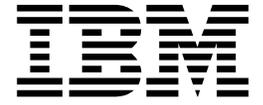


IBM CL/SuperSession for z/OS

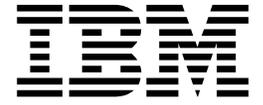


# Problem Determination Guide

*Version 2 Release 1*



IBM CL/SuperSession for z/OS



# Problem Determination Guide

*Version 2 Release 1*

**Note**

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 33.

**Second Edition (October 2017)**

This edition applies to Version 2 Release 1 of IBM CL/SuperSession for z/OS (program number 5601-B28) and to all subsequent releases and modifications until otherwise indicated in new editions.

Order publications through your IBM representative or the IBM branch office serving your locality.

IBM welcomes your comments. For information about how to send comments, see “How to send your comments to IBM” on page v.

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# Contents

<b>Read This First.</b> . . . . .	<b>v</b>	IBM JES Job Log. . . . .	14
How to send your comments to IBM . . . . .	v	IBM TLVLOG. . . . .	14
Documentation Conventions . . . . .	v	Additional Documentation . . . . .	14
<b>Chapter 1. Problem Determination</b>		Enabling Dumps. . . . .	15
<b>Overview</b> . . . . .	<b>1</b>	DEBUG and the Internal Trace Table . . . . .	16
Accessibility . . . . .	1	Sending Problem Documentation to IBM . . . . .	16
Isolating the Problem . . . . .	1	Creating the SMP/E List . . . . .	17
Problem Determination Map . . . . .	2	Generating Storage Creep Data. . . . .	17
Reporting a Problem to IBM Support . . . . .	5	Printed Copies of Dialogs . . . . .	18
Documentation Requirements Summary . . . . .	5		
<b>Chapter 2. Solving Problems.</b> . . . . .	<b>7</b>	<b>Chapter 4. Using Trace Facilities</b> . . . . .	<b>19</b>
Abend Problems . . . . .	7	General Trace Facility . . . . .	19
Wait and Loop Problems . . . . .	8	VSSTRACE Facility . . . . .	20
Message Problems . . . . .	8	Determining Which Trace Facility to Use . . . . .	20
Incorrect Output Problems. . . . .	9	Starting and Stopping VTAM TRACES . . . . .	20
Tuning Problems . . . . .	10	Tracing Pass Session Problems . . . . .	20
Documentation Problems. . . . .	10	Tracing Single Session Problems . . . . .	21
Installation and Customization Problems . . . . .	11	Tracing Multi-Session Problems. . . . .	21
SMP/E Installation Errors . . . . .	11	Formatting Trace Records for Printing (KLSUSR20	
Customization Errors . . . . .	11	Formatter). . . . .	23
<b>Chapter 3. Producing Documentation</b>		Sample Traces . . . . .	24
<b>for IBM Support.</b> . . . . .	<b>13</b>	Sample Trace of CL/SuperSession Main Menu. . . . .	24
Problem Documentation Guidelines . . . . .	13	Sample Trace of a Virtual Session Logon. . . . .	27
Documentation Requirements . . . . .	14	Sample Trace of a Virtual Session Logoff. . . . .	30
SMP/E SYSMOD Listing . . . . .	14	<b>Notices</b> . . . . .	<b>33</b>
System Log . . . . .	14	Trademarks . . . . .	34
		<b>Index</b> . . . . .	<b>35</b>



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## Read This First

### About this document

This guide describes how to isolate and resolve problems that involve IBM CL/SuperSession for z/OS. The manual presents procedures for using provided tools to gather problem documentation and for transmitting this material to IBM® Support.

**Note:** This document describes diagnostic approaches and diagnostic data gathering for CL/SuperSession operating system environments.

### IBM documents

Familiarity with IBM's *VTAM® Diagnosis* manual is assumed. Familiarity with the following IBM documentation for your operating system environment is also recommended:

- IBM utilities
- IBM service aids
- 3270 Programmer's Reference

---

## How to send your comments to IBM

Your feedback is important in helping us to provide accurate, high-quality information. If you have comments about this information or any other IBM CL/SuperSession for z/OS® documentation, contact us in one of these ways:

- Use the Online Readers' Comments Form at [www.ibm.com/software/awdtools/](http://www.ibm.com/software/awdtools/).
- Send your comments to the following address: [comments@us.ibm.com](mailto:comments@us.ibm.com).

Be sure to include the name of the document, the publication number, the version of IBM CL/SuperSession for z/OS, and, if applicable, the specific location (for example, the page number or section heading) of the text that you are commenting on.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way that IBM believes appropriate without incurring any obligation to you.

---

## Documentation Conventions

### Introduction

The following typographical conventions are used for command syntax in this documentation.

### Panels and figures

The panels and figures in this document are representations. Actual product panels may differ.

## Documentation Conventions

### Revision bars

Revision bars (|) may appear in the left margin to identify new or updated material.

### Variables and literals

In examples of command syntax, uppercase letters are actual values (literals) that the user should type; lowercase letters are used for variables that represent data supplied by the user. Default values are underscored.

```
LOGON APPLID(cccccc)
```

In the above example, you type **LOGON APPLID** followed by an application identifier (represented by *cccccc* ) within parentheses. The application identifier can have at most eight characters.

**Note:** In ordinary text, variable names appear in italics.

### Symbols

The following symbols may appear in command syntax.

Symbol	Usage
	The 'or' symbol is used to denote a choice. Either the argument on the left or the argument on the right may be used. Example: <b>YES   NO</b>  In this example, YES or NO may be specified.
[ ]	Denotes optional arguments. Those arguments not enclosed in square brackets are required. Example: <b>APPLDEST DEST [ ALTDEST ]</b>  In this example, DEST is a required argument and ALTDEST is optional.
{ }	Some documents use braces to denote required arguments, or to group arguments for clarity. Example: <b>COMPARE {workload} - REPORT={SUMMARY   HISTOGRAM}</b>  The <i>workload</i> variable is required. The REPORT keyword must be specified with a value of SUMMARY or HISTOGRAM.
-	Default values are underscored. Example: <b>COPY infile outfile - [COMPRESS={<u>YES</u>   NO} ]</b>  In this example, the COMPRESS keyword is optional. If specified, the only valid values are YES or NO. If omitted, the default is YES.
b	The symbol b indicates a blank space, when needed for clarity.

---

## Chapter 1. Problem Determination Overview

This guide helps you to identify and document system problems that result from, or are related to, CL/SuperSession. The guide is not an all-inclusive problem diagnosis handbook, but instead is designed to help you to provide the IBM Support team with the documentation and materials they need to efficiently diagnose and resolve a problem for you.

This chapter outlines the basic problem determination process. (Refer to “Isolating the Problem” and the map for problem determination in this chapter.) In addition, it describes the procedure for reporting a problem to IBM Support, including documentation requirements.

---

### Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in CL/SuperSession enable users to:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features using only the keyboard.

You can perform most tasks required to set up and run CL/SuperSession using a 3270 emulator logged on to TSO.

IBM Personal Communications for Windows provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need.

---

### Isolating the Problem

IBM categorizes system problems into 7 types:

- abends
- waits
- loops
- messages
- incorrect output
- tuning
- documentation

These problem types are described in Chapter 2, “Solving Problems,” on page 7. For any problem, noting problem symptoms and saving documentation (for example, message text and any output) are important in assisting you and IBM Support in identifying the failing component.

To isolate a problem, first determine if a relationship exists between the CL/SuperSession on your system and the occurrence of the problem. If the

## Isolating the Problem

problem occurs when CL/SuperSession is first installed, try to recreate the problem outside of CL/SuperSession and note any symptom changes. As part of this initial diagnostic procedure:

1. Try to isolate the type of problem by considering any recent modifications to your system configuration.
2. Then, look at your CL/SuperSession installation and/or customization procedures.
  - a. Was the product installed correctly?
  - b. Have you modified any IBM-supplied dialogs as part of installation or customization?

Modifying IBM-supplied dialogs and introducing or modifying your own dialogs are common causes of installation/customization problems.
3. If you have added or modified a dialog or user exit and you suspect the modification is the source of the problem, try to isolate and resolve the problem before contacting IBM Support. Use the LOG statement to determine if a particular dialog or user exit is the source of the problem. (For a description of the LOG statement, refer to the *Dialog Language Reference Manual* .)

The steps to problem determination are presented in the next section.

---

## Problem Determination Map

The problem determination map that follows outlines the general approach and actions to take to isolate and resolve system problems. Note that several actions need to be completed before contacting IBM Support, and that specific documentation must be provided for problem analysis. Refer to “Reporting a Problem to IBM Support” on page 5. for procedures and documentation requirements when reporting a problem to IBM Support.

### Installation related issues

1. Is the problem associated with a recent installation of CL/SuperSession?
  - If Yes. If possible, test the failing function outside the CL/SuperSession product environment. Continue to question 2. (Continue to question 2A (Review *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1*) if it is not possible to test the failing function without CL/SuperSession.)
  - If No. Continue to section “Recently installed maintenance” on page 3, question 1.
2. Does the problem go away when CL/SuperSession is not used?
  - If Yes. The problem may be related to CL/SuperSession. Review Chapter 2. Configuration planning and procedures and Chapter 3. Installation verification in the *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1* to ensure that the product is properly installed. Continue to question 3.
  - If No. The problem is not related to CL/SuperSession. Refer to appropriate IBM or vendor documentation to continue diagnosis.
3. Are there any installation or customization problems?
  - If Yes. Correct the installation and / or customization problems and then retest the failing function. Continue to section *System or other product changes*, question 5.
  - If No. Continue to section “CL/SuperSession modifications” on page 4, question 1.

### Recently installed maintenance

1. Have you recently installed maintenance (for example, PTFs, APARs, etc.) or parameter changes (for example, RLSPARM, RLSCMDS, or KLSSYSIN changes)?
  - If Yes. The problem may be related to the recently installed product maintenance changes. Review the maintenance installation and any product changes (for example, new initialization parameters) associated with the maintenance. Continue to question 2.
  - If No. Continue to section "System or other product changes," question 1
2. Are there any problems with the maintenance or change installation?
  - If Yes. Correct the maintenance/change installation problems and then retest the failing function. Continue to question 3.
  - If No. Continue to question 3A.
3. Did the problem recur?
  - If Yes. Back out the maintenance and/or changes and retest the failing function. Continue question 4.
  - If No. The problem was probably related to a maintenance/change installation error. The problem is solved.
4. Does the problem go away when CL/SuperSession is restored to the previous maintenance/change level?
  - If Yes. The problem is related to CL/SuperSession maintenance and/or changes. Continue to section "CL/SuperSession modifications" on page 4, question 2A.
  - If No. Continue to section "System or other product changes," question 1.

