

IBM Multi-platform APPC Configuration Guide

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Introduction

This booklet explains how to configure APPC and APPN on the following platforms:

- Networking Services/DOS
- OS/2
- AIX
- VM
- CICS
- MVS
- AS/400

(See the individual chapters for details on product versions and prerequisites.)

To configure APPC on different kinds of computers you need to know multiple, varying configuration methods. Terminology varies from one type of computer to another. There is a set of values that needs to match between two computers that want to communicate.

This guide is designed to do three things:

1. Describe the steps needed to configure APPC.
2. Explicitly state which values in one computer's configuration need to match values in a partner computer's configuration.
3. Separate the terminology differences between computers by mapping to a set of standard terms, and confining platform-specific terms to the section that describes that platform.

This guide is not a tutorial on APPC or APPN concepts, although some APPC and APPN terms are introduced in this first section. It is also not a network design tutorial. A good introduction to APPC and APPN concepts is provided in two publications: *Networking with APPN: An Overview*, G325-0204-00 and *Communicating with APPC and CPI-C: A Technical Overview*, G325-0202-00. Both are available from IBM.

To keep things simple, configuration for a token-ring Local Area Network is explicitly presented in this booklet. The information here should help you configure other types of networks, but additional information from the platform's installation guide may be necessary in those cases.

APING

This guide uses a widely available APPC program called APING in the configuration examples. APING is a small program that sends data across a network and receives some data back. APING is used to test connectivity between two machines on a network, and to provide diagnostic information when APPC communications fail. APING is shipped as a sample program with Networking Services, DOS and Communications Manager/2. It is also available on several bulletin boards:

- CompuServe

There is an APPC Info Exchange area on CompuServe (type GO APPC to access it when in CompuServe). In the Library section, there are several packages related to APING:

- APING.ZIP - The OS/2 APING executables, C source code, and makefiles for many platforms.
- APINGS.ZIP - The C source portion of the APING.ZIP package.
- PNGFAM.ZIP - The executables from the APING.ZIP package.
- APINGC.ZIP - the CICS COBOL source for the APINGD server.

- MKTTOOLS

MKTTOOLS is an IBM-internal bulletin board containing packages that can be distributed to customers. IBM marketing reps and SE's have access to this bulletin board and can request packages from it. The packages related to APING are:

- APING PACKAGE: The OS/2 APING executables, C source code, and makefiles for many platforms.
- APINGCIC PACKAGE: the CICS COBOL source for the APINGD server.

- OS2BBS

The OS2BBS is a bulletin board accessible through IBM Information Network. The APING package is available on the OS2BBS.

- APING.ZIP: The OS/2 APING executables, C source code, and makefiles for many platforms.

The APING package consists of a client program, APING, and a server program APINGD. We recommend that you obtain APING and use it when you configure APPC in your network.

When you finish configuring both partners, you can run APING on the client machine. When APING successfully exchanges information with a partner, the following information (with timing variations) is displayed.

```

APING version 2.35 APPC echo test with timings.
by Peter J. Schwaller (pjs@ralvm6.vnet.ibm.com)

Allocate duration:                               1711 ms

Program startup and Confirm duration:           689 ms

      Duration      Data Sent      Data Rate      Data Rate
      (msec)        (bytes)        (KB/s)         (Mb/s)
-----
      31            200            6.3            0.050
      29            200            6.7            0.054
Totals: 60            400            6.5            0.052

Duration statistics:  Min = 29  Ave = 30  Max = 31
  
```

Figure 1. Results from APING

Using this guide

This guide contains a chapter for each platform. Each chapter describes that platform's configuration independent of the type of machine it will be connecting to. Within each chapter, when parameter values are needed from a partner computer, the instructions will say: "See the 'How to find...' section of the partner computer's configuration chapter." The person using that partner computer's configuration chapter should be able to read the 'How to find...' instructions and provide the proper value.

Each chapter assumes some knowledge of the operation of that platform. No APPC or APPN knowledge is required, but someone configuring Networking Services DOS, needs to know how to edit a text file in DOS, and how to copy files for example.

If there are different people configuring different platforms, for example, when trying to connect OS/2 to an AS/400, this is what you should do:

1. Give the chapter on OS/2 to the OS/2 operator.
2. Give the AS/400 chapter to the AS/400 operator.
3. Each person fills in the values in the platform Configuration Worksheet at the beginning of their chapter. You need to obtain specific values from the person who is configuring the platform that you want to connect to. Instructions for finding this information are in the "How to find..." section of their chapter.
4. Each person follows the configuration directions in their chapter, filling in the appropriate values from the Configuration Worksheet.
5. If you need more details about a platform's configuration, you should refer to documents listed at the beginning of each chapter.

In this manner, the OS/2 operator never needs to learn the AS/400 configuration terminology (unless the same person is the operator of both machines).

Each chapter in this booklet is not only independent of the partner computer's platform, but also independent of the network structure. This means that the connection between computers is described as a direct connection from one computer to the other. However, configuration can get complex when a computer starts connecting to several partner computers. This complexity is unnecessary when a special kind of node called a network node is added to the network. A network node is used to locate partners in a network. (Network nodes are discussed in more detail in "What Is APPN?" on page 6.)

If you have a network node in your network, you can define just one link to it, and avoid defining the many individual links to the other computers in the network that can be located by the network node. The chapter for each platform describes how to substitute a link to a network node for many direct links to partner machines. The way to find out if you have a network node in your network is to ask someone who set up the network. That person should be able to provide you with the necessary information about the network node for you to include it in your configuration. If you don't have a network node, or don't know if you have one, you can continue to follow the directions that assume there is no network node. The only drawback is that this may add unnecessary complexity to your network.

What Is APPC?

Advanced Program-to-Program Communication (APPC) is software that enables high-speed communications between programs on different computers, from portables and workstations to midrange and host computers. APPC software is available for many different IBM and non-IBM operating systems, either as part of the operating system or as a separate software package.

APPC serves as a translator between application programs and the network. When an application on your computer passes information to the APPC software, APPC translates the information and passes it on to a network interface, such as a LAN adapter card. The information travels across the network to another computer, where the APPC software receives the information from the network interface. APPC translates the information back into its original format and passes it to the corresponding partner application.

What are Transaction Programs and Conversations?

The part of an application that initiates or responds to APPC communications is called a *transaction program* or TP. A transaction program on your workstation is not an entire, stand-alone program. Instead, it is the part of the program that handles transactions (exchanges of data) with another program.

When people talk with each other, we say that they are having a conversation. Likewise, the communication between two transaction programs is called a *conversation*.

A conversation between two programs is similar to conversation between two people. When you have a conversation with another person, you follow unwritten rules that govern how you begin and end the conversation, take turns speaking, and exchange information. Similarly, APPC is called a *protocol* because it provides the rules that govern how conversations between transaction programs start and stop, which program “speaks” first, and how data is exchanged.

A program in your computer may have several conversations active at one time, with the same transaction program or with different transaction programs.

What are Logical Units and Sessions?

When two people in different buildings want to talk to each other, they must use their telephones. Similarly, transaction programs in different computers can't talk directly to each other. Instead, they converse over sessions between two logical units.

A *logical unit* or LU is APPC software that serves as an interface or translator between a transaction program and the network. A logical unit manages the exchange of data between transaction programs..

An *LU* is located on your computer. A *partner LU* is located on a partner computer.

Before a transaction program can start a conversation with a partner transaction program, APPC must establish a *session*, the session that connects the local LU and the partner LU.

There is a one-to-one relationship between a conversation and a session. A session can support only one conversation at a time. However, as soon as that conversation ends, another conversation can use the session. So, compared to conversations, sessions are long-lived connections.

What Is a Mode?

A mode is a set of parameters that defines the characteristics of a session between two LUs. Modes have names that must match exactly. There are 5 modes predefined on most platforms that can be used by most applications. (Two more modes, SNASVCMG and CPSVCMG, are also defined, but they are not intended to be used directly by applications.) The SC suffix in the mode name means the definitions include security.

- #INTER - for interactive jobs
- #BATCH - for batch jobs
- #INTERSC - for interactive secured jobs
- #BATCHSC - for batch secured jobs
- #CONNECT - an average between #INTER and #BATCH

What Is CPI-C side information?

CPI-C, Common Programming Interface Communications, provides a consistent application programming interface for applications that require APPC.

CPI-C programming provides a mechanism, called side information which associates a set of parameters with a specified symbolic destination name. The CPI-C program then uses the symbolic destination name to initialize a conversation. This information includes:

CPI-C Symbolic destination name

The name used to refer to the CPI-C side information entry.

TP name

The name used to identify which program to start on the partner computer.

LU name

The name of the partner LU

mode name

The characteristics associated with the session between the LUs.

What Is a Network?

Transaction programs in different computers must use a network to communicate with each other. APPC provides the interface between the programs and networking software and hardware.

What Is APPN?

In simplest terms, a network consists of components that connect computers. These components are:

Node

A node is any computer in the network. For example, if your DOS workstation is connected to an OS/2 workstation, both computers are nodes.

Link

A link is a physical or logical connection between two adjacent nodes.

Before data can be sent between two nodes, a link must be active between them.

What Is APPN?

