CICS Family

Using Microsoft SNA Server V2 with CICS

SC33-1899-00

CICS Family

Using Microsoft SNA Server V2 with CICS

SC33-1899-00

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 35.

First edition (March 1997)

This edition applies to the Microsoft SNA Server version 2 product and its use with IBM Transaction Server for Windows NT

Order publications through your IBM representative or through the IBM branch office serving your locality. Publications are not stocked at the address given below.

At the back of this publication is a page entitled “Sending your comments to IBM”. If you want to make comments, but the methods described are not available to you, please address them to:

IBM United Kingdom Laboratories, Information Development,
Mail Point 095, Hursley Park, Winchester, Hampshire, England, SO21 2JN.

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

Contents

Using Microsoft SNA Server

What this book is about

CICS requires an SNA product to connect to an SNA network. This book describes how to setup and use the Microsoft SNA Server product.

The book includes a review of some of the SNA terminology you should be familiar with; a description of how to configure SNA Server; examples showing how the configuration of SNA Server should be coordinated with the configuration of CICS and it's partner systems; a description of how to start and shutdown SNA Server; and a description of how to investigate communication errors.

Who this book is for

This book is for system administrators who are responsible for the configuration, operation, and management of CICS machines SNA LU 6.2 network.

What you need to know to understand this book

You should be familiar with the SNA Server and CICS products, and have an understanding of the concepts of SNA. The *Intercommunication Guide* is the primary source of information on the communication features of CICS, giving examples of configurations and advice on systems design. In particular, you should read "Configuring CICS for SNA" in the *Intercommunication Guide*.

Road map

Table 1. Getting started road map

If you want to...	**Refer to...**
Read a review of SNA	Chapter 1, "Introduction to SNA" on page 1
Read about configuring SNA Server	Chapter 3, "Configuring SNA Server" on page 7
Read about how to communicate with EBCDIC mainframes	Chapter 4, "Configuring VTAM with details of your CICS region" on page 21
Read about how to start and shutdown sessions and links to other machines	Chapter 5, "Operating Microsoft SNA Server 2.11" on page 25
Read about how to solve communication problems	Chapter 6, "Problem determination with SNA Server" on page 27
Read a summary of CICS SNA features	Appendix A, "CICS and Microsoft SNA Server reference" on page 31

Chapter 1. Introduction to SNA

This chapter provides an introduction to the concepts and terminology of System Network Architecture (SNA) that you need to be familiar with when using CICS in an SNA environment.

IBM's System Network Architecture (SNA) defines a set of rules that systems use to communicate. These rules define the layout of the data that flows between the systems, and the action the systems take when they receive the data. The data layout and actions are known as the formats and protocols, and together they constitute the architecture.

SNA does not specify how a system should implement the rules. Indeed a fundamental objective of SNA is to allow systems which have very different internal hardware and software design to be able to communicate. The only requirement is that the externals meet the rules of the architecture.

Figure 1 on page 2 illustrates a heterogeneous network, with a CICS on Open Systems system intercommunicating with a number of different types of CICS regions.

Each CICS system uses its own platform specific SNA product. CICS for OS/2 uses Communications Manager/2. CICS/400 uses OS/400 Intercommunication Facility (ICF). IBM mainframe-based CICS works very closely with Virtual Teleprocessing Access Method (VTAM) to support SNA.

When you are configuring your CICS region to communicate with another CICS, it is important that you have an understanding of the SNA product that the other system uses. This is because although the two systems must agree common parameters, the terminology used for these parameters may be different. Some of the more important common parameters are discussed in the following sections.

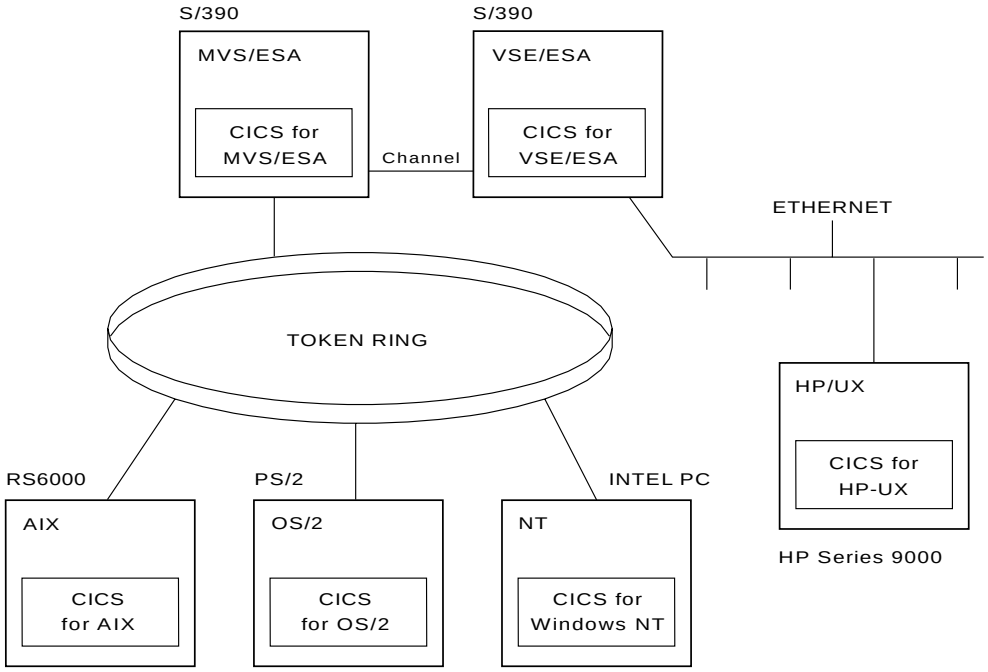

Figure 1. An example heterogeneous network

Logical Unit (LU) is an SNA term used to describe a logical collection of services that can be accessed from the network. In this environment, you can think of a CICS region as being the LU. SNA defines many different types of LU, describing devices like terminals and printers. The type of LU that is used for CICS intersystem communication is *LU type 6.2*.

Each LU is identified by a one-to eight-character name, referred to as the *LU name*. IBM mainframe-based CICS systems use the APPLID defined in the CICS system initialization table as their LU name. They also refer to the LU name as a NETNAME. The LU name for a CICS for OS/2 system is specified in the Communications Manager/2 Local LU definition and the LU name for a CICS/400 system is defined in the APPL parameter of the ADDCICSSIT command.

