CICS Universal Client

IBM

Summary of changes for the Windows edition

Version 5.0.1

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Contents

Chapter 1. Introduction

This document lists new or changed features in the CICS® Universal Client Version 5.0.1. Read it in conjunction with the manuals for Version 5.0, supplied with the product. See the README file for any late changes to the product.

The intention is to produce a formatted document that is more readable than the text file that is normally supplied with a service release. Your comments on this approach are welcome; see "Sending your comments to IBM" on page 43 for information on contacting IBM. An HTML version of the document is available on the CD.

In some cases, revised sections of the manuals are reproduced here, so that changes can be seen in context. In these cases, information that is new in this release is identified by a vertical line (|) in the margin.

Chapter 2. Supported software

The CICS Universal Client is supported with the following products:

Operating systems

The CICS Universal Client is supported on the following operating systems:
- Windows® XP Professional
- Windows 2000 Professional with a minimum of Service Pack 1
- Windows NT® Workstation V4.0 with a minimum of Service Pack 6a
- Windows NT Server V4.0 with a minimum of Service Pack 6a

  Notes:
  - Windows NT 4 Terminal Server is not supported.
  - The setting of multiple user interface languages, under Windows 2000 MultiLanguage Version, is not supported.
  - Only the CICS Transaction Gateway, not the CICS Universal Client, is licensed for use with Windows 2000 Terminal Services.
  - Multiple concurrent users using different user interface languages are not supported. This can occur when using Windows XP fast user switching.

Telnet clients

If you run the CICS Universal Client over telnet, certain telnet clients can cause problems with the display. For example, your telnet session might truncate message lines over a certain length. This is usually a problem with the telnet client that you are using, or the terminal type that you are going in as. Currently there is no solution to this problem.

CICS Servers

A CICS server runs real-time multi-user applications and manages the associated resources and data. The CICS Universal Client is supported with the following servers:
- CICS Transaction Server for z/OS® V2.2
  - Apply APAR OW52032 for AnyNet® support.
  - Apply APAR PQ70543 for better recovery for EPI and cicsterm requests made over SNA, after a failure of CICS or the network.
- CICS Transaction Server for z/OS V1.3

Supported software

- Apply APAR PQ30168 for signon capable terminals.
- Apply APAR OW52032 for AnyNet support.
- Apply APAR PQ70542 for better recovery for EPI and cicsterm requests made over SNA, after a failure of CICS or the network.
- CICS Transaction Server for VSE/ESA™ 1.1.0 (with APAR PQ30170, for signon capable terminals, applied), or a minimum service level of 1.1.1
- TXSeries® V4.2 with a minimum of PTF 9 (HP-UX)
- TXSeries V4.3 with a minimum of PTF 4 (Windows NT, AIX®, Solaris)
- TXSeries V5.0 (Windows, AIX, Solaris, HP-UX)
- CICS Transaction Server for Windows V5.0
- CICS Transaction Server for iSeries™ V5.2
- CICS Transaction Server for iSeries V5.1
- CICS Transaction Server for iSeries V4.5

SNA communications

Customers wishing to use SNA communications should install one of the following products:

Windows operating system
Any one of:
- IBM® Communications Server V6.1, with a minimum of service level 1
- IBM Personal Communications V5.5 for Windows
- IBM Personal Communications V5.6 for Windows
- Microsoft® Host Integration Server 2000

TCP/IP communications

TCP/IP support is provided by the operating system.

TCP62 communications

TCP62 support is provided by the CICS Universal Client.

Compilers and application development tools

The CICS Universal Client is supported with the following compilers and application development tools:

Windows
- IBM VisualAge® COBOL V3.0
- Microsoft Visual C++ V6.0
- Microsoft Visual Basic V6.0

- Microsoft Visual Basic Script (VBScript) V5.0
- Micro Focus Net Express V3.1 for COBOL

Note: The CICS Universal Client does not support use of the COM libraries with Microsoft Transaction Server (MTS), or the MTS component of COM+.

Screen readers

The CICS Universal Client is supported with JAWS V4.0.2

Note: See the IBM JDK 1.3.1 installation README file (on a typical installation `C:\Program Files\IBM\Java131\docs\readme.install.ibm.html`) for information about installing the IBM Access Bridge and the Java™ Accessibility Utilities package to support assistive technologies such as JAWS.

Other tools

These tools are available for viewing the PDF online documents:

- Adobe Acrobat Reader V5.0

Supported software

Chapter 3. Installation

The procedure is similar to that used for Version 5.0, although you now install the Java runtime environment through a separate procedure. Install the product as follows:

- Click **Start → Run** and then type `d:\setup`, where d: is your CD or network drive.
- Follow the instructions on screen.
- The installation program keeps you informed of progress. When the CICS Universal Client has been successfully installed you are advised to install the supplied Java runtime environment (JRE) if necessary. You are also asked if you want to view the README file and run the Configuration Tool. Both options are selected. A supported JRE must be installed for the Configuration Tool to run. Click **Finish** to end the installation.