Advanced Peer-to-Peer Networking (APPN) provides networking functions for APPC applications.

When configuring a node in a network, you must decide which type of node to configure. Types of nodes in an APPN network are:

Low-entry networking node (LEN)

Low-entry networking nodes are the simplest node type and have the least function. A low-entry networking node must be an end point in the network; it cannot function as an intermediate node. A LEN is capable of peer-to-peer communication, but unable to make direct use of APPN functions. Most end-user computers should be EN's. However, some platforms can only be LEN nodes, e.g., NS/DOS.

End node (EN)

An end node provides the functions of a low-entry networking node plus the ability to register information about itself with a network node. This ability helps reduce the amount of network configuration required.

Network node (NN)

NN's are used to locate partners in an APPN network. If there is a NN in the network, an end node can define one link to the network node. The EN then requires no other link definitions. Typically, there is at least one network node in a network but the addition of more requires informed network analysis.

What is a Control Point(CP) ?

In APPN, a control point is responsible for managing the node and its resources and, in an APPN end node, for communicating with an adjacent network node server's control point to obtain APPN network services. A control point is an LU and it might be the only LU at that node. *Whenever possible the CP should be the only LU at a node.* Platforms that are LEN only do not use the control point.

What is Subarea Networking?

Subarea networks existed prior to APPN. As opposed to APPN, subarea networks are hierarchical in nature. The software that implements subarea networks runs in host computers and communication controllers attached to those hosts. The host software is called VTAM (Virtual Telecommunications Access Method), and the communication controller software is called NCP (Network Control Program).

Nodes in APPN networks can have links to subarea networks and can establish sessions and conversations with LUs and TPs in those networks. From the perspective of the APPN node the entire subarea network is viewed as a LEN node. Resources in the subarea network can then be defined in the APPN node as though they all were contained in one LEN node.

What is a Node Identifier?

Note: Some SNA products require partner systems to code a specific value for a parameter called the *node identification* or *node id* for short. The two systems pass this node identifier during the link activation in a message unit called exchange identification or "XID." Node identifiers for each specific platform are described in the appendix. See Appendix A, "Using Node IDs in VTAM" on page 109.

We discourage use of node identifiers, preferring the CP name because it is more generic and less confusing.

How do I Configure a Network?

This section provides an overview of the steps required to configure APPC. Configuration is described by using a standard terminology. These standard terms are used throughout the guide to discuss configuration. Each platform may use platform-specific terms in its configuration instead of the standards terms. Therefore, each chapter contains a terminology mapping chart that cross-references the terms below with platform-specific terms.

The steps to APPC configuration are:

- Define yourself to the network.

To define yourself to the network, you must define these parameters:

- Network Name

A network is a set of interconnected nodes that are grouped by a common identifier called a *network name*. The network name is a 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network name.

- LU name

1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the network name.

The fully qualified name is represented as two concatenated names, the network name and the LU name, separated by a period (NETNAME.LUNAME). This unique name identifies the node.

- Define a link to your partner
 - You can define a direct link between the local node and the partner node if both nodes are in the same local network.
 - If there is a network node (NN) in the local network, you can define a link to the NN, and the NN can locate the partner node.

- If the partner node is located in a VTAM subarea, you can define a link to the VTAM subarea, and the VTAM subarea can locate the partner node for you.

To define a link, you must define these parameters:

- Network Name

This is the Network Name of the partner machine. To determine this value, refer to the "How to find..." section of the partner machine's configuration chapter.

- Partner LU Name

This is the LU name of the partner machine. To find this value, refer to the "How to find..." section of the partner machine's configuration chapter.

- Adjacent LAN Address

This is the address of the adjacent node or the network node you are connecting to. In a token ring, this is the address of the token ring card at the adjacent node. To find this value, refer to the "How to find..." section of the partner machine's configuration chapter.

- Define partner LU name

If you ARE NOT using a network node in your network, you must define a partner LU name. This will allow the partner to be located.

- Partner LU Name

This is the Local LU name defined on the partner machine. To find this value, refer to the "How to find..." section of the target machine's configuration chapter.

If you ARE using a network node in your network, you do not need to define an explicit partner LU name. However, you will need to know the partner LU name when running transaction programs.

CPI-C Side Information may be used to associate a set of parameters, including the partner LU name, with a symbolic destination name. The symbolic destination name can then be used when running transaction programs to specify the partner. Each platform has directions for configuring CPI-C side information.

- Configure to run as a server

If you are configuring your computer to run as a server, a transaction program must be configured on your computer. The transaction program will be the target of a conversation started by a client.

- TP name

1 to 64 alpha-numeric characters. This is the name specified by the partner APPC application when it wants to start a conversation with a TP on your computer.

AIX SNA Services/6000 Configuration

This chapter explains how to configure AIX SNA Services/6000. AIX SNA Services/6000 is IBM's implementation of APPC for AIX. Version 1.2 only supports low entry networking nodes (see "What Is APPN?" on page 6 for a discussion of SNA node types). The machine to be configured should have AIX version 3.2 and SNA Services version 1.2 with the latest updates applied. This is necessary to get the maximum benefit of APPC, including CPI-C support, and mode definitions. To check the level of SNA Services you have installed, run the command

```
lslpp -h sna.sna.obj
```

The result should contain four numbers similar to this:

```
01.02.0000.0000
```

If the last number is "0000", you do not have the latest updates. You should apply PTF's U411903 and U411904. If the last number is "0224" (indicating the July, 1992 quality refresh) or "0244" (indicating the December, 1992 quality refresh), then your SNA Services are sufficiently updated.

This document describes all of the profiles that need to be created to configure an AIX machine to run APING to another machine. A few profiles may be left out if you don't plan to run this AIX machine as a server. These will be noted. To configure Transaction Programs other than APING and APINGD on this machine, see the discussion under "Configure to run as a server" on page 22.

Prerequisites

- AIX V3.2
- AIX SNA Services/6000 V1.2 with PTF's U411903 and U411904
- Token-ring adapter

For more detailed configuration information, refer to the following publications:

- *Using AIX SNA Services/6000*, SC31-7002
- *AIX SNA Services/6000 Reference*, SC31-7014

Terminology

The terminology table maps the standard networking terms defined in "How do I Configure a Network?" on page 7 to the terms used by SNA Services/6000.

| <i>Standard Term</i> | <i>AIX SNA Services/6000 Term</i> |
|----------------------|-----------------------------------|
| Link Name | Attachment profile name |
| Network Name | network name |
| LU Name | local LU name |
| Partner LU Name | remote LU name |
| LAN Address | Link Address |
| Adjacent LAN Address | Remote link address |

SNA Services/6000 Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

For example, if you are following the recommendations in the Worksheet, you will write #INTER in the right column on the ?MODE? line. Then in Figure 13 on page 21 you will type #INTER in the "MODE name" field to replace "?MODE?" like this:

CPI Communications Side Information

| | |
|---------------------------------|-----------------|
| PROFILE name | = ?SYMDEST? |
| PARTNER LU name | = ?CALLCONNPRO? |
| REMOTE TRANSACTION PROGRAM name | = ?TPNAME? |
| SERVICE transaction program? | = no |
| MODE name | = #INTER |

Figure 2. CPI Communications Side Information

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|---|--|---------------------------|
| Values that must match with other places | | |
| ?LUNAME? | This is the symbol that refers to the LU name of the machine you are defining to the network. It is a 1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the same network. Refer to "How do I Configure a Network?" on page 7 for information about LU names. | |
| ?CPNAME? | This is the symbol that refers to the Control Point name of your machine. It same as your ?LUNAME?. Refer to "What Is APPN?" on page 6 for more information about control points. | |
| ?NETWORK? | This is the symbol that refers to the network name of the machine you are defining to the network. It is a 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network Refer to "How do I Configure a Network?" on page 7 for more information about network names. | |

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|---------------------|---|---------------------------|
| ?PARTNERLU? | This is the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value. Refer to "How do I Configure a Network?" on page 7 for more information about the partner LU name. | |
| ?PARTNERNET? | This is the symbol for the network name of the partner computer. Use the network name from the partner computer's "How to find..." section. Refer to "How do I Configure a Network?" on page 7 for more information about the partner network name. | |
| ?LANADDRESS? | This is the symbol for the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value. | |
| ?TPNAME? | This is the symbol for the Transaction Program name. This is the name of the transaction program at the partner computer. For APING, the TP Name on the server is APINGD . | |
| ?TPPATH? | This is the symbol for the fully specified path and filename of the executable code for a server transaction program located on your machine. For APINGD, this may be: <code>/local/sna/apingd</code> . | |
| ?MODE? | This is the symbol for the mode name. See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client/server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is #INTER . It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. | |
| Local values | | |
| ?SYMDEST? | <p>This is the symbol for the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It will be used locally on the AIX machine to refer to a CPI-C side information entry. See "What Is CPI-C side information?" on page 5 for more information on CPI-C Side Information.</p> <p>Note: The December 1992 quality refresh of SNA Services 6000 fixes an error that would require you to specify a symbolic destination that is exactly eight characters long when running APING. If you only have the July 1992 quality refresh (see -- Heading 'AININTR' unknown --), you should specify an eight character symbolic destination name.</p> | |

