

Digital SNA 3270 Data Stream Programming Interface for OpenVMS

Problem Solving

Part Number: AA-NF58C-TE

May 1996

This document describes how users of the Digital SNA 3270 Data Stream Programming Interface can solve problems they might encounter in the day-to-day operation of this product.

Revision/Update Information: This is a revised manual.

Operating System and Version: OpenVMS VAX Versions 6.1, 6.2, or 7.0
OpenVMS Alpha Versions 6.1, 6.2, or 7.0

Software Version: Digital SNA 3270 Data Stream
Programming Interface for OpenVMS,
Version 1.5

May 1996

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation or EDS. Digital Equipment Corporation or EDS assumes no responsibility for any errors that may appear in this document.

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

No responsibility is assumed for the use or reliability of software on equipment that is not supplied by Digital Equipment Corporation or its affiliated companies.

Digital conducts its business in a manner that conserves the environment.

Restricted Rights: Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013.

Copyright © 1988, 1996 Digital Equipment Corporation, EDS Defense Limited
All Rights Reserved.

The following are trademarks of Digital Equipment Corporation:

Alpha, DEC, DEC/CMS, DEC/MSS, DECnet, DECSYSTEM-10, DECSYSTEM-20, DECUS, DECwriter, DIBOL, EduSystem, IAS, MASSBUS, OpenVMS, PDP, PDT, RSTS, RSX, UNIBUS, VAX, VAXcluster, VMS, VT, and the Digital logo.

IBM and OS/2 are registered trademarks of International Business Machines Corporation.
MS-DOS is a registered trademark of Microsoft Corporation.

Contents

Preface	v
1 Solving 3270 DS Interface Problems	
1.1 Problem 1: Compile Time Errors	1-3
1.2 Problem 2: Undefined Symbols in the Application Program	1-4
1.3 Problem 3: Invalid Parameters in Application Program	1-5
1.4 Problem 4: Faulty Parameter Contents	1-6
1.5 Problem 5: Application cannot Attach to CICS	1-7
1.6 Problem 6: Status Message Occurs When Executing Procedures	1-8
1.7 Problem 7: Lost or Incorrect Data	1-9
1.8 Problem 8: Data Rejected When Using Field Mode	1-10
1.9 Problem 9: Cannot Locate Fields When Using Field Mode	1-11
1.10 Problem 10: BUGCHECK Error Occurs When Running Application	1-12
1.11 Problem 11: Application Hangs	1-13

Preface

The Digital SNA 3270 Data Stream Programming Interface (3270 DS Interface) enables OpenVMS users to communicate with programs running on an IBM host. The interface allows you to develop applications on an OpenVMS system that require support for an IBM SNA logical unit (LU) type 2 session. Access to the IBM SNA network is through one of the following transport products:

- DECnet SNA Gateway-ST
- DECnet SNA Gateway-CT
- Digital SNA Domain Gateway
- Digital SNA Peer Server
- OpenVMS SNA (OpenVMS VAX Version 6.1 and Versin 6.2 only)

Manual Objectives

This document describes how users of the 3270 DS Interface can solve problems they might encounter in the day-to-day operation of this product. The material in this book reflects the experience of the product developers. The solutions are not necessarily the only ones that will solve a particular problem, and not every possible problem is discussed.

Intended Audience

This book is designed to help system managers solve problems with the 3270 DS Interface. Readers of this book must have a working knowledge of the Digital and IBM systems that they will be using.

Associated Documents

The following is a list of documents related to this product:

- *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Installation*
- *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Problem Solving*
- *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming*

You should have the following Digital documents available for reference when you use the Application Programming Interface:

- *Digital SNA Domain Gateway Installation*
- *Digital SNA Domain Gateway Management*
- *Digital SNA Domain Gateway Guide to IBM Resource Definition*
- *DECnet SNA Gateway Problem Determination Guide*
- *DECnet SNA Gateway-CT Installation*
- *DECnet SNA Gateway-CT Problem Solving (OpenVMS & ULTRIX)*
- *DECnet SNA Gateway-CT Management (OpenVMS)*
- *DECnet SNA Gateway-CT Guide to IBM Parameters*
- *DECnet SNA Gateway-ST Installation*
- *DECnet SNA Gateway-ST Problem Solving (OpenVMS)*
- *DECnet SNA Gateway-ST Guide to IBM Parameters*
- *DECnet SNA Gateway Management for OpenVMS*
- *Digital Peer Server Installation and Configuration*
- *Digital Peer Server Management*
- *Digital Peer Server Network Control Language Reference*
- *Digital Peer Server Guide to IBM Resource Definition*
- *OpenVMS SNA Installation*
- *OpenVMS SNA Problem Solving*
- *OpenVMS SNA Guide to IBM Parameters*
- *OpenVMS SNA Management*

- *OpenVMS SNA Problem Determination Guide*

See the following documents for more information about the IBM 3270 Information Display System:

- *ACF for VTAM Version 2, Messages and Codes* (IBM Order No. SC27-0614)
- *IBM 3270 Information Display System and 3274 Control Unit Description and Programmer's Guide* (IBM Order No. GA23-0061)
- *IBM 3287 Printer Models 1 and 2 Component Description* (IBM Order No. GA27-3153)
- *MVS/TSO/VTAM Data Set Print Program Description/Operations Manual* (IBM Order No. SB21-2070)
- *IBM 3270 Information Display System*, Order No. GA23-0060
- *IBM 3270 Information Display System Data Stream Programmer's Reference*, Order No. GA23-0059
- *Systems Network Architecture—Introduction to Sessions Between Logical Units*, Order No. GC20-1869
- *Systems Network Architecture—Sessions Between Logical Units*, Order No. GC20-1868
- *IBM 3270 Information Display System: Operator's Guide*, Order No. GA27-2742

Graphic Conventions

This manual uses the following conventions:

Convention	Meaning
CAPITAL LETTERS	Represent constant values, or symbols. Code these exactly as they are specified.
lowercase italics	Represent variables for which you must supply a value.

Convention	Meaning
[]	<p>Square brackets enclose parameters or symbols that are either optional or conditional. Specify the parameter and value if you want the condition to apply. Do not type the brackets in the line of code. The following rules generally apply to parameters:</p> <ul style="list-style-type: none"> • You may code or omit an optional parameter. Omitting an optional parameter may impact a related parameter or may cause a default value to be specified. • You may code or omit a conditional parameter. Your choice is determined by how other parameters are coded.
()	<p>Parentheses delimit the argument list. The arguments must be typed in the line of code in the order indicated. Parentheses must be typed where they appear in a line of code.</p>
Special type	<p>Examples of system output and user input are printed in this special type.</p>
Numbers	<p>Numbers are decimal unless otherwise noted.</p>
<code>RET</code>	<p>Unless otherwise specified, every command line is terminated by pressing the RETURN key.</p>
<code>CTRL/x</code>	<p>Control characters are shown as <code>CTRL/x</code>, where <i>x</i> is an alphabetic character. The CTRL key and the appropriate key should be pressed simultaneously.</p>

1

Solving 3270 DS Interface Problems

This chapter discusses problems that may occur when you are using the Digital SNA 3270 Data Stream Programming Interface for OpenVMS. Each page presents a problem and possible solutions for the problem. The following table lists the 3270 DS Interface problems discussed in this chapter.

Note

If you have access to the Digital SNA 3270 Terminal Emulator for OpenVMS, you can use it to help diagnose problems you might have with the 3270 DS Interface. Mimic the operation of the application with the terminal emulator and compare a trace of the emulator with a trace of your application. This procedure should indicate areas where you are having difficulties.

Problem Number	Symptom
1	You get compile time errors with your 3270 DS Interface program.
2	The linker indicates that the 3270 DS Interface symbols in your program are not defined.
3	You receive an error status stating that a particular parameter is invalid.
4	You receive an error status stating that the contents of a particular parameter is faulty.
5	Your session is successfully established, but you cannot request the required IBM subsystem (CICS) application.
6	You receive an SNA3270\$_NYTXMIT status message form SNA3270\$TRANSMIT_STREAM or SNA3270\$TRANSMIT_SCREEN.
7	You are either loosing the first 10 bytes of data in the data stream, or the data looks incorrect.
8	When you use the field mode. IBM rejects your data stream.
9	You have difficulty locating fields when you use field mode.
10	You receive BUGCHECK error when your application is running.
11	You application hangs (for example, it enters either the LEF or MWAIT state).

1.1 Problem 1: Compile Time Errors

Problem:

You get compile time errors with your 3270 application.

Solution:

This problem could result from one of the following errors:

- Spelling errors in your code
- Incorrect use of definitions

Make sure you include one of the following statements in your application program:

```
INCLUDE SNA3270DF.*
```

Or

```
REQUIRE SNA3270DF.*
```

Where the choice of INCLUDE or REQUIRE and the file type are language-dependent (see the appropriate programmer's guide for the language you are using).

1.2 Problem 2: Undefined Symbols in the Application Program

Problem:

The linker indicates that the 3270 DS Interface symbols in your program are not defined.

Solution:

Make sure that you have linked to the 3270 DS Interface shareable image section. The following command sequence produces the proper results:

```
$ LINK/MAP test SYS$INPUT/OPTIONS 
```

```
SYS$SHARE:SNA3270SH/SHARE 
```

Where

test is the name of your program.

1.3 Problem 3: Invalid Parameters in Application Program

Problem:

You receive an error status stating that a particular parameter is invalid.

Solution:

An invalid parameter error status may indicate that supplied a parameter in an incorrect form. This error could result from passing the parameter by descriptor when you meant to pass it by reference. Check your code.