Installing the supplied JRE

You need Java to run the Configuration Tool. To install the supplied JRE, issue the following command:

```
d:\JRE 1.3.1\Windows\install.exe
```

where `d:` is your CD or network drive.

Upgrading

Remove any beta versions of the product before installation.

Currently installed product	Upgrade type
CICS Universal Client v5.0	Normal upgrade.
CICS Transaction Gateway v5.0, v5.0.1, v4.0, 4.0.1 and 4.0.2	No upgrade. Uninstall the product before continuing.
CICS Universal Client v3	Copies the relevant INI files before uninstalling the older version and then installing CICS Universal Client v5.0
CICS Transaction Gateway v3	No upgrade. Uninstall the product before continuing.
Versions earlier than 3.0	No upgrade. Uninstall the product before continuing.

The product will not install if the level of Windows is below that supported.

Chapter 4. Memory mapped tracing

If you enable wrapping trace, you can use the -b switch when you issue the cicscli command to turn tracing on, to specify that memory mapped trace files should be used.

With memory mapped tracing, the operating system's paging mechanism is used to swap data between memory and the trace file. This improves performance significantly when compared to standard file I/O, because the trace file is opened and written to less frequently. Because the operating system is responsible for flushing data to disk, data is not normally lost if an application terminates unexpectedly. However, if the operating system itself fails, data can be lost, and the trace file can be corrupted. If you are diagnosing problems where the server fails and needs to be restarted, use standard I/O tracing instead of memory mapped tracing.

If you use this option, the size of the trace files is limited to 10 MB, and in addition to CICSCLI.BIN and CICSCLI.WRP, you might see a series of files of the form CICSCLI.WRP1, CICSCLI.WRP2...CICSCLI.WRP*n*, where *n* is the number of files needed to hold the total amount of trace data specified in the Maximum Client wrap size field of the Configuration Tool. The trace formatter finds all files in the sequence when you format the binary files. Memory mapped tracing uses up to 10 MB of virtual storage.

To use memory mapped tracing, do the following:

1. Turn on wrapping trace by setting the Maximum Client wrap size field in the Configuration Tool to a value greater than 0.
2. When you turn on tracing, specify the -b switch as well as the other options, for example:

   ```
   cicscli -d -b
   ```

   or

   ```
   cicscli -d -m=component_list -b
   ```

Formatting the binary trace file

If you are using memory mapped tracing, note that data is not always written to disk immediately. As a consequence, turn tracing off before you format the binary trace file, to ensure that all data is flushed to disk.

You use the Binary Trace Formatter utility cicsftrc to convert the binary trace file CICSCLI.TRC to ASCII text. The utility has the following parameters:

Memory mapped tracing

-m=*list of components*
> Specifies that only trace points from the listed components are written to the text file. The components you can specify are the same as for CICSCLI -m. If -m is not specified, all trace points in the binary trace are written to the text file.

-w[=*filename***]**
> Indicates that there are two or more binary trace files to format and then concatenate (that is, the binary files were created with a wrapping trace). If no filename is specified with the -w parameter, cicsftrc assumes that the name of the second trace file is `CICSCLI.WRP`

-n Indents entry and exit points in the test trace file to make it more readable. By default, indentation is turned off.

-d Specifies detailed trace formatting. If you are using EPI calls, cicsterm or CICSPRINT, an approximation of the screen layout will be included in the trace.

-i=*filename*
> Specifies the name of the input (binary) trace file, which is `CICSCLI.BIN` by default.

-o=*filename*
> Specifies the name of the output (text) trace file. If no -o parameter is specified, the name of the text trace file is assumed to be `CICSCLI.TRC`

-f Overwrite any existing files.

-s Do summary trace formatting. Summary trace formatting is controlled by a template file (CCLSUMTR.TXT), which is read in at initialization time. It formats key trace points, and shows for example the flow of user API calls, the progress of calls through the Client daemon, and network flows to the server. For best results, specify the API.2 component. Summary tracing provides an overview; use it as requested by your IBM support organization.

Note: Versions of the CICS Universal Client earlier than 5.0.1 cannot format binary trace files produced with version 5.0.1.

Figure 1 on page 11 shows an example summary trace.

```
       -->Sample of API summary trace taken with API.2 and DRV options.

[Process ,Thread ]    Time      API Summary                    CCLCLNT  Summary                Comms Summary
=================================================================================================================
...
...
...
[000000bf,0000017c] 12:08:32.190 --->[7315] CCL3310 ECI Call type ECI_SYNC, UOW=0
[00000089,000000a4] 12:08:32.290                                -S-> [4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=89
[000000bf,0000017c] 12:08:32.330     [7391] CCL1040   using slot = Slotp->Ctrl.ConvId = 6
[000000bf,0000017c] 12:08:32.350     [7099] CCL1037   Sync ECI call, so waiting for a reply...
[00000089,00000063] 12:08:32.400                                <-R- [4418] CCL4412 TCP/IP (to STEMPLAR) receive data: Length=12
[00000089,0000018b] 12:08:32.511                                <-R-[4418] CCL4412 TCP/IP (to STEMPLAR) receive data: Length=29
[00000089,000000a4] 12:08:32.521                                -S->[4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=94
[00000089,000000a4] 12:08:32.531                                -S->[4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=94
[00000089,000000a4] 12:08:32.541                                -S->[4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=94
[00000089,000000a4] 12:08:32.541                                -S->[4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=94
[00000089,000000a4] 12:08:32.551                                -S->[4410] CCL4411 TCP/IP (to STEMPLAR) send data: Length=94
[00000089,00000168] 12:08:32.581                                <-R-[4418] CCL4412 TCP/IP (to STEMPLAR) receive data: Length=12
[00000089,0000017e] 12:08:32.601                                <-R-[4418] CCL4412 TCP/IP (to STEMPLAR) receive data: Length=31
[000000bf,0000018e] 12:08:32.621     [7364] CCL3350   Event Service Thread got a request REQUEST_TYPE_ECI_1
[000000bf,0000008a] 12:08:32.671 <---[7316] CCL3311 ECI Call type ECI_SYNC, UOW=0 got rc=ECI_NO_ERROR {Time in API = 0.821 seconds}
```

