What Is a Communications Access Method?

A communications access method is the interface between SAS software and the network protocol that you use to connect two platforms. You must specify a communications access method for both SAS/CONNECT software and SAS/SHARE software.

The access method that you choose is determined by the network protocols that you have available at your site and the host platforms that you are connecting.

Note: Do not confuse Communications Access Method with FTP Access Method. The FTP Access Method is a facility that is used with the FILENAME statement in SAS software that allows you to access remote files by using the FTP protocol. For more information, see the SAS Language Reference: Dictionary.

Types of Communications Access Methods

There are two types of communications access methods: program-to-program and terminal-based.
Program-to-Program Communications

Program-to-program communications access methods use networking protocols to allow two processes to interact over a network. They have these advantages over terminal-based communications access methods:

- much larger packet sizes
- data transmitted in binary form (therefore, not requiring the application to perform any character set encoding)
- message notification often performed asynchronously.

Program-to-program communications access methods may require additional system software to achieve support on all of the necessary platforms. Here is a list of program-to-program methods of communication that are supported by SAS/CONNECT and SAS/SHARE.

APPC

is an abbreviation for Advanced Program-to-Program Communication. This type of connection uses the LU 6.2 protocol for distributed processing within an IBM SNA network. APPC and LU 6.2 are often used interchangeably.

CPIC

is an acronym for Common Programming Interface for Communications. This interface supports the IBM SAA (System Application Architecture) solution by providing a method for developing portable distributed applications. CPIC functions as a layer that resides on top of the APPC protocol.

DECnet

is an acronym for the Digital Equipment Corporation Networking architecture. In SAS documentation, this term describes the task-to-task communication interface over a DECnet network.

NetBIOS

is an acronym for the IBM Network Basic Input/Output System. This is an operating system interface for application programs that are running on nodes in a local area network.

SPX

is an abbreviation for the Novell Sequenced Packet Exchange. This is a communications protocol that provides guaranteed delivery of Internetwork Packet Exchange (IPX) packets. IPX enables NetWare workstations to communicate with NetWare servers, and SPX adds the connection-oriented features required for reliable client/server communication.

TCP/IP

is an abbreviation for Transmission Control Protocol/Internet Protocol. This is a program-to-program interface that is supported by multiple vendors over multiple vendors’ hardware.
The following program-to-program-based connection types are supported by SAS/SHARE only:

**IUCV**

is an abbreviation for Inter-User Communications Vehicle. This interface is a part of the VM/CMS operating system and is used by programs that run under VM/CMS.

**VTAM LU 0**

is an acronym for Virtual Telecommunications Access Method. This type of connection uses LU 0 protocol for program-to-program communications with an IBM SNA network under the OS/390 operating system.

**XMS**

is an abbreviation for Cross-Memory Services. This interface is part of the OS/390 operating system and is used by programs that run within a single OS/390 environment.

---

### Terminal-Based Communications

Terminal-based communications access methods let two processes interact over a network by using a terminal interface. They have these characteristics:

- limited transmission packet size (because of the size of the terminal screen)
- limited efficiency (because they force the application to perform character-set encoding to write data to the screen even though users are not expected to read from the screen)
- message notification generally accomplished through polling.

Because of the limitations of terminal-based communication methods, these methods cannot support Remote Library Services. Terminal-based interfaces, however, are relatively inexpensive and generally available.

The following terminal-based connection types are supported by SAS/CONNECT only:

**EHLLAPI**

is an acronym for Extended High-Level Language Applications Programming Interface. EHLLAPI is a standard 3270 programming interface that uses the SNA LU2 protocol and is provided by many third-party vendors for OS/2, DOS, and Windows workstations. SAS/CONNECT first moved to this standard interface with Release 6.06 of SAS Software under OS/2. EHLLAPI, HLLAPI, and WinHLLAPI are sometimes used interchangeably. Support for Windows HLLAPI (WinHLLAPI) was added with Release 6.11 of SAS software under Windows. Release 6.11 defines a standard and consistent IBM EHLLAPI-style implementation with the addition of Windows specific extensions.

