



CHAPTER

44

FAQs, Tips, and Troubleshooting

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Introduction

This section answers questions you may have about using SAS/CONNECT software. The questions are grouped to help you find the ones that are most pertinent to your use of SAS/CONNECT. You may find it helpful to scan all of the questions to determine which ones are relevant to your tasks and to become familiar with some of the more common questions.

General Questions

SAS Software Products

Both SAS/CONNECT and SAS/SHARE provide services in a client/server environment. However, there are well-defined differences between the functionality of SAS/CONNECT and that of SAS/SHARE. Mapping these characteristics with the requirements of an application should enable you to determine which product you need to get the job done. In many cases, you might find that you want to combine functionality from both products.

Question

What is SAS/CONNECT software?

Explanation

SAS/CONNECT software enables a SAS session on one host to create a SAS session on another host and use that remote session to access remote data and execute SAS statements.

SAS/CONNECT software provides various services for the client/server environment:

- Remote compute services allow you to submit SAS statements to the remote session for execution and get the results back in the local session.
- Remote library services (RLS) allow you to access SAS data on a remote host (regardless of machine architecture) as if it were local.
- Data transfer services allow you to explicitly upload and download files from one host to the other (including SAS data files and catalogs, external data files, and binary files).
- Messaging Services allow programs, which compose a distributed application, to communicate by sending data in the form of a message to each other.
- Remote Objecting Services are used by SAS/AF developers to distribute selected partitions of their encapsulated object frameworks across remote session boundaries.
- Agent Scheduling Services are used as a client/server-based implementation of a periodic job scheduler that has extension to support on-demand execution.

Question

What is SAS/SHARE software?

Explanation

SAS/SHARE software provides a multi-user client/server environment for the SAS System. The multi-user server provides concurrent update access to SAS data for local and remote users across the enterprise. The server also provides remote users with low-overhead connectivity for reading SAS data.

SAS/SHARE software consists of two procedures and a SAS I/O engine:

- PROC SERVER is the multi-user SAS server. It runs in its own SAS session and waits for requests from clients.
- PROC OPERATE is the server administration tool. It displays and controls the status of a server, the libraries accessed through it, and the users connected to it.
- The REMOTE engine handles SAS library and SAS file I/O requests by forwarding them to a SAS server. Combined with SAS software inter-host connectivity, the REMOTE engine enables remote access to SAS data; combined with the multi-user server, it enables concurrent update access to SAS data.

Question

What is the difference between SAS/CONNECT software and SAS/SHARE software?

Explanation

SAS/CONNECT software puts the full power of the SAS System at your disposal on the remote host. You can send work to it and get back the results, use it to download or upload data, or access remote data through it as if it were local. If you license SAS/ACCESS software on the remote host, you can also update DBMS data. However, update access to SAS data through the remote session requires that the remote session have exclusive access to the data.

SAS/SHARE software, by contrast, provides a multi-user data server which permits access to remote data as if it were local and concurrent update access to that data by multiple client SAS sessions. You cannot send arbitrary work to a SAS/SHARE server to be performed, and you cannot update DBMS data, but you can share SAS libraries, data sets, and catalogs with other users in update mode.

Question

What is the difference between creating a SAS/CONNECT remote session and connecting to a remote SAS/SHARE server?

Explanation

A SAS/CONNECT remote session is a dedicated SAS session on the remote host. This session is exclusively yours. You create the remote session when you need it, and terminate it when you are finished with it.

A remote SAS/SHARE server is a single SAS session that is shared by many users for the purpose of local access to remote data. The server reads and writes data on behalf of its users but typically has its own privileges and permissions. The server must already be running when you try to connect to it and continues to run after you disconnect from it. The server is started by an administrator or as part of system start-up.

Question

How is the REMOTE engine distributed?