Figure 1. Sample of API summary trace taken with API.2 and DRV options

Points to note:

1. {Time in API} shows the amount of time that the client API call took to complete. This can help when investigating performance problems.
2. The API Summary column refers to client API code inside the user application process. It tracks when user requests enter and leave the client API code. ---> and <--- show the program entering and leaving the Client daemon API.
3. CCLCLNT is the background Client daemon process. You see entries here only if you specify the CCL tracepoint.
4. The Comms Summary tracks when Client daemon calls enter and leave the network. -S-> shows a request being sent to the network; <-R- shows a reply being received.

If a user application is making EPI calls, or using cicsterm or cicsprnt, the trace formatter puts an approximation of the screen into the trace. Figure 2 on page 12 shows a 3270 screen capture from a formatted trace file, taken from the CECI transaction. It is an aid to problem determination, not a completely accurate representation of the screen. See "Formatting the binary trace file" on page 9 for details of how to format the trace file.

Memory mapped tracing

```
Command = Erase/Write, so clearing main screen
 Command2 = Read Modified
 WCC = 0x32 ( Free Kbd,80 char)
 Set Buffer Address to (1,2)
 Insert Cursor @ (1,2)
 Set Buffer Address to (1,1)
 Start Field Extended (Unprotected,Alphanumeric,Display,not-pen-detectable,Foreground Colour Green)
 Data : ' '
 Insert Cursor @ (1,3)
 Set Buffer Address to (2,1)
  Data : 'User        '
  .....
  .....
  .....
  .....
 Set Buffer Address to (24,49)
 Start Field Extended (Autoskip (Prot+Num),Display,not-pen-detectable,Foreground Colour Turquoise)
 Data : '9'
 Set Buffer Address to (24,51)
 Start Field Extended (Unprotected,Alphanumeric,Intense,pen-detectable,Foreground Colour Red)
 Data : 'Messages    '
              1         2         3         4         5         6         7         8
      12345678901234567890123456789012345678901234567890123456789012345678901234567890
  >+--------------------------------------------------------------------------------+
 01| -                                                                              |
 02| ´STATUS. . :´Enter one of the following:                                       |
 03|                                                                                |
 04| ´ABend       EXtract      READPrev     WAit                                    |
 05| ´ADdress     FEpi         READQ        WRITE                                   |
 06| ´ALlocate    FOrmattime   RECeive      WRITEQ                                  |
 07| ´ASKtime     FREE         RELease      Xctl                                    |
 08| ´ASSign      FREEMain     RESetbr                                              |
 09| ´Bif         Getmain      RETRieve                                             |
 10| ´CAncel      Handle       RETUrn                                               |
 11| ´CHange      IGnore       REWrite                                              |
 12| ´CONNect     INquire      SENd                                                 |
 13| ´CONVerse    ISsue        SET                                                  |
 14| ´DELAy       LInk         SIGNOFf                                              |
 15| ´DELETE      LOad         SIGNON                                               |
 16| ´DELETEQ     PErform      START                                               |
 17| ´DEQ         POP          STARTBr                                             |
 18| ´DUmp        POSt         SUspend                                             |
 19| ´ENDbr       PUsh         SYncpoint                                           |
 20| ´ENQ         READ         Unlock                                              |
 21| ´ENTer       READNext     Verify                                             |
 22|          ´                                                                     |
 23| ´PF´1-Help        ´2-HEX         ´3-End         ´4-EIB         ´5-Variables   |
 24|    ´6-User                                      9-Messages                    |
    +--------------------------------------------------------------------------------+
    | 1BþC000                      STEMPLAR                                         |
    +--------------------------------------------------------------------------------+
      12345678901234567890123456789012345678901234567890123456789012345678901234567890
              1         2         3         4         5         6         7         8
```

Figure 2. Screen capture from a formatted trace file

The formatter lists the commands which built the screen, and shows an approximation of the screen.

The Binary Trace Formatter utility `cicsftrc` formats SNA and MPTN data structures within TCP62 data flows.