**TELNET**

is a terminal application interface written to use the TELNET protocol. TELNET is less efficient than TCP/IP because it is layered on top of the TCP/IP protocol. Because TELNET can communicate with an asynchronous interface in the remote environment, and it can run over an existing TCP/IP network, it is useful with SAS/CONNECT when the remote host does not have a supported TCP/IP product.
Making Connections with SAS/CONNECT and SAS/SHARE Software

For both SAS/CONNECT and SAS/SHARE, you must specify a communications access method, along with other steps, to connect two SAS sessions on the same or different platforms.

You must perform steps on the local side and, sometimes, on the remote side.

For SAS/CONNECT, perform the following general steps at the local host:
1. Specify a sign-on script name, if applicable.
2. Specify the communications access method.
3. Specify the name of the remote host that you are connecting to.
4. Sign on to the remote host.

When you access a SAS/SHARE server, perform the following general steps:
1. Specify the communications access method.
2. Specify the server name.

At the remote sides for SAS/CONNECT and SAS/SHARE, you may need to ensure that a configuration file has been set up or that environment variables have been declared.

Additional tasks may be needed based on the platform and the access method that are being used. These tasks may be performed by different people, such as the user, the system administrator on the local and remote sides, or the network administrator.

For example, a user may need to set variables or options on the local side or to configure a local configuration file to automate the connection process. A network administrator may need to configure the network to prepare the access method, or the remote-side system administrator may need to configure the remote side to prepare for a connection from the local side.

Connecting Hosts with the Protocol Gateway Service

**CAUTION:**

*Version 6 Only* The protocol gateway service provided by the DOMAIN server is not supported in Version 7. However, information about this service is included here for Version 6 users.

The protocol gateway service of the DOMAIN server enables two SAS sessions in a networked environment that do not use a common communications access method to communicate with each other. A network comprises one or more logical domains, each of which maps a topological area according to the communications protocol or access method that it uses.

For example, an OS/390 mainframe that uses the APPC access method and a Windows 95 personal computer that uses the NetBIOS access method cannot communicate. However, a DOMAIN server that runs both the APPC and NetBIOS access methods can bridge communication between them.

The DOMAIN server offers a protocol-independent gateway service that eliminates the need for licensing, configuring, and supporting multiple access methods in a given environment.

For SAS/CONNECT, see Figure 1.1 on page 8 and for SAS/SHARE, see Figure 1.3 on page 10 to determine whether you can use the same communications access method to connect the platforms that you want. If you cannot use the same access method
between platforms, consider using the DOMAIN server. See “Using a DOMAIN Server for Cross-Access Method Communication” on page 437 for details on setting up and using the DOMAIN server.

### Terminology

Throughout this documentation, we have adopted terms that refer to the local and remote sides of a SAS/CONNECT and a SAS/SHARE session. Definitions follow:

- **local host**
  - SAS/CONNECT local side; the host from which a user connects to a SAS/CONNECT remote host.

- **remote host**
  - SAS/CONNECT remote side; the host to which a user on a SAS/CONNECT local host connects.

- **client**
  - SAS/SHARE local side; the host from which a user connects to a remote SAS/SHARE server.

- **server**
  - SAS/SHARE remote side; the session on the remote side that provides data processing services as part of a distributed application.

### Supported Communications Access Methods by Platform

For SAS/CONNECT, the matrix shown in Figure 1.1 on page 8 identifies the communications access methods that you can use to make a connection between a local and a remote host. Unless you are using the DOMAIN server, as described in “Using a DOMAIN Server for Cross-Access Method Communication” on page 437, the access method that you use must be available on both hosts. See Figure 1.2 on page 9 for a list of access methods by release number.