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|--|--|---------------------------|
| <p>The following are the names of the profiles that must be configured. The profile names must be 1 to 14 characters long (unless otherwise indicated). The profile names are referenced only on the machine you are configuring, and do not need to match any values on other machines. Some suggestions for profile names are provided.</p> <p>If you are using Quick Configuration, you only need to fill in a value for the first symbol below (?QUICKPRO?). All the profile names generated for the Quick Configuration will be the same (except the Transaction Program and Mode profile names which are slightly modified).</p> | | |
| ?QUICKPRO? | The symbol for name that Quick Configuration uses to generate profile names for all the profiles it creates. You don't need this value if you are not using Quick Configuration. This value is 1-12 characters long. Suggestion: use the same value as that used for the ?PARTNERLU? symbol. | |
| ?CPPRO? | The symbol for the name of the Control Point profile. Suggested profile name: CPPRO | |
| ?LUPRO? | The symbol for the name of the Local Logical Unit 6.2 profile. Suggested profile name: MYLUPRO | |
| ?CALLATTACHPRO? | The symbol for the name of the Outgoing (CALL) Attachment profile. Suggested profile name: CALLATT Note: The attachment profile names are only 1-8 characters long. | |
| ?LISTATTACHPRO? | The symbol for the name of the Incoming (LISTEN) Attachment profile. Suggested profile name: LISTATT Note: The attachment profile names are only 1-8 characters long. | |
| ?CALLCONNPRO? | The symbol for the name of the Outgoing (CALL) Connection profile. Suggested profile name: CALLCONN | |
| ?LISTCONNPRO? | The symbol for the name of the Incoming (LISTEN) Connection profile. Suggested profile name: LISTCONN | |
| ?MODEPRO? | The symbol for the name of the Mode Profile. To avoid defining new modes, use one of the mode profiles already supplied by SNA Services/6000: <ul style="list-style-type: none"> • INTER • BATCH • INTERSC • BATCHSC <p>Note that these are the mode profile names. The actual modes defined by them are: #INTER, #BATCH, #INTERSC, and #BATCHSC. Which one to choose may depend on the requirements of your client/server application, as specified in its documentation. See "What Is a Mode?" on page 5 for a discussion of these modes. To use the default mode that APING uses, specify INTER.</p> | |

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|---------------|---|---------------------------|
| ?MODELISTPRO? | The symbol for the name of the Mode List profile. Suggested profile name: MODELIST | |
| ?RTPNAMEPRO? | The symbol for the name of the Remote Transaction Program Name profile. This value must not be the same as any local Transaction Program Name profiles (?TPNAMEPRO?). Suggested profile name: use the ?TPNAME? value, followed by an "R". (For APING, this would be APINGDR .) If this machine is being configured as a server only, you do not need to create any Remote Transaction Program Name profiles. | |
| ?RTPLISTPRO? | The symbol for the name of the Remote Transaction Program List profile. Suggested profile name: RTPLIST If this machine is being configured just as a server (i.e. it will not try to start transaction programs on the partner machine), you do not need to create a Remote Transaction Program List profile and can use the default profile provided by SNA Services, 6000 called RDEFAULT . | |
| ?TPNAMEPRO? | The symbol for the name of the Transaction Program Name profile. Suggested profile name: use the value for ?TPNAME? followed by "PRO". For example: APINGDPRO If you will not be running this machine as a server, you do not need to configure any Transaction Program Names, and will therefore not need this value. | |
| ?TPNLISTPRO? | The symbol for the name of the Transaction Program List profile. Suggested profile name: TPNLIST . If you will not be running this machine as a server, you do not need to configure transaction programs on it. In this case, use the default Transaction Program List profile name, TDEFAULT . | |

Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
 - a. Additional LEN configuration
 - b. Other link configuration
3. Configure to run as a client
 - a. Define CPI-C side information
 - b. Other client configuration
4. Configure to run as a server

- a. Define transaction programs
- b. Other server configuration

SNA Services stores its configuration information within encoded profiles that are accessed using the System Management Interface Tool (SMIT).

Within SMIT, SNA Services configuration panels can be accessed by selecting the following series of panels:

```
--Communications Applications
  --SNA Services
    --Configure
      --Advanced Configuration
```

For the rest of this discussion, other panels will be specified from this base level within SMIT.

The user should have the base configuration of AIX SNA Services installed and have "system group" access to the system in order to run SMIT and start the SNA subsystem. "System group" authority is required to make the changes suggested in this document. See the document, *Using AIX SNA Services/6000*, SC31-7002, for more information on SNA Services installation.

For this discussion, we will progress through a basic configuration that allows both an outgoing and incoming APING operation to be performed. This chapter describes how to configure a workstation that is attached to a Token Ring LAN and assumes the token ring DLC has been created by the system. Other DLC's will require Attachment Profile definitions that would replace the Token Ring Attachment Profile described below.

There are several profiles that need to be defined:

1. A Control Point Profile
2. A Local LU (6.2) Profile
3. 2 Token Ring Attachment Profiles
4. Two Logical Connections Profiles
5. A Mode List Profile
6. A Remote TP Name Profile
7. A Remote TP Name List Profile
8. A CPI-C Side Information Entry
9. A TP Name Profile
10. A TP Name List Profile

Quick Configuration

AIX SNA Services/6000, with the PTFs specified above, provides a "Quick Configuration" utility that creates all of the above profiles based on information entered on just one or two SMIT panels. This Quick Configuration is an excellent way to configure a simple connection to a partner machine using a single mode definition and a single transaction program definition. Quick Configuration is designed for just such a scenario. Quick Configuration does not reuse profiles that have already been defined. So, if you repeatedly use Quick Configuration to define connections to

partners, then multiple LU profiles, mode profiles, mode list profiles, etc. will be defined. It is recommended that if you choose to use Quick Configuration that you use it to define the first connection to a partner, but from then on to follow the explicit instructions for adding or updating the other profiles.

Verifying configuration

Once the profiles are created, they can be verified using either the command `verifysna`, or in SMIT by following this hierarchy of panels:

```
--Communications Applications
--SNA Services
--Configure SNA Profiles
--Advanced SNA Configuration
--Verify SNA Configuration Profiles
```

Starting and stopping APPC

APPC is part of the AIX SNA Services/6000 subsystem. You can use the following command to test the status of the SNA subsystem:

```
lssrc -l -s sna
```

If the SNA subsystem is not started, it can be started with the command:

```
startsrc -s sna
```

If you want the partner computer to be able to initiate a conversation to this AIX machine, you need to start the listen attachment before your partner attempts to activate the link between the two. Do this with this command:

```
startsrc -t attachment -o LISTEN
```

Note: The "LISTEN" value must match the "PROFILE name" of the Token Ring Attachment profile defined as the incoming, or "listen" attachment.

To stop the SNA subsystem, execute this command:

```
stopsrc -s sna
```

Configuration

Quick Configuration

1. From within SMIT, follow these panels:

```
--SNA Services
--Quickly Configure an LU 6.2 Connection
```
2. Enter a 1-12 character name (This is the value you filled in for the **?QUICKPRO?** symbol in the Worksheet). All profiles created during this quick configuration will contain this name.
3. Specify "no" when asked if you wish to configure to an existing network attachment.
4. Select a default network ATTACHMENT type: **token_ring_listen** if your partner will initiate the conversation, **token_ring_call** if you will be initiating the conversation. To allow both actions, you will need to add another attachment profile after Quick Configuration, or follow the non-Quick Configuration instructions below.

The following figure shows the Quick Configuration panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|---------------------------------|-----------------------------|
| Quick Configuration NAMES | = ?QUICKPRO? |
| Fully qualified LOCAL LU name | = ?NETWORK?.?LUNAME? |
| Local LU ADDRESS | = 0 |
| MODE name | = ?MODE? |
| Local Transaction Program name | = ?TPPATH? |
| Fully qualified REMOTE LU name | = ?PARTNERNET?.?PARTHERLU? |
| Remote Transaction Program name | = ?TPNAME? |
| ATTACHMENT | = ?QUICKATTACH? #see note 1 |
| Link ADDRESS | = ?LANADDRESS? #see note 2 |

Figure 3. Quick Configuration panel.

Notes:

- a. The value in this field is already fixed when this panel is displayed.
 - b. This field only appears if this configuration is based on a Call attachment.
5. You should now have a connection to a partner properly configured. Skip to "Running APING" on page 23. The following descriptions for adding profiles should be used to understand the profiles that were created by Quick Configuration, and to expand the configuration (by adding transaction program profiles, mode profiles, and more connection profiles that reference the profiles already created by Quick Configuration).

Define yourself to the network

Create Control Point profile

A control point must be defined to run APPC on SNA Services. This definition is done by adding a Control Point profile.

From within SMIT, the Control Point profile can be accessed by following this series of panels:

```
--Nodes
  --Control Point
```

The following figure shows the Control Point profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet.

| | | |
|--------------------|-------------|------------|
| PROFILE name | = ?CPPRO? | |
| XID node ID | = 00000000 | # see note |
| NETWORK name | = ?NETWORK? | |
| CONTROL POINT name | = ?CPNAME? | |

Figure 4. Control Point profile

Note: It is not recommended that you use an XID node ID for configuration. See Appendix A, "Using Node IDs in VTAM" on page 109 for a discussion of whether you should, and if so, what value to use here.