Chapter 5. Changes to the Configuration Tool

- A new field on the **Server group definition** panel allows you to exclude a server from load balancing; see "Excluding servers from workload management".
- Permitted values for several fields have changed, and the Configuration Tool substitutes the minimum value if you try to enter a value outside the permitted range; see "Changes to fields".
- The Configuration Tool uses the path set in the CICSCLI environment variable as the default for opening and saving configuration files; see "Specifying the path to the configuration file" on page 16.
- You can save any changes you make under the **Settings** menu item. In addition to the regular font color and face you can now also change the warning font color; see "Saving your Configuration Tool settings" on page 16.

Excluding servers from workload management

All servers not assigned to a server group are considered for workload management. To stop the Workload Manager from sending requests to a server, do the following:

1. Launch the Configuration Tool.
2. Create a new server group.
3. Add the server to the new server group.
4. Clear the **Manage workload for this server group** check box.

If you disable load balancing for a particular server group, for any server in that group, the Workload Manager connects to the server specified in the call, rather than randomly selecting a new server. The WorkLoad Manager does not resend failed requests to a server that has load balancing disabled.

Changes to fields

The Configuration Tool substitutes the minimum value if you try to enter a value outside the permitted range in the following fields:

Field	Minimum value	Maximum value
Connection timeout	0	3600
Maximum buffer size	4	32
Maximum Client wrap size (Kb)	0	2 000 000

Changes to the Configuration Tool

Field	Minimum value	Maximum value
Maximum logical SNA sessions	1	255
Maximum requests	1	10 000
Maximum servers	1	256
Maximum SNA RU size	256	4096
Port (on Configuring Server settings, TCP/IP protocol panel)	0	65 535
Region timeout (s)	0	3600
Remote node inactivity poll interval (s)	0	65 536
Server retry interval	1	10 000
SNA pacing size	0	63
SO_LINGER setting	0	65 536
TCP62 port	0	1 000 000

Note:

Specifying the path to the configuration file

Configuration details are stored by default in the CTG.INI file in the <install_path>\bin subdirectory. You are recommended to use the Configuration Tool to update this file.

You can specify a different path to the configuration file by setting the CICSCLI environment variable. The Configuration Tool uses the path set in the CICSCLI environment variable as the default for opening and saving configuration files. The Configuration Tool does not substitute the <install_path>\bin subdirectory if the CICSCLI environment variable does not reference a valid path, neither does it try to create directories if the path specified in the environment variable does not already exist. If the Configuration Tool fails to find a configuration file, the Taskguide is launched.

The CICS Universal Client log indicates the location of CTG.INI. The CICS Universal Client will not run if a configuration file is not found.

Saving your Configuration Tool settings

The **Settings** pulldown has these options:

Color   Changes the background color on panels and fields. If you change the color, all fields (except check boxes and radio buttons) take on the same background color as the main panel.

Font   Changes the typeface, size, style and color of text. You can also change the color of warning text.

Save on exit

If this menu option is selected, your choices are stored in CTGCFG.INI, for use in future sessions. A copy of CTGCFG.INI is created for each user in the `%appdata%\IBM\CTG` directory.

If the system administrator has designated this as a roaming folder, your preferences are used when you run the Configuration Tool on any computer on the network.

If the `%appdata%\IBM\CTG` directory cannot be resolved, the Java home directory is used. In this case, CTGCFG.INI will be overwritten if another user alters the settings, and saves them in the Java home directory.

Notes:

1. The file is not deleted if the CICS Universal Client is uninstalled. It remains on the system unless manually deleted, and will be reused if the product is reinstalled.

2. To restore the default settings, close the Configuration Tool, delete file CTGCFG.INI, and then restart the Configuration Tool.

3. When you close the Configuration Tool, a message is displayed if file CTGCFG.INI cannot be written—even if you have deselected the **Save on exit** menu option. Click **OK** to clear the message and close the Configuration Tool.

Multiple server definitions

Multiple identical server definitions are not permitted in the configuration file of the CICS Universal Client. The combination of fields which identify a server, and must therefore be unique is as follows:

Protocol	Fields in `CTG.INI`
TCP/IP	**Hostname or IP address** and **Port**.
SNA	**Partner LU name**, **Local LU name** and **Mode name**.

Changes to the Configuration Tool

| | TCP62 | **Partner LU name**, **Local LU name** and **Mode name**. |

This ensures that every connection that the CICS region and the network protocol see is represented by a unique server definition in the configuration file. Existing Client applications that use different server names to send requests to the same CICS region continue to work if a user exit is defined to redirect requests. Sample user exits `ecix2.c` and `epix2.c` do this; see `<install_path>\samples\samples.txt`.