An SNA network also has a one-to eight-character name, called the *network name*. The network name is sometimes referred to as the *network id* or the *netid*. An LU can be uniquely identified by combining its LU name with the network name of the network that owns it. The LU's name is then referred to as the *network-qualified LU name*, or the *fully-qualified LU name*. For example, if an LU named CICSA belonged to a network named NETWORK1, then its network-qualified LU name would be NETWORK1.CICSA.

For an LU to communicate with another LU, it must establish at least one *session* between them. The request to activate a session is referred to as a *BIND request*. It is used to pass details of the capabilities of the initiating LU to the receiving system, and

also to determine a route though the network. The receiving LU is then given a chance to send a description of its capabilities to the initiating LU in the *BIND response*. Once the session is established, it may be used for a number of intersystem requests and will remain active for as long as the two LUs, and the network between them, is available.

When you configure your network, you can set up different characteristics for the sessions that are established between a pair of LUs, such as in the route they take through the network. Session characteristics are defined in what are referred to as *modegroups*, where all the sessions associated with a modegroup have the same characteristics. Modegroups are identified by a one to eight character *modename*.

There are many ways to connect CICS systems in a network and, provided the data is successfully transferred in the correct format, these CICS systems are unaware of the make-up of the network. To reflect this, SNA configuration is done at two levels, the *logical level* and the *physical level*.

The logical level is the level described in the preceding paragraphs. It is concerned with the characteristics of the systems that wish to communicate.

The physical level is concerned with linking the actual machines, or *nodes*, in the network. Each node has physical links, or *connections*, to other nodes so that they are all connected to at least one other node. Data may have to travel along a number of links in order to get from one system to another. Also, these links may be of different types. For example:

- IBM Token Ring
- Synchronous Data Link Control (SDLC)
- Ethernet
- X.25

These types of links are collectively referred to as *data link control (DLC) protocols*.

Each node has a physical unit (PU). This is a combination of hardware and software that controls the links to other nodes. There are a number of types of PU that reflect the capabilities and responsibilities of the PU, such as:

PU type 5
: The best known example is an IBM mainframe processor running VTAM. VTAM provides the support for the Systems Services Control Point (SSCP) function defined in SNA.

PU type 4
: This is a communications controller, such as ACF/NCP, that resides in the center of a network, routing and controlling the data flow between machines.

PU type 2
: This is a small machine, such as an APPC workstation. It can only communicate directly with a PU type 4 or a PU type 5 and relies on them to route the data they send to the correct system.

PU type 2.1

This is a more advanced PU type 2 that can also communicate with other PU type 2.1 nodes directly. This node is capable of supporting an *independent LU*. An independent LU is an LU that can establish a session with another LU without using VTAM. Communications Server is a PU type 2.1 node.

PU type 2.1 nodes may have support for *Advanced Peer-to-Peer Networking (APPN)*. This enables a node to search for an LU in the network rather than requiring a remote LU's location to be pre-configured locally. There are two types of APPN nodes, *end nodes* and *network nodes*. An end node is able to receive a search request for an LU and respond indicating whether the LU is local to the node or not. A network node is able to issue search requests, as well as respond to them, and maintains a dynamic database that contains the results of the search requests the node has made. Support for APPN can greatly reduce the maintenance work in an SNA network, especially if the network is large or dynamic. IBM Communications Server supports APPN. Microsoft SNA Server does not support APPN.

Related Information

- "Communicating across SNA connections" in the *Intercommunication Guide*.
- *Systems Network Architecture Technical Overview* provides a comprehensive summary of SNA
- A range of SNA publications can be seen in the Bibliography.

Chapter 2. Microsoft SNA Server and CICS

This section summarizes those particular characteristics of the Microsoft SNA Server product that users of CICS systems on other platforms may not be familiar with.

Restrictions of SNA Server v2.1.1

SNA Server v2.1.1 imposes a number of restrictions on CICS. These include:

- Within one workstation, Microsoft SNA Server can only support a single CICS region

  This restriction also effects CICS clients, so a workstation cannot support both a CICS region and a CICS client that are using SNA.

- CICS cannot receive inbound SNA requests for transactions unless they are defined to SNA Server using the **cicssnatpns** utility
- CICS cannot send already verified userids
- CICS cannot send correct sense codes in some error conditions
- CICS cannot receive requests that include Process Initialization Parameters (PIP) data.

  This affects inbound DTP requests that specify the PIPLIST and PIPLENGTH parameters on the CONNECT PROCESS command, and data conversion on inbound function shipping, distributed program link and asynchronous processing requests. The DTP requests will be rejected by SNA Server, and the data conversion routines in CICS for Windows NT will not be able to use the code page and byte order information in requests from remote CICS systems such as CICS on Open Systems.

- Termination of the SNA Base Service should not be done whilst CICS is running.

  Termination of the SNA Server Base Service by the command **NET STOP SNABASE** will immediately terminate all applications using the SNA Server libraries including CICS. If the SNA Base Service is to be terminated all CICS regions using the local SNA interface to SNA Server should be terminated first.

Chapter 3. Configuring SNA Server

This chapter describes how to configure Microsoft SNA Server version 2.1.1 for CICS communications. It describes how the values defined in SNA Server relate to resources defined in CICS.

It is not intended to cover every aspect of installing and configuring SNA Server. For full details on configuring SNA Server you should refer to the *Microsoft SNA Server Administration Guide*.

The following topics are discussed in this chapter:

- Configuring the node
- Configuring the Local LUs
- Configuring the Connections
- Configuring the Partner LUs
- Configuring the Modenames
- ConfigurIng the Local LU and Partner LU pairs
- Configuring the CICS transactions

Configuring Microsoft SNA Server for CICS

To configure Microsoft SNA Server version 2.1 you must login as a user who is a member of the Administrator group, and use the **SNA Server Admin** application. To locate this application from the Program Manager you select:

```
► Microsoft SNA Server (Common)
  ► SNA Server Admin
```

This displays the **SNA Server Admin** panel. Many of the functions you will need are selected from the **Services** menus.

You should first configure the Server Properties.

Configuring the Server Properties

This defines your Microsoft SNA Server as a node in the SNA network. Select the **Properties** option from the **Services** menu. The **Server Properties** dialog panel is displayed:

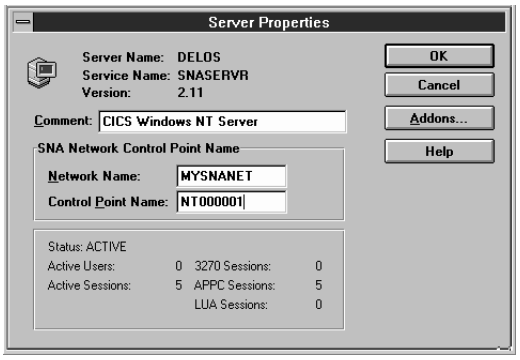

Figure 2. The Server Properties

Enter the details about the Server:

Network Name
Is the name of the SNA network that your SNA Server will be attached to. The name can be from one to eight characters long, and can contain alphanumeric characters and the special characters $, #, and @. Lowercase letters are converted to uppercase.

