



interskill  
learning

## Identifying CICS Problems

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## Objectives

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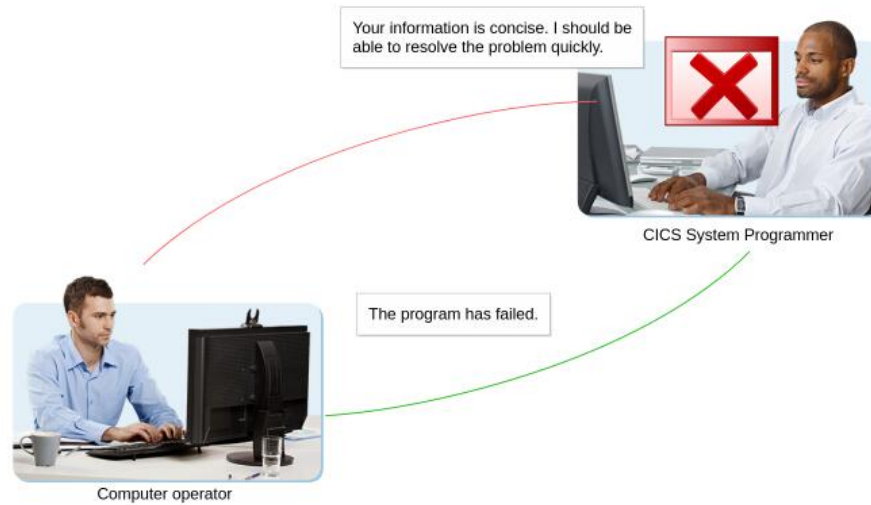
### Identifying CICS Problems

In this module, you will examine the role of the CICS operator, and the general processes that you will perform after being alerted to a CICS problem.

You will also look at some of the common CICS problems and their indicators.

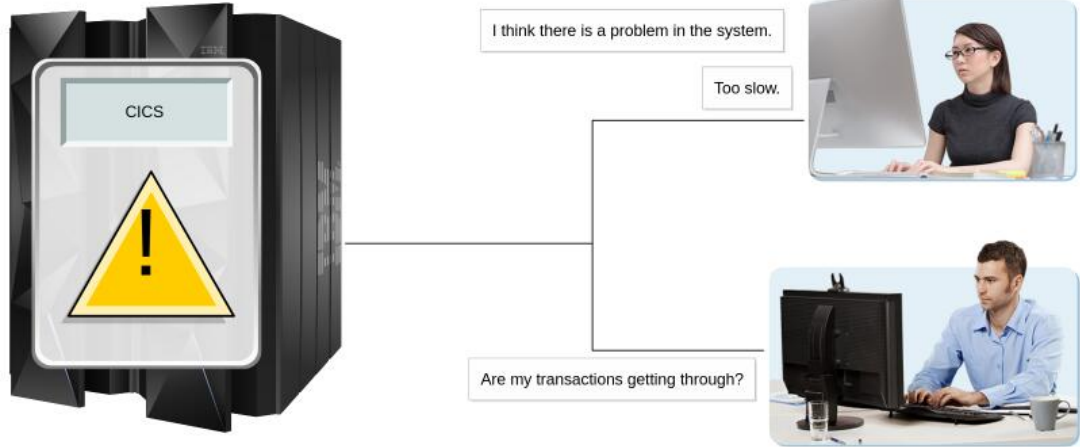
After completing this module, you will be able to:

- Define the Key Processes in Identifying CICS Problems
- Differentiate Between Types of CICS Problems
- Identify the Indications of Common CICS Problems