### System or other product changes

1. Have you recently installed maintenance, tuning changes, network definition changes, or new product versions to the operating system or other system software (for example, VTAM, RACF, ACF2, DFP, CICS, IMS, PC 3270 emulators, TELNET server, etc)?
  - If Yes. Review the changes that were made to the other system software components. If necessary, contact other vendors to ensure that all appropriate maintenance is installed (for example, PTFs and/or APARs to resolve PEs). Continue to question 2.
  - If No. Continue to section "CL/SuperSession modifications" on page 4, question 1.
2. Are there problems with the installation of other system software changes?
  - If Yes. Correct the other system software changes and retest the failing function. Continue to question 3.
  - If No. Continue to question 3A.
3. Did the problem recur?
  - If Yes. Back out the other system software changes and retest the failing function. Continue to question 4.
  - If No. The problem was probably related to installation errors in the other system software. The problem is solved.
4. Does the problem go away when the other system software is restored to the previous maintenance/change level?
  - If Yes. The problem may be with the other system software.

OR

## Map for CL Problem Determination for z/OS Environments

The problem may be related to the interaction between the other system software and CL/SuperSession. Continue to section “CL/SuperSession modifications,” question 2A.

- If No. Continue to section “CL/SuperSession modifications,” question 1
5. Did the problem recur?
- If Yes. Continue to section “CL/SuperSession modifications,” question 1.
  - If No. The problem was probably related to an initial installation error. The problem is solved.

### CL/SuperSession modifications

1. Did you modify any CL/SuperSession dialogs or user exits?
- If Yes. The problem is possibly related to the modification:  
Follow these steps:
    - Use the SSPL LOG statement in one or more modified dialogs to locate the problem.
    - Back out the modified dialog.
    - Reinstall the previous working version.
    - Review and correct your modifications.
    - Retest the product using the modified dialog.Continue to question 2.
  - If No. Continue to question 2A.
2. Did the problem recur?
- If Yes. Contact IBM Support for assistance.
    - Determine the problem type (see Chapter 2 Chapter 2, “Solving Problems,” on page 7).
    - Begin to generate the required documentation (see “Documentation Requirements Summary” on page 5) and Chapter 3 Chapter 3, “Producing Documentation for IBM Support,” on page 13.Continue to section “Collecting trace information.”
  - If No. The problem is solved.

### Collecting trace information

1. Is trace documentation required? (Refer to Chapter 4 Chapter 4, “Using Trace Facilities,” on page 19)
- If Yes. Use the VSSTRACE command to invoke the General Trace Facility. Continue to question 2.
  - If No. Contact IBM Support for further assistance.
2. Can you locate the problem on the trace? (Refer to “Sample Traces” on page 24.)
- If No. Contact IBM Support for further assistance.
  - If Yes. Continue to question 3.
3. Does analysis of the trace indicate that CL/SuperSession is the cause of the problem?
- If Yes. Contact IBM Support for further assistance.
  - If No. The problem is not related to CL/SuperSession. Refer to appropriate IBM or vendor documentation to continue diagnosis.

## Reporting a Problem to IBM Support

If you are unable to isolate a problem or resolve it yourself, the problem may be with the CL/SuperSession. You need to report the problem to IBM Support. Before submitting a problem to IBM:

1. Gather as much information and documentation as you can about the problem. Refer to “Documentation Requirements Summary” and the appropriate chapters in this manual.
2. Contact IBM Support and report the problem.

## Documentation Requirements Summary

The following table lists the documentation that IBM Support needs to diagnose and resolve a problem.

	Abend	Wait/Loop	Msg.	Output	Tuning	Doc.
SMP/E SYSMOD listing	●	●	●	●	●	
Ten Minutes of System Log	●	●	●	●	●	
Job Log	●	●	●	●	●	
Original Dialog Name		●		●		
Modified Dialog		●		●		
Unformatted Dump	●	●				
User exits	●	●				
Message Number and Text			●			●
Panel ID			*			
Trace				●		
Screen Print				●		
Terminal Definitions				●		
User initialization library	●	●	●	●	●	
User command library					●	
User panel library		●			●	
VTAMLST				●	●	
Tuning Data					●	
Manual Number and Pages						●
* User panel if created. IBM strongly recommends that you create SMP/E USERMODs to install customer modifications to <i>-RHILEV-</i> .RLSPNLS. See the skeleton SKLSSAMP(KLSUSRMD). The SMP/E SYSMOD listing is sufficient if USERMODs are used.						

## Documentation Requirements Summary

---

## Chapter 2. Solving Problems

This chapter provides procedures for identifying a problem and classifying it according to the seven problem types defined by IBM: abend, wait, loop, message, output, application tuning, or documentation. In addition, the chapter describes system problems associated with CL/SuperSession installation and customization and gives suggestions for resolving them. The system problems are noted by internal system diagnostics. Be sure to note exactly which message, return code, abend code, or tuning symptom occurs. This information is crucial in first classifying and then isolating and resolving the problem.

---

### Abend Problems

When an abend occurs, an operating system abend message, including an abend code, is usually issued. Possible abend codes are:

Code	Description
U0000	After CL/SuperSession termination is requested and confirmed, a program timer is set limiting the shutdown to 30 seconds. If the timer expires, user abend 0 is invoked to purge CL/SuperSession from the system. The unexpected halt of a component usually causes U0000. If the problem persists, contact IBM Support.
U0004	This is an initialization error. The CL/SuperSession load library could not be opened. This is usually the result of an invalid TLVLOAD DD statement in the supplied procedure KLS. z/OS messages in the system log indicate a specific reason that the library was not opened.
U0008	This is an initialization error. During startup, CL/SuperSession detected an exception condition and tried to issue a WTO to indicate the source of the error. However, the integrity of the CL/SuperSession address space was found to be corrupted. Contact IBM Support.
U0012	This is an initialization error. During startup, CL/SuperSession detected an exception condition. A message indicating the source of the error is written to the system and job logs. Refer to the error message to determine your course of action.
U0100	Invoked by the product and accompanied by a message written to the system and job logs. The reason for the abend is explained in the message. After a system dump is taken, the product attempts to recover from this failure automatically. Successful recovery is indicated by the message KLVER011.

**Note:** After receiving this abend code, you should:

1. bring down CL/SuperSession.
2. inactivate the ACB major node.
3. activate the ACB major node.
4. start CL/SuperSession.

Although recovery may be successful, the address space may be damaged.

U0200	Invoked by the product and accompanied by a message written to the system and job logs. The reason for the abend is explained in the message. These abends are generally caused by storage exhaustion or storage overlays and cannot be retried. If U0200 occurs, CL/SuperSession terminates after a system dump is taken. This abend can also be forced by the SHUTDOWN ABEND operator command.
-------	--

## Abend Problems

Review the abend code and system logs. If you are unable to locate and resolve the problem, generate the documents described in Table 2 and call IBM Support. An abend can also be caused by storage creep. Message KLVGM005 is issued when storage creep is the problem. Refer to Chapter 3, "Producing Documentation for IBM Support," on page 13 for instructions on diagnosing the problem and producing documentation to send to IBM Support.

---

## Wait and Loop Problems

Wait problems and loop problems have similar symptoms and causes.

The symptoms of a wait problem might include:

- CL/SuperSession does not respond to an operator command.
- Terminal traffic or a subset of terminal traffic stops.
- CL/SuperSession cannot be terminated normally.
- Terminals and application programs are not communicating. (This symptom may also indicate a loop problem.)

The symptoms of a loop problem might include:

- CPU utilization is high.
- CL/SuperSession product does not respond to operator commands.
- A dialog repeats the same commands over and over.
- A dialog may have exceeded the loop counter.
- Commands or data cannot be entered at a terminal location.
- An application accessed under CL/SuperSession is in error or has a runaway condition.

A primary suspect for a wait or loop problem is user modification to a dialog. If you suspect a modified dialog is causing the problem, back out the change and reinitialize the system with an earlier, working version of the dialog. If this change resolves the problem, review and correct the modification. If the problem continues, call IBM Support and then generate the documentation summarized in Table 2.

---

## Message Problems

Messages unique to CL/SuperSession inform you of system status and possible problems. CL/SuperSession-generated messages have the following prefixes:

<b>Prefix</b>	<b>Message Type</b>
<b>CESC</b>	CL/SuperSession SSPL Conversion Utility message
<b>CG</b>	CL/SuperSession GATEWAY panel message
<b>CL</b>	CL/SuperSession user interface panel message
<b>CS</b>	CL/SuperSession panel message
<b>CT</b>	CL/SuperSession user interface table message
<b>KLG</b>	CL/SuperSession message
<b>KLS</b>	CL/SuperSession message
<b>KLU</b>	CL/SuperSession virtual session support message
<b>KLV</b>	CL/SuperSession message
<b>MIGR</b>	Migration message

Refer to the *Messages Manual* for specific message descriptions and appropriate responses. If you are unable to resolve a problem identified by a system message, generate the documentation described in Table 2, and then call IBM Support for assistance.

---

## Incorrect Output Problems

The symptoms of an incorrect output problem are the following:

- An application works differently under CL/SuperSession than it does without CL/SuperSession.
- An application program message reports an unexpected result from a CL/SuperSession, such as a return code, sense code, or both.
- A terminal user cannot enter data to an application.
- A terminal user reports wrong or missing data at the terminal.
- The cursor is positioned incorrectly on the screen.
- A terminal user gets an unexpected response to a transaction.
- The output data is formatted incorrectly.