Create a local LU 6.2 Profile

The local LU 6.2 profile must also be added. Its definition follows.

From within SMIT, this can be accessed via:

```
--Logical Units
--LU6.2
--LU6.2 Local Logical Unit
```

The following figure shows the Control Point profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet.

| | |
|-----------------------|----------------|
| PROFILE name | = ?LUPRO? |
| TPH LIST profile name | = ?TPHLISTPRO? |
| NETWORK name | = ?HETWORK? |
| Local LU NAME | = ?LUNAME? |
| INDEPENDENT LU? | = yes |
| Local LU ADDRESS | = 1 |
| SSCP ID | = * |

Figure 5. Local LU6.2 profile

Define a link to a partner or network node

Next, the partner LU and link need to be defined in order for a connection to the partner LU to be established. There are two types of links that can be defined. One type of link allows this machine to initiate a connection to the partner computer. This link is called a *"call" attachment*. The other allows the partner computer to initiate a connection with the local computer. This link is called a *"listen" attachment*. Both attachments must be defined if both partner and local computers wish to be able to initiate a connection. The listen attachment must be started before the partner attempts to activate the link. Instruction on starting the link is discussed in "Starting and stopping APPC" on page 15.

Create a Token Ring Attachment profile (LISTEN or incoming)

From within SMIT, the Token Ring Attachment profile can be accessed by following this series of panels:

```
--Physical Units
--Token Ring
--Token Ring Attachment
```

The following figure shows the Listen (incoming) Attachment profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|--------------------------------|-------------------|
| PROFILE name | = ?LISTATTACHPRO? |
| CONTROL POINT profile name | = ?CPPRO? |
| LOGICAL LINK profile name | = TDEFAULT |
| PHYSICAL LINK profile name | = TDEFAULT |
| STOP ATTACHMENT on inactivity? | = no |
| inactivity TIMEOUT | = 0 |
| LU address REGISTRATION | = no |
| REGISTRATION PROFILE name | = LDEFAULT |
| CALL type | = listen |
| AUTO-LISTEN? | = yes |
| MINIMUM SAP address | = 04 |
| MAXIMUM SAP address | = EC |
| ACCESS ROUTING | = link_name |
| REMOTE LINK name | = |
| Remote LINK address | = 000000000000 |
| Remote SAP address | = 04 |

Figure 6. Token Ring Attachment Profile (LISTEN or incoming)

Create a Token Ring Attachment profile (CALL or outgoing)

The following figure shows the call (outgoing) Attachment profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|---|-------------------|
| Token Ring Attachment profile (CALL) | |
| PROFILE_name | = ?CALLATTACHPRO? |
| CONTROL POINT profile name | = ?CPPRO? |
| LOGICAL LINK profile name | = TDEFAULT |
| PHYSICAL LINK profile name | = TDEFAULT |
| STOP ATTACHMENT on inactivity? | = no |
| inactivity TIMEOUT | = 0 |
| LU address REGISTRATION | = no |
| REGISTRATION PROFILE name | = LDEFAULT |
| CALL type | = call |
| AUTO-LISTEN? | = no |
| MINIMUM SAP address | = 04 |
| MAXIMUM SAP address | = EC |
| ACCESS ROUTING | = link_address |
| REMOTE LINK name | = |
| Remote LINK address | = ?LANADDRESS? |
| Remote SAP address | = 04 |

Figure 7. Token Ring Attachment profile (CALL or outgoing)

Define Logical Connections

The connection profile specifies the attachment profile to be used to activate the partner, the partner LU name, and the Remote Transaction Program (RTP) name list. Again, in order to act as both client and server, separate connection profiles must be defined.

From within SMIT, the Logical Connection profiles can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
--LU6.2 Logical Connection
```

Create Logical Connection profile (CALL): The following figure shows the CALL Logical Connection profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|---|------------------|
| PROFILE name | = ?CALLCONHPR? |
| ATTACHMENT profile name | = ?CALLATTACHPR? |
| LOCAL LU profile name | = ?LUPRO? |
| NETWORK name | = ?PARTHNET? |
| STOP CONNECTION on inactivity? | = no |
| TIMEOUT | = 0 |
| REMOTE LU name | = ?PARTHERLU? |
| SECURITY Accepted | = conversation |
| CONVERSATION SECURITY ACCESS LIST profile | = CONVDEFAULT |
| REMOTE TPN LIST profile name | = ?RTPLISTPR? |
| MODE LIST profile name | = ?MODELISTPR? |
| INTERFACE type | = extended |
| SESSION CONCURRENCY | = parallel |
| Node VERIFICATION? | = no |

Figure 8. Logical Connection profile (CALL)

Create Logical Connection profile (LISTEN)

The following figure shows the LISTEN Logical Connection profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|---|------------------|
| PROFILE name | = ?LISTCONHPR? |
| ATTACHMENT profile name | = ?LISTATTACHPR? |
| LOCAL LU profile name | = ?LUPRO? |
| NETWORK name | = ?PARTHNET? |
| STOP CONNECTION on inactivity? | = no |
| TIMEOUT | = 0 |
| REMOTE LU name | = ?PARTHERLU? |
| SECURITY Accepted | = conversation |
| CONVERSATION SECURITY ACCESS LIST profile | = CONVDEFAULT |
| REMOTE TPN LIST profile name | = ?RTPLISTPR? |
| MODE LIST profile name | = ?MODELISTPR? |
| INTERFACE type | = extended |
| SESSION CONCURRENCY | = parallel |
| Node VERIFICATION? | = no |

Figure 9. Logical Connection profile (LISTEN)

Configure to run as a client

To run as a client, the following information needs to be configured:

- the modes to be used,
- the names of the Transaction Programs to run on the target machines, and
- optionally, CPI-C Side Information.

Define the Mode List

The mode list contains the names of the mode profiles that can be used by a transaction program.

From within SMIT, the mode profile list can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
  --LU6.2 Mode List
```

The following figure shows the Mode List profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You can add more than one profile to this list.

| | |
|------------------|-----------------|
| Mode List | |
| PROFILE name | = ?MODELISTPRO? |
| Name 1 | = ?MODEPRO? |
| Name 2 | = ?MODEPRO2? |
| Name 3 | = ?MODEPRO3? |

Figure 10. Mode List

Create the Remote TP Name profile

The remote TP profile specifies a Transaction Program that will be run on the partner machine. A Remote TP Name list is then created to collect a set of Remote TP Name profiles. Neither the Remote TP Name profiles nor the Remote TP Name list need to be created if this machine will only be running as a server.

From within SMIT, the Remote TP Name profile can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
  --LU6.2 Remote Transaction Program Name
```

The following figure shows the LISTEN Logical Connection profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

| | |
|-------------------------------|----------------|
| Remote TP Name profile | |
| PROFILE name | = ?RTPNAMEPRO? |
| RTPN name is in HEXADECIMAL? | = no |
| RTPN name | = ?TPNAME? |
| PIP data? | = no |
| CONVERSATION type | = mapped |
| RECOVERY level | = no_reconnect |
| SYNC level | = confirm |

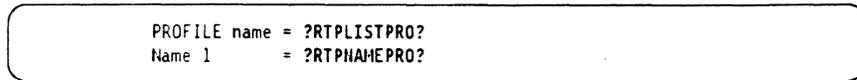
Figure 11. Remote Transaction Program Name

Create Remote TP Name List profile

From within SMIT, the Remote TP Name List profile can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
--LU6.2 Remote Transaction Program Name List
```

The following figure shows the Remote TP Name List profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet.



```
PROFILE name = ?RTPLISTPRO?
Name 1       = ?RTPNAMEPRO?
```

Figure 12. Remote Transaction Program Name List profile

Note: More remote transaction programs can be configured by creating more Remote Transaction Name profiles and adding them to this list.