Control Point (CP)
Is the name that identifies your SNA Server to other control points (or nodes) on the SNA network. The name can be from one to eight characters long, and can contain alphanumeric characters and the special characters $, #, and @. Lowercase letters are converted to uppercase.

Configuring local LUs

You must define a local logical unit (LU) for each CICS for Windows NT region that uses local SNA, and it is the name that the region will be known by in the network.

To configure a local LU select:

- ► Microsoft SNA Server (Common)
  - ► SNA Server Admin

Select the local CP name that is displayed in the left hand box of the **Servers and Connections** window. This will highlight that entry, and if any LUs are already configured they will be displayed in the right hand box of the window. Select the **Assign LUs** option from the **Services** menu. This will display the **Insert LU** panel:

Figure 3. Insert LU

You should ensure that **APPC (Local)** is highlighted, and then select **OK**. This will display the **New APPC LU Properties panel**:

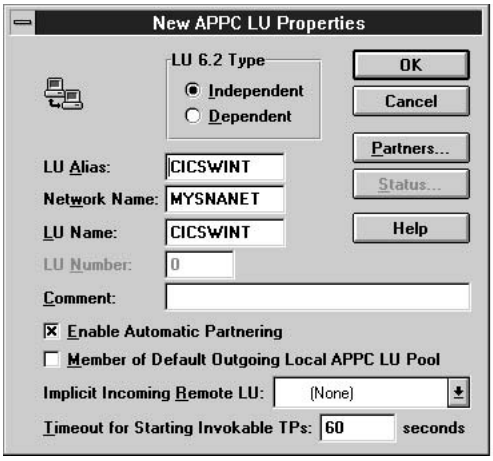

Figure 4. New APPC LU Properties

Enter the details about the local LU:

LU Alias
The name local transaction programs can use when referring to this LU.

Network Name
The name of the SNA network that this workstation is connected to.

LU Name
The name that the local LU is known by throughout the SNA network.

Automatic Partnering
Enables this local LU to communicate with all the partner LUs that are configured on the connection. If you select this it will simplify the later configuration that is described in “Local LU to Partner LU pairings” on page 14.

Member of Default Outgoing Local APPC LU pool
You should not select this option.

Timeout for starting Invokable TP
Determines how long SNA will wait for CICS to receive a request. This may take some time if the region is overloaded and CICS is receiving many requests for this transaction.

Select **OK** when completed.

Configuring the connection

A connection (or link) is required to each machine (or node) in the SNA network where a system is running that CICS will want to communicate with.

To configure the connection to the remote machine select:

- Microsoft SNA Server (Common)
  - SNA Server Admin

and then select the **New Connection** option from the **Services** menu. This displays the **Insert Connection** panel:

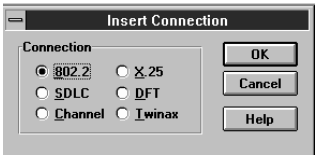

Figure 5. Insert Connection

From this panel you select the type of connection you will be using, such as **802.2** for a LAN connection. Select **OK** when complete to transfer to the **Connection Properties** panel.

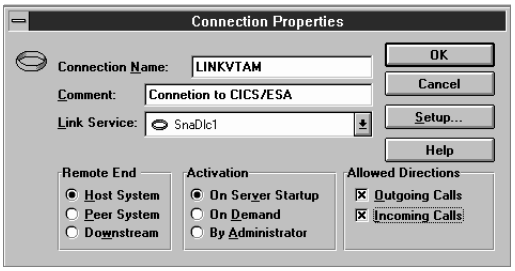

Figure 6. Connection Properties

Enter the details about the Connection:

Connection Name
This is the name that will be used in the **Servers and Connections** panel to identify this connection.

Link Service
This illustrates the type of connection being configured.

Remote End
You should select **Host System** if this connection is to a host, such as a CICS for MVS/ESA or CICS for VSE system. You should select **Peer System** if this connection is to be to another workstation machine, such as a CICS on Open Systems region.

Activation
This is used to determine when the sessions will be activated.

Allowed Directions
You should ensure that both the **Outgoing Calls** and **Incoming Calls** options are selected.

When complete, select the **Setup** option to display the setup panel for the connection, such as the **802.2 Setup** panel:

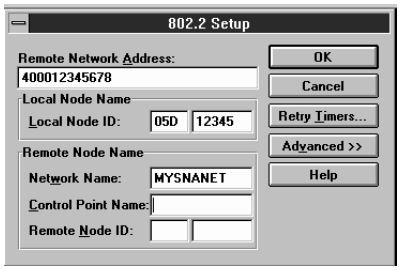

Figure 7. 802.2 Setup

Enter the details about the connection:

Remote Network Address
The 12 digit hexadecimal network address of the remote machine. If the connection is to a 37x5 front end processor this will be the MACADDR parameter in the NCP configuration.

Local Node Name (Local Node ID)
An eight digit hexadecimal field that identifies the local system to the remote system. The first three digits are the block number, and the last five are the node number.

Remote Node Name
These are optional fields, and provide additional security if you wish to identify the remote system. You should consult the system administrator of that remote system to see if these fields should be entered.

Select **OK** to close this window, and then **OK** on the **Connection properties** panel to create the connection. The connection will now appear in the **Servers and Connection** panel.

Configuring Partner LUs

You need to configure the partner (or remote) LUs on each connection. From the Program Manager you select:

- ► Microsoft SNA Server (Common)
  - ► SNA Server Admin

From the **Server and Connections** window, select the previously configured connection, and then from the **Service** menu, select the **Assign LUs** option. This will display the **Insert LU** panel:

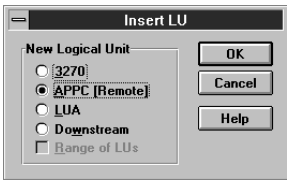

Figure 8. Insert LU

You should select the **APPC (Remote)** option, and then select **OK**. This will display the **New APPC Remote LU Properties** panel:

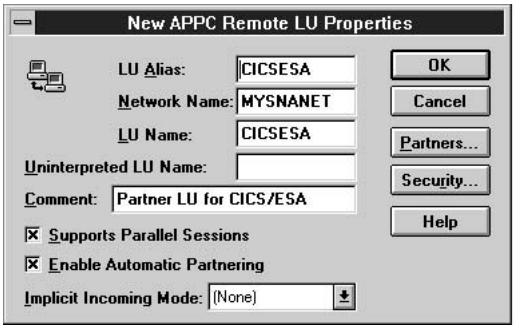

Figure 9. New APPC Remote LU Properties

Enter the details about the remote LU:

LU Alias
The name that local transaction programs may know the remote LU by. This may be the same as the **LU Name** (see below), or it may be different.

