Resolving CICS Problems

Objectives

Resolving CICS Problems

In this module, you will discover how and when CEMT transactions are invoked.

You will explore the INQUIRE, SET, and PERFORM commands associated with this type of transaction, and see some examples.

After completing this module, you will be able to identify:

- The INQUIRE Commands Required to Display CICS Resource Attributes
- The Purpose of the INQUIRE, SET, and PERFORM Commands
- How to Use CEKL, CMSG, and CWTO Transactions

Which CICS commands will help me in these situations?

- A CICS user informs you that their terminal is not functioning properly.
- CICS must be shut down.
- CICS is not communicating between regions.
- CICS is not taking a dump.
- Two CICS tasks seem to be enqueuing each other.
- A CICS task must be terminated immediately.
- CICS will not shut down.
- You must send a message to all CICS users.

As an operator, you will probably have the authority to enter CEMT transactions, or perform equivalent actions in CICS Explorer, which enable you to monitor and modify the status of CICS components, such as connections, tasks, transactions, terminals, and enqueues.

You will now look at the CICS commands to display resource attributes, modify the status of resources, and perform system-related functions. If the command is referenced for 3270 use, the command syntax is also provided in this module.

```
?INQ TERM
 STATUS:  COMMAND SYNTAX CHECK
  CEMT  Inquire TErminal()
   < CLass() | ALl >
   < TRansaction() >
   < PRiority() >
   < PAgeable | AUtopageable >
   < Inservice | Outservice >
   < ATi | NOAti >
   < TTi | NOTti >
   < RTerminal | RSession | Session | Local >
   < NEtname() >
   < COnsole() >
   < ACquired | RELeased >
   < CReate | NOCreate >
   < TAsk() >
   < REMotesystem() >
   < NQname() >
   < RNAme() >
 + < RNEtname() >

                              SYSID=S690 APPLID=CICSTS53

PF 1 HELP        3 END        5 VAR        7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

If you are unsure of the syntax for a transaction, the transaction's parameters can be preceded by a question mark (?). For example, the ?INQ TERM transaction was entered and after pressing the Enter key, the output shown here was produced.

If a command displays information about a number of different resources, you can obtain more detailed data on a specific resource by placing the cursor to the left of the resource name and pressing Enter.

Click **Play** to see a demonstration of this concept.

Performance problems | Loops | CICS user problems | Waits | Communication issues

CEMT INQUIRE | SYSTEM | CONNECTION | TASK | TERMINAL | ENQUEUES
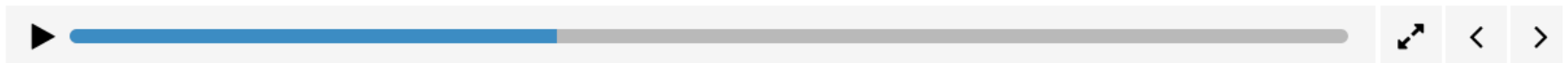
The CICS problems that you are alerted to will involve communication errors, slow response times, or no response at all. You must then determine the status of CICS components and resources so that you can identify the cause of the problem. You will now look at the commonly used CEMT INQUIRE commands that provide this information.

```
INQ TERM
RESULT - OVERTYPE TO MODIFY
  Terminal( A20 )
  Transaction()
  Priority( 000 )
  Pagestatus( Autopageable )
  Servstatus( Inservice )         Items appearing in green can be overtyped with another value.
  Atistatus( Ati )
  Ttistatus( Tti )
  Nature(Session)
  Purgetype(              )
  Netname(PP24CID)
  Console()
  Termstatus(              )
  Createsess(              )
  Task(00000)
  Remotesystem(EXS1)
  Nqname()
  Rname()
+ Rnetname()
                                  SYSID=S700 APPLID=CICSTS53
                                  TIME: 19:49.10  DATE: 04/21/16

PF 1 HELP 2 HEX 3 END      5 VAR      7 SBH 8 SFH      10 SB 11 SF
```

The CEMT INQUIRE command display enables you to update some attributes of the CICS component by directly overtyping text. There are multiple fields and values for each command so you will only look at the most common of these in this module. Refer to the IBM Knowledge Center for more details of this and other CICS transactions.