Explanation

The REMOTE engine is distributed with base SAS software. You must license either SAS/CONNECT or SAS/SHARE software in order to use it. Licensing either product on the local (client) machine allows you to use it to access data through a SAS/SHARE server. Of course, SAS/SHARE software must be licensed on the remote (server) machine.

Question

What is remote library services?

Explanation

Remote library services (RLS) is a feature of SAS/CONNECT and SAS/SHARE software that allows you to access SAS data on a remote host (regardless of machine architecture) as if it were local. The REMOTE engine sends requests either to a single-user SAS/CONNECT server that runs in a SAS/CONNECT remote session or to a multi-user SAS/SHARE server that runs in its own SAS session on the remote host.

License Question**Question**

I have end users with desktop machines who just need read-only access to SAS data on a mainframe or on a UNIX workstation. Because they only need read access, not update access, should I license only SAS/CONNECT software on the client and server machines?

Explanation

Not necessarily. If your users need remote computing services on a mainframe or on a UNIX workstation or if they need bulk data transfer services between the platforms, you need SAS/CONNECT software on the desktop (local) and remote (mainframe or UNIX) hosts. However, if you have a number of users who only need to read remote data, you can avoid the overhead of a SAS/CONNECT sign on for each of those users by licensing SAS/SHARE software on the remote hosts and SAS/CONNECT or SAS/SHARE on the local host. The users can use remote library services to connect directly to the SAS/SHARE server on the remote platform and access subsets of the data more quickly.

Signing On**Packet-Failure Message****Problem**

You are signing on to a 3270 connection by means of an IBM 3174 control unit, and you receive the following message:

```
Received host T packet reason ?
M outbound packet failure
```

Explanation

The File Transfer Aid option (option 125) of the 3174 control unit must have digit 6 set to 1. Refer to pages 316 through 317 of the IBM *3174 Subsystem Control Unit Customizing Guide* (order number GA23-0214) for information about setting this option.

Absence of SAS Software Start-up Messages

Problem

While signing on to a remote session, you receive the following message:

```
ERROR: Did not get SAS software startup messages
```

Explanation

This message occurs if the command to invoke SAS software on the remote host is not correct in the script file that is being used for signing on. Look at your script file and make sure that the TYPE statement that invokes SAS software on the remote host uses the correct SAS command for your site. At some sites, the command to invoke SAS software is not the default command name SAS.

Host-Not-Active Message

Problem

While signing on to a remote session, you receive the following message:

```
ERROR: Did not get Host prompt.
Host not active.
```

Explanation

If you are signing on to a 3270 connection, one of the following actions may overcome the problem:

- If you are using OS/2, Windows 3.x, or Windows 32s on the local host, switch to your remote host session and look for any terminal error messages that may appear there. Respond to these messages and switch back to the local SAS session.
- Make sure you are at the remote prompt before attempting to sign on. For example, if the remote host is running TSO, you must not be in an ISPF session. SAS/CONNECT expects the TSO READY prompt.
- Look at the script that you used for signing on, to ensure that the character string in the WAITFOR statement that tests for the remote system prompt, exactly matches a character string that normally appears on the remote screen. The WAITFOR statement is case sensitive.
- If you do not find any errors after checking the previous items in this list, modify the script file at the location where the error message appears in the file. Add a SNAPSHOT statement before the LOG statement that produces the error message. The SNAPSHOT statement sends a copy of the remote screen to the Log window or the file on the local host. You can examine the SAS log on the local host to see what is displayed by the remote host at the time that the WAITFOR statement executes.

If you are signing on to a TELNET or a TCP/IP connection, one of the following actions may overcome the problem:

- Look at the script that you used for signing on, to ensure that the character string in the WAITFOR statement that tests for the remote system prompt, exactly matches a character string that normally appears on the remote system. The WAITFOR statement is case sensitive.
- Look at the value of the REMOTE= option on the local host to be sure it specifies the correct IP address.
- If you do not find any errors after checking the two preceding items, modify the script file by adding a TRACE ON statement and an ECHO ON statement at the beginning of the script file. These statements send a copy of the remote screen to the Log window or to a file on the local host. You can examine the SAS log on the local host to see what is displayed by the remote host at the time the WAITFOR statement executes.