Network Name
The name that identifies the SNA network that the remote LU connected to.

LU Name
The name of the remote LU that it is known by throughout the SNA network. You may regard this name as the true name of the remote LU, whereas the **LU Alias** name (defined above) is this local system's private name for the LU.

Uninterpreted Name
This is not needed, unless the remote LU is a dependant LU.

Support Parallel Sessions
Select this box when the partner is an independent LU.

Enable Automatic Partnering
If you select this box it will simplify later configuration, because the remote LU will be automatically partnered with the local LU. This is described in "Local LU to Partner LU pairings" on page 14.

Configuring Modenames

You need to configure at least one modename for each partner. To locate the mode properties panel select the **Partners** button on the remote LU properties panel that is shown in Figure 9 on page 12. This displays the partners panel, which is shown in Figure 12 on page 14. From that panel select the **Modes** button to display the **APPC Mode Properties panel**.

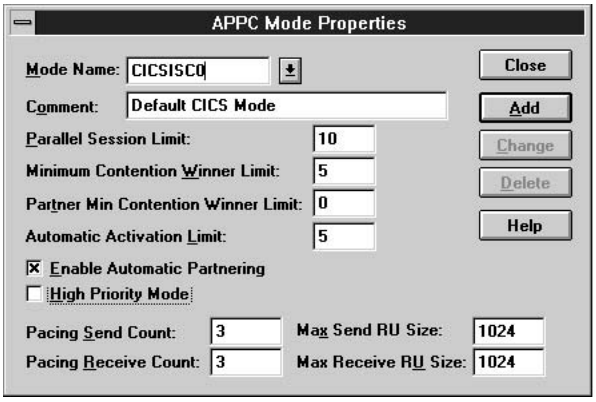

Figure 10. APPC Mode Properties

Enter the details about the mode:

Mode Name
This is the name that identifies the mode.

You enter the details of the mode you require, and select **Add** to return to the **Remote LU Properties panel**

Security

If you require session level security with this partner, (you may also know this as bind time security) select the **Security** button. This displays:

Figure 11. Security

The session level security password can be entered as either a 16 hexadecimal field, or as an eight byte character field. You must ensure that you correctly enter the same password in both systems, else neither will be able to bind to the other.

Conversation-level security is configured when you define the transactions. Refer to “Using cicssnatpns” on page 15 for further information on this.

Local LU to Partner LU pairings

SNA Server requires that you specify which local LU will communicate with which partner LU and which modename they will use. This is referred to as *pairing*, and it must be configured. When you configure the local LU you can select the **Enable Automatic Partnering** option. This option is shown selected in Figure 4 on page 9.

You can display the pairings that SNA Server has enabled by selecting the **Partners** button on the **Remote LU Properties** panel shown in Figure 9 on page 12. This will display the **LU 6.2 Partner LUs** panel:

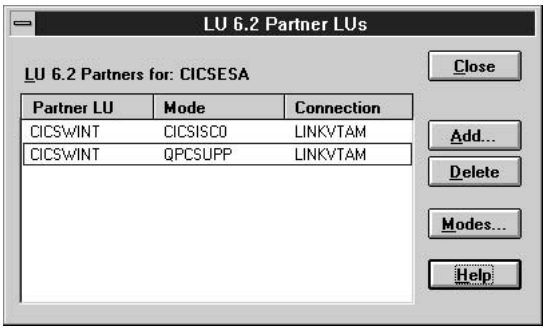

Figure 12. LU 6.2 Partner LUs

From this panel you can **Add** or **Delete** LU-LU pairs.

Configuring CICS transactions

SNA Server requires a definition of each CICS transaction that will be requested by incoming SNA intersystem requests. This definition includes the name of the transaction, the CICS region’s local LU alias and the userids and passwords that may be received with the request for the transaction.

Typically, the CICS transactions you would define to SNA Server are:

- The function shipping mirror transactions (CPMI and CVMI), and any transaction named by a remote program on the TRANSID option of the EXEC CICS LINK command.
- The CRTE transaction for explicit transaction routing and IBM Clients.
- Transactions that are run from remote terminals using transaction routing.
- The remote scheduler transaction, CRSR.
- All back-end Distributed Transaction Processing (DTP) transactions.
- The CCIN and CTIN transactions which are used when a CICS client attaches using SNA.

CICS will generate a list of candidate transaction names in the region's **console.msg** file during region startup (see message ERZ058470I) as it registers them with SNA Server. This list will include all CICS transactions defined with any of the following parameters in the Transaction Definitions (TD):

- **IsBackEndDTP=yes**, or
- **ProgName=DFHMIRS**, or
- **InvocationMode=comms_link**, or
- **InvocationMode=any_facility**

Note: Since **InvocationMode=any_facility** is the default setting for new TD entries, it is likely that all of the transactions that you have defined to CICS will appear in the list.

For an incoming request for a transaction to be successfully passed to CICS:

- CICS must be running and have the name of the transaction registered with SNA Server, and
- The name of the CICS transaction must be defined to SNA Server

SNA Server keeps its definitions of CICS transactions in the NT registry on the NT machine where your CICS region is running. You can look at the CICS transactions defined in the registry using the NT **Registry Editor**. They are found under:

```
HKEY_LOCAL_SYSTEM: System\CurrentControlSet\Services\SnaBase\Parameters\TPs
```

To add SNA Server definitions of CICS transactions to the NT registry, use the CICS-provided application **cicssnatpns**.