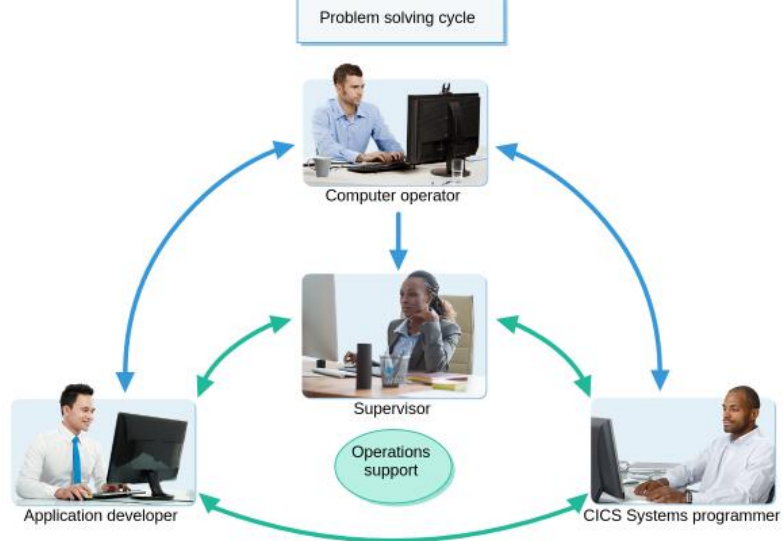
When a program fails, the information that the operator conveys to the CICS system programmer determines which path the programmer will take to solve the problem. This is when the operator's ability to distinguish between vital and useless information is crucial. If the information is concise and accurate, a quick solution is more likely, especially when the programmer cannot access the system.

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



Console messages can appear once or many times in a CICS environment. A single transaction or the entire system might abend, or the system may appear to be running too slowly. Users might complain that their transactions are not completing, or that they are receiving incorrect responses.

The more equipped you are to deal with these conditions, the better you can record the necessary information and pass it to the person responsible so the problem can be solved quickly.



Operators are not expected to solve a CICS problem unless the circumstances are exceptional and precise information has been provided. Your data center should have clear guidelines about the appropriate operations support person to notify when CICS problems arise. This person will be a supervisor, application developer, or CICS Systems programmer.



Computer operator

Identify the symptoms of the problem

Notify operations support

Assist operations support by providing specific information about the problem and performing specific actions as requested to solve the problem

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Listed here are the operator's most important responsibilities in the problem-solving process. Note that the first step is not to identify the problem; this will be done by operations support. The more clearly you identify the indications of the problem, the quicker operations support will be able to solve the problem.



What time did the problem occur?

Which product/application are you using?

Are there any error messages?

What response are you receiving?

Is the problem intermittent?

Is the screen 'hanging'?

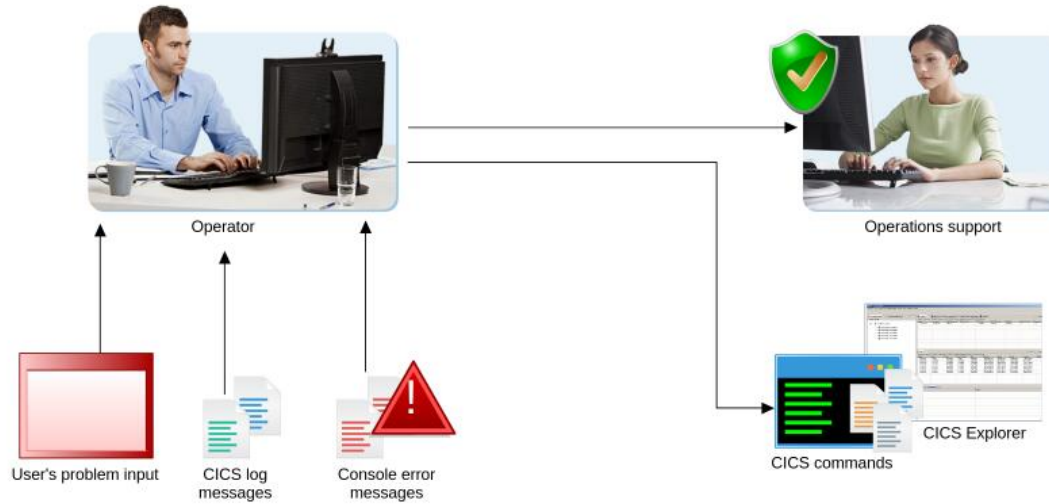
Can the problem be recreated?

What response would you normally expect to receive?

What was the sequence of events leading up to the problem?