**Note:** The above symptoms can also result from an error in a host-based application program such as TSO or IMS™.

Incorrect output problems are caused by:

### Communication definition problems

A terminal definition problem is the most common cause of incorrect output. Within a VTAM network, mode entry definitions (MODEENTs) define terminal characteristics, parameters and protocols. If these definitions are incorrect, they cause unexpected results at the terminal, including corrupted screens. Refer to the appropriate IBM documentation for help in resolving incorrect output problems relating to mode entry definitions.

### CL/SuperSession product installation and customization problems

Incorrect output and wait problems are frequently associated with incorrect installation and customization of CL/SuperSession. Be sure to follow the instructions in the Program Directory for IBM CL/SuperSession for z/OS and the *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1* for IMS data communications definitions to help resolve terminal definition problems.

### File transfer

Incorrect output problems can occur during file transfer. The file transfer problem may be caused by immediate broadcast which interrupts file transfer. To solve the problem, disable immediate broadcast with the dialog function VIGIBC (1). When the file transfer is complete, enable immediate broadcast with dialog function VIGIBC (0).

**Note:** If you have the file transfer dialog available (usually through the trigger, \ft), immediate broadcast is disabled and enabled automatically.

If the problem is not caused by immediate broadcast, check logmodes to ensure that the bind images for the physical and virtual session are the same, and that the binds match the bind that was used on the PC for the native file transfer.

## Incorrect Output Problems

Also check session options as described in *IBM CL/SuperSession for z/OS User's Guide V2.1* for the correct settings for file transfer. The session options are set automatically by the file transfer dialog.

If file transfer problems persist, get a trace of the file transfer without CL/SuperSession and a trace of the physical and virtual CL/SuperSession terminals during file transfer to the point when the problem occurs. Include the bind and the names and uses of logical units with the trace.

### Compression problems

Compression problems can cause incorrect output. To correct the problem, try running the application in single-window display. (Running in single-window display allows the CL/SuperSession to automatically disable compression for file transfer and graphics output and other 3270 data stream facilities that do not work with data compression.)

If an incorrect output problem occurs, generate and review the documentation described in Table 2. Refer to Chapter 4, "Using Trace Facilities," on page 19 when generating and reviewing trace documentation. When CL/SuperSession is involved, you may wish to obtain a trace of the application running without CL/SuperSession for comparison. If you are unable to locate the problem, contact IBM Support for assistance.

---

## Tuning Problems

Tuning problems are generally defined as problems involving job, network, and resource performance.

The symptoms of an application tuning problem include:

- Slow terminal response time
- Slow CL/SuperSession operator command execution
- Slow logon processing

Tuning problems can result from other operating system and subsystem components, such as z/OS, CICS®, or IMS. Access methods and their resources, such as VTAM and VSAM, can also introduce tuning problems. Performance measurement and tuning within your environment can substantially minimize or even eliminate such problems.

Another source of tuning problems can be dialogs that are implemented incorrectly. In such cases, looping uses valuable system resources, and the result is poor performance.

See the *IBM CL/SuperSession for z/OS Customization Guide V2.1* for more information on performance and tuning.

To pinpoint a CL/SuperSession tuning problem, obtain the documentation listed in "Documentation Requirements Summary" on page 5. Review the documentation. If you are unable to resolve the problem, contact IBM Support.

---

## Documentation Problems

The symptoms of a documentation problem are:

- CL/SuperSession does not perform as described in the manual.
- Information essential for installing, operating, or servicing CL/SuperSession is missing from the manual.

- Information in the manual is ambiguous and you cannot use CL/SuperSession effectively.
- Information in one CL/SuperSession manual does not agree with information in another CL/SuperSession manual.

To resolve a documentation problem, contact IBM Support with the following information:

- Number of the manual containing the error
- Description of the error

If the problem has not been reported, IBM Support will create an incident record and ask you to send a copy of the page containing the error.

---

## Installation and Customization Problems

Many problems are caused by incorrect installation and customization. You can reduce the chances of introducing errors and make error isolation and resolution easier if you follow these simple guidelines:

1. Install products without customizing them, following the installation procedure described in the *Program Directory for IBM CL/SuperSession for z/OS V2.1* and the *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1*.
2. When the products are installed, use the installation verification tests to ensure that products *as delivered* are working. As part of installation testing of the products, you initialize them and log on and log off under installation verification tests. The *Program Directory for IBM CL/SuperSession for z/OS V2.1* and the *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1* describe the steps for testing CL/SuperSession installation.
3. Perform the appropriate customization on the installed products for your site. IBM strongly recommends that you copy IBM-supplied library members to user libraries before you perform any customization, and that you make no changes to the original IBM-supplied data.

The following paragraphs explain how to avoid installation errors. If you do make an error in your installation, back out the product or sysmod and install it again.

### SMP/E Installation Errors

The *Program Directory* details the step-by-step procedure for installing with SMP/E. The following list identifies common errors that occur while performing an SMP/E installation. In general, the most likely errors occur in your JCL. If an SMP/E install fails, be sure to check these probable causes:

- Errors in substituting symbolics
- A prefix of more than 8 characters
- Errors in typing the IBM tape volser or target disk allocation volser
- Insufficient disk space
- Mismatch between the DSN in the JCL and the DSN on the volume
- Attempt to receive an empty file

### Customization Errors

To determine if a problem is a customization error, review any recent changes to dialogs or to your system environment. Consider the following areas:

## Customization Errors

### Processing environment

For example, was a new host processor or communication controller introduced?

### Operating system

For example, was the operating system modified or was a new release installed?

### VTAM network

Were new terminals defined? If so, were their attributes and/or parameters set correctly?

### Security system

Was CL/SuperSession newly defined to the security system or redefined to a new security system?

The *IBM CL/SuperSession for z/OS Customization Guide V2.1* contains information that is useful if the problem symptom is poor network performance or main storage utilization.

Ensure that the JCL REGION parameter is coded to create a larger enough region for your environment. Sites that use CA-ACF2, RACF®, or CA-TOP SECRET and have large numbers of users should review the RESERVE parameter in TLV Parm(KLSSYSIN). RESERVE storage in these environments must be below the 16-megabyte line. (Refer to the *IBM CL/SuperSession for z/OS Customization Guide V2.1*.)

If you suspect that a modification to a dialog is the problem:

1. Back out the modified dialog and replace it with an earlier, working version.
2. Check to see if the problem is resolved.
3. If removing the suspect dialog solves the problem, you can then use the LOG statement to locate and debug the dialog error problem. (Refer to the *IBM CL/SuperSession for z/OS Customization Guide V2.1* and the *Dialog Language Reference Manual* .)
4. If dialog modification is not the problem or if the problem persists, verify your installation procedures. (Refer to the *Program Directory for IBM CL/SuperSession for z/OS V2.1* and the *IBM CL/SuperSession for z/OS Basic Configuration Guide V2.1*.)

If you are unable to isolate the problem or resolve it yourself, the problem may be with the CL/SuperSession product. In that case, report the problem to IBM Support.

---

## Chapter 3. Producing Documentation for IBM Support

If you are unable to locate and resolve a problem associated with a CL/SuperSession product, contact IBM Support for assistance. You will be asked for a detailed description of the problem and any steps you have taken to resolve it. You will also be asked for the documentation described in this chapter and any documentation you produced in your initial problem isolation efforts. (See Chapter 2, "Solving Problems," on page 7.) Documentation requirements for each IBM-defined problem type are summarized in "Documentation Requirements Summary" on page 5. Be sure to forward required documentation to IBM in the form specified.

This chapter provides instructions for collecting documentation to provide to the IBM Support team..

**Note:** Trace procedures are described in Chapter 4, "Using Trace Facilities," on page 19.

---

### Problem Documentation Guidelines

Consider the following when creating problem documentation to be forwarded to IBM:

- Send standard IBM unformatted dumps for the following reasons:
  - An internal formatter is used to analyze dump data. If the data is already formatted, the IBM data formatter cannot process the data correctly.
  - Creating formatted dumps can require considerable system resources.
- Submit problem documentation according to the "Exchanging data with IBM" section of the IBM Software Handbook. For more information, see "Sending Problem Documentation to IBM" on page 16.
- Use IBM-supplied JCL to generate required documentation.
- CL/SuperSession supports creation of SVC dumps and traces. If you modify the installed product, you need to verify that your system is set up to produce the requested problem documentation.
- If ABEND-AID is installed, it must be disabled to produce usable, CL/SuperSession problem documentation. To disable ABEND-AID, add the following data definition statement to the job procedure:

```
//ABNLIGNR DD DUMMY
```

The remainder of this chapter:

1. Defines the types of documentation that IBM Support Services will request.
2. Describes how to create and format output created through IBM service aids.
3. Summarizes procedures for creating documentation media (for example, creating printed copies of dialogs).
4. Provides sample JCL for generating required documentation.

### Documentation Requirements

Regardless of the problem type, IBM Support always requests the following documentation:

- SMP/E SYSMOD listing
- System log for 10 minutes before the error occurred
- IBM JES job log
- IBM TLVLOG

These documents are described in the following paragraphs.

#### SMP/E SYSMOD Listing

This listing shows the CL/SuperSession product level and the maintenance that was applied. See “Creating the SMP/E List” on page 17 for instructions on producing the listing.

#### System Log

The IBM system log is frequently referred to as the console log. This log is written to by all system and subsystem programs. For several problem types, a partial system log is requested.

When you supply a system log, be sure to supply *the 10 minutes immediately before the occurrence of the error* .

#### IBM JES Job Log

The job log contains all messages issued by a job (that is, a started task, a TSO user, or a batch job). Most operating system, JCL substitution, and allocation/deallocation messages appear only in the job log. The job log is always requested. A complete job log should always accompany a dump.

#### IBM TLVLOG

The IBM TLVLOG contains CL/SuperSession product information. As shipped, the TLVLOG is part of the job log because a data definition (DD) statement in the started task command procedure assigns the TLVLOG to SYSOUT. However, if this default assignment is changed to another destination (through the DSN parameter), the TLVLOG is created as a separate dataset. All product messages are output to the TLVLOG DD.

#### Additional Documentation

The following documentation may also be requested:

- Custom dialogs  
From the TLVPNLS DD, typically in ...RLSPNLS.
- Configuration libraries  
TLVCMDS and TLVPARM DD..
- Miscellaneous helpful information  
Dumps, VTAM configuration, screen shots.