Defining CPI-C Side Information

Some applications, like APING, do not require CPI-C side information. These applications use programming calls available on a particular platform to dynamically create side information when running. SNA Services/6000 provides the programming calls that allow APING (and other applications) to do this dynamic definition, so you do not need to create this Side Information profile for APING. For those applications that require CPI-C Side Information, this is how to create a profile:

From within SMIT, CPI-C Side Information panel can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
--LU6.2 CPI Communications Side Information
```

The following figure shows the CPIC-C Side Information panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet.

CPI Communications Side Information

```
PROFILE name           = ?SYMDEST?
PARTNER LU name        = ?CALLCONNPRO?
REMOTE TRANSACTION PROGRAM name = ?TPNAME?
SERVICE transaction program? = no
MODE name              = ?MODE?
```

Figure 13. CPI Communications Side Information

Configure to run as a server

Define local transaction programs

To run AIX as a server, you must define the transaction programs (TPs) on your machine with which a client can start a conversation. For each TP, you must define a TP profile, and then you need to create a TP Name List profile that lists the TP profiles you have defined. This TP Name List profile will then be referenced in the definition of a connection. (If you will not be running this machine as a server, you do not need to create either the Transaction Program Name profile or the Transaction Program Name List profile.)

Create Transaction Program Name

From within SMIT, the Transaction Program Name profile panel can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
--LU6.2 Transaction Program Name
```

The following figure shows the Transaction Program Name profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet. You'll also need to change any other values that are highlighted.

```
PROFILE name                = ?TPNAMEPRO?
Transaction program name is in HEXADECIMAL? = no
TRANSACTION program name    = ?TPNAME?
PIP data?                   = no
SUBFIELDS                   = 0
CONVERSATION type           = mapped
RECOVERY level              = no_reconnect
SYIIC level                 = confirm
Full PATH to TPN executable = ?TPPATH?
MULTIPLE INSTANCES supported? = yes
User ID                     = 100
SERVER synonym name         = TDEFAULT
RESTART action              = once
COMMUNICATION type         = signals
IPC queue key               = 0
Standard INPUT file/device  = /dev/null
Standard OUTPUT file/device = /dev/console
Standard ERROR file/device  = /dev/console
SECURITY Required           = none
communication_ipc_queue_key = 0
RESOURCE SECURITY ACCESS LIST profile = RSRCDEFAULT
```

Figure 14. TP Name profile

Create Transaction Program Name List

From within SMIT, the TP Name List profile panel can be accessed by following this series of panels:

```
--Logical Units
--LU6.2
--LU6.2 Transaction Program Name List
```

The following figure shows the LISTEN Logical Connection profile panel. Replace the symbols (the words beginning and ending with question marks) with the corresponding values from the Configuration Worksheet.

```

TP Name List
  PROFILE name = ?TPHILISTPRO?
  Name 1      = ?TPHAMEPRO?

```

Figure 15. Transaction Program Name List

Note: You can define more Transaction Programs to be run between two machines by adding more TP Name profiles and adding them to this TP Name List.

Running APING

Execute APING to contact the partner LU defined by the outgoing connection, ?CALLCONNPRO?, by typing:

```
aping -n ?CALLCONNPRO?
```

with the APING executable being located in a directory in the system's PATH (ex. /local/appctps).

You can also specify the CPI-C symbolic destination name:

```
aping -n ?SYHDEST?
```

Once an incoming session is established, the RS/6000 can communicate with this caller only on this session (and not on a new outgoing call). This problem will be fixed in a later release. Thus, if an incoming session is already established, you would not specify ?CALLCONNPRO? as the target. You would specify the listen connection, ?LISTCONNPRO?.

How to find...

- LU name

The LU name is specified in a Local LU6.2 profile as the "Local LU NAME" parameter. To find out which Local LU6.2 profile to look at, see the listen Logical Connection profile parameter "LOCAL LU profile name". There may be many Logical Connection profiles. The one to use is the one that specifies as its "ATTACHMENT profile name" the same Token ring Attachment profile used in the `startsrc` command that starts the listen attachment.

For example: In the configuration recommended above, the Token Ring Attachment profile specified in the `startsrc` command is LISTEN. The Logical Connection profile that specifies LISTEN as its "ATTACHMENT profile name" is called ?CALLCONNPRO?. The "LOCAL LU profile name" in the ?CALLCONNPRO? Logical Connection profile is ?LUPRO?. Therefore, the LU name is the value specified as the "Local LU NAME" parameter of the ?LUPRO? Local LU6.2 profile.

- Network name

See the discussion for how to find the local LU name. The Network name is also specified in the Local LU6.2 profile, as the "NETWORK name" parameter.

- Control Point (CP) name

The CP name is specified in the Control Point profile as the "CONTROL POINT name." The actual Control Point profile being used is specified in the Attachment profiles as the "CONTROL POINT profile name."

- LAN address

The LAN address is hard-coded on the Token-Ring adapter in the AIX machine or is over-ridden by a value called the "locally administered LAN address. It is a 12-digit hexadecimal value. You can find the LAN address by running the command `lscfg -v`. The LAN address is specified by the Network Address parameter under the tok0 resource. This parameter will specify the locally administered address if there is one.

AS/400 Configuration

This chapter describes configuration for APPC on the AS/400. The chapter uses a step-by-step methodology to describe how to configure APPC communications on the AS/400 with an IBM token-ring adapter connection to the network.

Prerequisites

APPC/APPN support is part of the OS/400 operating system of AS/400.

For more information refer to the following publications:

- *AS/400 Programming Reference Summary:ecit, SC21-8076*
- *AS/400 Programming: Control Language Reference:ecit, SC41-0030*
- *AS/400 Communications APPC Guide:ecit, SC41-8189*
- *AS/400 Communications APPN Guide:ecit, SC41-8188*

Terminology

The terminology table maps the standard networking terms defined in “How do I Configure a Network?” on page 7 to the terms used by the AS/400.

| <i>Standard Term</i> | <i>AS/400 Term</i> |
|----------------------|----------------------------|
| Network Name | Remote Network Identifier |
| LU Name | Default Local Location |
| CP Name | Local Control Point Name |
| Partner LU Name | Remote Control Point |
| Local LAN Address | Local Adapter Address |
| Adjacent LAN Address | LAN Remote Adapter Address |

AS/400 APPC Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

For example, if you are following our excellent recommendations, you will write `#INTER` in the right column on the `?MODE?` line. Then in Figure 21 on page 32 you will type `#INTER` on the AS/400 screen that looks like this:

```
MOdename ==> #INTER
```

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|---|--|---------------------------|
| Values that much match with other places | | |
| ?LUNAME? | This is the symbol that refers to the LU name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the same network name. Refer to "How do I Configure a Network?" on page 7 for more information about LU names. | |
| ?CPNAME? | This is the symbol that refers to the Control Point name of your machine. It should be the same as your ?LUNAME?. Refer to "What Is APPN?" on page 6 for more information about control points. | |
| ?NETWORK? | This is the symbol that refers to the network name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network name. Refer to "How do I Configure a Network?" on page 7 for more information about network names. | |
| ?PARTNERLU? | This is the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value. Refer to "How do I Configure a Network?" on page 7 for more information about the partner LU name. | |
| ?PARTNERCP? | This is the Control Point(CP) name of your partner. Refer to the "How to find.." section of the partner computer's configuration chapter for this value. | |
| ?PARTNERNET? | This is the symbol for the network name of the partner computer. Use the network name from the partner computer's "How to find..." section. Refer to "How do I Configure a Network?" on page 7 for more information about the partner network name. | |
| ?LANADDRESS? | This is the symbol for the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value. | |
| ?TPNAME? | This is the symbol for the Transaction Program name. This is the name of the transaction program at the partner computer. For APING, the TP Name on the server is APINGD. | |
| ?MODE? | This is the symbol for the mode name. See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client/server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is #INTER. It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. | |

| <i>Symbol</i> | <i>How to determine the value for this symbol</i> | <i>Fill in value here</i> |
|---------------------|--|---------------------------|
| ?NODEID? | This is the symbol for the node identifier. Refer to "What is a Node Identifier?" on page 7 for information on whether or not you need this value, and if so, how to define it. If you do use the node identification, the recommended/required IDBLOCK value (the first part of the node ID) on this platform is 05D . | |
| Local values | | |
| ?CONTRNAME? | This is the symbol for the controller description name. 1 to 10 letters or numbers which will be used as a local name on the AS/400 machine to refer to the controller description. You can choose any name you like, but since you will use this name later to refer to this controller, choose a meaningful name (such as PARTNERCP). | |
| ?DEVNAME? | This is the symbol for the device description name. 1 to 10 letters or numbers which will be used as a local name on the AS/400 machine to refer to the device description. You can choose any name you like, but choose a meaningful name (such as PARTNERCP00) | |
| ?NODETYPE? | This is the symbol for your AS/400's APPN node type. This can be *ENDNODE to be configured as an end node, or *NETNODE to be configured as a network node. | |
| ?LINENAME? | This is the symbol for the line description name. 1 to 10 letters or numbers which will be used as a local name on the AS/400 machine to refer to the line description. You can choose any name you like, but since you will use this name later to refer to this controller, choose a meaningful name (such as TRLANXX, where XX is the LAN adapter number) | |
| ?RESNAME? | This is the symbol for the resource name. You can use the command "WRKHDWRSC" to find out the resource name of the adapter you are using. WRKHDWRSC TYPE(*CMN) | |
| ?PLUALIAS? | This is the symbol for the partner LU alias. 1 to 8 characters that designates a nickname for the Partner LU. Alias names are case sensitive. (Suggestion: PARTNERLU) | |
| ?SYMDEST? | This is the symbol for the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It will be used locally on the AS/400 machine to refer to a CPI-C side information entry. (Suggestion: PLUALIAS) | |

Working with the AS/400

Starting/stopping APPC

You can start and stop an APPC controller using the Vary Configuration (VRYCFG) command.

The VRYCFG command can be used to activate and deactivate a controller, or link. To activate or start a link between two systems type the following from the command entry (CL commands):

```
VRYCFG CFGOBJ(?CONTRNAME?) CFGTYPE(*CTL) STATUS(*ON)
```

To stop a link type the following from the command entry:

```
VRYCFG CFGOBJ(?CONTRNAME?) CFGTYPE(*CTL) STATUS(*OFF)
```

To activate or start a link between two systems using menu commands, follow this sequence:

- AS/400 Main panel
- 7. Define or change the system
- 1. Configuration
- 1. Configure devices and communication
- 2. Configure communications and remote hardware
- 1. Work with communications controllers
- 8. next to desired ?CONTRNAME? entry.
- 1. or 2. for Vary on or Vary off

Other Commands

- APING.DOC - Refer to the APING documentation for how to compile the APING and other programs on the AS/400.