When a CICS user reports a problem, the operator should try to obtain the following information:

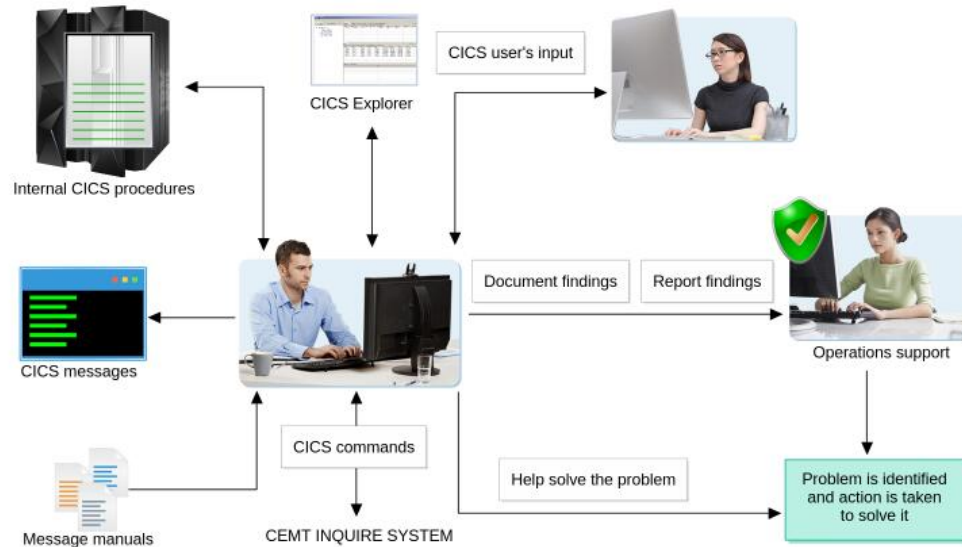
- What the user was doing, for example, the exact text of a command that the user entered
- What the results were, for example, the exact message text and the time that it was displayed
- What the user expected the results to be



Most CICS problems result in console messages being issued. In these cases, the indications of the problem can be identified by an interpretation of the messages.

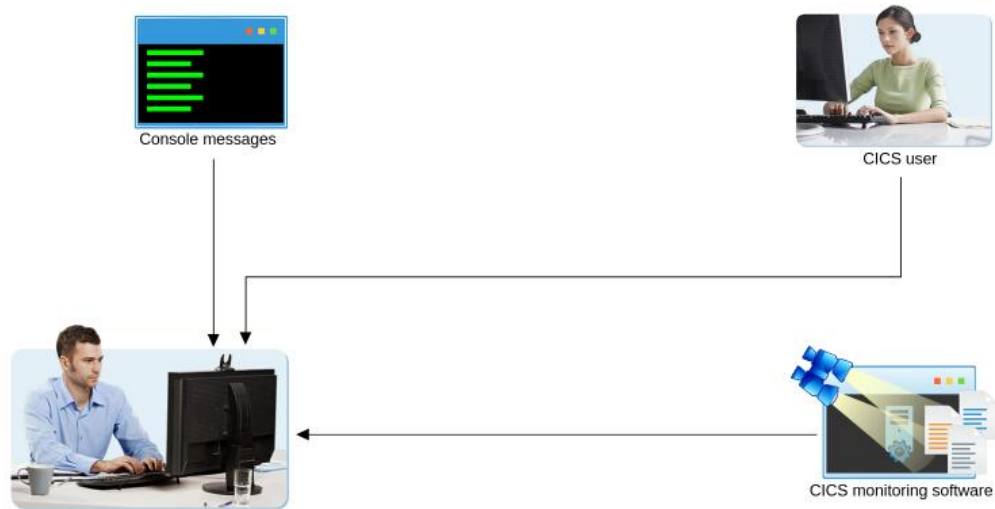
In other cases, you will have the authority to enter CICS commands or use CICS Explorer to display the status and attributes associated with CICS components. All findings must be recorded as precisely as possible before being forwarded to operations support.