## Enabling Dumps

The startup JCL contains dump-enabling DD statements. As currently shipped, the started task JCL provided by member KLS in the supplementary library (RLSSAMP) contains

dump-enabling statements.

Figure 1 illustrates the JCL that enables dumps.

```
//KLS  PROC PFX=' -thilev- '
//      MEMORY=OM,
//      SYSIN=KLSSYSIN,
//      SOUT=A
//*
//IEFPROC EXEC PGM=KLV,REGION=&MEMORY,TIME=1440
//STEPLIB DD DISP=SHR,DSN=&PFX..LOADLIB
//TLVLOAD DD DISP=SHR,DSN=&PFX..LOADLIB
//TLVCMDS DD DISP=SHR,DSN=&PFX..RLSCMDS
//      DD DISP=SHR,DSN=&PFX..TLSCMDS
//      DD DISP=SHR,DSN=&PFX..TLVCMDS
//TLVPNLS DD DISP=SHR,DSN=&PFX..RLSPNLS
//      DD DISP=SHR,DSN=&PFX..TLSPNLS
//      DD DISP=SHR,DSN=&PFX..TLVPNLS
//TLVPARM DD DISP=SHR,DSN=&PFX..RLSPARM
//      DD DISP=SHR,DSN=&PFX..TLSPARM
//      DD DISP=SHR,DSN=&PFX..TLVPARM
//SKLSSAMP DD DISP=SHR,DSN=&PFX..TLVPNENU
//TLVH0ENU DD DISP=SHR,DSN=&PFX..TLVPNENU
//TLVLOG  DD SYSOUT=&SOUT
//ABNLIGNR DD DUMMY
//TLVSNAP DD SYSOUT=&SOUT <-- Enables IBM TLV SNAP dumps
//TLVSYIS DD DISP=SHR,DSN=&PFX..RLSPARM(&SYSIN),FREE=CLOSE
//*
//
```

Figure 1. Enabling Dumps In z/OS

Note the following:

- IBM prefers that you provide SVC dumps if APF-authorized and TLVSNAP dumps if not APF-authorized. SVC dump is the default for systems that are APF-authorized. IBM encourages you to APF-authorize your job step to obtain an SVC dump. Refer to the *IBM CL/SuperSession for z/OS Customization Guide V2.1* for information on the SDUMP option.
- When SVC dump support is used, be sure to allocate sufficient DASD. Specify 50 cylinders of 3380 for every 32 megabytes of storage specified above the line and 25 cylinders for 15 megabytes specified below the line.
- When SVC dumps are not enabled, dump output is directed to SYSOUT CLASS A in the TLVSNAP dataset as provided in the sample JCL. You may optionally create a DASD dataset to receive the TLVSNAP dump output resulting from an abend.
- Do not add a SYSUDUMP or SYSMDUMP to the provided JCL. The resulting dump processing introduces unnecessary overhead.

The TLVPARM(KLSSYSIN) member contains the CL/SuperSession startup parameters. KLSSYSIN contents and parameters are fully documented in the *IBM CL/SuperSession for z/OS Customization Guide V2.1*.

### DEBUG and the Internal Trace Table

In certain cases, you may need to provide IBM Support with an internal trace table included as part of the dump. This table reflects the flow of information through the system. For example, this data is crucial in isolating a problem involving a recurring abend.

The trace table is enabled by:

1. Adding parameter DEBUG (Y) to the KLSSYSIN parameters.
2. Setting TRACE on by issuing the command in CL/SuperSession or coding it in KLSSTART in TLSCMDS.

Contact IBM Support if you need assistance with the trace table. Once enabled, the trace table is automatically included in dumps. Trace table enabling remains in effect for the duration of a CL/SuperSession execution. It is disabled by resetting the KLSSYSIN parameter to DEBUG (N) and recycling the product.

**Note:** Creating a trace table may affect system performance.

---

### Sending Problem Documentation to IBM

For copying different types of documentation, see the specified sections for procedures and JCL.

- Generate the list of current maintenance installed on your system: See “Creating the SMP/E List” on page 17.
- Generate Storage Creep Data: See “Generating Storage Creep Data” on page 17.

Our software support specialists may request that you send IBM the problem information, systems data or test cases, etc., or that our support specialists be able to view it with you electronically. To accomplish this, you may be offered several options by the IBM support specialist. By the terms and conditions of the applicable support agreements: (i) this information will be non-confidential (for example, not labeled "your company confidential"); and (ii) you should not supply IBM with any personally-identifiable information (whether in data or other form). You will be responsible for reasonable costs and other amounts that IBM may incur relating to any such information mistakenly provided to IBM or the loss or disclosure of such information by IBM, including those arising out of any third party claims.

Once your documentation is completely received by IBM approved means, IBM will use it only for the purposes for which it was provided - that is, to fix defects or to support IBM products or services. We will not disclose it to other parties, except to contractors of IBM who we may use to help us fix defects or provide support; and we will delete, destroy or return it when it is no longer required.

For more information on exchanging information with IBM, please refer to the Service Users License Agreement at Enhanced Customer Data Repository (ECuRep) website.

If you and the IBM support specialist agree, you may decide to send your problem information or test cases to IBM. There are several approved methods and tools that can be used. Please refer to the document Exchanging Information with IBM Technical Support, for more information. The IBM support specialist working with you can help you set up the transfer.

## Sending Problem Documentation to IBM

- The following site discusses how to use ECURep and discusses different ways to send files to IBM: Enhanced Customer Data Repository (ECuRep).

For Blue Diamond customers, details can be found on the Blue Diamond FAQ:  
<http://www-01.ibm.com/support/docview.wss?uid=nas8N1020947>.

You need to understand and acknowledge that IBM may use its global resources, including but not limited to, IBM Affiliates and personnel located in various countries, for the delivery of service and services. By sending us problem information, you warrant that none of the Customer Data exported to, or otherwise accessible by, IBM is controlled as a defense article under the U.S. International Traffic in Arms Regulation (ITAR) or under any other country's laws or regulations.

Additional software support procedures can be found in the IBM Software Support Handbook: <https://www-304.ibm.com/support/customer/care/sas/f/handbook/getsupport.html>.

## Creating the SMP/E List

To accurately diagnose a problem, IBM Support must know the product level you are running and the maintenance you have applied.

The JCL in Figure 2 creates a list of any maintenance applied.

```
//<jobname> JOB ...  
//LIST      EXEC PGM=GIMSMP,REGION=0M  
//SMPCSI    DD DISP=SHR,DSN=TDCLSS.V2R1M0.CSI  
//SMPCNTL   DD *  
            SET BDY(TZONE)  
            .  
  
            LIST SYSMODS  
                FORFMID(HKLS210)  
            .  
//
```

Figure 2. JCL to Create an SMP/E List for FMID(HKLS210).

---

## Generating Storage Creep Data

You may suspect a storage creep problem if free storage decreases over a period of time. The STORAGE command can show such decreases. To provide the information for IBM Support to analyze the problem, do the following:

1. Run CL/SuperSession for at least one day.
2. Then, have all users log off CL/SuperSession.
3. Close all hostgate ACBs:

```
F k1v,CLOSE hostgateacb
```

4. Create a dump:

```
DUMP COMM=(SS STORAGE CREEP)  
R xx,JOBNAME=k1v,SDATA=(RGN,CSA,PSA,TRT,SWA,LSQA,SUM,SQA),END
```

In the above example, *xx* is the reply number from the DUMP command.

### Printed Copies of Dialogs

Whenever you furnish a printed copy of a dialog, include a description of the dialog (what it is intended to do, any unusual coding, etc.), the dialog name, and all relevant notes.

Create the printed copy using an IBM-supplied copy formatting utility, such as IEBGENER or ISPF.

---

## Chapter 4. Using Trace Facilities

This chapter describes:

- IBM General Trace Facility and VSSTRACE, two service aids used to generate the documentation that IBM requires to analyze CL/SuperSession problems
- Procedures for using the trace facilities

This chapter also provides examples and detailed descriptions of trace output. Use these examples as a reference when analyzing your own trace data.

Startup JCL enables the standard IBM service aids used to gather problem documentation. The following paragraphs explain how to determine which service aid to use.

**Note:** For detailed explanations and procedures when using the standard IBM service aids, refer to the appropriate IBM documentation.

---

### General Trace Facility

CL/SuperSession incorporates an interface to the standard z/OS system trace capability provided by the IBM Generalized Trace Facility (GTF). General Trace Facility:

- Eliminates potential diagnostic data loss that can be caused by the wrapping action of the CL/SuperSession internal trace table.
- Enables the full Request Unit (RU) to be seen (VTAM buffer trace facilities provide a maximum of approximately 200 bytes of RU data) when tracing session data.
- Provides operator commands to activate and deactivate buffer tracing on specified physical and virtual sessions.

Figure 3 contains sample JCL to run GTF as a started task. Modify the JCL as needed, then store the modified procedure in a system procedure library (for example, SYS1.PROCLIB).

```
//GTF      PROC
//IEFPROC EXEC PGM=AHLGTF,PARM='MODE=EXT,DEBUG=NO,TIME=YES',
//          REGION=2000K,DPRTY=(15,15)
//IEFRDOR DD  DSNAME=tracedsn,UNIT=SYSDA,
//          VOL=SER=tv01,SPACE=(TRK,(30)),
//          DISP=(NEW,CATLG)
```

Figure 3. Sample GTF Started Task JCL

Modify the JCL as follows:

1. Change **tracedsn** to the dataset name for the trace dataset.
2. Change **tv01** to the volume serial (volser) number for the trace dataset.

The CL/SuperSession GTRACE command can activate tracing for a single physical or virtual session. The physical terminal node name or the virtual terminal APPL name is specified in the GTRACE command.

### VSSTRACE Facility

The VSSTRACE facility traces all physical and virtual session activity for all CL/SuperSession user IDs or specified groups of user IDs.

A single VSSTRACE command can initiate tracing for all sessions associated with a user or group of users. There is no need to know the physical terminal node name or virtual terminal APPL name. Only the user ID is specified in the VSSTRACE command. Trace command processing identifies the appropriate sessions to be traced.