If you cannot find the problem, one possible solution is to link your program with a debugger. Set a breakpoint at the entry to the 3270 data stream routing you think may be causing the problem. The following example illustrates this process.

Example:

SNA3270\$REQUEST_CONNECT is the routing you suspect is causing problems. Enter the following commands after you invoke the debugger:

```
DBG> SET LANGUAGE BLISS
DBG> SET BREAK SNA3270$REQUEST_CONNECT
```

When you reach the breakpoint, enter the following command (for OpenVMS VAX systems) to examine the arguments passed to the routine in question (SNA3270\$REQUEST_CONNECT).

```
DBG> EXAMINE .AP: .AP+20
```

This command displays the first 8 parameters in the argument block. The first longword of the argument block contains the number of parameters that were passed to the SNA3270\$REQUEST_CONNECT routine. The second and subsequent longwords contain the first and subsequent parameters that were passed to the SNA3270\$REQUEST_CONNECT routine. Examine these parameters for help in locating the problem.

For more information on using the debugger, refer to the *OpenVMS Debugger Reference Manual*.

1.4 Problem 4: Faulty Parameter Contents

Problem:

You receive an error status stating that the contents of a particular parameter is faulty.

Solution:

See the explanation of the particular error status in the *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming* manual.

1.5 Problem 5: Application cannot Attach to CICS

Problem:

Your session is successfully established, but you cannot request the required IBM subsystem (CICS) application.

Solution:

Check that you have translated the application name to EBCDIC.

1.6 Problem 6: Status Message Occurs When Executing Procedures

Problem:

You receive an SNA3270\$NYTXMIT status message from SNA3270\$TRANSMIT_STREAM or SNA3270\$TRANSMIT_SCREEN.

Solution:

The SNA3270\$NYTXMIT status message indicates that it is not your turn to transmit. To trace the execution of the interface procedures you have called, display the data you received in the status vector (refer to the *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming* manual for more information about status vectors). If the trace shows an SNA3270\$OK_MORE or SNA3270\$OK_NYT status message returned from the SNA3270\$TRANSMIT_STREAM or SNA3270\$TRANSMIT_SCREEN, you must receive more data before you can transmit.

If the trace shows that the 3270 DS Interface called the notify routine because SNA327\$K_EVT_TURNGONE event occurred, the primary logical unit (PLU) is retracting its permission to send. You may be able to prevent this event with the SNA3270\$LOCK_SCREEN procedure (refer to the *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming* manual for more information).

1.7 Problem 7: Lost or Incorrect Data

Problem:

Either you are losing the first 10 bytes of data in the data stream, or the data looks incorrect.

Solution:

The first 10 bytes of the transmitted data stream are composed of 7 bytes of header information, 1 byte of AID key code, and 2 bytes of cursor address. Similarly, the first 9 bytes of received data are composed of 7 bytes of header information, 1 byte of write command, and 1 byte of write control code. You must remember to offset past this information before examining the data stream (see sections 2.3.1 and 2.3.2 of the *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming* manual for more information on transmitting and receiving a 3270 data stream).

If you are still having difficulty with your data stream, run SNATRACE or CTF as described in the relevant SNA Gateway documentation, and examine the data that is actually being transmitted and received. Verify that the data contents is correct. SNATRACE is for DECnet SNA Gateways only. CTF is for Digital SNA Domain Gateways and Digital SNA Peer Server.

1.8 Problem 8: Data Rejected When Using Field Mode

Problem:

When you use field mode, IBM rejects your data stream.

Solution:

Check that your code is not modifying the character or attributes vectors. If the vectors are used incorrectly, the data stream will be corrupted and IBM will reject it. Let the 3270 DS Interface make changes to the vectors by calling `SNA3270$READ_FIELD` and `SNA3270$WRITE_FIELD`.

1.9 Problem 9: Cannot Locate Fields When Using Field Mode

Problem:

You have difficulty locating fields when you use field mode.

Solution:

Write a program to analyze the fields on the screen where you are trying to locate a field. The FORTRAN example in Section 5.1 of the *Digital SNA 3270 Data Stream Programming Interface for OpenVMS Programming* manual provides a model that you can customize and use to analyze the location of the fields on a screen.

1.10 Problem 10: BUGCHECK Error Occurs When Running Application

Problem:

You receive a BUGCHECK error when your application is running.

Solution:

If you receive a BUGCHECK error when your application is running, check the following:

- Be sure that your application is not writing into memory that has been allocated by the 3270 DS Interface for its own use.
- Be sure that you are using dynamic memory correctly. If you have deallocated a piece of memory, be sure that you are not still writing to it.

1.11 Problem 11: Application Hangs

Problem:

Your application hangs (for example, the application enters either the LEF or MWAIT state).

Solution:

Check the size of your process quotas, particularly the ASTLM quota. They may be too small.