```
INQ SYS
 STATUS:  RESULTS - OVERTYPE TO MODIFY
  Aging( 00500 )                  Oslevel(011000)
  Akp( 04000 )                    Progautoctlg( Ctlgmodify )
  Cicstslevel(050300)             Progautoexit( DFHPGADX )
  Cmdprotect(Cmdprot)             Progautoinst( Autoinactive )
  Db2conn()                       Reentprotect(Reentprot)
  Debugtool( Nodebug )            Release(0700)
  Dfltuser(CICSUSER)              Runaway( 0020000 )
  Dsalimit( 07340032 )            Scandelay( 0100 )
  Dsrtprogram( NONE     )         Sdtran(CESD)
  Dtrprogram( DFHDYP    )         Sosabovebar(Notsos)
  Dumping( Sysdump )              Sosaboveline(Notsos)
  Edsalimit( 0104857600 )         Sosbelowline(Notsos)
  Forceqr( Noforce )              Storeprotect(Inactive)
  Logdefer( 00005 )               Time( 0001000 )
  Maxtasks( 020 )                 Tranisolate(Inactive)
  Memlimit(Nolimit)
  Mqconn()
  Mrobatch( 001 )

                               SYSID=S700 APPLID=CICSTS53
                               TIME: 21.37.01  DATE: 04/21/16
 RESPONSE: NORMAL
PF 1 HELP       3 END        5 VAR         7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

This field identifies the user ID of the default user for this instance of the CICS region. If there is no signed on user, the attributes assigned to this ID are used.

The systems programmer may request the current status of the CICS system, or you may have to display CICS system attributes in response to an error message. In these situations, the CEMT INQUIRE SYSTEM (CEMT I SYS) command can be used to display information such as the dump options that are in effect, the version of CICS that is running, and whether CICS is short on storage.

Mouse-over the resulting display for descriptions.

```
INQ CONNECTION
STATUS:   RESULTS - OVERTYPE TO MODIFY
  Con(B1E1) Net(B1E1REMT)   Ins Rel  Vta Appc
  Con(LU21) Net(JCOLU021)   Ins Acq  Vta Appc




                                   SYSID=S700 APPLID=CICSTS53
  RESPONSE: NORMAL                 TIME: 21:42.03  DATE: 04/21/16
PF 1 HELP       3 END       5 VAR      7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

The Servstatus field indicates whether the system is available for communication. A status of Ins indicates that it is in service and is available for use.

If a connection fails between CICS regions, or between a CICS region and a remote system, you may receive a console message indicating that action must be taken. The CEMT I CONNECTION (CEMT I C) command is used to display the status of other CICS regions or remote systems that this CICS region can communicate with.

Mouse-over the resulting display for descriptions.

```
INQ TASK
STATUS:    RESULTS - OVERTYPE TO MODIFY
        Tas (00170)  Tra(v220)                    Run Tas Pri( 255 )
        Sta(TO) Use(CICSUSER) Uow(ABC9D8D11144C007)
        Tas (00172)  Tra(v400)                    Run Tas
        Sta(TO) Use(CICSUSER) Uow(AB8FFF3758786C01)
        Tas (00180)  Tra(v200)                    Run Tas
        Sta(TO) Use(CICSUSER) Uow(AB900BE2010AC401)
        Tas (00169)  Tra(CEMT) Fac (3026)         Run Ter
        Sta(TO) Use(CICSUSER) Uow(AB6DB080C40CEE01)
        Tas (00184)  Tra(v884)                    Sus Tas
        Sta(TO) Use(CICSUSER) Uow(AB6DB08AC66B4000) Hty(ZCIOWAIT)




                                        SYSID=S690 APPLID=CICSTS53
    RESPONSE: NORMAL                    TIME: 21:44.19  DATE: 04/21/16
PF 1 HELP        3 END        5 VAR          7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

This is the type of facility that initiated this task. Tas indicates that a task initiated it and Ter indicates that it was initiated from a terminal.

You might have to identify an active task that is causing problems, such as preventing CICS from being brought down, or you might have to identify the resource that a user's task is waiting on. The CEMT INQUIRE TASK (CEMT I TA) command is used to display details of the user's tasks.