---

### Determining Which Trace Facility to Use

For recreatable CL/SuperSession problems where an application acts differently under CL/SuperSession than it did without CL/SuperSession, include a VTAM buffer trace of the application functioning correctly (without CL/SuperSession) in addition to the appropriate CL/SuperSession trace of the failure.

To determine if an application is running under CL/SuperSession, enter the **i** action code next to the problem session ID on your CL/SuperSession menu. The resulting pop-up window indicates the session type:

- **MULTI** indicates that the application is running under CL/SuperSession. Refer to “Tracing Multi-Session Problems” on page 21.
- **SINGLE** indicate that the application is running under CL/SuperSession only. Refer to “Tracing Single Session Problems” on page 21.
- **PASS** indicate that the application is accessed through CL/SuperSession, but has passed control to the application. Refer to “Tracing Pass Session Problems.”

CL/SuperSession issues trace records (called USR records) to the GTF dataset. GTF must be started with the USR option for trace records to be recorded. You can then format the USR records for printing using the procedure described in “Formatting Trace Records for Printing (KLSUSR20 Formatter)” on page 23.

CL/SuperSession recording uses GTF in the same way that the VTAM TYPE=BUF trace does.

**Note:** In all cases, a trace that includes a VTAM Bind is required.

---

### Starting and Stopping VTAM TRACES

To start a buffer trace, enter the following:

```
F procname,TRACE,TYPE=BUF,ID=termid,AMOUNT=FULL
```

In the example above, *procname* identifies the procedure name for VTAM. Procedure name differs for each operating system.

To stop a buffer trace, enter the following:

```
F procname,NOTRACE,TYPE=BUF,ID=termid
```

---

### Tracing Pass Session Problems

If the problem occurs before the selected application writes any data to the screen, obtain a trace as described in “Tracing Single Session Problems” on page 21.

If the problem occurs after the selected application writes data to the screen, obtain a VTAM buffer trace.

---

### Tracing Single Session Problems

Use the following procedure to generate a General Trace. (In the procedure, user entries and system responses are labeled appropriately.)

1. Enter the following commands at your system console:

```
Enter:          S GTF.GTF
Response:      xx AHL100SPECIFY TRACE OPTIONS
Enter:          R xx,TRACE=USR
Response:      AHL10I TRACE OPTIONS SELECTED --USR yy AHL125A RESPECIFY TRACE
               OPTIONS OR REPLY U
Enter:          R yy,U
Response:      AHL01I GTF INITIALIZATION COMPLETE
```

where **XX** is the numerical response required by z/OS.

2. Initiate the General Trace Facility, as follows:

```
Enter:          F KLS,GTF ON
Response:      KLVOP971 GTF INTERFACE ENABLED GTRACEID: xxxx (3E8) INTERNAL: NO
```

3. Initiate GTRACE, as follows:

```
Enter:          F KLS,GTRACE pterm CLASS=TERM ON
Response:      KLVOP128 TRACE TERM(pterm) QUEUED
```

where *pterm* is the LU name of the physical terminal. In this example, *pterm* would be L615A70.

4. Recreate the problem. Make sure that the user initiates a logon to CL/SuperSession at this point so BINDs can be recorded.
5. Turn off tracing, as follows:

```
Enter:          F KLS,GTRACE pterm CLASS=TERM OFF
Response:      KLVOP128 TRACE TERM(pterm) DISABLED
Enter:          F KLS,GTF OFF
Response:      KLVOP972 GTF INTERFACE DISABLED
Enter:          P GTF
Response:      AHL006I GTF ACKNOWLEDGES STOP COMMAND
```

---

### Tracing Multi-Session Problems

The VSSTRACE procedure uses the CL/SuperSession commands GTF and VSSTRACE to activate the required trace(s). In the following procedure, information about the virtual and physical sessions for one user is written to GTF.

1. Start the trace by issuing the following commands. (In the procedure, user entries and system responses are labeled.)

## Tracing CL/SuperSession Multi-Session Problems

```
Enter :      S GTF.GTF
Response:    xx AHL100A SPECIFY TRACE OPTIONS
Enter :      R xx,TRACE=USR
Response :   AHL103I TRACE OPTIONS SELECTED --USR yy AHL125A RESPECIFY TRACE
             OPTIONS OR REPLY U
Enter :      R yy,U
Response :   AHL031I GTF INITIALIZATION COMPLETE
```

2. Initiate GTF tracing as follows:

```
Enter :      F KLS,GTF ON
Response:    KLVOP971 GTF INTERFACE ENABLED GTRACEID: xxxx (3E8) INTERNAL: NO
```

3. Initiate the VSSTRACE facility as follows:

```
Enter :      F KLS,VSSTRACE userid ON
Response:    KLUOP202 TRACE USER(userid) QUEUED
```

4. Recreate the problem at this point. Make sure that the user initiates a logon to CL/SuperSession at this point so BIND images can be recorded.

5. Turn off tracing, as follows:

```
Enter :      F KLS,VSSTRACE userid OFF
Response:    KLUOP202 TRACE USER(userid) DISABLED
Enter :      F KLS,GTF OFF
Response:    KLVOP972 GTF INTERFACE DISABLED
Enter :      P GTF
Response:    AHL006I GTF ACKNOWLEDGES STOP COMMAND
```

Note the following:

- The command VSSTRACE can be followed by a *userid* or *userids* . If it is, trace activity is limited to physical and virtual session activity related to the specified user IDs.
- Specifying ON starts the trace. (Specifying OFF stops it.)
- The trace facility can also be started automatically as part of the CL/SuperSession initialization by incorporating the GTF and VSSTRACE commands in a startup command list.
- The user should not be logged on when the VSSTRACE command is issued. If the user is not logged on, the command is treated as a pending trace request; tracing begins when the user logs on. (Pending trace requests are discarded when the system is brought down.)

Once the trace is recorded, use the appropriate procedure in “Formatting Trace Records for Printing (KLSUSR20 Formatter)” to format the data for printing. You can then print the data and analyze it yourself using the sample traces in “Sample Traces” on page 24.)

---

### Formatting Trace Records for Printing (KLSUSR20 Formatter)

This section describes using the trace facilities to perform your own analysis of communications problems.

CL/SuperSession uses the GTF trace record format identifiers (FIDs) X'20'through X'4F'. All current CL/SuperSession records are formatted by a single module named KLSUSR20. Due to the limited number of alias names that may be assigned to a load module, KLSUSR20 is replicated twice in the load library as KLSUSR30 and KLSUSR40. Each copy of the module is assigned fifteen alias names as follows:

KLSUSR20 alias KLSUSR21-KLSUSR2F KLSUSR30 alias KLSUSR31-KLSUSR3F  
KLSUSR40 alias KLSUSR41-KLSUSR4F

The load module and alias names were selected to meet IBM-specified naming requirements for IPCS format appendages. The formatting routine is distributed as an assembler language source module in member KLSUSR20 of the supplementary library (SKLSSAMP).

#### **z/OS IPCS Requirements**

KLSUSR20 and its alias names must be available to IPCS when CL/SuperSession GTF trace records are to be formatted. This can be accomplished by using sample JCL member KLV@IPCS. The JCL and IPCS control statements needed to print CL/SuperSession trace records are demonstrated in Figure 4 on page 24.

## Formatting Trace Records for Printing (KLSUSR20 Formatter)

```
//JOB CARD JOB (ACCOUNTING), 'CL/ENGINE GTF PRINT'
//*****
//*          MVS/ESA IPCS BATCH --- PRINT GTF TRACE RECORDS
//*
//* 3E8 = CL/ENGINE TRACE RECORD DEFAULT ID (GTRACEID=1000)
//*
//* FEF = VTAM BUFFER
//* FF1 = USER BUFFER
//* FF0 = SMS
//* FF2 = NCP LINE
//* FE1 = VTAM INTERNAL TRACE
//* FE2 = TSO/VTAM TGET/TPUT
//*
//* FOR EXAMPLE:  GTFTRACE DDNAME(TRACE),RNIO,USR(FF2,FEF)
//*                GTFTRACE DDNAME(TRACE),USR(ALL)
//*
//*****
//* NOTE: BEFORE USING THIS JOB YOU MUST ASSEMBLE THE GTF TRACE
//*        FORMATTING ROUTINE.  SEE MEMBER KLV@AS20 IN THIS LIBRARY.
//*        BEFORE SUBMITTING THIS JOB CHANGE ALL INSTANCES OF "-THILEV-"
//*        TO THE VALUE SPECIFIED FOR THE TARGET DATASET NAME PREFIX
//*        DURING PRODUCT INSTALLATION.
//*****
//IPCSBAT EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=1500K
//STEPLIB DD DSN=-THILEV-.TLVLOAD,DISP=SHR
//IPCSDDIR DD DSN=USER.IPCS.DIR,DISP=SHR
//IPCSPRNT DD SYSOUT=*
//TRACE DD DSN=SYS1.TRACE,DISP=SHR
//SYSUDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSTSIN DD *
IPCS
DROPDUMP DDNAME(TRACE)
SETDEF DDNAME(TRACE) NOCONFIRM /*QLV0075*/
GTFTRACE DDNAME(TRACE),USR(3E8),TERMINAL,NOPRINT
END
//*****
```

Figure 4. Sample KLV@IPCS JCL

To use the JCL, change **-THILEV-** to the CL/SuperSession system target load library name. Change **USER.IPCS.DIR** to the IPCS dump directory name that conforms to your environment's IPCS dump datasets.

---

## Sample Traces

This section provides three sample traces with detailed explanations. For ease of reference, each trace is divided into segments. Use the examples when analyzing your own trace records.

**Note:** These traces are examples only and will not match your trace data.

### Sample Trace of CL/SuperSession Main Menu

Each CL/SuperSession GTF record has a GTRACEID of 3E8. Look for this identifier when locating the beginning of a record. Each record contains a GTF format appendage identifier, or FID (for example, USR4F), ASCB address (for example, 00F92900), and job name (for example, KLV). A record has associated sequence and segment numbers. Sequence numbers begin with SQ; segment numbers begin with SG. The first field of every CL/SuperSession trace record is labeled SQ xxxx and is a sequential counter of GTF recording requests within CL/SuperSession. It should not be confused with the SNA transmission sequence number that is also labeled SQ xxxx. The SNA transmission sequence number appears later on the same line, immediately after the Return/Feedback field RF xxxx.