A similar matrix for SAS/SHARE is shown in Figure 1.3 on page 10. It shows the communications access methods that are available to a client host for accessing a remote SAS/SHARE server.
**Figure 1.1** Available Connections for SAS/CONNECT

<table>
<thead>
<tr>
<th>LOCAL HOSTS</th>
<th>OS/390</th>
<th>CMS</th>
<th>OpenVMS</th>
<th>UNIX</th>
<th>OS/2</th>
<th>Windows NT</th>
<th>Windows 32s</th>
<th>Windows 95</th>
<th>Macintosh</th>
<th>VSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/390</td>
<td>APPC</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>CMS</td>
<td>APPC</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>OpenVMS</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>None</td>
</tr>
<tr>
<td>UNIX</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>None</td>
</tr>
<tr>
<td>OS/2</td>
<td>APPC</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>Windows NT</td>
<td>APPC</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>Windows 95</td>
<td>APPC</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>VSE</td>
<td>APPC</td>
<td>None</td>
<td>APPC APPC</td>
<td>EHLLAPI APPC</td>
<td>APPC EHLLAPI</td>
<td>APPC EHLLAPI</td>
<td>APPC EHLLAPI</td>
<td>APPC EHLLAPI</td>
<td>None</td>
<td>APPC</td>
</tr>
</tbody>
</table>

* On UNIX hosts, the APPC access method is available only for HP-UX, Solaris, and AIX.
### Figure 1.2  Access Method Availability for SAS/CONNECT Software

<table>
<thead>
<tr>
<th>HOST</th>
<th>RELEASE</th>
<th>ACCESS METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>APPC</td>
</tr>
<tr>
<td>OS/390</td>
<td>6.07+</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>5.18+</td>
<td>●</td>
</tr>
<tr>
<td>CMS</td>
<td>6.07+</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>5.18+</td>
<td>●</td>
</tr>
<tr>
<td>OpenVMS</td>
<td>6.07+</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>5.18+</td>
<td>●</td>
</tr>
<tr>
<td>UNIX</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>6.07+</td>
<td>●</td>
</tr>
<tr>
<td>OS/2</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>6.08+</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>6.06</td>
<td>●</td>
</tr>
<tr>
<td>Windows NT</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>6.09</td>
<td>●</td>
</tr>
<tr>
<td>Windows 32s</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>6.10</td>
<td>●</td>
</tr>
<tr>
<td>Windows 95</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>●</td>
</tr>
<tr>
<td>Macintosh</td>
<td>6.11</td>
<td>●</td>
</tr>
<tr>
<td>VSE</td>
<td>6.08+</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>5.16</td>
<td>●</td>
</tr>
</tbody>
</table>
Completing the Worksheet

To prepare to make a connection with SAS/CONNECT or SAS/SHARE, complete the following worksheet. Having this information on hand may be helpful when making a connection.

Table 1.1  Sample Worksheet

<table>
<thead>
<tr>
<th>Data</th>
<th>You Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local host/Client platform</td>
<td></td>
</tr>
<tr>
<td>Remote host/Server platform</td>
<td></td>
</tr>
<tr>
<td>Name of remote host/server</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.3  Available Connections for SAS/SHARE Software

<table>
<thead>
<tr>
<th>CLIENT HOSTS ▶</th>
<th>OS/390</th>
<th>CMS</th>
<th>OpenVMS</th>
<th>UNIX</th>
<th>OS/2</th>
<th>Windows NT</th>
<th>Windows 32s</th>
<th>Windows 95</th>
<th>Macintosh</th>
<th>VSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/390</td>
<td>APPC TCP/IP XMS VTAM LU 0</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC* TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>CMS</td>
<td>APPC TCP/IP IUCV</td>
<td>TCP/IP</td>
<td>APPC* TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>OpenVMS</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>None</td>
</tr>
<tr>
<td>UNIX</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>None</td>
</tr>
<tr>
<td>OS/2</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>Windows NT</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>Windows 32s</td>
<td>APPC TCP/IP CPIC</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>Windows 95</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>APPC TCP/IP</td>
<td>TCP/IP</td>
<td>APPC</td>
</tr>
<tr>
<td>VSE</td>
<td>APPC</td>
<td>APPC</td>
<td>None</td>
<td>APPC* APPC</td>
<td>APPC</td>
<td>APPC</td>
<td>APPC</td>
<td>APPC</td>
<td>None</td>
<td>APPC</td>
</tr>
<tr>
<td>Macintosh</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>TCP/IP</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