Using cicssnatpns

The GUI of **cicssnatpns** is shown in Figure 13 on page 16

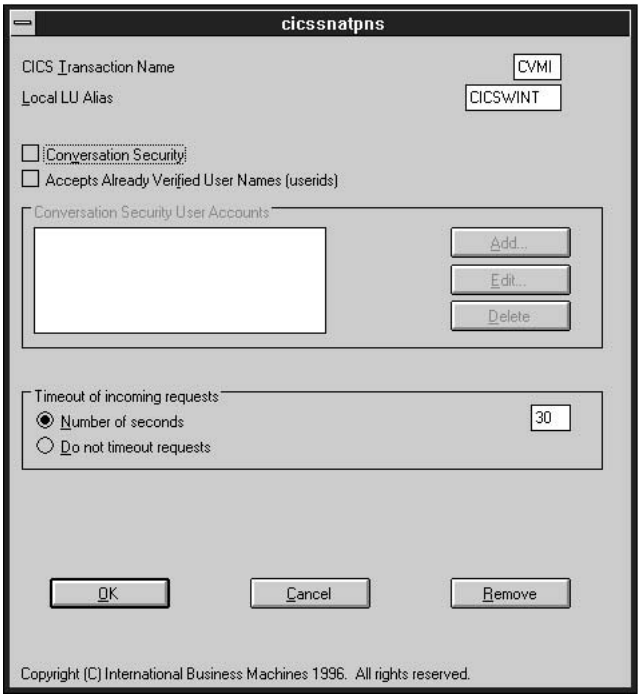

Figure 13. cicssnatpns

cicssnatpns may be started with no parameters, in which case the fields of the panel are cleared allowing you to enter the appropriate values.

Alternatively, you may invoke **cicssnatpns** with the name of a CICS transaction as a parameter. **cicssnatpns** will look in the NT registry and fill in the panel with any values already stored for the transaction. If the transaction is not defined in the NT registry, **cicssnatpns** displays the CICS transaction name in the panel and clears the other fields to their default values.

All of the fields of the panel may be altered:

CICS Transaction Name
Specifies the four character transaction ID (transid) for the transaction. This is also the name of the Transaction Definitions (TD) entry for the transaction which is defined in your CICS region.

Local LU Alias
Specifies the local LU alias for your CICS region. This is written to your region's **console.msg** file during region start up. It is also defined in the **LU Alias** field shown in "Configuring local LUs" on page 8.

Conversation Security
Specifies whether userids can be received with requests for this transaction. If you select this option and some requests for this transaction will be accompanied by

both a user id and a password, then select the **Add** button to specify each user ID and password pair.

You should note that:

- Each password that you define will be stored in the NT registry in ***clear text***.
- The password sent over SNA and defined in the NT registry need not be the same password associated with the CICS User Definitions (UD) entry for the userid.
- If this option is selected either with, or without, the **Accepts Already_Verified User Names (userids)** option described below, the Communications Definitions (CD) attribute **RemoteSysSecurity** should be set to **trusted**. This is because SNA Server does not pass passwords to CICS after it has validated them. Therefore all userids appear to CICS as **Already_Verified**.

Accepts Already-Verified User Names (userids)
Specifies whether userids which are not accompanied by a password (because the password has already been verified by the remote system) can be received with this transaction. Select this option if this transaction is requested by another CICS region.

Timeout of incoming requests
Specifies the timeout value for the transaction. A small value means intersystem requests will be rejected quickly if CICS is unavailable. However if may cause intersystem requests to be rejected unnecessarily if CICS is heavily loaded.

Once you have finished entering the required values, select the **OK** button and the values displayed on the panel will be saved in the registry. Alternatively, select the **Cancel** button to leave the NT registry unchanged, or the **Remove** button to remove the definition of the CICS transaction from the NT registry.

Migrating NT registry entries generated by FAACOMR

The method of registering transactions that was provided with the CICS for Windows NT version 2 product was the **FAACOMR** application If you are migrating your CICS region from CICS for Windows NT version 2 and you have definitions of CICS transaction in the NT registry that were created by the **FAACOMR** program, these definitions will have to be migrated using **cicssnatpns**.

For each transaction, enter:

```
C:\cicssnatpns transid
```

where *transid* is the name of the CICS transaction. This will display the details of the transaction found in the registry. Check they are correct and select the **OK** button. **cicssnatpns** will save the definition in the NT registry in the new format.

SNA Client support

An alternative to installing SNA Server on each CICS workstation is to use a combination of the Microsoft Windows NT SNA Client program with the Microsoft SNA Server program. SNA Client is installed on each CICS workstation, and supports the APPC API used by CICS. SNA Server is installed on another workstation, and provides the SNA transport layer used to communicate with other systems.

When used in this manner, a single SNA Server system can support multiple Windows NT SNA Client systems.

SNA Server configuration for SNA Clients

The workstations using the Windows NT SNA Client are defined to SNA Server as local APPC LUs as described in “Configuring local LUs” on page 8. You should specify a **LU Alias** for the SNA Client LU, and that alias should be used in the **cicssnatpns** configuration when you configure the transactions the SNA Client will send to the SNA Server.