## Sample Trace of CL/SuperSession Main Menu

Many trace records consist of only a single segment, SG0000. Additional segments for a particular record sequence number are numbered sequentially and are only used for message data (3270 data streams or SNA RU data) that could not fit within a single GTF record. GTF limits the record size to 256 bytes.

However, there is no limit to the number of Request Unit (RU) bytes provided by a CL/SuperSession buffer trace. In Figure 5, the Main Menu consists of 928 bytes. This data resides in two CL/SuperSession buffers in memory. The first buffer has an address of 338F1A0 and length of hexadecimal 1F8 (decimal 504) bytes. The second buffer has an address of 338F3A8 and length of hexadecimal 1A8 (decimal 424) bytes. Each GTF record has an associated time stamp (TIME:).

```
USR4F 3E8 ASCB 00F92900          JOBK KLV
SQ008E SG0000 KLVVTAPI PTERM/GATEWAY SEND DATA REQ RF0000 SQ001E SN00000000 OC DR1 CD
DAT 00000000 00000000 0338F1A0 00001F8 00000000 00000000 0338F3A8 00001A8 *.....1....8.....3Y...Y*
TIME: A1A92907 C3EF4743 06:42:38.715636
```

Figure 5. CL/SuperSession Main Menu Sent to the Physical Terminal

The following is an item-by-item description of the first (header) segment.

- USR4F is the GTF Format ID (FID).
- 3E8 is the GTRACEID.
- ASCB 00F92900 is the ASCB address.
- KLV is the job name.
- SQ008E, SG0000 identifies CL/SuperSession trace record X'008E', segment 0. This first line contains the SNA Transmission header and the Request/Response header related to the Main Menu RU data sent from the gateway to the physical terminal.
- The name KLVVTAPI identifies the CL/SuperSession module that created the record.
- PTERM/GATEWAY identifies the destination/origin VTAM LU names participating in this session. In this case, application GATEWAY originates the Main Menu RU, and the physical terminal PTERM receives the message.
- SEND identifies the VTAM macro that CL/SuperSession issues. Some other commonly used VTAM macros are RECEIVE and OPENSEC. Most SEND data and all RECEIVE data are contained within a single trace record sequence number. (There may be multiple segments.) CL/SuperSession uses VTAM's LMPEO to send large messages that are contained in multiple buffer areas. The first trace record of an LMPEO send contains the addresses and byte counts of each buffer that is part of the message. A subsequent trace record (there may be multiple segments) is created for each buffer that is part of the message. This particular trace record is for a SEND using LMPEO.
- DATA identifies the RU as a data request or response. For RUs which contain network commands (command requests) or responses to command requests, you see such things as BIND, SDT, BID, and UNBIND.
- REQ identifies this RU as an SNA request. In Figure 11 on page 27, item RSP identifies that particular Path Information Unit (PIU) as a response.
- RF0000 describes the Return Code (R) and Feedback (F) that VTAM returns in response to the SEND macro.
- SQ001E is the SNA sequence number that would appear in the SNA transmission header when the RU is in the network. Figure 11 on page 27 on page 64 shows a sequence number of X'1E' for the response PIU. This PIU is a response to the Main Menu request RU sent by CL/SuperSession.

## Sample Trace of CL/SuperSession Main Menu

- SN00000000 is the Sense Code field. Figure 11 on page 27 also shows a value of SN00000000. When an SNA Exception Response or Exception Request is received, the sense code field contains the associated SNA sense information.
- OC identifies the chaining bits from the SNA Request/Response header. This Main Menu RU is an Only in Chain (OC) element. Other values could be MC (Middle in Chain), LC (Last in Chain), or FC (First in Chain).
- DR1 identifies the response type as carried in the second byte of the SNA Request/Response Header. In this case, GATEWAY requires a Definite Response Type 1 (DR1) from the terminal to the Main Menu PIU.
- CD indicates that GATEWAY set the Change Direction indicator for this RU. This, in conjunction with the keyboard reset indication in the 3270 data stream, frees the terminal for input.

The first buffer is divided into three segments: SG0000 (Figure 6), SG0001 (Figure 7), and SG0002 (Figure 8).

```

USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ008F SG0000 KLVVTAPI PTERM/GATEWAY
BUF 0338F1A0 000001F8
DAT 7EC31140 401D406D 606D1DC8 40C183A3 899695A2 1DC840D6 97A3 8996 95A21DC8 *-C. .H ACTIONS.H OPTIONS.H*
40C39694 94819584 A21DC840 C1849489 954DD45D 1DC840C5 A789 A34D E75D1DC8 * COMMANDS.H ADMIN(M).H EXIT(X).H*
40C88593 971DE83C C150401D E8606060 60606060 60606060 6060 6060 60606060 * HELP.Y.A& .Y-----*
60606060 60606060 60606060 60606060 60606060 60606060 6060 6060 60606060 *-----*
60606060 60606060 60606060 60606060 60606060 60606060 6060 6000 1D60E2E5 *-----*
E2C5D3C5 D53CC2F9 001DE8C3 D361E2E4 D7C5D9E2 C5E2E2C9 D6D5 40D4 81899540 *VSELI.B9..YCL/SUPERSESSION MAIN *
D48595A4 3CC36100 1D60D496 99857A00 404E3CC3 *MENU.C/..-MORE:..+.C
TIME: A1A92907 C3F2D943 06:42:38.715693
  
```

Figure 6. Main Menu First Buffer Segment SG0000

```

USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ008F SG0001
DAT 6F001D60 3CC65000 1D60E285 938583A3 00A285A2 A2899695 A200 A689 A3880081 *?..-F&.-SELECT.SESSIONS.WITH.A*
1DE87F61 7F1D6096 99008195 008183A3 89969500 83968485 4B3C C8F0 001DE800 *.Y"/"-OR.AN.ACTION.CODE.HO..Y.*
0000E285 A2A28996 9500C9C4 0000C485 A2839989 97A38996 953C C960 00E3A897 *.SESSION.ID..DESCRIPTION.I-.TYP*
853CC9E9 00E2A381 A3A4A23C 4A40001D 60000000 3C4A4E60 0000 3C4A 6E600000 *.E.IZ.STATUS. ....+-.>..*
3C4AF660 00003C4B C1603C4B 50001D40 6D1DE800 C1D4E2C3 C9D4 E23C 4B6000C3 *.6-...A-..&..Y.AMSCIMS.-.C*
C9D4E23C 4BE9404D D7C1E2E2 E3C8D9E4 61D4E4D3 E3E2C5E2 E25D 3C4C 4000D4A4 *.IMS..Z (SINGLE/MULTSESS).< .MU+
93A3893C 4C60001D 406D1DE8 00C1D4E2 D5C5E3E5 C13C4CF0 00D5 C5E3 E5C9C5E6 *LTI.<...Y.AMSNETVA.<0.NETVIEW*
C1404DD7 C1E2E2E3 C8D9E461 D4E4D3E3 E2C5E2E2 5D3C4D50 00D4 A493 *A (SINGLE/MULTSESS).(&.MUL *
TIME: A1A92907 C3F7BA43 06:42:38.715771
  
```

Figure 7. Main Menu First Buffer Segment SG0001

```

USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ008F SG0002
DAT A3893C4D F0001D40 6D1DE800 C1D4E2D5 C5E3E5C2 3C4E4000 D5C5 E3E5 C9C5E6C2 *TI.(0..Y.AMSNETVB.+ .NETVIEWB*
404DD7C1 E2E2E3C8 * (PASSTH
TIME: A1A92907 C3F99643 06:42:38.715801
  
```

Figure 8. Main Menu First Buffer Segment SG0002

The second buffer has a sequence number of SQ0090 and is divided into two segments: SG0000 (Figure 9) and SG0001 (Figure 10 on page 27).

```

USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ0090 SG0000 KLVVTAPI PTERM /GATEWAY
BUF 0338F3A8 000001A8
DAT D9E461D4 E4D3E3E2 C5E2E25D 3C4E6000 D4A493A3 893C4F40 001D 406D 1DE800C1 *R/MULTSESS).+-.MULTI.| ..Y.A*
D4E2D6D7 C5D93C4F 5000D6D7 C5D9C1E3 D6D9404D D7C1E2E2 E3C8 D9E4 61D4E4D3 *MSOPER. &. OPERATOR (SINGLE/MUL*
E3E2C5E2 E25D3C4F F000D4A4 93A3893C 5050001D 406D1DE8 00C1 D4E2 E3E2D6C1 *TSESS).[0.MULTI.&&..Y.AMSTSOA*
3C506000 E3E2D6C1 3C50E940 4DD7C1E2 E2E3C8D9 E461D4E4 D3E3 E2C5 E2E25D3C *&-.TSOA.&Z (SINGLE/MULTSESS).*
D14000D4 A493A389 3CD16000 1D406D1D E800C1D4 E2E3E2D6 C73C D1F0 00E3E2D6 *J .MULTI.J-..Y.AMSTSOG.J0.TSO*
C73CD1F9 404DD7C1 E2E2E3C8 D9E461D4 E4D3E3E2 C5E2E25D 3CD2 5000 D4A493A3 *G.J9 (SINGLE/MULTSESS).K&.MULT*
893CD2F0 001D406D 1DE800C1 D4E2E3E2 D6C23CD3 *I.KO..Y.AMSTSOB.L *
TIME: A1A92907 C3FC7043 06:42:38.715847
  