* On UNIX hosts, the APPC access method is available only for HP-UX, Solaris, and AIX.
Using Communications Access Methods △ Completing the Worksheet

Data You Supply
Communications access method

SAS/CONNECT only: pathname of sign-on script file, if applicable

SAS/CONNECT only: pathname of spawner program, if applicable

After you research these topics and complete the worksheet, you are ready to make the desired connection.
A sample of a completed worksheet follows.

Table 1.2 Completed Worksheet

<table>
<thead>
<tr>
<th>Data</th>
<th>You Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local host/Client platform</td>
<td>Windows 95</td>
</tr>
<tr>
<td>Remote host/Server platform</td>
<td>UNIX</td>
</tr>
<tr>
<td>Name of remote host/server</td>
<td>RMTNODE/SHARE1</td>
</tr>
<tr>
<td>Communications access method</td>
<td>TCP</td>
</tr>
<tr>
<td>SAS/CONNECT only: pathname of sign-on script file, if applicable</td>
<td>c:\sas\connect\saslink tcpunix.scr</td>
</tr>
<tr>
<td>SAS/CONNECT only: pathname of spawner program, if applicable</td>
<td>c:\sas\connect\sasexe spawner</td>
</tr>
</tbody>
</table>

SAS/CONNECT Example:

UNIX Remote Host:
No procedures are necessary.

Windows 95 Local Host:
filename rlink 'c:\sas\connect\saslink\tcpunix.scr';
options comamid=tcp remote=rmtnode;
signon;

SAS/SHARE Example:

UNIX Server:
options comamid=tcp;
proc server id=share1;
run;

OS/2 Client:
options comamid=tcp;
%let blue=rmtnode.unx.sas.com;
libname tigris 'd:\remote\data' server=blue.share1;
You have the worksheet data ready to use for making the desired connection.

### SAS/CONNECT Scripts

SAS Institute provides sample script files that you may customize and use with SAS/CONNECT to sign on to and sign off a remote host. Names of script files and their locations on the operating system are provided in this documentation, where relevant. The content of selected script files is provided to draw your attention to statements that may need to be modified in order to work at your site. See Chapter 41, “Sign-on Script Files,” on page 503 for these sample script files.

### SAS/CONNECT and SAS/SHARE Examples

Typical examples of how to use SAS/CONNECT and SAS/SHARE by platform, by access method, by local side, and by remote side are provided in this documentation. In addition, these examples are collected in one location in the appendices in Part 14.

### Access Method Option and Variable Summary

In order to use a specific access method, you may need to set specific options or variables based on the host that is being used. The forms that you can use to set an option or a variable include the OPTIONS statement in a SAS session or in an AUTOEXEC file, an option in a configuration file or at a SAS invocation, or a SAS macro variable. Each option or variable that is relevant to a specific host and access method is described individually. Methods for setting them are also provided. For a comprehensive table of options and variables and methods for setting them by host and by access method, see Chapter 38, “Access Method Options and Variables Summary Tables,” on page 483.

### Troubleshooting

If a procedure that you attempt is unsuccessful, an error message is reported to your display. See Part 13 for error-message recovery information. The messages are organized by platform and by access method.