Matching SNA Server parameter with CICS parameters

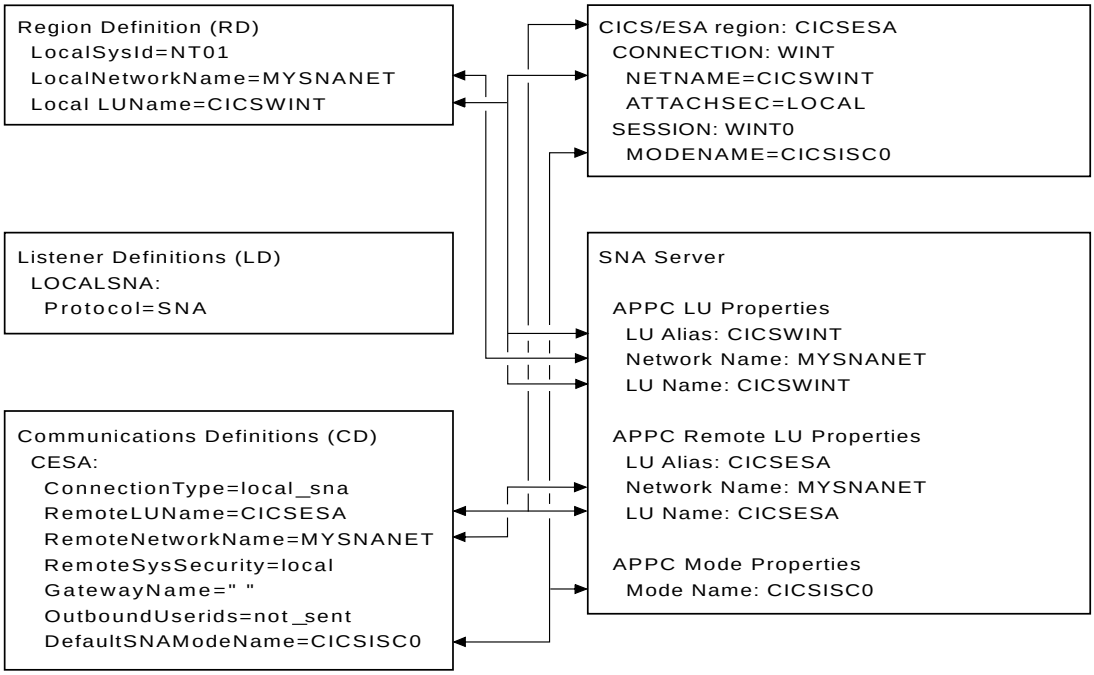

Figure 14. Matching SNA Server parameters with CICS

Alternatives

- The **DefaultSNAModeName** CD attribute, can be left blank and you can set the mode name by using the CICS_SNA_DEFAULT_MODE environment variable:

  ```
  CICS_SNA_DEFAULT_MODE=CICSISC0
  ```

  For more information on CICS_SNA_DEFAULT_MODE refer to “Configuring CD entries for local SNA” in the *Intercommunication Guide*.
- If you wish to configure the APPC Remote LU alias with a different value from the APPC Remote LU name, set the value of the APPC Remote LU alias in the **SNAConnectName** attribute of the CD entry.
- If you wish to configure the APPC local LU alias with a different value from the APPC local LU name, set the value of the APPC local LU alias using the CICS_SNA_LUALIAS environment variable. For example, if the region’s local LU name is CICSWINT, and the APPC local LU alias you require is CICSNT, then the environment variable would be set as follows:

  ```
  CICS_SNA_LUALIAS_CICSWINT=CICSNT
  ```

  Your CICS region will read this environment variable during region initialization and write messages to the console.msg which indicate the local LU name and alias that the CICS region is using.

For information on setting environment variables refer to “Environment variables” in the Intercommunication Guide.

Chapter 4. Configuring VTAM with details of your CICS region

The Virtual Telecommunication Access Method (VTAM) is an IBM product that runs on a mainframe and controls access to systems such as CICS for MVS/ESA, CICS/ESA, CICS/MVS and CICS/VSE. VTAM uses the services of the Network Control Program (NCP) product to connect the mainframe to the network. Therefore, the NCP may need updating so it will pass requests from your SNA machine to VTAM and the remote system beyond.

VTAM and NCP definitions are coded using macros. The sections below show example definitions. Only a few examples are shown. As these examples could not cover the extensive range of network configurations, they are to be used as guidance only. Please refer to the following manuals for more information and examples of VTAM and NCP definitions:

- *VTAM Resource Definition Examples*
- *IBM Network Products Implementation Guide*

Defining your machine and CICS regions to VTAM

The VTAM Physical Unit (PU) macro defines the machine where your SNA product is running. The example below is a PU macro for a PC running CICS for Windows NT that is connected to the network with an IBM Token Ring:

```
*********************************************************************
*
NT000127 PU    ADDR=C1,            STATION ADDRESS (CAN BE ANY VALUE)  X
               IDBLK=05D,          071 = RS/6000, 05D = OS/2           X
               IDNUM=12345,        PART OF XID.                        X
               DISCNT=NO,          HANG-UP ON LU LOGOFF                X
               MAXDATA=265,        MAX I-FIELD SIZE                    X
               MAXOUT=7,           RECEIVE PACING WINDOW               X
               MAXPATH=1,          NO OF DIAL-OUT PATHS                X
               MODETAB=MTDFLT,     MODETAB IF LU DOES NOT SPECIFY ONE  X
               SSCPFM=FSS,         LUs NOT SUPPORTING CHAR-CODED MSGS  X
               PACING=0,                                               X
               VPACING=0,                                              X
               PUTYPE=2,                                               X
               ISTATUS=ACTIVE
*
*********************************************************************
```

Values coded in the PU definition for your machine must match the definitions you create in your SNA product. For example, VTAM can use either an *Exchange Identifier (XID)* or a *control point (CP) name* to match a request from you machine to its PU definition. The PU definition above has an XID defined. This is made up from the IDBLK and IDNUM values. Therefore your SNA product would be configured with an XID of 05D12345.

The CP name can be coded on a PU definition using the CPNAME parameter. This is not required in the example above because the XID is coded. If your SNA product allows you to configure both an XID and a CP name but in the VTAM PU definition you specify only an XID, then it is suggested that you make the PU name (NT000127 in this example) the same as the CP name. This will make it easier for you to associate the

VTAM PU definition with your machine. However if you do use the CPNAME parameter in the PU definition then that CP name must be differenmt from the PU name.

When you are setting up a link between your machine and VTAM, you must decide which machine is to issue the command that establishes the link. One machine must *call* and the other must *listen*. It is usual for VTAM to listen and your machine to call. However, if you wish to set up VTAM so it calls your machine, VTAM needs to know the address of your machine. This is defined in a **PATH** definition. The PATH definition is coded just after the PU definition.

```
*********************************************************************
*
NT01     PATH  GRPNM=WINT,              ECLTYPE=LOGICAL group in NCP  X
               DIALNO=01044000012345678                               X
               GID=1,                                                 X
               PIC=1,                                                 X
               USE=YES
*
*********************************************************************
```

Under the PU and, if defined, the PATH macro definitions, are the logical unit (LU) definitions. The LUs are in the machines defined in the PU definition, and are configured in the SNA product in that machine.

```
*********************************************************************
*
CICSWINT LU    LOCADDR=0,ISTATUS=ACTIVE,MODETAB=MTCICS
*
*********************************************************************
```

The LOCADDR=0 option on the LU definition indicates that the region's LU is **independent**. This enables it to communicate with other independent LUs without using VTAM. The MODETAB parameter specified the name of the VTAM mode table that defined all of the modegroups (modenames) used by the CICS region. Examples of mode table entries are shown below.