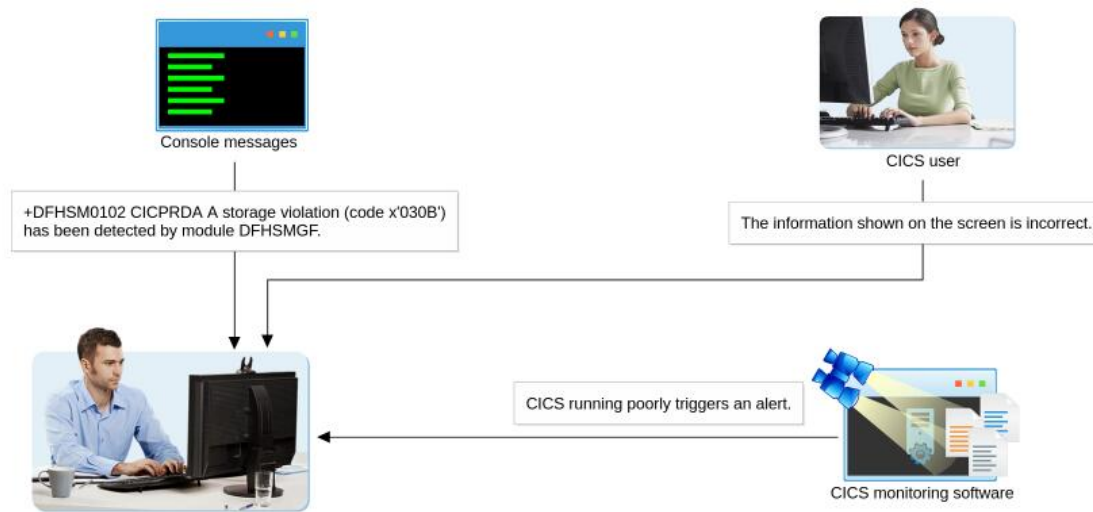
After determining that a CICS problem exists, the operator should follow this process to help solve it:

1. Locate the appropriate CICS problem procedures to identify the action that should be taken and the person that should be contacted
2. Identify any key CICS messages and gather information about any responses that are received by the system or CICS users
3. Collect any additional, relevant information by using CICS commands or CICS Explorer
4. Record and forward all the gathered details to the appropriate person
5. Assist with any resolution as instructed



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Certain events can alert you to a problem with CICS, such as a system monitoring software alert or a console message. Sometimes a problem is not identified until a user contacts you.



The following situations will alert you to a CICS problem:

- The CICS system is not running because of an abend, looping program, or wait state, or it is running in a degraded state
- CICS tasks are running slowly or not at all
- Incorrect information is being displayed to the CICS user
- CICS storage violation or other system-related error messages are being displayed on the console

You will now investigate these different types of problems and their indications.

```
DFHAC2206 11:28:04
CICK Transaction G00R
failed with abend
G040. Updates to
local recoverable
resources backed out.
```



CICS user

```
DFHAC2259 12:17:04
CIC0 Transaction CEMT
abend AEXZ in program
DFHEMTD TERM 0036
DFHPEP not linked.
```

User response:

The transaction abend message contains several important pieces of information. It identifies the transaction that has failed and most importantly, the abend or user code. This may be followed by additional messages associated with the abend.

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A transaction abend indicates that a transaction has ended abnormally. This failure could be the result of events, such as the transaction receiving an unexpected or invalid response, an internal logic error, or a task being purged. In some cases, this type of failure may also result in CICS terminating abnormally.

Whatever the error, if a transaction abends, CICS will usually forward a related message to the master terminal operator console and log. Most of these problems are handled by application developers or CICS system programmers, or by IBM directly.

DFHPA0001 AN ABEND (CODE ---/AKEC) HAS OCCURRED AT OFFSET X'054E' IN MODULE DFHPAGP

```
IEA794I SVC DUMP HAS CAPTURED:  
DUMPID=002 REQUESTED BY JOB (DUMPSRV )  
DUMP TITLE=CICS DUMP: SYSTEM=CICSPRD CODE=KERNDUMP ID=1/0001
```



CICS user

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If CICS encounters a system abend, a log and console message indicating that CICS has abnormally terminated is produced. A system dump is also produced unless system dumps are suppressed by CICS initialization parameters, the CICS system dump table, or by the MVS system defaults.