### How to Use This Documentation

This document organizes the steps (by platform and by access method) that you must perform in order to connect two hosts across a network. To make a connection for the local side, locate the Part that contains the specific host that you want, and then locate the appropriate access method in that Part. For example,
Table 1.3  Finding Information for the Local Host

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the local host?</td>
<td>UNIX</td>
</tr>
<tr>
<td>What access method am I using?</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>See: Part and Chapter</td>
<td>Part 7,</td>
</tr>
<tr>
<td></td>
<td>Chapter 20</td>
</tr>
</tbody>
</table>

In most cases, after you complete the steps at the local host, you must also perform steps at the remote host, which may be documented in another Part and Chapter. For example,

Table 1.4  Finding Information for the Remote Host

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the remote host?</td>
<td>OS/390</td>
</tr>
<tr>
<td>What access method am I using?</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>See: Part and Chapter</td>
<td>Part 4,</td>
</tr>
<tr>
<td></td>
<td>Chapter 7</td>
</tr>
</tbody>
</table>

Steps are marked clearly by product, local side, remote side, task, and audience, that is, user, applications programmer (person who writes end-user applications), system administrator, SAS/SHARE server administrator, or network administrator. The persons who perform these tasks should supply each other with network and operating system information, as necessary.

Using the SAS/CONNECT and SAS/SHARE Documentation Set

The following three books are used with SAS/SHARE and SAS/CONNECT software:

- SAS/CONNECT User’s Guide
- SAS/SHARE User’s Guide
- Communications Access Methods for SAS/CONNECT and SAS/SHARE Software.

Communications Access Methods provides information to establish a connection between two hosts across a network. For using SAS/CONNECT or SAS/SHARE software, start with either the SAS/CONNECT User’s Guide or the SAS/SHARE User’s Guide, and then refer to Communications Access Methods for SAS/CONNECT and SAS/SHARE Software when making a network connection.

Communications Access Methods for SAS/CONNECT and SAS/SHARE Software makes the communications access methods information in the following documentation obsolete:

- SAS Software: Changes and Enhancements, Release 6.11
Additional SAS Documentation

For a complete list of SAS publications, you should refer to the current Publications Catalog. The catalog is produced twice a year. You can order a free copy by writing, calling, or faxing the Institute (or access the on-line version of the Publications Catalog via the World Wide Web):

SAS Institute Inc.
Fulfillment Center
SAS Campus Drive
Cary, NC 27513
Telephone: 800-727-3228
Fax: 919-677-8166
E-mail: sasbook@sas.com
www.sas.com/pubs

Documentation for Other SAS Software Products

The following SAS publication may be helpful if you use the TCP/IP access method on the OS/390 platform.

- SAS Technical Report C-111, SAS/C Socket Library for TCP/IP, Release 5.01

The following platform-specific SAS publications may be helpful, as needed:

- SAS Companion for the CMS Environment, Version 6, First Edition
- SAS Companion for the Macintosh Environment, Version 6, First Edition
- SAS Companion for the Microsoft Windows Environment, Version 6, Second Edition
- SAS Companion for the Microsoft Windows NT Environment, Version 6, First Edition
- SAS Companion for the MVS Environment, Version 6, Second Edition
- SAS Companion for the OpenVMS Environment, Version 6, Second Edition
- SAS Companion for the OS/2 Environment, Version 6, Second Edition
- SAS Companion for the VSE Environment, Version 6, First Edition
- SAS Companion for UNIX Environments: Language, Version 6, First Edition

In addition to Communications Access Methods for SAS/CONNECT and SAS/SHARE Software, the following publications will be helpful when using SAS/CONNECT and SAS/SHARE software:
Vendor-name Documentation

The following publications provide complete details about installing and configuring a communications access method on a particular host operating system.

CMS: APPC Access Method Documentation

- VM/SP Release 6 Connectivity and Programming Guide and Reference (SC24-5377)
- VM/ESA Connectivity Planning, Administration, and Operation (SC24-5448)
- SNA Technical Overview (GC30-3073)
- SNA Formats (GA27-3136)
- VTAM Programming for LU6.2 (SC30-3400)

OS/390: APPC Access Method Documentation

- SNA Technical Overview (GC30-3073)
- SNA Formats (GA27-3136)
- VTAM Programming for LU6.2 (SC30-3400)
- MVS/ESA Planning: APPC Management (GC28-1110)

OS/390: VTAM LU 0 Access Method Documentation

- VTAM Installation and Resource Definition (SC27-0610 for ACF/VTAM Version 2)
- VTAM Installation and Resource Definition (SC23-0111 for ACF/VTAM Version 3)