Defining mode groups to VTAM

The example macro below shows part of a VTAM mode table MTCICS. This defines a number of mode groups that includes the entry for modename CICSISC0. The mode table used by a CICS region must have a definition for all of its modegroups (modenames) it uses and a definition for the SNASVCMG mode group. This modegroup is used by your SNA product for network management requests.

```
MTCICS   MODETAB
*************************************************************************
* MODE TABLE FOR CICS                                                   *
*************************************************************************
          :            :            :            :          :
*
* Modename CICSISC0 - Parallel_Sessions=yes
*
CICSISC0 MODEENT LOGMODE=CICSISC0,                                      X
               TYPE=0,             ONLY TYPE RECOGNISED                 X
               FMPROF=X'13',       SNA                                  X
               TSPROF=X'07',       SNA                                  X
               PRIPROT=X'B0',      PRIMARY PROTOCOL                     X
               SECPROT=X'B0',      SECONDARY PROTOCOL                   X
               COMPROT=X'79A5',    COMMON PROTOCOL                      X
               SSNDPAC=X'00',                                           X
               SRCVPAC=X'00',                                           X
               RUSIZES=X'8989',    RUSIZES IN-4096 OUT-4096             X
               PSNDPAC=X'00',                                           X
               PSERVIC=X'060200000000000000122F00'
*
* Modename SNASVCMG - required for parallel sessions
*
SNASVCMG MODEENT LOGMODE=SNASVCMG
          :            :            :            :          :
         MODEEND
*************************************************************************
* END OF MODE TABLE FOR CICS                                            *
*************************************************************************
```

Chapter 5. Operating Microsoft SNA Server 2.11

SNA Server resources are managed using the **SNA Server Admin** application which is located in the **Microsoft SNA Server** program group. This chapter gives some guidelines for the most common SNA administration tasks, including:

- "Starting and stopping the node"
- "Starting and stopping connections"
- "Starting and stopping sessions"

Starting and stopping the node

Starting the node

To start the SNA node on your NT machine, select the name of your machine on the **SNA Server Admin** panel. Then select the **Start** option on the **Service** menu and the node will become active.

Stopping the node

The node is stopped by selecting the name of your machine on the **SNA Server Admin** panel and then selecting the **Stop** option on the **Service** menu.

Starting and stopping connections

Starting a connection

To start an inactive connection, select the name of the connection and then select the **Start** option on the **Service** menu. The connection will become active (or start listening) for an incoming request depending on what allowed directions were originally configured for the connection.

Stopping a connection

A connection can be stopped by selecting the name of the connection and then selecting the **Stop** option on the **Service** menu.

Starting and stopping sessions

Starting sessions

Starting individual sessions is not possible by user operations from SNA Server. If the remote SNA product supports the activation of SNA sessions by user operation then this method can be used to activate the required sessions. Alternatively initiating a CICS intersystem request will activate the required sessions. You can also specify an auto-activate level in the mode definition so that a number of sessions will be activated when the remote system makes contact, or when the first intersystem request is made.

Stopping sessions

Stopping sessions is achieved by selecting the local computer and then selecting the LU Name in the right hand side of the **Servers and Connections** window. Double clicking the mouse on the selected LU name displays the APPC LU Properties box and the Status button displays the current status of all LUs configured as partners to this local LU. To unbind a session in a particular mode group select the mode and then select the **Zoom** radio button. If any sessions are bound using the selected mode group then they can be selected and terminated using the **Deactivate** radio button.

Chapter 6. Problem determination with SNA Server

When failures occur in an intersystem environment, the first steps in problem determination usually involves trying to understand the exact nature of the problem and then locating the communications component or product that was responsible for it. To do this it is often necessary to use the message and trace facilities provided by each product.

This chapter describes how to use the problem determination tools provided for SNA Server. These include:

- "Viewing messages from SNA Server"
- "Tracing SNA Server"

"System management in an SNA intersystem environment" in the Intercommunication Guide explains when these should be used.

Viewing messages from SNA Server

SNA Server writes messages to the NT application log which can be viewed using the **NT Event Viewer** application. This application is located in the **Administrative Tools** program group.

You can control the level of detail of these messages using the **SNA Server Admin** application.

To configure the types of messages produced by SNA Server switch to the **SNA Server Admin** application (which is in the SNA Server program group). Select the **Logs** option from the **Options** menu to display the **Error/Audit Logging and Popups** panel. Then select the **Audit Log Level** you require, and select **OK**.

It is recommended that logging is set to **Significant System Events** during normal operations, and is only set to **Detailed Problem Analysis** when diagnosing problems. This will prevent the application log file from rapidly filling up with unwanted data.

Tracing SNA Server

The SNA Server trace application in the in the Microsoft SNA Server program group allows you to trace the SNA calls made by CICS. The trace files are written to the traces subdirectory in the SNA Server root directory (C:\SNA by default).

To activate tracing select the tracing levels you require, and then select **Apply** to start the trace. After you have run the request you wish to trace select **Clear** to turn the trace off.

To trace the data flowing across the SNA network from SNA Server, run the SNA Server trace application. Select **SnaServer** in the **Service Name** menu. Then select the **SNA Formats** check box for **Message Traces** and the **Apply** button. The trace file is written to the file **nodemsg**x**.trc** in the SNA trace directory.

To trace the calls CICS makes to SNA Server, select **SNA Applications** in the Service Name menu, and the **APPC API** check box for **Client API Tracing**. The trace file is written to the file **api*x*.trc** in the SNA Server trace directory.

Full details on using the SNA trace facility can be displayed by selecting the **Help** button on the **SNA Server Trace Options** panel.

Part 1. Appendixes

Appendix A. CICS and Microsoft SNA Server reference

This chapter contains reference information about CICS for a Microsoft SNA Server system administrator.

CICS expects a SNA product to be present on the local NT machine if a CICS Listener Definitions (LD) entry with **Protocol=SNA** is defined in the CICS region. The information that follows describes the features that CICS will use if the SNA product is Microsoft SNA Server.

- CICS will dynamically load the "wappc32.dll" library into a number of its operating system processes. The directory where this library and any of its dependencies are located should be specified in the PATH environment variable for the CICS region.

  If CICS can not load the library, messages are written to the CICS region's **console.msg** file during startup.

  Note: The name of this library can be changed using the CICS_SNA_APPC_LIBRARY environment variable.