Chapter 6. Samples

These samples have been discontinued:

EPIBeans, samples and product code

    `<install_path>\samples\java\com\ibm\ctg\epi`

        ColorMap.java
        DefaultColorMap.java
        EPIBasicScreenHandler.java
        EPIBasicScreenHandlerBeanInfo.java
        EPIMonitor.java
        EPIMonitorBeanInfo.java
        EPIScreenButtons.java
        EPIScreenButtonsBeanInfo.java

    `<install_path>\samples\java\com\ibm\ctg\samples\epi`

        BeanSample.java
        TerminalDetails.java
        TerminalDetailsEditor.java
        VAJSample.java

Visual Basic CicsComTerm

    `<install_path>\samples\vb\epi\EpiA1`
        All files

VB Script samples

    `<install_path>\samples\vb\script`

        ecib1
        epib1

Visual Basic samples

    `<install_path>\samples\vb\eci`
        All files

    `<install_path>\samples\vb\epi`
        All files

    `<install_path>\samples\vb\esi`
        All files

Terminal Servlet

Samples

<install_path>\samples\terminalservlet

The Terminal Servlet samples have changed. The following files are no longer shipped as part of the Terminal Servlet sample:

epissam1.shtml
epissam2.shtml
epissam4.shtml

Similar sample files with .html extensions are provided. The Terminal Servlet sample package is now a single sample, not a collection of samples.

Chapter 7. New EPI exit

A new EPI exit, CICS_EPIStartTranExtendedExit, passes the Terminal Index as a parameter. If you write a user-exit DLL, you must include all exits, apart from the following:

- **CICS_EciSetProgramAlias** is optional.
- Include either **CICS_EpiTermIdExit** or **CICS_EpiTermIdInfoExit**. New DLLs should use **CICS_EpiTermIdInfoExit**.
- Include either **CICS_EpiStartTranExit** or **CICS_EpiStartTranExtendedExit**. New DLLs should use **CICS_EpiStartTranExtendedExit**.

If a required exit is not included, the exits will not load. The CICS Universal Client traces the input parameters to the exits immediately before they are called, and the output of the exit when the exit returns. A user exit active flag of 0 in the trace means that the exits have failed to activate, due to a missing required exit. This information is also shown in a log message. CICS tracing is not available for use within the exit.

EPI: CICS_EpiStartTranExtendedExit

> Allows a user to see that a transaction has been started, and to see the TransId, 3270 data, and TermIndex sent to it. It does not affect the running of the EPI program. **CICS_EpiStartTranExtendedExit** is called after the EPI state has been verified, and just before the **CICS_EpiStartTran** is called.

> Note that a pseudo-conversational transaction causes the **CICS_EpiStartTranExtendedExit** to be called because in this case an EPI program would have to start a transaction again.

cicsterm: StartTranExtendedExit:

> If a non-ATI transaction is being started, **StartTranExtendedExit** is called, sending a blank in the TransId field and the TIOA (terminal input output area) for the Data field. As only one cicsterm runs per process, the TermIndex number is hardcoded to 1. The TransId is either the first four characters of the TIOA data, or follows a 3270 Set Buffer Address (SBA) command (which begins X'11'). In the latter case, it starts on the 4th byte of the TIOA (as a SBA command takes up a total of three bytes).

> **StartTranExtendedExit** is not driven for ATI transactions. This is because the exit is normally driven by the **CICS_EpiStartTran** API call, and this call is not made to start ATI transactions. However pseudo-conversational transactions drive **StartTranExtendedExit**. This is because in an EPI program, the user would have to call

New EPI exit

CICS_EpiStartTran to start the pseudo-conversational transaction. In the case of pseudo-conversational transactions, the transaction id is put in the TransId parameter block and the TIOA passed in the data block does not contain the transaction id.

StartTranExtendedExit is not called as a result of an EXEC CICS RETURN TRANSID*name* IMMEDIATE command issued by an application from a cicsterm session.

CICS_EpiStartTranExtendedExit

Function name:	Parameters:
CICS_EpiStartTranExtendedExit	Anchor
	TermIndex
	TransId
	Data
	Size

Purpose

To allow the user to see when a transaction is started, for information gathering purposes. This exit does not select a system, and has no return data.

When called

On invocation of **CICS_EpiStartTran**, after the EPI has validated the parameters.

Parameters

Anchor Input parameter. The pointer set up by **CICS_EpiInitializeExit**.

TermIndex Input parameter. The value supplied by the TermIndex parameter of the CICS_EpiReply call to which this exit relates.

TransId Input parameter. The value supplied for the **TransId** parameter of the **CICS_EpiStartTran** call to which this exit relates.

Data Input parameter. The value supplied for the **Data** parameter of the **CICS_EpiStartTran** call to which this exit relates.

Size Input parameter. The value supplied for the **Size** parameter of the **CICS_EpiStartTran** call to which this exit relates.

Return codes

CICS_EXIT_OK
Processing of the **CICS_EpiStartTran** call continues.

CICS_EXIT_BAD_ANCHOR
CICS detected an invalid anchor field. The EPI writes a CICS Universal Client trace record, and then processing of the **CICS_EpiStartTran** call continues.

CICS_EXIT_BAD_PARM
CICS detected an invalid parameter. The EPI writes a CICS Universal Client trace record, and then processing of the **CICS_EpiStartTran** call continues.

New EPI exit

user-defined

User-defined return codes must have a value not less than
CICS_EXIT_USER_BASE. The EPI writes a CICS Universal Client trace
record, and then processing of the **CICS_EpiStartTran** call continues.