The reasons for CICS failures include storage violations, application program errors, CICS program interrupts, and initialization and shutdown failures.

## Investigating a wait



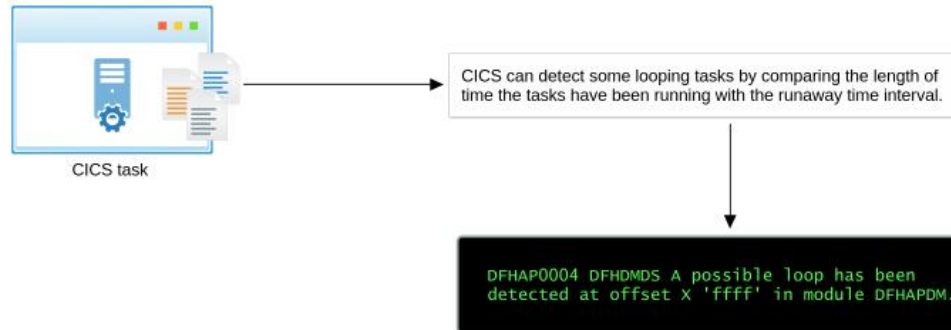
### Investigation methods

Online enquiry

Traces

Analysis of the formatted CICS system dump

If a CICS task has suspended its processing and no activity is occurring, it may be in a wait state; that is, it is waiting for a resource to become available. If no tasks in the CICS region are running, CICS itself may be in a wait state. The CEMT INQ TASK command can be used to determine which user tasks or transactions are suspended.



A loop occurs when CICS code repeatedly executes. The following circumstances indicate some of the symptoms as a result of a loop:

- CPU usage is very high
- Little or no activity is occurring at terminals because other tasks are unable to gain CPU access
- New tasks are unable to start and existing tasks are suspended
- The "system busy" symbol is permanently displayed in an operator system display screen

DFHSM0137 ATRCICA The amount of MVS storage available to CICS is low.



DFHSM0131 CICA3 CICS is under stress - short on storage below 16MB.

A loop or wait may result in little or no CICS activity occurring. Other events can result in a degradation of CICS services. Indications of poor CICS performance include tasks taking longer to complete than normal, or a failure to start at all. Messages also indicate when CICS is under stress, which may mean that it is working near full capacity.





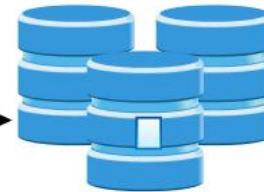
- Incorrect data when the dump is formatted.
- No dump produced at all.
- Where there are several dump data sets for the one dump, one may be missing.
- Incorrect data captured.

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Incorrect data problems can range from unexpected results in trace and dump output to incorrect output, or none at all, being received by a terminal. Most of these problems are internally related to CICS and require action from operations support or IBM.

**Mouse-over** the data sets and the user to see the types of problems that can occur.

```
+DFHSM0102 CICPRD1 A storage violation (code x'030B') has been
detected by module DFHSMGF.
+DFH0U0201 CICPRD1 ABOUT TO TAKE SDUMP. DUMPCODE: SM0102 , DUMPID: 1/0002
+DFH0U0202 CICPRD1 SDUMPX COMPLETE. SDUMPX RETURN CODE X'00'
IEA794I SVC DUMP HAS CAPTURED:
DUMPID=011 REQUESTED BY JOB (PCICS1 )
DUMP TITLE=CICS DUMP: SYSTEM=CICPRD1 CODE=SM0102 ID=1/0002
IEA611I COMPLETE DUMP ON SYS DUMP.CICPRD1.D160209.T133118.S00011.PCICS1
DUMPID=011 REQUESTED BY JOB (PCICS1 )
FOR ASID (0077)
INCIDENT TOKEN: PRD1 PRD1 02/09/2016 10:22:17
+DFH0U0201 CICPRD1 ABOUT TO TAKE SDUMP. DUMPCODE: SM0102 , DUMPID: 1/0002
+DFH0U0202 CICPRD1 SDUMPX COMPLETE. SDUMPX RETURN CODE X'00'
IEA794I SVC DUMP HAS CAPTURED:
DUMPID=012 REQUESTED BY JOB (PCICS1 )
DUMP TITLE=CICS DUMP: SYSTEM=CICPRD1 CODE=SM0102 ID=1/0002
+DFHSR0001 CICPRD1 An abend (code 0C4/AKEA) has occurred at offset
X'FFFFFFFF' in program GSSBRG1.
```

