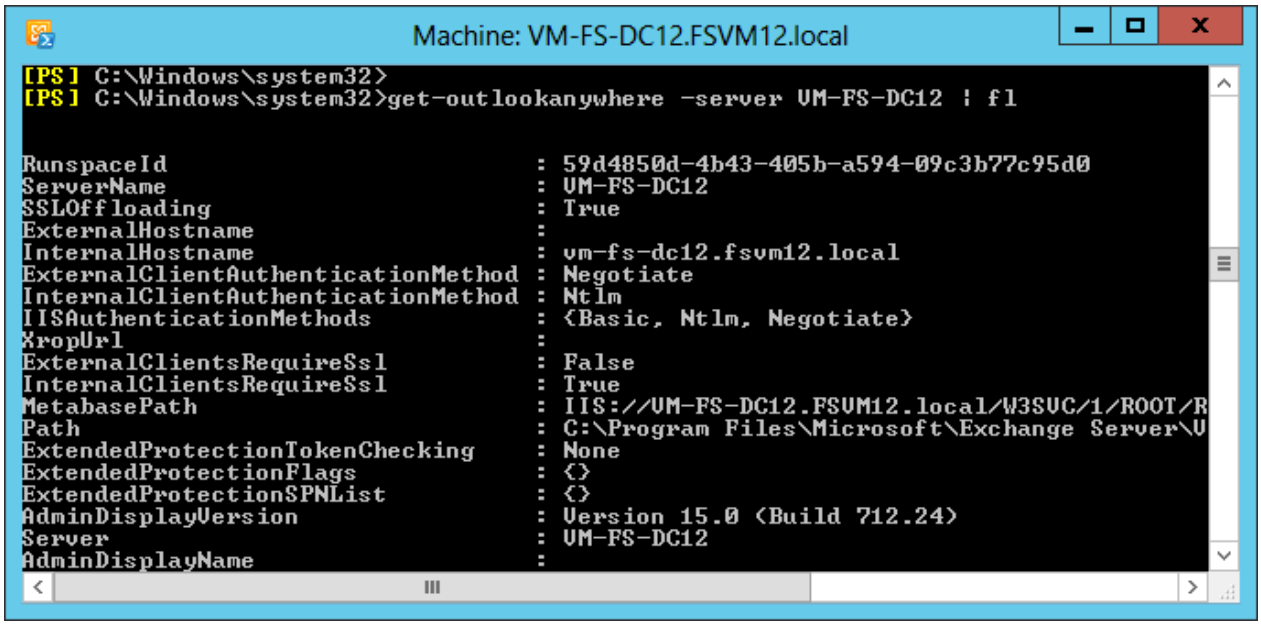
Note:
If you installed parallel instances, better check the DEFAULTS.INI parameters before running Setup again.

8.2 Troubleshooting Exchange 2013 Connection Problems

If you encounter problems connecting to Exchange 2013, you can use the following registry values for fine-tuning MAPI profile parameters.

Registry Key	Default	Possible values	Related attribute in get-outlookanywhere result
Options\ RpcProxyServerFlags	0x01	0x01 - do not use SSL 0x03 - use SSL 0x13 - use SSL, ignore certificate errors	InternalClientRequiresSsl
Options\ RpcProxyServerAuth	0x10	0x10 - negotiate 0x01 - basic authentication 0x02 - NTLM	InternalClientAuthenticationMethod
Options\ RpcPacketAuth	0x0a	0x00 - none 0x09 - negotiate 0x0a - winnt	

You can use the Exchange Management Shell command “get-OutlookAnywhere” to find the Exchange server configuration related to the above keys.



9. Ordering Information

TC/MWA-MX needs a special license. One license is needed per TCOSS system.