```

Figure 9. Main Menu Second Buffer Segment SG0000

## Sample Trace of CL/SuperSession Main Menu

```
USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ0090 SG0001
DAT 4000A285 40A3A296 3CD36000 D4A493A3 893CD440 001D406D 1DE8 00C1 D4E2E5E3 * .SE TSO.L-.MULTI.M .._.Y.AMSVT*
C1D4C13C D45000D6 D4E5E3C1 D4C14040 4DD7C1E2 E2E3C8D9 E461 D4E4 D3E3E2C5 *AMA.M&.OMVTAMA (SINGLE/MULTSE*
E2E25D3C D4F000D4 A493A389 3CD55000 1DE8403C F0F0001D E83C F350 001D60C3 *SS).MO.MULTI.N&..Y.00..Y.3&..-C*
96949481 9584407E 7E7E6E1D 403CF44E 001D603C F4D340E2 E8E2 C761 D9F2F0F1 *OMMAND --->. .4+...-4L SYSG/R201*
C2F0F240 1D60C595 A3859940 40C6F17E C8859397 4040C6F3 7EC5 A789 A34040C6 *B02 .-ENTER F1-HELP F3-EXIT F*
F57ED985 869985A2 884040C6 F87EC6A6 844040C6 F97ED985 A399 8985 A5854040 *5-REFRESH F8-FWD F9-RETRIEVE *
C6F1F07E C183A389 96954040 3C404000 114BD113                                *F10=ACTION . . .J. *
TIME: A1A92907 C3FE6C43 06:42:38.715878
```

Figure 10. Main Menu Second Buffer Segment SG0001

The next trace entry, shown in Figure 11, records the physical terminal's response to the Main Menu data.

```
USR4E 3E8 ASCB 00F92900          JOBK KLV
SQ0091 SG0000 KLVVTRXP GATEWAY /PTERM READONLY DATA RSP RF00 00 SQ001E SN00000000 DR1
TIME: A1A92909 0E31AF43 06:42:40.068378
```

Figure 11. Physical Terminal Response to Main Menu

## Sample Trace of a Virtual Session Logon

This record traces the first SNA command that an application sends to the terminal during session initiation. This is a BIND from application VTAMPLUS to virtual terminal VTERM000 (this establishes a virtual session). In the example that follows, VTAMPLUS is the CL/SuperSession operator facility application. There is a concurrent session between GATEWAY and the physical terminal, PTERM (see “Sample Trace of CL/SuperSession Main Menu” on page 24). Applications like the CL/SuperSession operator facility (and TSO, CICS, IMS, etc.) send screens to the virtual terminal on the virtual session. CL/SuperSession then makes sure that these messages are delivered to the physical terminal on the physical session. The physical session is the session between GATEWAY and the physical terminal. The virtual session is the session between the host application (that is, CICS, TSO, etc.) and the virtual terminal.

**Note:** IBM Support requires BIND RUs containing bind images for the physical and virtual sessions in order to analyze VTAM-related problems. Make sure that you have captured BIND information in the trace data before you send it in. BINDs contain critical session rules that the virtual and physical sessions require in order to communicate.

Figure 12 has a sequence number of 000E and a segment number of 0000.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ000E SG0000 KLVVXSC VTERM000/VTAMPLUS READONLY BIND REQ RF0000 SQ0000 SN00000000 0C DR1
RU 31010303 B1903080 008007C7 80000200 00000000 18502B50 7F00000 7 E5E3C1D4 *.....gG.....&.*...VTAM*
D7D3E400 05000003 002308E5 E3C5D9D4 F0F0F060 1AD72B41 DB50CE9 E CB11D5C5 *PLUS.....VTERM000-.P...&.....NE*
E3C9C4F0 F0F14BE7 E7E7C4D9 D4F2F50E 11F3D5C5 E3C9C4F0 F0F14BE 5 E3C1D4D7 *T1D001.XXXDRM25..3NET1D001.VTAMP*
D3E42C0A 01084040 40404040                                *LUS...
TIME: A1AA74D3 345A0143 07:27:04.172960
```

Figure 12. Application Sends BIND to Virtual Terminal

Figure 13 on page 28 is a continuation of the first GTF record. It is segment 0001 of sequence number 000E. It contains the last 13 bytes of data that completes the BIND RU started in the previous record segment.

## Sample Trace of a Virtual Session Logon

```
USR4E 3E8 ASCB 00F5B600          JOBN KLV
SQ000E SG0001
DAT 40402D09 08C4F4C1 F3F2F7F8 F4          * ...D4A32784
TIME: A1AA74D3 34645E43 07:27:04.173125
```

Figure 13. Application Sends BIND to Virtual Terminal (continued)

In Figure 14, VTERM000 issues VTAM macro OPNSEC to accept the BIND. VTAM processes the OPNSEC request by creating an SNA positive response (+RSP) to the BIND.

```
USR4E 3E8 ASCB 00F5B600          JOBN KLV
SQ000F SG0000 KLVVTAPI VTAMPLUS/VTERM000 OPNSEC DATA REQ RF0000 SQ0000 SN00000000 OC DR1
TIME: A1AA74D3 368FBA43 07:27:04.182011
```

Figure 14. Virtual Terminal Accepts BIND and Starts Session

This record contains another common SNA command, Start Data Traffic (SDT), which the application sends after establishing the session. VTAM automatically issues an SNA +RSP to the SDT; no action by VTERM000 is necessary.

```
USR4E 3E8 ASCB 00F5B600          JOBN KLV
SQ0010 SG0000 KLVVTXSC VTERM000/VTAMPLUS READONLY SDT REQ RF0000 SQ0000 SN00000000 DR1
TIME: A1AA74D3 38682641 07:27:04.189570
```

Figure 15. Application Sends Start Data Traffic

The BIND request (Figure 12 on page 27 ) specified bracket protocol. Figure 16 indicates that application VTAMPLUS sent a BID command requesting permission to begin a bracket. This RU carries an SNA sequence number of SQ0001.

```
USR4E 3E8 ASCB 00F5B600          JOBN KLV
SQ0011 SG0000 KLVVTAPI VTERM000/VTAMPLUS RECEIVE BID REQ RF0000 SQ0001 SN00000000 OC DR1
TIME: A1AA74D3 413FEA43 07:27:04.225790
```

Figure 16. Application BIDs to Begin a Bracket

VTERM000 sends a positive response (+RSP) to the BID RU. (SNA sequence number SQ0001, which matches the sequence number in Figure 17, identifies this as a response to the BID.) Essentially, VTERM000 is saying to VTAMPLUS, “OK, you can talk to me.”

```
USR4E 3E8 ASCB 00F5B600          JOBN KLV
SQ0012 SG0000 KLVVTAPI VTAMPLUS/VTERM000 SEND      BID RSP RF0000 SQ0001 SN00000000 OC DR1
TIME: A1AA74D3 645C7A43 07:27:04.369607
```

Figure 17. Virtual Terminal Accepts BID

Figure 18 on page 29 is a three-segment (SQ0013-SG0000, SQ0013-SG0001, SQ0013-SG0002) data message that VTAMPLUS is sending to the virtual terminal. The request (REQ) has an SNA sequence number of SQ0002. It contains the Entry Validation panel, which asks the user to enter a user ID and password. This message is not forwarded to the physical terminal because the initial dialog for APPLDEF VTAMPLUS is in effect.

**Note:** Initial dialogs are specified in the APPLDEF commands; see commands library member(KLSCAPLD). One of their functions is to simulate certain user tasks, such as typing a user ID and password.



## Sample Trace of a Virtual Session Logon

traces are a VTAM application program interface convention and are not related to SNA data traffic in the network.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0022 SG0000 KLVVTAPI VTAMPLUS/VTERM000 RESETSR NEXT 00000000 00000000
TIME: A1AA74D5 ACB0A141 07:27:06.763018
```

Figure 23. Receive Mode Change

Figure 24 indicates that GATEWAY is preparing to send an output message to the PTERM. At this time, the PTERM's keyboard is unlocked and PTERM owns the SNA direction indicator. GATEWAY sends an SNA SIGNAL request to ask PTERM to relinquish the SNA direction indicator.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0023 SG0000 KLVVTAPI PTERM/GATEWAY SEND SIGNAL REQ RF0000 SQ0000 SN00000000 OC DR1
TIME: A1AA74D6 F41D8141 07:27:08.104152
```

Figure 24. GATEWAY SIGNALs for Send Direction

Figure 25 indicates that the physical terminal sends a null RU (that is, no data) with the Change Direction (CD) indication, allowing GATEWAY to start sending data.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0024 SG0000 KLVVTAPI GATEWAY/PTERM RECEIVE DATA REQ RF0000 SQ0003 SN00000000 OC XDRI CD
TIME: A1AA74D6 F42A8C41 07:27:08.104360
```

Figure 25. Physical Terminal Relinquishes Send Direction with Null RU

In Figure 26, GATEWAY delivers the logon message received on the virtual session (Figure 21 on page 29 ) to the physical terminal.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0025 SG0000 KLVVTAPI PTERM/GATEWAY SEND DATA REQ RF0000 SQ0008 SN00000000 OC DR1 CD
DAT F1C311F5 E51DE8C1 60E5E3C5 D9D4F0F0 F0          *1C.5V.YA-VTERM000
TIME: A1AA74D6 F6F87041 07:27:08.115847
```

Figure 26. GATEWAY SENDs Logon Message to Physical Terminal

## Sample Trace of a Virtual Session Logoff

In Figure 27, the user types LOGOFF at the terminal to terminate the session with application VTAMPLUS. This is an Only in Chain (OC) RU with exception response (XDRI) requested and Change Direction (CD) indications. It originated at the physical terminal and its destination is GATEWAY (the physical terminal is always in session with a host PLU application in the CL/SuperSession address space, GATEWAY in this example).

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0037 SG0000 KLVVTAPI GATEWAY/PTERM RECEIVE DATA REQ RF00 00 SQ0007 SN00000000 OC XDRI CD
DAT 7DF2C711 F2C19396 87968686          *'2G.2A1ogoff          *
TIME: A1AA74E0 6CF97E41 07:27:18.036375
```

Figure 27. User Enters Logoff Request from Physical Terminal

In Figure 28 on page 31, GATEWAY issues VTAM macro RESETSR to change the RECEIVE mode.