Requested-Link-Not-Found Message

Problem

While signing on to a remote session from a local OS/390 host, you receive the following message:

```
ERROR: XMS Communication Failure:
        requested-link XVT not found.
```

Explanation

This error occurs if the COMAMID= value is not submitted on the local OS/390 host when a SIGNON is initiated from OS/390. To resolve this error, submit the COMAMID= option before attempting the SIGNON.

OS/2 Support

For SAS/CONNECT users on OS/2, the following topics will answer your questions about communications packages, the alarm that sounds when signing on, hardware and software requirements, and local area networks. These topics are covered in the following sections.

Alarm While Signing On

Question

Can you turn off the alarm that sounds when you are establishing a link with a 3270 connection?

Answer

Yes. Refer to the documentation for your communications package.

Local Area Networks

Question

For 3270 connections, does SAS/CONNECT work with local area networks?

Answer

If the 3270 network software is functional with your remote host, SAS/CONNECT works by means of the network. SAS/CONNECT communicates by using the EHLLAPI interface, which handles 3270 communications with the network.

Configuration for Token Ring Networks

Question

For 3270 connections, what configuration is required for SAS/CONNECT to support a Token Ring network?

Answer

SAS/CONNECT does not require any special configuration. The Token Ring network configuration requires a 3174 control unit or a 37x5 control unit directly on the Token Ring network to be able to emulate a 3270-type terminal that uses OS/2 on a Token Ring network.

SAS/GRAPH Software

When SAS/CONNECT and SAS/GRAPH are used together, questions may develop concerning the transfer of catalog entries that contain graphics output, the effect of an IBM 3274 control unit on the graphics display, requirements for the GRLINK driver, insufficient memory messages, the need for a graphics adapter, and options for displaying graphs on the local host. These issues are discussed in the following sections.

IBM 3274 Controller

Question

Does the IBM 3274 control unit have to be customized for graphics in order to use the GRLINK device driver?

Answer

No. Special hardware or configuration is not needed because SAS/CONNECT passes data by using packets. The IBM 3274 control unit has no effect on the remote processing of graphics. You also do not need 3270 emulation software with graphics capabilities. You do need SAS/GRAPH on both your remote host and your local host for remote graphics processing. SAS/GRAPH uses the graphics capabilities of the PC to display the graphics created by the remote host.

Graphics Adapter

Question

Is it possible to transfer graphics catalogs, and is a graphics adapter required?

Answer

Yes. You can transfer graphics catalogs by using one of the following methods:

- Use the INCAT and OUTCAT options with the UPLOAD and DOWNLOAD procedures. See Chapter 17, “The UPLOAD Procedure,” on page 107 and Chapter 18, “The DOWNLOAD Procedure,” on page 129.
- Use the GRLINK facility. See “Example 3. Compute Services: Remote Graphics Processing” on page 40. If you choose the GRLINK facility, locally submit the following statement on the local host to transfer the catalog entries without viewing any graphs:

```
goptions nodisplay;
```

Whichever method you use, a graphics adapter is not required.

Requirements for the GRLINK Device Driver

Question

Do you need SAS/GRAPH on a remote host in order to use the GRLINK device driver?

Answer

Yes. SAS/GRAPH is required on both the local host and the remote host.

Rotating Graphics

Question

How can you rotate a graph when you display it on the local host or on an attached hardcopy device?

Answer

GOPTIONS ROTATE should be specified in the local session to rotate the graph. Do not specify GOPTIONS ROTATE in the remote session.

Changing Background Color

Question

How do you change the background color for a graph that you create on the remote host and display on the local host?