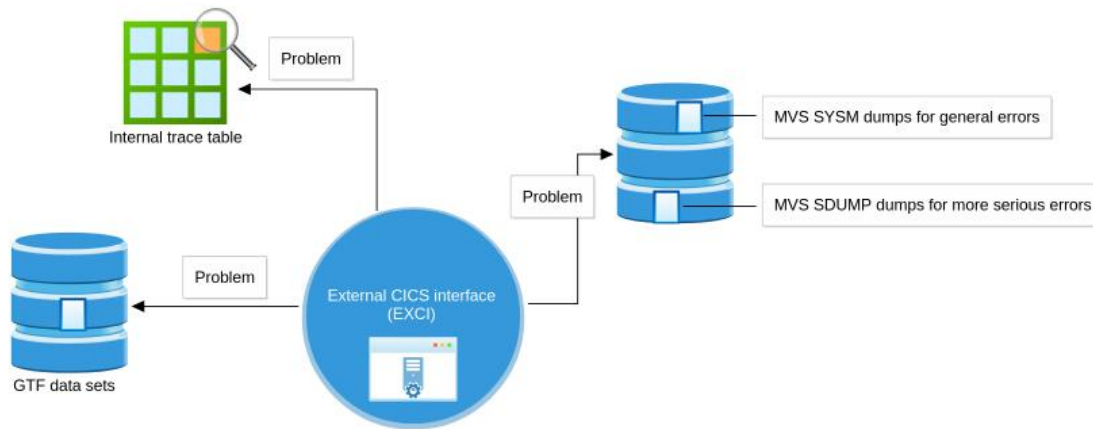


Dump data sets

Although CICS contains its own facilities for handling storage, application programs can sometimes contain code that circumvents this. This can result in storage violation messages that are similar to the following:

```
+DFHSM0102 CICPRD1 A storage violation (code x'030B') has been detected by module DFHSMGF
```

If this type of storage violation is encountered, a CICS system dump is usually taken and an appropriate entry in the trace table is made.



Because CICS can communicate with a wide variety of external users, there is always the possibility that problems will occur with the issuing of requests to CICS, or with the routing of information to or from the terminal through the external interface. Problem solving for this type of error is likely to be achieved by using system dumps and both the internal trace table and the General Trace Facility (GTF).



As mentioned in an earlier course, CICS can communicate with other systems that are in the same operating system or sysplex using multiregion operation (MRO), or communicate with other CICS or non-CICS systems that are not in the same z/OS image or sysplex using either TCP/IP (IPIC) or SNA (ISC over SNA).

Whichever communication protocol is used there is always the possibility that it will become interrupted or fail. Although CICS usually attempts to reconnect automatically, other situations will require the operator to analyze problems using inquiry commands, or to manually issue a reconnect.

```
+DFHLG0772 CICSPRD9 436
An error has occurred during MVS logger operation IXGWRITE for
log stream CICSPRD9.CICSPRD9.DFHLOG.
MVS logger codes: X'00000004', X'00000407'.
Log stream attributes: SYSTEMLOG(YES), DASDONLY(NO),
STRUCTNAME(DFHLOG_PAOR_03), RETPD(X'00000000'), AUTODELETE(NO).
```

```
IEE612I CN=01      DEVNUM=160  SYS=PROD      CMDSYS=PROD
IEE163I  MODE=RD
```

---

The CICS log manager utilizes the MVS logger to gather data that CICS stores in its CICS system log, forward recovery logs, and journals.

If data in these logs subsequently becomes corrupted or inaccessible, events such as restarting CICS become a problem because during a restart, these logs may be referenced to determine appropriate actions.

The screen shown here displays the type of error message associated with a logging problem.