Configuration

Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
 - a. Additional LEN configuration
 - b. Other link configuration
3. Configure to run as a client
 - a. Define CPI-C side information
 - b. Other client configuration
4. Configure to run as a server

- a. Define transaction programs
- b. Other server configuration

When using AS/400 APPC configuration commands, you can enter the commands in one of three ways:

- Using the command prompt: Enter the command and press PF4(Prompt).
- Using direct entry: Enter the command and its parameters following the syntax described in the *CL Reference*
- Proceeding through a series of menu driven panels.

Define yourself to the network

1. To communicate within an APPN network you must have an LU name. During the AS/400 installation process, at least one LU name was configured. Your local LU is displayed on the Display Network Attributes panel. You can view this display either by using the DSPNETA command, or by following this sequence of panels:

- AS/400 Main panel
 - 7. Define or change the system
 - 1. Configuration
 - 4. Network management
 - 1. Display network attributes

You will see a panel similar to the following:

```

                                Display Network Attributes
                                System:  LU1AHE

Current system name . . . . . >
Pending system name . . . . . >
Local network ID . . . . . > ?NETWORK?
Local control point name . . . . . > ?CPNAME?
Default local location . . . . . > ?LU1AHE?
Default mode . . . . . > BLANK
APPH node type . . . . . > ?NODETYPE?
Maximum number of intermediate sessions . . . . > 200
Route addition resistance . . . . . > 128
Server network ID/control point name . . . . . >
```

Figure 16. DISPLAY NETWORK ATTRIBUTES. This screen displays the configured network attributes.

If you wish to change the network attributes, use the command CHGNETA command or follow this panel sequence:

- AS/400 Main panel
 - 7. Define or change the system
 - 1. Configuration
 - 4. Network management
 - 2. Change network attributes

2. For APPC on the AS/400, an entry called a communications entry must be created in a subsystem to handle APPC program evoke (or allocate) requests. To check to see if the communications entry has already been defined:
 - a. Type WRKSBS
 - b. Type 5 in the blank next to your communications subsystem (ex. QCMN)
 - c. Type 8 to view Communications Entries

If there is not a Communications Entry for device APPC, you must add one. To add a Communications Entry for device APPC, type the CL command ADDCMNE:

```

ADDCHNE
Subsystem Description ..... > QCMN
Library ..... > *LIBL
Device ..... > APPC
Remote Location ..... >
Job Description ..... > QDFTJOB
Library ..... >
Default User Profile ..... > QUSER
Mode ..... > *ANY
Maximum active jobs ..... > *NOHAX

```

Figure 17. ADD COMMUNICATIONS ENTRY. This screen displays the Add Communications entry parameters.

The subsystem must be stopped and restarted for the communications entry to be active.

Define a link to a partner or network node

There are three 'descriptions' used for APPC communications on the AS/400. These are:

- Line Description

The line description describes the physical line connection to be used between the AS/400 and the network.
- Controller Description

The controller description is used to describe all the characteristics of a link to an adjacent computer.
- Device Description

The device description is used to describe all the characteristics of the logical connection between two locations in the network.

The AS/400 has a feature called automatic configuration. Automatic configuration can be used to autcreate a device description and/or a controller description on the AS/400. The autcreate happens when a partner tries to start a conversation with the AS/400. To 'turn on' automatic configuration, type the CL command WRKSYSVAL and follow these steps:

1. Page down until you find the system value, 'QAUTOCFG'.
2. Type 2 for Change

3. Type 1 to 'turn' on automatic configuration

The below configuration directions describe how to create or change line, controller, and device descriptions. If you wish to autocreate a controller and/or device description, you can skip those respective steps.

1. Create or change line description: You must have a line description to be used with the controller description. If there is a line description already available, you should not create a new one and can skip this step. This example creates a token ring line description named TRLAN. To create or change line descriptions for token-ring, use CRTLINTRN or CHGLINTRN (create or change T-R line).

```
CRTLINXXX
Line Description ..... > ?LINENAME?
Resource name ..... > ?RESNAME?
Online at IPL ..... > *YES
Vary on wait ..... > *NOWAIT
Maximum controllers ..... > 40
Line speed ..... > 4M
Maximum frame size ..... > 1994
Local adapter address ..... > *ADPT
```

Figure 18. CREATE CHANGE LINE DESCRIPTION. This screen displays the Line Description attributes.

2. Create or change controller description (link definition): You can access controller descriptions through the CRTCTLAPPC or CHGCTLAPPC commands (Create/Change Controller Description, APPC). The following example shows only the fields of the controller description that need to be changed. You can allow the other fields to default.

```
CRTCTLAPPC
Controller Description ..... > ?CONTRNAME?
Link type ..... > *LAN
Online at IPL ..... > *YES
APPN-capable ..... > *YES
Switched line list ..... > ?LINENAME?
Remote network identifier ..... > ?PARTNERNET?
Remote control point ..... > ?PARTNERLU?
LAN remote adapter address ..... > ?LANADDRESS?
APPN CP session support ..... > *YES
APPN node type ..... > *CALC
APPN transmission group number ..... > CALC
```

Figure 19. CREATE CHANGE CONTROLLER DESCRIPTION. This screen displays the Controller Description attributes.

3. Create or change device description (LU definition): You can access controller descriptions through the CRTDEVAPPC or CHGDEVAPPC commands (Create/Change Device Description, APPC). The following example shows only the fields of the device description that need to be changed. You can allow the other fields to default.

```

CRTDEVAPP
Device Description ..... > ?DEVNAME?
Remote Location..... > ?PARTHERLU?
Local Location ..... > ?LUNAME?
Remote network identifier ..... > ?PARTNERHET?
Attached Controller ..... > ?CONTRNAME?

```

Figure 20. CREATE CHANGE DEVICE DESCRIPTION. This screen displays the Device Description attributes.

Configure to run as a client

Define CPI-C side information

To use a CPI-C symbolic destination name, a CPI-C side info entry or CSI should be defined.

The following are CL commands that allow you to create, display, print, change, delete and work with the side information.

- CRTCSI - Create the *CSI
- DSPCSI - Display or print the *CSI object
- CHGCSI - Change the *CSI object
- DLTCSI - Delete the *CSI object
- WRKCSI - Provides a menu interface for the *CSI object

```

CRTCSI
Side Information..... > ?SYMDEST?
Library.....>
Remote Location..... > ?PARTHERLU?
Transaction Program name..... > ?TPNAME?
Mode..... > ?MODE?

```

Figure 21. CREATE CPI-C SIDE INFORMATION. This screen displays the CPI-C Side Information parameters. Press PF10 for Additional parameters.

Configure to run as a server

Define transaction programs

To run AS/400 as a server, you must, in addition to the configuration steps above, define a transaction program (TP) on your machine which will be started when the client establishes a conversation.

To define the TP for AS/400, the User Library List needs to be changed. The library where your transaction program resides should be added to the list. To access the User Library List do the following:

- Type the WRKSYSVAL from a command line
- Page down until you find the QUSRLIBL system value.

- Select 2 for Change
- Type your server program's library name (e.g. APING) in the space next to the desired sequence number. The library should contain the server program to be started (e.g. APINGD)

Running APING

You should now be able to APING any of the computers you configured to using the steps above.

To run APING, from the AS/400 command line, type the CL command CALL from the command entry line.

```

Call Program (CALL)
Program..... > APING
Library..... > APING
Parameter..... > ?PARTHERLU?or?SYMDEST?
                or?PLUALIAS?

```

Figure 22. CALL program. This screen displays the Call program parameters.

How to find....

- LU name

During the AS/400 installation process, at least one LU name was configured. Your LU name can be found on the Display Network Attributes panel. Use DSPNETA command or follow this panel sequence.

- ```

-- AS/400 Main panel
-- 7. Define or change the system
-- 1. Configuration
-- 4. Network management
-- 1. Display network attributes

```

On the Display network attributes panel, the LU name is the Default local location.

- CP name

On the Display network attributes panel, the CP name is the Local control point name.

- Network Name

On the Display network attributes panel, the Network Name is the Local network ID.

- LAN address

the LAN address is found by accessing the line description.

- Type WRKLIND (Work with line descriptions)
- Page down to the Token-Ring line description entry

- Type "5" in front of the Token-Ring line description entry to Display
- Look in the panel entry for Local Adapter Address. This is the value that a partner will enter for its remote address when connecting.

---

## CICS Configuration

The Customer Information and Control System (CICS) provides an environment optimized for running very short programs called *transactions* on System/370 and System/390 processors. Transactions consist of a program (that may perhaps call other programs) with an associated transaction identifier or *transaction ID*. The transaction ID is 1-4 characters long but typically is always four characters. For example, the transaction CEDA starts the program that performs on-line resource definition.