Chapter 8. Problem determination

CPMI tasks lock in CICS Transaction Server for z/OS

If a CPMI (or equivalent mirror transaction) task locks in your CICS region, it is possibly because you have reached the MAXTASKS limit of your CICS region. This prevents the mirror program from sending data back to the Client daemon, which appears to hang. The problem typically occurs when CICS has a high number of concurrent transactions. A solution is to put the mirror transaction in a TranClass that has a MAXACTIVE lower than the MAXTASKS of your CICS region. All new requests to the CICS region are queued, and CICS can continue to process current requests. The value you specify for MAXACTIVE depends on your installation, and other tasks running in the region.

Appendix A. Accessibility

The English version of the CICS Universal Client has been tested for
accessibility on the Windows operating system. The product is accessible,
subject to the statements contained in this chapter.

Documentation

Download the CICS Transaction Server for z/OS Information Center for an
HTML version of the documentation. Go to this Web page:

`www.ibm.com/software/ts/cics/`

and follow the **Library** link.

An HTML version of this document is supplied on the product CD; it is not
available in the CICS Information Center.

Configuration Tool accessibility

See Appendix B, "Editing the configuration file `CTG.INI`", on page 33 for
information on how to configure the CICS Universal Client by editing the
configuration file. This is the recommended way if you use a screen reader.

Components

Each component in the Configuration Tool has a name and description for
screen readers.

Keys

You can use the following keys to operate the Configuration Tool:

Alt, Space
Press and release the **Alt** key, then press **Space**, to open the window
menu. This allows you to move, size, maximize or minimize the window.

Ctrl+letter
Certain actions have shortcuts assigned to them. Hold down the `Ctrl` key
and type the letter to do the action.

Ctrl+letter	Action
C	Copies the selected value.
N	Creates a new configuration.
O	Opens an existing configuration.
P	Pastes.

Ctrl+letter	Action
S	Saves the current configuration.
U	Cuts the selected value.
V	Pastes.
W	Creates a new server definition.
X	Cuts the selected value.

Arrows (left and right)
1. (Applies if the menus are active.) Move to a different menu.
2. (Applies if the buttons are active.) Cycle through the buttons.
3. (Applies if the tree is active.) If a node contains subnodes, the left arrow collapses the node, the right arrow expands it. If a node cannot be expanded further, pressing the right arrow moves down to the next node. If a subnode is selected, pressing the left arrow moves to the parent node.

Arrows (up and down)
1. (Applies if the tree is active.) Move up and down through the tree.
2. (Applies if the buttons are active.) Cycle through the buttons.

Control+Page Up
   Scroll left.

Control+Page Down
   Scroll right.

Control+Tab
   Use this (rather than **Tab**) on panels that contain a table to cycle between the tree, objects on the panel, and the buttons. Use **Control+Shift+Tab** to move backwards.

Enter
   Activates a button in the Taskguide.

Escape
   Closes the menu.

F2 Select and change an editable number field in a table, for example the **Bias value** field on the **Program definition for managing workload** panel.

F6 (Applies if the tree or the panel is active.) Toggles between the tree and the panel.

F8 (Applies if the tree or the panel is active.) Allows you to gain control of the split between the tree and panel areas. After pressing F8, use the arrow keys to move the split:

- Press the left arrow key to move the split left (decrease the width of the tree, increase the width of the panel).
- Press the right arrow key to move the split right (increase the width of the tree, decrease the width of the panel).

F10
Opens the file menu.

Page Up
Scroll up.

Page Down
Scroll down.

Scroll bars
You cannot use the keyboard to control scroll bars in the tree panel. Use the up and down arrow keys to navigate the tree; settings for the selected item are shown in the settings panel.

Shift+Tab
If the cursor is on a field in the panel other than the first field, moves backwards through the fields. Otherwise, toggles between the tree and the panel.

Space
1. Activates a button.
2. Selects a checkbox.
3. Selects a node in the tree.

Tab
Cycles through the tree, fields in the panel, and the buttons.

Customizing colors and fonts

Use the **Settings** option on the menu to change colors and fonts. Settings are not applied consistently on the Taskguide.

Fields that contain errors are displayed by default in italic, in the font warning color. (Plain text is automatically selected for the warning font if you select italic for the main font.) Use the **Settings->Font** option on the menu to change the warning color.

Using help

Screen readers read the entire page in the help window, rather than the area required by a user who has pressed F1. In addition, you cannot use the keyboard to navigate the help window. For example, pressing **Tab** while the help page is displayed prevents navigation of the page using the arrow keys. Use **Alt+F4** to close the page, and then open the help files, which are html files, in a browser outside the Configuration Tool. The help file index is `cclhlp15.htm` in directory:

```
<install_path>\bin\resource\<htmldir>
```

where `<htmldir>` represents the directory containing the help files in these
languages:

Language	<htmldir>
English	html
German	html_de
Spanish	html_es
French	html_fr
Italian	html_it
Japanese	html_ja
Korean	html_ko
Turkish	html_tr
Simplified Chinese	html_zh

Taskguide

Screenreaders cannot read the Taskguide; do not use the Taskguide if you use
a screenreader. Use the menu in the Configuration Tool to add servers (**Tools
—> New server**).