Answer

Specify the following statement in the local SAS session before remote-submitting the graphics step:

```
goptions cback=color;
```

Miscellaneous Questions and Problems

The following sections address the miscellaneous questions that may develop as you use SAS/CONNECT.

DOWNLOAD and UPLOAD Procedures

Problem

During a PROC DOWNLOAD or a PROC UPLOAD step, you receive the following error message:

```
ERROR 200-322: The symbol is not recognized.
```

Explanation

This problem occurs if the remote file that is being referenced by the INFILE or the OUTFILE option begins with a special character and is specified as FILEREF(*filename*), for example:

```
PROC UPLOAD INFILE=pcflref
            OUTFILE=hstflref($filename);
run;
```

To avoid the problem, put single quotes (') around the filename, as shown in the following example:

```
PROC UPLOAD INFILE=pcflref
            OUTFILE=hstflref('$filename');
run;
```

Problem

You transfer a *variable* block binary file that has a record length (LRECL) greater than 256 bytes, and SAS/CONNECT segments the file into multiple 256-byte records. For example, downloading a binary file that has an LRECL of 1024 results in four 256-byte records.

Explanation

The data is not lost when the file is segmented by SAS/CONNECT. Using the LRECL option in the remote or the local FILENAME statement does *not* avoid this problem. To avoid the problem, follow these steps:

- 1 Define the OS/390 FILENAME statement by using the RECFM=U parameter.

```
FILENAME VFILE 'VARIABLE.BLOCK.FILE' RECFM=U;
```

- 2 Use the DOWNLOAD procedure with the BINARY option to transfer the file. Information displayed in the local Log windows regarding the transfer shows how many bytes were transferred. For example:

NOTE: 1231 bytes were transferred at
1231 bytes/second.

- 3 On the local host, use the RECFM= and the LRECL= options in the INFILE statement, which points to the transferred file, where RECFM is set to S370VB and LRECL is set to the number of bytes that are transferred.

Problem

You transfer a *fixed* block binary file that has a record length (LRECL) greater than 256 bytes and SAS/CONNECT segments the file into multiple 256-byte records. For example, downloading a binary file that has an LRECL of 1024 results in four 256-byte records.

Explanation

The data is not lost when the file is segmented by SAS/CONNECT. Using the LRECL option in the remote or the local FILENAME statement does *not* avoid this problem. To avoid the problem, follow these steps:

- 1 Use the DOWNLOAD procedure with the BINARY option to transfer the file.
- 2 The INFILE statement that is used to read in the transferred file *must* contain the options RECFM=F and LRECL=xxxx, where LRECL is equal to the LRECL parameter on the remote system.

Problem

When you use DOWNLOAD on a print file, the EBCDIC carriage-control character 'F1'x is not downloaded.

Explanation

To avoid the problem, change the SAS system option FILECC to NOFILECC. The NOFILECC option indicates that the data in column 1 of a printer file should be treated as data and not carriage control. For SAS software Releases 6.07 and 6.08, the default setting is NOFILECC. Earlier releases use FILECC as the default setting, and you must change it to NOFILECC to DOWNLOAD 'F1'x successfully. In addition, the DCB characteristics of the print file must include a RECFM of FBA or VBA.

Problem

The DOWNLOAD procedure does not translate the carriage-control character F1 that occurs in the external file that you downloaded.

Explanation

The OS/390 carriage-control character 'F1'x should be translated to ASCII '31'x, instead, it is translated to ASCII '20'x.

ASCII '31'x is 1. It is not possible to DOWNLOAD an external file and convert the OS/390 carriage-control character 'F1'x to the ASCII carriage-control character 'OD'x. The OS/390 EBCDIC value would have to be 'OD'x to convert to ASCII 'OD'x. If '31'x is missing, refer to the previous problem.

Remote Submit Events

Problem

The first time that you remote submit a PROC statement, you receive the following message:

```
ERROR 2-12: Invalid option.
```

Explanation

The remote AUTOEXEC.SAS file contains an OPTIONS statement that has not been closed by a semicolon (;). To avoid this problem, add the semicolon (;) to the OPTIONS statement in the remote AUTOEXEC.SAS file.