This chapter describes how to configure CICS to use the APING and APINGD sample programs.

### Prerequisites

The following software levels are required for the definitions in this chapter:

- CICS/ESA Version 3 Release 3
- ACF/VTAM Version 3 Release 4.1 or Version 3 Release 3
- MVS/ESA Version 4 Release 3 or Version 4 Release 2
- NCP Version 5 Release 2 or later

In most cases, you will find CICS has already been installed and an LU name has been assigned. In addition, you will almost certainly find VTAM installed and the network name has already been defined. Therefore, while we give instructions on how to set the LU name in CICS and VTAM, you probably will not need to make any changes. The information is very useful, however, because you will need it to configure other platforms that wish to communicate with CICS.

In addition, you should have the APING and APINGD sample programs for CICS.

These publications provide detailed information on the configuration process for CICS Version 3 Release 3 and VTAM Version 3 Release 4.1.

- *CICS/ESA: Resource Definition (Online)*, SC33-0666
- *CICS/ESA: System Definition Guide*, SC33-0664
- *VTAM: Resource Definition Reference*, SC31-6438
- *VTAM: Network Implementation Guide*, SC31-6434
- *NCP: Resource Definition Reference*, SC30-3448

---

### Terminology

Below is a table of standard APPC terms and the equivalent CICS terms. Using standard terms makes configuring two unlike platforms easier so standard terms are used whenever possible. Some terms have no CICS equivalent but instead are set in VTAM or NCP.

| <i>Standard Term</i> | <i>CICS Term</i>          |
|----------------------|---------------------------|
| Link Name            | PU name (VTAM)            |
| Network Name         | Network, NETID (see note) |
| LU Name              | APPLID, ACBNAME           |
| Partner LU Name      | Netname                   |
| LAN Address          | LOCADD (NCP)              |
| Adjacent LAN Address | DIALNO (VTAM)             |

**Note:** CICS uses network name only when defining CPI-C side information. VTAM keeps track of partner LUs and routing traffic to the partner LUs, in the same network or different networks.

## CICS Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

For example, if you are following our excellent recommendations, you will write *#INTER* in the right column on the *?MODE?* line. Then in Figure 30 on page 48 you will type *#INTER* on the CICS screen that looks like this:

```
MOdename ==> #INTER
```

Likewise, in Figure 27 on page 45 the substitution would look like this:

```
?PARTNERLU? LU LOCADDR=0, ISTATUS=ACTIVE, X
 MODETAB=?MODETABLE?, DLOGMOD=#INTER
```

| <i>Variable</i>                               | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Fill in value here</i> |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Values that must match in other places</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                           |
| ?LUNAME?                                      | This is the LU name of the CICS region you are configuring. It can be 1-8 characters (letters or numbers) but must begin with a letter. In CICS this is called the <i>APPLID</i> ; in VTAM this is called the <i>APPLID</i> or <i>ACBNAME</i> . Refer to "How do I Configure a Network?" on page 7 for information on how to define this value. If CICS is installed and running, you will not be able to choose this, you will have to get this value from the CICS or VTAM system programmer. |                           |
| ?NETWORK?                                     | This is the network name, called the <i>NETID</i> in VTAM. It can be 1-8 characters (letters or numbers) but must begin with a letter. CICS uses the value defined in VTAM. See "How to find..." on page 55 for information on how to find this value.                                                                                                                                                                                                                                          |                           |

| <i>Variable</i>     | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Fill in value here</i> |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?CPNAME?            | This is the Control Point name of your machine. It can be 1-8 characters (letters or numbers) but must begin with a letter. Its value is set in VTAM, where it is called the <i>SSCPNAME</i> . See "How to find..." on page 55 for more details.                                                                                                                                                                                                                                                                                                                |                           |
| ?PARTNERCP?         | This is the Control Point name of the partner computer. VTAM uses this name in the CPNAME parameter to identify partner computers. Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                                                                                                                                                                                                                        |                           |
| ?PARTNERLU?         | This is the partner's LU name. CICS calls this the <i>netname</i> . This is <i>NOT</i> the same as the ?NETWORK? name described earlier. Refer to the "How to find..." section of the partner computer's configuration chapter for this value. In many cases this value will be the same as the preceding value (?PARTNERCP?).                                                                                                                                                                                                                                  |                           |
| ?PARTNERNET?        | This is the network name of the partner computer. VTAM does all processing of network name Use the network name from the partner computer's "How to find..." section. If this value is different than the value for ?NETWORK?, special coding is required in VTAM (see Figure 28 on page 45 for an example).                                                                                                                                                                                                                                                    |                           |
| ?LANADDRESS?        | This is the LAN address of the network processor that connects the host to the LAN. It is 12 hexadecimal digits (for example, x'10005A25EEF0' or x'400085950001'). This chapter assumes that the network processor is an IBM 3745 running NCP V5R2 or later.<br><br>VTAM's preferred method for connecting to APPN or LEN nodes requires the partner computer to initiate the connection. This relieves VTAM (and VTAM system programmers) from having to know the LAN Address of the partner computer. VTAM uses the ?PARTNERCP? name to identify the partner. |                           |
| ?TPNAME?            | This is the Transaction Program name. It is the name that is sent across the network to the server machine and can be 1-64 characters, including a period (.). The server machine then maps this TP Name to an executable program. The TP Name is usually specified in a client/server product's documentation. For APING, the default TP Name is <b>APINGD</b> but this can be changed.                                                                                                                                                                        | <b>APINGD</b>             |
| ?SERVERTRAN?        | A 4 character name for the CICS server transaction, that is, the transaction initiated by an APPC partner LU. This must match the first four characters of the Transaction Program name and must be in upper-case.                                                                                                                                                                                                                                                                                                                                              | <b>APIN</b>               |
| ?MODE?              | See "What Is a Mode?" on page 5 for a discussion of modes. Sometimes a client/server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is <b>#INTER</b> .                                                                                                                                                                                                                                                                                     | <b>#INTER</b>             |
| <b>Local values</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                           |

| <i>Variable</i>                                                                                                                                            | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Fill in value here</i> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?LINKNAME?                                                                                                                                                 | 1 to 8 letters or numbers which will be used as a local name to refer to the link to a partner computer. You can choose any name you like, but since you will use this name later to refer to this link, choose a meaningful name. CICS relies on VTAM to handle this type of information. VTAM calls the link name the PU name and it must begin with an alphabetic character. See -- Heading 'CPLNKF' unknown -- for more information.                                  |                           |
| ?SYMDEST?                                                                                                                                                  | This is the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. CICS does not require you to create side information. Example: <b>JOE</b> .                                                                                                                                                                                                                                                                                        |                           |
| <b>Profile names, file names</b> - these are names of CICS resources or members of MVS datasets. Unless otherwise noted, you can choose any name you want. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |
| ?PROCLIB?                                                                                                                                                  | The dataset that contains the CICS start-up procedure. This procedure library should already exist and will probably have a member for CICS. Examples: <b>SYS1.PROCLIB</b> or <b>IPO1.PROCLIB</b> .                                                                                                                                                                                                                                                                       |                           |
| ?CICSPROC?                                                                                                                                                 | The procedure name (a member in ?PROCLIB?) that starts CICS. This job must run <i>after</i> the VTAM application node (APPL) is active. Example: <b>CICS330</b> .                                                                                                                                                                                                                                                                                                         |                           |
| ?SITPARMS?                                                                                                                                                 | The dataset with just those CICS System Initialization Table (SIT) parameters that are set at start-up time. There are several dozen SIT parameters. If several CICS regions have the same settings for most of them, they can use the same pre-assembled table but change the ones that need to be unique (like the LU name) when starting CICS. One way to do this is with a dataset containing the parameters to be changed. Example: <b>CICS330.SYSIN(DFHSSIP1)</b> . |                           |
| ?SWNETNODE?                                                                                                                                                | The VTAM switched major node containing the PU definition for the remote peripheral node (if the partner LU is in a DOS, OS/2, AIX, or OS/400 or other APPN platform). VTAM V3R4, the basis for the examples in this book, has a feature that dynamically creates the PU definition. This may already be defined. Example: <b>LANSW</b> .                                                                                                                                 |                           |
| ?APPLNODE?                                                                                                                                                 | The VTAM application major node with the CICS APPL statement. This must be varied active before starting CICS. This typically will already exist so contact your VTAM systems programmer for this. If you are looking on your own, it will usually have APPL in the name. Example: <b>CICSAPPL</b> .                                                                                                                                                                      |                           |
| ?GROUP?                                                                                                                                                    | A 1-8 character name for the collection of CICS definitions. CICS reserves for its own use names beginning with DFH. You can choose any name. Examples: <b>OS2</b> or <b>AIX</b> .                                                                                                                                                                                                                                                                                        |                           |
| ?CON?                                                                                                                                                      | A 1-4 character <i>connection</i> name used as a nickname for the partner LU. The CICS connection defines the partner LU. Several other parameters are tied to the connection name. It does not have to match anything outside CICS. Example: <b>DWAI</b> .                                                                                                                                                                                                               |                           |

| <i>Variable</i> | <i>How to determine the value for this symbol</i>                                                                                                                                                                                   | <i>Fill in value here</i> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?SESSION?       | A 1-8 character name for the sessions with a given mode name.                                                                                                                                                                       |                           |
| ?CLIENTTRAN?    | A 1-4 character name for the CICS client transaction, that is, a transaction started by a terminal user signed on to this CICS region. Example: <b>APNG</b> .                                                                       |                           |
| ?CLIENTPGM?     | A 1-8 character name for the client program. This typically is the same as the real program name and this chapter will use that convention. Example: <b>APING</b> .                                                                 |                           |
| ?SERVERPGM?     | A 1-8 character name for the server program. This typically is the same as the real program name and this chapter will use that convention. Example: <b>APINGD</b> .                                                                |                           |
| ?PROFILE?       | A 1-8 character name for the partner characteristics in CICS' CPI-C side information. See "Define CPI-C Side Information (OPTIONAL)" on page 51.                                                                                    |                           |
| ?APINGLIB?      | The load library containing the compiled and link-edited programs for APING and APINGD. Example: <b>CICSAPPS.LOADLIB</b> .                                                                                                          |                           |
| ?MODETABLE?     | The binary table containing mode names that VTAM searches, usually a member of SYS1.VTAMLIB. This may already exist but may not have the preferred mode names (#INTER, #BATCH, etc.) Check to make sure. Example: <b>APPCMODE</b> . |                           |