## Sample Trace of a Virtual Session Logoff

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ003B SG0000 KLVVTAPI PTERM/GATEWAY RESETSR NEXT 00000000 00000000
TIME: A1AA74E0 6E504C41 07:27:18.041871
```

Figure 28. Receive Mode Change

Figure 29 shows the LOGOFF message being forwarded from the virtual terminal to the application. It requests an exception response (XDR1), along with Only in Chain (OC), Change Direction (CD), and Begin Bracket (BB) indications.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ0039 SG0000 KLVVTAPI VTAMPLUS/VTERM000 SEND DATA REQ RF000 0 SQ0002 SN00000000 OC XDR1 BB CD
DAT 7DF2C711 F2C19396 87968686          *12G.2Alogoff *
TIME: A1AA74E0 7E994D43 07:27:18.108564
```

Figure 29. Logoff Request Sent to Application by Virtual Terminal

In Figure 30, VTAMPLUS is sending the last message from its buffers to VTERM000 with Definite Response (DR1), End Bracket (EB), and Only in Chain (OC) indications.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ003A SG0000 KLVVTAPI VTERM000/VTAMPLUS RECEIVE DATA REQ RF0 000 SQ0008 SN00000000 OC DR1 EB
DAT F1C311F2 401DC813 12F5E5          *1C.2 .H..5V *
TIME: A1AA74E0 972D0343 07:27:18.209232
```

Figure 30. Final Application Message Received by Virtual Terminal

In Figure 31, VTERM000 issues a positive response to the previous RU.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ003B SG0000 KLVVTAPI VTAMPLUS/VTERM000 SEND DATA RSP RF0000 SQ0008 SN00000000 OC DR1 EB
TIME: A1AA74E0 A7A65C43 07:27:18.276709
```

Figure 31. Virtual Terminal Positive Response

In Figure 32, GATEWAY delivers the last message received by VTERM000 to the terminal. This RU carries the Change Direction (CD), and the keyboard reset indications which unlock the keyboard and remove the

X-CLOCK/X-SYSTEM message from the display.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ003C SG0000 KLVVTAPI PTERM/GATEWAY SEND DATA REQ RF0000 SQ000C SN00000000 OC DR1 CD
DAT F1C311F2 401DC813 12F5E5          *1C.2 .H..5V *
TIME: A1AA74E0 A8E30A43 07:27:18.281776
```

Figure 32. Final Application Message Sent to the Physical Terminal

In Figure 33, VTAMPLUS sends the UNBIND request to VTERM000, which terminates the virtual session.

```
USR4E 3E8 ASCB 00F5B600          JOBK KLV
SQ003D SG0000 KLVVTXSC VTERM000/VTAMPLUS READONLY UNBIND REQ RF0000 SQ0000 SN00000000 OC DR1
RU 32010000 0000601A D72B41DB 50CE9ECB 11E4E2C3 C1C3D6F0 F14B C3C3 C3C4D9D4 *.....-P...&.....USCAC001.CCCDRM*
F2F5          *25
TIME: A1AA74E0 D2FAA943 07:27:18.454186
```

Figure 33. Virtual Session Termination



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# Index

## A

- ABEND-AID 13
- abends
  - codes and symptoms 7
  - user response 7
- application errors 8

## C

- CL/SuperSession
  - application problems 9
  - main menu trace 24
  - messages 9
  - problems 20
  - procedure trace 21
  - sample trace 24
  - traces
    - on physical sessions 20
    - on virtual sessions 20
- communication
  - definition problems 9
  - traffic 8
- compression problem 9
- console log 14
- conventions, documentation v
- copying 24
- CPU utilization problems 8
- creating
  - SMP list 17
- cursor position 9
- customization
  - ACF2 sites 11
  - areas 11
  - errors 11
  - guidelines 11
  - incorrect output 9
  - operating system 11
  - problem
    - determination 2
    - solving 11
  - processing environment 11
  - resolution 11
  - security system 11
  - VTAM 11

## D

- data format problems 9
- DEBUG 16
- determining problems 2
- diagnostic data loss 19
- dialog
  - loop problems 8
  - producing printed copies 18
- documentation
  - basic requirements 14
  - generating 19
  - guidelines for creating 13
  - problem resolution 11
  - problems 11

- documentation (*continued*)
  - sending documentation to 16
  - z/OS requirements 5
- documentation conventions v
- dumps
  - enabling 15
  - formatting 13
  - forwarding output 13
  - printing dump output 13
  - providing trace table 16
  - SVC 15
  - SYSMDUMP 15
  - SYSUDUMP 15
  - TLSSAMP 15
  - TLVSNAP 15

## E

- enabling dumps 15
- errors
  - customization 11
  - installation 11

## F

- file transfer
  - incorrect output 9
  - problem 9
- format identifier (FID) 23
- format problems 9
- formatting trace records 23

## G

- General Trace Facility 19
  - automating 23
  - with CL/SuperSession 21
- Generalized Trace Facility (IBM) 19
- GTRACE 19
  - facility 19
- GTRACE command 5
- guidelines
  - installation and customization 11
  - problem documentation 13

## I

- IBM Customer Support
  - problem reporting 5
- IBM Problem Report
  - guidelines 13
- IBM problem types
  - abends 7
  - documentation 10
- IBM Support
  - documentation requirements 5
  - dumps 5
  - libraries 5
  - lists 5

- IBM Support (*continued*)
  - logs 5
  - modified dialogs 5
  - modified user exits 5
  - traces 5
- IBM Support Services
  - documentation requirements 13
- IEBGENER 18
- incident number
  - inclusion in the volser 16
- incorrect output 9
  - loops 8
  - messages 8
  - tuning 10
  - waits 8
- installation
  - guidelines 11
  - incorrect output 9
  - problem determination
    - dialog 2
    - maintenance 2
    - operating system 2
    - parameter changes 2
    - software 2
    - user exit 2
  - SMP/E errors 11
  - testing 11
- Interactive System Productivity Facility (ISPF) 18
- internal trace table
  - DEBUG 16
  - eliminating overlay 19
- IPCS GTFTRACE 23
- ISPF
  - See* Interactive System Productivity Facility (ISPF)

## J

- JCL 24
  - for batch IPCS execution 23
  - region 11
  - to create an SMP list 17
  - to enable dumps in z/OS 15
  - to print z/OS trace records 23
  - to trace CL/SuperSession
    - problems 19
- job log
  - description 15

## K

- KLS@CPYM 17
- KLS@IPCS 23
- KLSSYSIN 15
- KLSUSR20 formatter 23
- KLV@ADMP 23
- KLV@GTF 24

## L

- log
  - console 14
  - job 14
  - system 14
  - TLVLOG 14
- LOG statement
  - customization errors 11
  - determination 2
  - location of a problem source 2
  - map 2
- loops
  - causes and symptoms 8
  - counting 8
  - faulty dialogs 8

## M

- maintenance problem determination 2
- map problem determination
  - customization 2
  - dialog modification 2
  - installation 2
  - maintenance 2
  - trace 2
  - user exit modification 2
- message
  - causes and symptoms 8
  - prefixes 8
  - resolving message problems 9
  - types 8
- messages 9
- mode entry definitions 9
- MODEENTS 9
- modification problem
  - determination
    - dialog 2
    - user exit 2
  - resolution 11
- Move under CL/SuperSession 8
- multisession 20

## N

- network configuration 9

## O

- operating system
  - definition overrides 9
  - problems 9
- operator command response 8
- output problems 9

## P

- pass sessions 20
- printed copies of dialogs 18
- printed documentation
  - dialogs 18
  - dumps 13
  - incident number 16
- printed dump output 13

## problem

- determination
  - customization 2
  - dialog modification 2
  - installation 2
  - maintenance 2
  - overview 1
  - trace 2
  - user exit modification 2
- reporting procedure 5
  - documentation requirements 5
- researching 7
- solving
  - abend 7
  - customization 11
  - documentation 10
  - installation 11
  - loop 8
  - output 9
  - tuning 10
  - wait 8
- types
  - abend 5, 7
  - documentation 5, 7
  - loop 5, 7
  - message 5, 7
  - output 5, 7
  - tuning 5, 7
  - wait 5, 7
- problem database 7
- problem documentation and guidelines 13
- problem isolation
  - determining relationships 1
  - IBM problem types 1
  - researching using CECS 7
- problem reporting
  - procedure 5
  - report form 5
  - using CECS 7
- Problem solving overview 7

## R

- reporting problems 5
- researching a problem 7
- RESERVE parameter 11
- return codes 9

## S

- sample traces 24
- sending documentation to 16
- sense codes 9
- service aid 19
- session type 20
- SHUTDOWN ABEND command 7
- SMP list
  - creating 17
  - KLS@CPYM 17
  - SMPLIST 17
- SMP/E
  - installation errors 11
  - SYSMOD listing 14
- SSPL Log 2
- SVC Dump Datasets 16

## SVC Dumps

- allocating DASD 15
- SDUMP option 15
- symbols, use of v
- symptoms
  - abends 7
  - documentation problems 10
  - incorrect output 9
  - loops 8
  - messages 8
  - tuning problems 10
  - waits 8
- SYSMDUMP 15
- SYSOUT command 15
- system
  - light on 8
  - log
    - description 14
    - performance 16
- SYSUDUMP 15

## T

- terminal definitions for z/OS 9
- terminal locked 8
- TLSSAMP 15, 19
  - IPCUSR20 member 23
  - KLS@CPYM member 17
  - KLSUSR20 member 23
  - KLV member 15
  - KLV@ADMP member 23
  - KLV@GTF member 24
- TLVLOG 14
- TLVSNAP 15
- trace table 16
- traces 19
  - analyzing data 24
  - CL/SuperSession 20
  - determination
    - CL/SuperSession 20
  - determining which facility to use 20
  - documentation required 2
  - enabling the trace table 16
  - facilities 19
  - formatting records 23
  - General Trace Facility 19
  - output description 19
  - records 20
  - sample with Virtual Session logoff 27
  - sample with Virtual Session logon 27
  - samples 24
  - starting 20
  - stopping 20
  - VSSTRACE facility 20
- tracing 19
  - CL/SuperSession problems 21
- tuning
  - problems 10

## U

- U0000 abend 7
- U0004 abend 7
- U0008 abend 7
- U0012 abend 7
- U0100 abend 7

- U0200 abend 7
- unexpected responses 9
- USR
  - option 20
  - record 20

## V

- VIGIBC 9
- virtual terminal
  - logoff sample trace 30
  - logon sample trace 27
- volser and incident number 16
- VSSTRACE 5
  - automating 23
  - description 20
  - with CL/SuperSession 21

## W

- waits 8

## Z

- z/OS
  - enabling dumps in 15
  - printed copies of dialogs 18
- z/OS IPCS requirements 23







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