- CICS will output the string and version number returned by the **WinAPPCStartup** call of the `wappc32.dll` library to the region's **console.msg** file during startup.
- Each CICS region uses its own local LU name.
- CICS regions may make use of the following APPC calls:
  - AP_B_ALLOCATE
  - AP_B_CONFIRM
  - AP_B_CONFIRMED
  - AP_B_DEALLOCATE
  - AP_B_FLUSH
  - AP_B_PREPARE_TO_RECEIVE
  - AP_B_RECEIVE_AND_WAIT
  - AP_B_RECEIVE_IMMEDIATE
  - AP_B_REQUEST_TO_SEND
  - AP_B_SEND_DATA
  - AP_B_SEND_ERROR
  - AP_RECEIVE_ALLOCATE
  - AP_TP_STARTED
  - AP_TP_ENDED
- CICS uses mapped conversations.
- Each CICS region will keep a RECEIVE_ALLOCATE outstanding for each of its four character transaction program names (TPNs). These calls are issued using a **WinAsyncAPPCEx** call.
- CICS expects its invokable TPNs to be defined in the local NT registry under:

  `System\CurrentControlSet\Services\SnaBase\Parameters\TPs\<TPN>\Parameters`

  with the following keys:

```
SNAServiceType: REG_DWORD: 0x1A
ConversationSecurity: REG_SZ:  "yes" or "no"
AlreadyVerified: REG_SZ: "yes" or "no"
Timeout: REG_DWORD: <timeout in seconds>
LocalLU: REG_SZ: <local LU alias for CICS region>
```

If ConversationSecurity is yes, there are also keys for each userid and password pair that accompanies a request for the TPN:

```
<User1>: REG_SZ: <Password1>
       ...
<Usern>: REG_SZ: <Passwordn>
```

- The **cicscp start sna** and **cicscp start sna** commands can be used to start and stop MicroSoft SNA Server. They work by starting and stopping the **SnaServr** service. The name of the service that is controlled by these **cicscp** commands can be changed using the CICS_SNA_SERVICE_NAME environment variable.

Bibliography

SNA books

Systems Network Architecture Technical Overview, GC30-3073

Systems Network Architecture Transaction Programmer's Reference Manual for LU Type 6.2, GC30-3084

Systems Network Architecture--Sessions Between Logical Units, GC20-1868

Systems Network Architecture Format and Protocol Reference Manual: Architecture Logic for LU Type 6.2, SC30-3269

Systems Network Architecture LU 6.2 Reference--Peer Protocols, SC31-6808

Microsoft SNA Server books

Microsoft SNA Server Administration Guide
Microsoft SNA Server Installation Guide
Microsoft SNA Server Reference

CICS books

Intercommunication Guide, SC33-1564

Administration Guide, SC33-1774

Administration Reference, SC33-1563

CICS Family: Interproduct Communication, SC33-0824

Using IBM Communications Server for AIX with CICS, SC33-1898

Using IBM Communications Server for Windows NT with CICS, SC33-1900

CICS for MVS/ESA Intercommunication Guide, SC33-1695

CICS Family: Communicating from CICS on System/390, SC33-08

CICS/VSE Intercommunication Guide, SC33-0701

CICS for OS/2 Intercommunication, SC33-1583

CICS/400 Intercommunication, SC33-1388

Notices

The following paragraph does not apply to any country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of the intellectual property rights of IBM may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact Laboratory Counsel, MP151, IBM United Kingdom Laboratories, Hursley Park, Winchester, Hampshire, England SO21 2JN. Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 500 Columbus Avenue, Thornwood, New York 10594, U.S.A.

Trademarks and service marks

The following terms, used in this publication, are trademarks or service marks of IBM Corporation in the United States or other countries:

AIX	CICS/6000	RISC System/6000
AIXwindows	DB2	RS/6000
CICS	GDDM	SAA
CICS/ESA	IBM	SP2
CICS/VSE	InfoExplorer	VTAM
CICS/400	OS/2	

The following terms, used in this publication, are trademarks or service marks of other companies:

Microsoft, Windows, Windows NT, and the Windows 95 logo are trademarks or registered trademarks of Microsoft Corporation.

Lotus Notes is a trademark of Lotus Development Corporation.

Encina is a trademark of Transarc Corporation.

Sun and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.

Other company, product, and service names, which may be denoted by a double asterisk (**), may be trademarks or service marks of others.

Index

V

X

Sending your comments to IBM

CICS Family

Using Microsoft SNA Server V2 with CICS

SC33-1899-00

If you especially like or dislike anything about this book, please use one of the methods listed below to send your comments to IBM.

Feel free to comment on what you regard as specific errors or omissions, and on the accuracy, organization, subject matter, or completeness of this book. Please limit your comments to the information in this book and the way in which the information is presented.

To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate, without incurring any obligation to you.

You can send your comments to IBM in any of the following ways:

- By mail, use the Readers' Comment Form (RCF)
- By fax:
  - From outside the U.K., after your international access code use 44 1962 870229
  - From within the U.K., use 01962 870229
- Electronically, use the appropriate network ID:
  - IBM Mail Exchange: GBIBM2Q9 at IBMMAIL
  - IBMLink: WINVMD(IDRCF)
  - Internet: idrcf@winvmd.vnet.ibm.com

Whichever you use, ensure that you include:

- The publication number and title
- The page number or topic to which your comment applies
- Your name/address/telephone number/fax number/network ID.

Readers' Comments

CICS Family

Using Microsoft SNA Server V2 with CICS

SC33-1899-00

Use this form to tell us what you think about this manual. If you have found errors in it, or if you want to express your opinion about it (such as organization, subject matter, appearance) or make suggestions for improvement, this is the form to use.

To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer. This form is provided for comments about the information in this manual and the way it is presented.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

Be sure to print your name and address below if you would like a reply.

Name	Address
Company or Organization	
Telephone	Email

CICS Family
Using Microsoft SNA Server Version 2 with CICS SC33-1899-00

You can send your comments POST FREE on this form from any one of these countries:

Australia	Finland	Iceland	Netherlands	Singapore	United States
Belgium	France	Israel	New Zealand	Spain	of America
Bermuda	Germany	Italy	Norway	Sweden	
Cyprus	Greece	Luxembourg	Portugal	Switzerland	
Denmark	Hong Kong	Monaco	Republic of Ireland	United Arab Emirates	

If your country is not listed here, your local IBM representative will be pleased to forward your comments to us. Or you can pay the postage and send the form direct to IBM (this includes mailing in the U.K.).

1 Cut along this line

2 Fold along this line

By air mail
Par avion

IBRS/CCRI NUMBER: PHQ - D/1348/SO

NE PAS AFFRANCHIR

NO STAMP REQUIRED

REPONSE PAYEE
GRANDE-BRETAGNE

IBM United Kingdom Laboratories
Information Development Department (MP095)
Hursley Park,
WINCHESTER, Hants
SO21 2ZZ United Kingdom

3 Fold along this line

From: Name _____

Company or Organization _____

Address _____

_____

EMAIL _____

Telephone _____

4 Fasten here with adhesive tape

1 Cut along this line

Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

SC33-1899-00