Mouse-over the resulting display for descriptions.

```
INQ TASK
RESULT - OVERTYPE TO MODIFY
 Task(0000169)
 Tranid(CEMT)
 Facility(3026)
 Runstatus(Suspended)
 Ftype(Term)
 Priority( 255 )
 Purgetype(           )
 Startcode(TO)
 Userid(CICSUSER)
 Uow(ABC9D8D11144C007)
 Htype(ZCIOWAIT)
 Hvalue(DFHZARQ1)
 Htime(000129)
 Indoubt(Backout)
 Indoubtwait(Wait)
 Bridge()
 Identifier()
+ Indoubtmins(000000)

                                SYSID=S690 APPLID=CICSTS53
 RESPONSE: NORMAL              TIME: 21:47.11  DATE: 04/21/16
PF 1 HELP       3 END      5 VAR       7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

When invoking the expanded format for the results of this command, an additional field named Purgetype can be used to terminate the task. If PURGE is entered into this field, the task will be terminated only if data integrity can be maintained.

FORCEPURGE can be entered to terminate the task immediately, but system integrity cannot be guaranteed and this could result in CICS itself being terminated.

```
INQ TERM(37V5)
STATUS: RESULTS - OVERTYPE TO MODIFY
  Ter(37V5) Tra(CEMT) Pri( 000 ) Pag Ins Ati Tti Loc
  Net(PPS37V5 ) Acq        Tas(0000061)           Nqn(DEALEI00.PPS37V5 )




                                     SYSID=S690 APPLID=CICSTS53
   RESPONSE: NORMAL               TIME: 21:50.48  DATE: 04/21/16
 PF 1 HELP        3 END       5 VAR        7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

These two fields indicate whether this terminal is available for use by transactions that are automatically initiated from within CICS (Ati), and whether the terminal can be used by the transactions that are initiated from this terminal (Tti).

If a terminal seems to be locked and it is not allowing input or displaying output, you can view the attributes of that terminal to identify the transaction running on it. The CEMT INQUIRE TERMINAL (CEMT I TE) command is used to display this information.

Mouse-over the resulting display for descriptions.

```
INQ UOWENQ
STATUS: RESULTS
   Uow(B8528234D94C3781) Tra(CEMT) Tas(0000103) Act Exe Own
      Res(ACCT.CICS700.ACCTFILE    ) Rle(021) Enq(00000000)
   Uow(B8528234D94CD224) Tra(CMSI) Tas(0000108) Act Tdd Own
      Res(QTFI                     ) Rle(004) Enq(00000000)
   Uow(B8528234D94CC004) Tra(FUPD) Tas(0000125) Act Dat Own
      Res(DSS.FAMBEN.F2VDB         ) Rle(016) Enq(00000000)
   Uow(B8528234D94CC351) Tra(FUPD) Tas(0000135) Act Dat Wai
      Res(DSS.FAMBEN.F2VDB         ) Rle(016) Enq(00000000)




                                    SYSID=S690 APPLID=CICSTS53
                                    TIME: 21:59.21  DATE: 04/21/16
PF 1 HELP 2 HEX 3 END      5 VAR    7 SBH 8 SFH      10 SB 11 SF
```

This is the state that the enqueue is held in. Act indicates that the enqueue is held in active state and Ret indicates that the enqueue is held in retained state, indicating that other transactions are not allowed to wait on the enqueue.

You might encounter a deadlock where two tasks are competing for an exclusive lock on the same resource. In this situation, the CEMT INQUIRE ENQ (CEMT I E) command and the CEMT INQUIRE UOWENQ (CEMT I UOWE) command can be used to display enqueue information.

Mouse-over the resulting display for descriptions.

```
CEMT SET FILE(GHTRWORK) CLOSED DISABLED
 STATUS:  RESULTS - OVERTYPE TO MODIFY
  Fil(GHTRWORK) Vsa Clo Dis Rea Upd Add Bro Del      Sha        NORMAL
          Dsn( CICSTS53.CICS.GHTRWORK                      )




                                      SYSID=S690 APPLID=CICSTS52
      RESPONSE: NORMAL                TIME: 22:18.55  DATE: 04/21/14
 PF 1 HELP 2 HEX 3 END     5 VAR   7 SBH 8 SFH      10 SB 11 SF
```

The INQUIRE command enables you to display CICS resource attributes and to overtype and update some of the data. These resources can also be modified directly by using the CEMT SET command. For example, the CEMT SET FILE (CEMT S FI) command is used to change the attributes of a VSAM or BDAM file by entering appropriate operands at the end of the command.