Screen readers and pop-up windows

If you try to delete a server, a server group, or a program definition, a
window with the title **Choose an option** opens. This window has a
drop-down list of options, and **Cancel** and **OK** buttons. The window does not
fully support screen readers. When the window opens, use the up and down
arrow keys to select the required option, then tab once to **OK** to delete the
item. Tab again to **Cancel** to cancel the operation.

Registering COM libraries

COM libraries are registered during installation. If you register an
out-of-process server (.EXE file) by running the executable, a window is
displayed, telling you that registration has been successful:

ECI

If you run ccloeci.exe the message is "CICS Client ECI COM Automation
Server Objects Registered"

EPI

If you run ccloepi.exe the message is "CICS Client EPI COM Automation
Server Objects Registered"

You cannot configure the font or color of this window. To continue, close the window by pressing **Alt+F4**.

Setting EPITerminal properties programmatically

The EPITerminal terminal properties sheet is not accessible. To set properties programmatically, use the getTerminal() method of the EPITerminal object and cast it to a Terminal object. For example, if epiTerm is an EPITerminal object, code something like the following:

```
Terminal term = (Terminal)epiTerm.getTerminal();
```

You can then use methods on the Terminal object to set these properties. To set the name for a CICS server named YOURSERV, code the following:

```
term.setServerName("YOURSERV");
```

See the Javadoc supplied with the product for full details of these setter methods.

cicsterm

Although cicsterm is accessible, it relies on the application that is being processed to define an accessible 3270 screen.

The bottom row of cicsterm contains status information. The following list shows this information, as it appears from left to right:

Status
For example, **1B** is displayed while cicsterm is connecting to a server. Displayed at columns 1 – 3.

Terminal name
Also referred to as *LU Name*. Columns 4 – 7.

Action
For example, **X-System**, indicating that you cannot enter text in the terminal window because cicsterm is waiting for a response from the server. Columns 9 – 16.

Error number
Errors in the form CCLNNNN, relating to the CICS Universal Client. Columns 17 – 24.

Server name
The server to which cicsterm is connected. Columns 27 – 35.

Upper case
An up arrow is displayed when the Shift key is pressed. Column 42.

Caps Lock
> A capital A is displayed when Caps Lock is on. Column 43.

Insert on
> The caret symbol (^) is displayed if text will be inserted, rather than overwriting existing text. If you have difficulty seeing the caret, change the font face and size, or use a screen magnifier to increase the size of the status line. Column 52.

Cursor position
> The cursor position, in the form ROW/COLUMN, where ROW is a two-digit number, and COLUMN a three-digit number. The top left of the screen is 01/001. Column 75–80.

> **Note:** You might need to change the default behavior of your screen reader if it reads only the last digit of the cursor position. Customize your screen reader to specify that columns 75–80 of the status row are to be treated as one field. This will cause the full area to be read when any digit changes.

Appendix B. Editing the configuration file `CTG.INI`

A sample configuration file is supplied: `<install_path>\ctgsamp.ini`. To create a new configuration, you are recommended to copy this file to `<install_path>\CTG.INI` and edit the copy.

The configuration file is a text file consisting of a number of sections. Each section starts with `SECTION <NAME>` as the first entry on a line, and ends with `ENDSECTION`.

This chapter maps entries in the configuration file to the corresponding fields in the Configuration Tool. For an explanation of the fields see the Configuration chapter in the Administration book.

If used to denote a comment, the number sign (#) character must either be at the start of a line, or be preceded by a space or tab character. This is because some valid names (for example modename) can start with the number sign character.

CLIENT section

There must be one CLIENT section. Entries correspond to fields in the Client Configuration and Trace settings panels of the Configuration Tool. The section name also stores the value entered in the Application ID field of the Configuration Tool.

Table 1. SECTION CLIENT

Entry in the INI file	Configuration Tool field
SECTION CLIENT	Application ID
CCSID	Codepage identifier override
CPNAME	Fully qualified CP name or template (under Common TCP62 settings)
CPIPADDRESSMASK	IP address mask for CP name (optional) (under Common TCP62 settings)
DOMAINNAMESUFFIX	Anynet domain name suffix (under Common TCP62 settings)
ENABLEPOPUPS	Enable popups. Set to **Y** to enable, or **N** to disable.
LOGFILE	Log file
TCP62PORT	TCP62 Port (under Common TCP62 settings)
MAXBUFFERSIZE	Maximum buffer size

Table 1. SECTION CLIENT (continued)