Problem

After signing on by using the NOTERMINAL option, which is specified for the remote host, a requestor window appears when a LIBNAME statement that uses the WAIT= option is remote-submitted.

Explanation

To prevent this window from appearing, specify the NOFILEPROMPT SAS system option on the remote host.

Problem

After you start a SAS/CONNECT session by using the NOTERMINAL option, any remote-submitted statements that follow a syntax error are only parsed and not processed.

Explanation

When a SAS/CONNECT session is started with the NOTERMINAL option, the internal option \$SYNTAXCHECK is automatically set. If you remote-submit a statement that follows a syntax error, the statement is parsed but not processed. In the following example,

```
data a;
  do i=1 to 10;
    outpt;
  end;
run;
data b;
  x=1;
run;
```

data set A is not created because of the syntax error that is caused by OUTPT. Data set B is not created because SAS software is in syntax check mode from the previous OUTPT syntax error. The DATA step will only be parsed.

To avoid this problem, add the NO\$SYNTAXCHECK option to the remote SAS system invocation options in the script file.

Problem

You cannot remote-submit code that uses square brackets because the keyboard on your local host does not support these characters.

Explanation

The less than (<) and greater than (>) symbols can be used in place of square brackets. Use < for the left square bracket ([) and > for the right square bracket (]).

In OpenVMS Alpha, square brackets are typically used to delineate the directory name in a path name. However, you can use < and > as equivalent delimiters. For example:

```
libname sales 'disk:<sales.years.1991>';
```

Problem

After remote-submitting a full-screen procedure, you receive the following message:

```
ERROR: No terminal connected to the SAS session.
```

Explanation

SAS/CONNECT does not support remote submission of full-screen procedures.

Problem

When remote submitting a JCL batch job under OS/390 when using Release 6.08 of SAS, you receive the following message:

```
JOB OPTIONS(JOB01501) SUBMITTED ***.
```

Explanation

A Break window appears on the local host display and explains that a message was received from the remote host. Press ENTER on the remote host and select **CONTINUE** from the local Break window.

When remote submitting a JCL batch job under OS/390 when using Release 6.07 of SAS, the message does not appear on the remote host; therefore, the Break window does not appear. A beep sounds, but the remote submit continues uninterrupted.

The following is an example of a remote submission of a JCL batch job:

```
DM 'RSUBMIT';
  X 'SUBMIT JOBS.CNTL(OPTIONS)';
ENDRSUBMIT;
```

Note: If remote submit is not used and the JCL batch job is submitted from either Release 6.07 or Release 6.08 of SAS under OS/390, the message *does* appear. Press ENTER to continue SAS software processing. △

To avoid receiving the above message and the interaction that is required to clear it, you can direct your JCL to the internal reader. The FILENAME statement can be used in place of the TSO ALLOCATE or the JCL DD statement. A sample SAS program that uses the FILENAME statement to write to an internal reader is:

```
rsubmit;
```

```

/*****/
/* filename to point to JCL code */
/*****/
filename injcl '.misc.jcl' disp=shr;

/*****/
/* filename to internal reader */
/*****/
filename outrdr sysout=a pgm=intrdr
recfm=fb lrecl=80;

/*****/
/* data step to submit job to batch */
/* queue */
/*****/
data _null_;
infile injcl(myjcl);
file outrdr noprint notitles;
input;
put _infile_;
run;

/*****/
/* filename to clear */
/*****/
filename outrdr clear;
endrsubmit;

```

Servers

Question

Does SAS/CONNECT provide both single and multi-user services?

Explanation

SAS/SHARE is the only software in the SAS System that provides multi-user update access to SAS data libraries or SAS files. However, SAS/CONNECT is the only SAS software that gives you compute services, data transfer services, and single-user RLS.