In the example shown here, the CEMT SET FILE(GHTRWORK) CLOSED DISABLED command is used to stop access to the data in a file (CLOSED), and stop new users from accessing the file (DISABLED).

```
CEMT INQ FILE(GHTRWORK)
 RESULT - OVERTYPE TO MODIFY
   File(GHTRWORK)
   Accessmethod(Vsam)
   Openstatus( Open )
   Enablestatus( Enabled )
   Readstatus( Noread )
   Updatestatus( Noupdate )
   Addstatus( Addable )
   Browsestatus( Browse )
   Deletestatus( Delete )
   Exclstatus(            )
   Disposition( Share )
   Rlsaccess( Notrls )
   Emptystatus( Noemptyreq )
   Dsname( CICSTS52.CICS.GHTRWORK                )
   Table( Nottable )
   Loadtype( Noload )
   Cfdtpool(           )
+  Tablename(          )



                              SYSID=S690 APPLID=CICSTS53
                              TIME: 22:23.49  DATE: 04/21/16
 PF 1 HELP 2 HEX 3 END     5 VAR     7 SBH 8 SFH      10 SB 11 SF
```

The same result can be achieved by entering the CEMT INQ FILE command and overtyping the relevant fields with CLOSED and DISABLED.
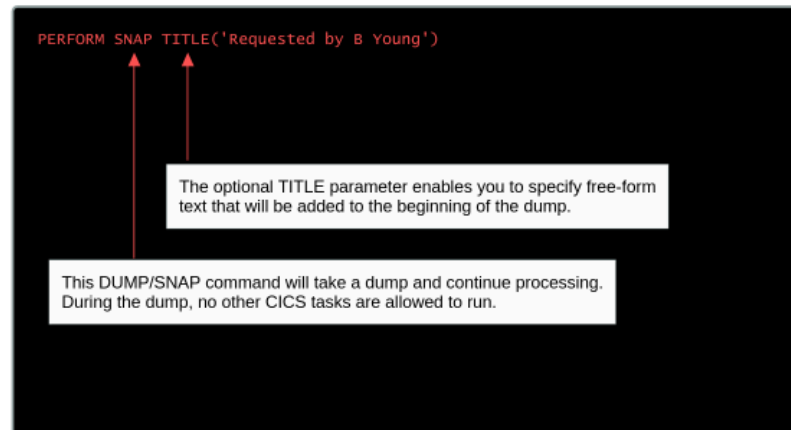
```
CEMT PERFORM SHUTDOWN
```

First quiesce stage	This phase enables tasks to commit or back out cleanly, but within a reasonable timeframe.
Second quiesce stage	No new tasks are allowed to start and terminal access is prohibited.
Third quiesce stage	CICS closes all related files, writes statistics to SMF, and writes a warm start record to the global catalog.

CEMT PERFORM commands are normally used to perform an action on a CICS system component rather than on a resource like the INQUIRE and SET commands do. PERFORM commands are mostly used during CICS shutdown.

```
PERFORM SNAP TITLE('Requested by B Young')
```

The optional TITLE parameter enables you to specify free-form text that will be added to the beginning of the dump.

This DUMP/SNAP command will take a dump and continue processing. During the dump, no other CICS tasks are allowed to run.

When a CICS task is experiencing a wait problem or is in a loop, the systems programmer may request that you take a dump of CICS. This is achieved by using the CEMT PERFORM DUMP command or the CEMT PERFORM SNAP command, both of which produce a "snapshot" of the CICS system.