Entry in the INI file	Configuration Tool field
MAXREQUESTS	Maximum requests
MAXSERVERS	Maximum servers
MAXWRAPSIZE	Maximum Client wrap size
PRINTCOMMAND	Print command
PRINTFILE	Print file
REMOTENODEINACTIVITYPOLLINTERVAL	Remote node inactivity poll interval (s) (under Common TCP62 settings)
SRVRETRYINTERVAL	Server retry interval
TERMINALEXIT	Terminal exit
TRACEFILE	Client trace file name
USEOEMCP	Use OEM codepage. Set to **Y** to enable the field, otherwise set to **N**.
LOADMANAGER	Enable the Workload Manager (on the Workload Manager settings panel in the Configuration Tool.) Set this to **Y** to enable workload management, otherwise set to **N**.
TRACE	A comma-separated list of components to trace, as entered on the Trace settings panel. Possible entries are as follows:
ALL	Trace everything
API	Client API level 1
API.2	Client API level 2 (also traces level 1)
TRN	Transport layer
DRV	Protocol drivers level 1
DRV.2	Protocol drivers level 2 (also traces level 1)
CLI	CICSCLI command line
CCL	Client daemon
EMU	CICSTERM and CICSPRINT
LMG	Workload manager
CPP	CPP classes

SERVER section

This section defines a server to which the Client daemon may connect. There may be more than one SERVER section. The first server listed is the default. The section name also stores the value entered in the **Server name** field of the Configuration Tool.

Table 2. SECTION SERVER

Entry in the INI file	Configuration Tool field
SECTION SERVER	Server name
DESCRIPTION	Description
INITIALTRANSID	Initial transaction
MODELTERM	Model terminal definition
REGION	To assign the server to a Workload Manager server group, enter the name of the server group here, for example `REGION=MYGROUP` Otherwise, omit the entry.
UPPERCASESECURITY	Use upper case security. Set to **Y** to enable, otherwise set to **N**.
USENPI	Use Windows credentials for security. Set to **Y** to enable, otherwise set to **N**.
PROTOCOL	Network protocol. Valid entries are SNA, TCP62, TCPIP, or LOCALNP (Named pipe). The Network protocol must correspond to an entry in the DRIVER section; see "DRIVER section" on page 36.

Other entries in this section depend upon the protocol selected.

Table 3. SECTION SERVER: additional entries for the TCP protocol

Entry in the INI file	Configuration Tool field
NETNAME	Hostname or IP address
PORT	Port
CONNECTTIMEOUT	Connection timeout
TCPKEEPALIVE	Send TCP/IP Keepalive packets. Set to **Y** to enable, otherwise set to **N**.

Table 4. SECTION SERVER: additional entries for the TCP62 protocol

Entry in the INI file	Configuration Tool field
LOCALLUNAME	Local LU name or template
LUIPADDRESSMASK	IP address mask for LU name template (optional)
SNAMAXRUSIZE	Maximum SNA RU size
SNASESSIONLIMIT	Maximum logical SNA sessions
MODENAME	Mode name
SNAPACINGSIZE	SNA pacing size
NETNAME	Partner LU name

Notes:

1. Entries corresponding to the Common TCP62 settings panel on the Configuration Tool are stored in the CLIENT section of the INI file; see "CLIENT section" on page 33

2. When configuring a TCP62 CICS server, you must also update the local hosts file; see the Configuration chapter in the Administration book for details.

Table 5. SECTION SERVER: additional entries for the SNA protocol

Entry in the INI file	Configuration Tool field
LOCALLUNAME	Local LU name
MODENAME	Mode name
NETNAME	Partner LU name
LUALIASNAMES	Use LU alias names. Set to **Y** to enable, otherwise set to **N**.

Table 6. SECTION SERVER: additional entry for the LOCALNP protocol

Entry in the INI file	Configuration Tool field
NAMEDPIPENAME	Named pipe name

DRIVER section

This section defines a communications protocol DLL used to communicate with a server. There should be one DRIVER section for each Network protocol used with your servers; see "SERVER section" on page 35. Entries take the following form:

```
SECTION DRIVER =<protocol>
    DRIVERNAME=<DLL>
ENDSECTION
```

Table 7. DRIVER section

Valid entries for *<protocol>*	Corresponding *<DLL>*
SNA	CCLWNTSN
TCP62	CCLTCP62
TCPIP	CCLWNTIP
LOCALNP	CCLCLPIP

LOADMANAGER section

This section is present if you enable the Workload Manager. Entries take the following form:

```
SECTION LOADMANAGER
    TYPE=0
    Timeout=60
    BIAS=<program>;<server1>:1;<servergroup1>:3;...
    NOTMANAGED=<servergroup2>
ENDSECTION
```

Figure 3. LOADMANAGER section example

Table 8. SECTION LOADMANAGER

Entry in the INI file	Meaning
TYPE	Defines the type of algorithm used. • Enter 0 for **Round robin**. • Enter 1 for **Biasing**.
Timeout	Corresponds to the **Region timeout (s)** field in the Configuration Tool.

Table 8. SECTION LOADMANAGER (continued)

Entry in the INI file	Meaning

BIAS	Create a line like this for each program for which workload management is enabled.
	
	    The first entry is the program, terminated by a semicolon. In Figure 3 on page 37, this is *<program>*.
	
	    This is followed by a list of servers or server groups used for biasing. Entries take the following form:
	
	    `<server>:<Bias value>`
	
	    Enter 0 for the Bias value if you selected the Round robin algorithm.

NOTMANAGED	Equivalent to clearing the **Manage workload for this program** check box in the Configuration Tool. Create a separate entry for each server group that is to be excluded from workload management.

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