Question

How do I initialize a server?

Explanation

Single-user Server

Execution of the LIBNAME statement initializes the server.

Multi-user Server

The server is initialized and controlled by the system administrator. The LIBNAME statement connects to a pre-existing server.

Question

How are the two servers different?

Explanation

Single-user Server

- gives single-user access to a dedicated server.
- with SAS/ACCESS, gives read or write access to data (the user can update data).
- connecting to the server requires the SIGNON statement followed by a LIBNAME statement that names the REMOTE engine.

```
SIGNON <rsessid>;
LIBNAME <libref> REMOTE
      <'datalib'> SERVER=<rsessid>;
```

Multi-user Server

- gives multi-user, concurrent access to a server.
- with SAS/ACCESS, gives read only access to data (users cannot update data).
- connecting to the server requires a LIBNAME statement that names the REMOTE engine.

```
LIBNAME <libref> REMOTE <'datalib'>
      SERVER=serverid;
```

Macros

Question

Why is it that a macro will execute on a local host but sometimes not on a remote host?

Explanation

This has been observed when a macro does *not* end with a semicolon, and it is the last line in an invocation RSUBMIT block. A remote submitted macro invocation requires the semicolon, and a locally submitted macro does not. For example, the following macro executes on a local host but not on a remote host:

```
RSUBMIT;
  %MACRO MYDATE;
    %PUT &SYSDATE;
  %MEND MYDATE;
  %MYDATE          /* semicolon omitted */
ENDRSUBMIT;
```

During the processing of a remote submit block, SAS/CONNECT software checks the beginning of each statement for the ENDRSUBMIT statement. The semicolon is used to indicate the end of each statement (except comments). If the semicolon is omitted, then the ENDRSUBMIT statement is inadvertently submitted for remote processing. This results in the macro not executing.

During local processing, SAS/CONNECT does not search for the ENDRSUBMIT statement and, therefore, does not require the semicolon.

Question

When processing macros, what gets processed on the remote host, and what gets processed on the local host?

Explanation

When a macro is compiled, two things are produced: (1) compiled macro program statements or instructional code and (2) text. Only items stored as text are passed to the remote host for processing. All statements and instructional code are processed on the local host.

Items stored as text include:

- Macro variable references
- Nested macro invocations
- Nested macro definitions
- Macro functions, except %STR and %NRSTR
- Arithmetic and logical macro expressions
- Names and values of local macro expressions
- Text to be written by %PUT statements
- Field definitions in %WINDOW statements
- Model text of SAS statements and SAS Display Manager System commands.

SAS Guide to Macro Processing discusses each item in detail.

Note: A good tool to determine what is instructional code and will be processed on the local host, is the option MLOGIC. MLOGIC specifies whether the macro processor prints a message whenever the SAS System executes any macro instructional code within a macro. Any statements produced by MLOGIC are processed on the local host and everything else is executed on the remote host. Δ

For example, in the following code, all the %LET statements are inside the RSUBMIT block. The &USER1 macro is assigned in the local SAS session rather than the remote. However, by placing the %LET statement inside a macro, &USER2 is set in the remote session.

```
%macro client;
  RSUBMIT;
    %let user1 = %sysget(LOGNAME);

    %macro remote;
      %global user2;
      %let user2 = %sysget(LOGNAME);
    %mend remote;
  %remote

  data _null_;
    put "user 1 = &user1";
    put "      2 = &user2";
  run;
ENDRSUBMIT;
```



```
%mend client;  
%client
```

In the macro CLIENT, everything within the macro is stored as text except the %LET statement that creates the macro variable USER1. This means everything within the macro is passed to the remote host except the %LET statement. Because the %LET statement is executed on the local host, the macro variable USER1 is created on the local host. The %LET statement that creates the macro variable USER2 and the references to the USER1 and USER2 variables are both seen as text and are executed on the remote host.

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