MVS

```
SET DATE=2016.010,CLOCK=01.000.00
```

CICS

```
CEMT PERFORM RESET
```
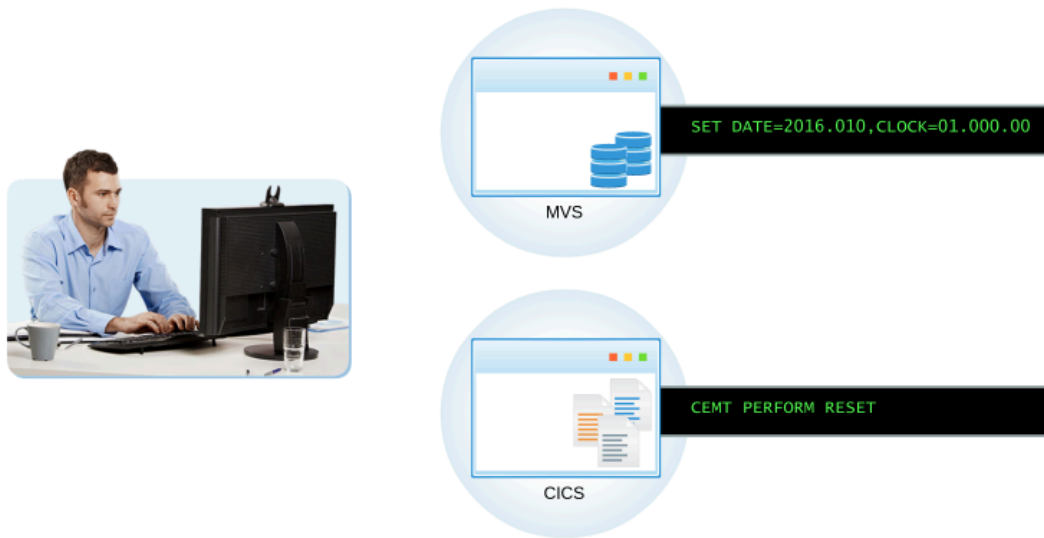
During daylight saving when the MVS date or time-of-day clock is updated, the CICS equivalent must be synchronized. This is achieved by invoking the CEMT PERFORM RESET command while CICS is running. To verify that CICS has the correct time, view the SYSLOG and compare timestamps between MVS and CICS messages.

CICS

Looping task

CICS terminal — Unable to communicate with CICS — ✗ → Looping task ← ✓ — CEKL transaction — System console

When a looping CICS task or CICS resource shortage occurs, CICS might not allow you to enter a CEMT transaction from a CICS terminal to identify the task that is causing the problem. The CEKL transaction provides you with the CEKL INQ TASK command and the CEKL SET TASK command, which are entered from the operating system console to help you identify the problem task and remove it if necessary.

```
F CICA1,CEKL INQ TASK
DFHCQ0243I CEKL INQUIRE: 00001 task(s) matched selection criteria.
TAS(43) SUS QR XEMT                    USE(CICSUSER) ATT(00400) CPU(00032) RUA(00
HTI(6732) HTY(ICMIDNTE) HVA(DFHAPTIM)
F CICA1,CEKL SET TASK(43) PUR
DFHCQ0252I CEKL SET: PURGE request issued for task number 00043.
TAS(00043) PUR SUS QR CEMT             USE(CICSUSER) ATT(00400) CPU(*****) RUA(00
HTI(00401) HTY(ZCIOWAIT) HVA(DFHTSARQ)




IEE612I CN=01        DEVNUM=160   SYS=PROD      CMDSYS=PROD
F CICA1,CEKL SET TASK(43) KILL
IEE163I  MODE=RD
```

The CEKL INQUIRE TASK command enables you to list information about tasks in the CICS region. The CEKL SET TASK command enables you to cancel a task by using the PURGE, FORCEPURGE, or KILL options.

KILL is an extension of the PURGE and FORCEPURGE commands. These commands are only used as a last resort to remove a task and enable a stalled region to continue processing.

It is useful to be able to send messages to CICS users, particularly when the CICS system is going to be brought down for a period of time and users must be warned so they can close any work in progress. When a transaction appears to be causing a problem, you will also have to inform the user who initiated it.

The CMSG transaction is used to send messages to CICS users. To receive the message, the user must be logged on at the terminal when the message is sent.
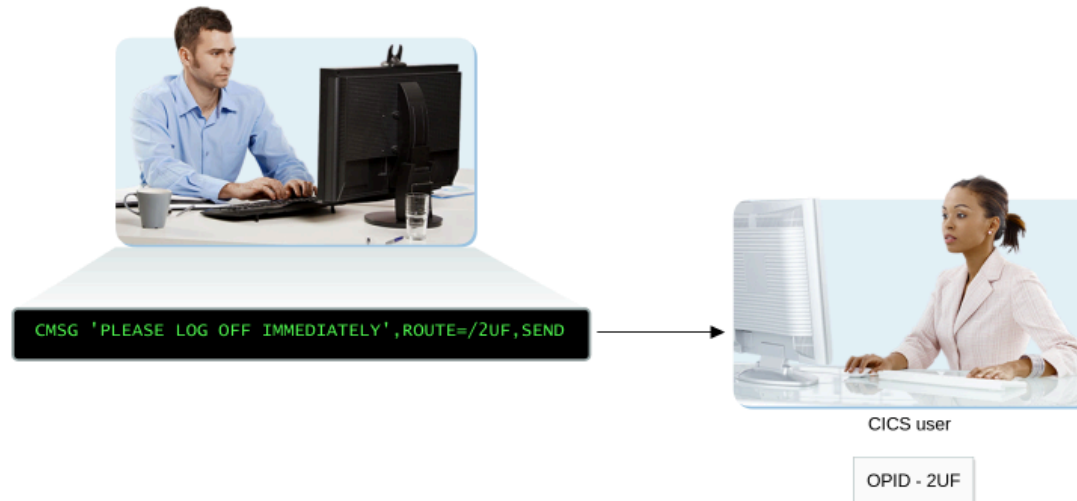
```
CMSG 'CICS NEEDS TO BE BROUGHT DOWN FOR URGENT MAINTAINENCE',R=ALL,SEND
```