OS/2: APPC Access Method Documentation

- SNA Technical Overview (GC30-3073)
- SNA Formats (GA27-3136)
- VTAM Programming for LU6.2 (SC30-3400)
- Extended Services for OS/2 Communications Manager User’s Guide (S04G-1015)
- Extended Services for OS/2 Communications Manager Configuration Guide (S04G-1002)
- Extended Services for OS/2 Problem Determination Guide for the Service Coordinator (S04G-1006)
- Extended Services for OS/2 Programming Services and Advanced Problem Determination for Communications (S04G-1007)
- Extended Services for OS/2 Communications Manager System Management Programming Reference (S04G-1116)
- Extended Services for OS/2 APPC Programming Reference (S04G-1025)
UNIX AIX: APPC Access Method Documentation

- AIX SNA Server/ 6000 Command Reference (SC31-7100)
- AIX SNA Server/ 6000 Diagnosis Guide and Messages (SC31-7101)
- AIX SNA Server/ 6000 User’s Guide (SC31-7002)
- AIX SNA Server/ 6000 Transaction Program Reference (SC31-7003)
- AIX SNA Server/ 6000 Configuration Reference (SC31-7014)

UNIX HP-UX: APPC Access Method Documentation

- HP-UX SNAplus Installation Guide (J2220-61021)
- HP-UX SNAplusLink Administrator’s Guide (J2220-61023)
- HP-UX SNAplusAPI Administrator’s Guide (J2223-61008)
- HP-UX SNAplus Diagnostics Guide (J2220-61022)
- Installing and Administering X.25/ 9000 (36940-90018)
- Installing and Administering Token Ring/ 9000 (J 21625-61001)
- IBM SNA: Technical Overview (GC30-#073)
- IBM SNA: Formats (GA27-3136)

UNIX Solaris: APPC Access Method Documentation

- SunLink SNA Peer-to-Peer 8.0 and SunLink SNA Peer-to-Peer RunTime 8.0 Installation Guide
- SunLink SNA Peer-to-Peer 8.0 and SunLink SNA Peer-to-Peer RunTime 8.0 Administrator’s Guide
- SunLink HSI/ S 2.0 Installation and Administration Guide
- SunLink TRI/ S 3.0 Installation Guide
- SunLink FDDI/ S 2.0 Installation Guide
- IBM SNA: Technical Overview (GC30-#073)
- IBM SNA: Formats (GA27-3136)

VSE: APPC Access Method Documentation

- SNA Technical Overview (GC30-3073)
- SNA Formats (GA27-3136)
- VTAM Programming for LU6.2 (SC31-6410)
- VTAM Installation and Resource Definition (SC23-0111)

Windows: APPC Access Method Documentation

- Microsoft SNA Server Installation Guide
- Microsoft SNA Server Administration Guide
Windows: CPIC Access Method Documentation

- Rumba Tools for APPC
- IBM SNA: Technical Overview (GC30-#073)
- IBM SNA: Formats (GA27-3136)
- IBM: Multiplatform APPC Configuration Guide (GG24-4485-00)

Feedback

If you have comments or suggestions about this or any other SAS software documentation or about the software, we would like to hear from you. You may write to us at the Institute or contact us by e-mail at the address shown under “Additional Documentation.”

SAS Syntax Conventions

PROC DATASETS <LIBRARY=libref> <MEMTYPE=(mtype-list)>
<DETAILS | NODETAILS> <other-options>;
RENAME variable-1=new-name-1 < . . . variable-n=new-name-n >;

1. SAS keywords, such as statement or procedure names, appear in bold type.
2. Values that you must spell as they are given in the syntax appear in uppercase type.
3. Optional arguments appear inside angle brackets(<>).
4. Mutually exclusive choices are joined with a vertical bar(|).
5. Values that you must supply appear in italic type.
6. Argument groups that you can repeat are indicated by an ellipsis ( . . ).