The following command is used to send a message to all CICS users:

```
CMSG 'msgtext',ROUTE=ALL,SEND
```

Where 'msgtext' is the text of the message, which must be enclosed in single quotes.

```
CMSG 'PLEASE LOG OFF IMMEDIATELY',ROUTE=/2UF,SEND
```

CICS user

OPID - 2UF

When a message is sent to individual CICS users, their operator identification (opid) is specified as part of the command, for example:

```
CMSG 'msgtext',ROUTE=/opid,SEND
```

The slash that precedes the opid is required. This command will send the message to the first terminal, which an operator with that identifier is currently signed on to.

CMSG 'CICS IS EXPERIENCING PERFORMANCE PROBLEMS',ROUTE=.BA,SEND

TLT - DFHTLTBA	
CICS terminal name	Operator identification
BI20	2UF
SJ39	F83
AWI2	SAL
O9EE	DI0
JH3K	WO4
MM98	FI0
FJKH	2IR
F98P	FC8

CICS terminals

Terminal list tables (TLT) can also be used to specify the recipients of a message. The following command is used to send a message to users whose terminals are listed in a particular TLT:

```
CMSG 'msgtext',ROUTE=.xx,SEND
```

Where xx is the one-character or two-character TLT suffix preceded by a period.
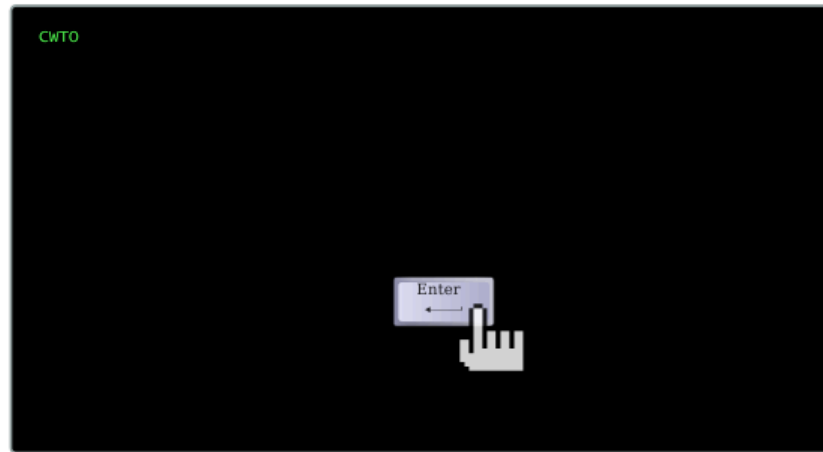
```
MESSAGE HAS BEEN SENT
```

You can send a message from a terminal to the operator console by using the CICS write to operator (CWTO) transaction. The format of this transaction is:

```
CWTO msgtext
```

Where 'msgtext' is the text of the message. When the message has been sent, the following response appears on your terminal:
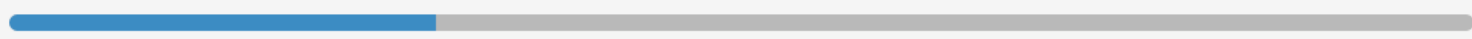
```
MESSAGE HAS BEEN SENT
```

You can request that the system prompts you for the message that you want to send by entering the CWTO transaction with no message text.

Click **Play** to see a demonstration of this concept.

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```
ENTER MESSAGE
THERE IS A PROBLECANCEL
```

If you decide after starting a message that you do not want to send it, type CANCEL at the end of it. A message will be terminated if the word CANCEL comprises its last six characters.