## Working with CICS and VTAM

This section describes commands that you (or an MVS system operator) must issue from an MVS operator console to make CICS and VTAM work. There are programs like the JES Spool Display and Search Facility (SDSF) that allow authorized users to view the system log and enter MVS commands from any 3270 session. If you have such a program then you don't have to be at the System 390 console to issue these commands.

VTAM definitions are grouped into *major nodes*, each of which is a separate member of SYS1.VTAMLST. The `VBUILD TYPE=` statement determines the type of major node. The two types you will use are *application* major nodes and *switched* major nodes. Application major nodes define host LUs using `APPL` statements, while switched major nodes define peripheral nodes using `PU` statements and `LU` statements. All of these will be described in more detail.

### Starting/stopping APPC

APPC is part of CICS; it starts automatically when CICS is started, and stops automatically when CICS is stopped. Starting CICS consists of two steps:

1. Starting the VTAM application major node that contains the CICS `APPL` definition. To do this, issue the following command from the MVS operator console:

```
v net,act,id=?APPLNODE?
```

2. Running an MVS job that starts CICS. This job (called a *procedure* or *proc*) is usually in a *procedure library* such as SYS1.PROCLIB. To start CICS, issue following command from the MVS console:

```
s ?CICSPROC?
```

The procedure can be included in the MVS start-up list or a system operator can run it from the console. For more details on the start-up proc, see “Defining yourself to the network” on page 41.

## Other commands

Other MVS and CICS commands that are necessary or just useful include the following:

### MVS console commands

- If the partner LU is in a computer connected to an NCP (a common case for CICS), the VTAM definition for the partner computer must be active before the computer can even connect to NCP. (There are some exceptions to this. See *VTAM: Network Implementation Guide*, Chapter 5, Section 2 for more details.) In VTAM, a *switched major node* is a set of definitions for partner computers on a LAN (in this example). The following command activates the switched major node and all the partner computer definitions in it:

```
v net,act,id=?SWNETNODE?
```

If the major node is active the following commands deactivate and activate the link to the partner computer:

```
v net,inact,id=?LINKNAME?,f
v net,act,id=?LINKNAME?
```

- Displaying an active LU shows all the sessions and session partners of that LU. The following commands display the CICS LU and the partner LU.

```
d net,id=?LUNAME?,e
d net,id=?PARTNERLU?,e
```

### CICS Commands

- In CICS, the CEMT transaction allows you to display and modify the status of connections, netnames, and modenames (that is, all sessions with a particular mode name):

```
cemt inq conn(?CON?)
cemt inq netname(?PARTNERLU?)
cemt inq netname(?MODE?)
```

---

## Configuration

This guide provides instructions for using CICS Resource Definition Online (RDO) to create and modify CICS definitions. To start Resource Definition Online, you must be logged on to CICS and your user-ID must be authorized to run the CEDA transaction.

## Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
  - a. Additional LEN configuration
  - b. Other link configuration
3. Configure to run as a client
  - a. Define CPI-C side information
  - b. Other client configuration
4. Configure to run as a server
  - a. Define transaction programs
  - b. Other server configuration

Since CICS' primary role is as a server, the server discussion will come before the client discussion.

### Defining yourself to the network

Typically, the LU name for CICS has already been defined by the CICS systems programmer. If you are logged on to CICS, for example, the CICS LU name appears in the lower right corner of the 3270 screen. If this is the case for you, skip directly to "Define a link to a partner or intermediate node" on page 44.

If you must start from scratch, this section describes how to create the CICS LU name. The APPLID parameter in the CICS System Initialization Table (SIT) determines the LU name for CICS. This macro statements are assembled and link-edited into a binary table that CICS loads at start-up time. The APPLID must match the ACBNAME used in the VTAM APPL statement.

The APPLID in the System Initialization Table can be over-ridden at start time by including some statements in the start-up procedure. In particular, the APPLID can be (and usually is) specified this way. Figure 23 on page 42 is a CICS start-up procedure. The dataset with the over-ride parameters must be in the SYSIN DD concatenation list.

The highlighted sections are discussed in the notes below. This is not the complete listing, just the section from the beginning down to the DFHRPL DD statement.

```

//DFHSTART PROC START='AUTO',
// INDEX1='CICS330',
// INDEX2='CICS330',
// REGNAM1=,
// REGNAM2=,
// REG='32M',
// DUMPTR='YES',
// RUNCICS='YES',
// OUTC='*',
// RDRC='A',
// SIP=1
etc.

//*****
//***** EXECUTE CICS *****
//*****
//CICS EXEC PGM=DFHSIP,REGION=®,TIME=1440,
// COND=(1,NE,CICSCNTL),
// PARM='START=&START,SYSIN'
//*
//* THE CAVM DATASETS - XRF
//DFHXMSG DD DISP=SHR,
// DSN=&INDEX1..CNTL.CICS®NAM1..DFHXMSG
//DFHXCTL DD DISP=SHR,
// DSN=&INDEX1..CNTL.CICS®NAM1..DFHXCTL
//*
//* THE "FILEA" APPLICATIONS SAMPLE VSAM FILE
//* (THE FILEA DD STATEMENT BELOW WILL
//* OVERRIDE THE CSD DEFINITION IN GROUP DFHMROFD)
//FILEA DD DISP=SHR,
// DSN=&INDEX1..CICS®NAM1..FILEA
//*
//SYSIN DD DSN=?SITPARMS?,DISP=SHR # note 1
//DFHCMACD DD DSN=CICS330.DFHCMACD,DISP=SHR
//* THE CICS STEPLIB CONCATENATION
//STEPLIB DD DSN=EDC.V2R1M0.SEDCLINK,DISP=SHR
// DD DSN=&INDEX2..SDFHAUTH,DISP=SHR
// DD DSN=SYS1.COB2CICS,DISP=SHR
// DD DSN=SYS1.COB2LIB,DISP=SHR
//* DD DSN=IMS.RESLIB,DISP=SHR
//* THE CICS LIBRARY (DFHRPL) CONCATENATION
//DFHRPL DD DSN=EDC.V2R1M0.SEDCLINK,DISP=SHR # note 2
// DD DSN=&INDEX2..SDFHLOAD,DISP=SHR
// DD DSN=?APINGLIB?,DISP=SHR # note 2
// DD DSN=SYS1.COB2CICS,DISP=SHR
// DD DSN=SYS1.COB2LIB,DISP=SHR
etc.

```

Figure 23. Startup Procedure for CICS - ?PROCLIB?(?CICSPROC?)

**Notes:**

1. The ?SITPARMS? dataset contains the overrides to the System Initialization Table. This file must be in the SYSIN DD list.
2. The DFHRPL DD concatenation list is where CICS looks for executable programs and must contain the load library containing the APING and APINGD modules. In this example, the load library is ?APINGLIB?.

Figure 24 on page 43 shows a data set with SIT over-ride parameters, in particular the APPLID. Once CICS has started, these parameters become part of the SIT for this CICS region.

```
SIT=6$,
XRF=NO,
SEC=YES,
XAPPC=YES,
XCMD=NO,
XDCT=NO,
XJCT=NO,
XPCT=NO,
XPPT=NO,
XTST=NO,
XTRAN=YES,
XFCT=NO,
XPSB=NO,
AUXTR=ON,
AUXTRS!=NEXT,
APPLID=(?LUNAME?), # note
ISC=YES,
GRPLIST=MNFLIST,
.END
```

Figure 24. CICS SIT Override Parameters - CICS330.SYSIN(DFHSSIP1)

**Note:** The APPLID must match the VTAM ACBNAME parameter.

To define the CICS LU name in VTAM, you will need to set up an application major node with a minor node for this CICS region. In VTAM, the name of a resource (LU, APPL, etc.) is the name that precedes the key word in the definition. Figure 25 shows an example of a VTAM application major node with one minor node (that is, one APPL statement).

```
?APPLNODE? VBUILD TYPE=APPL # note 1
?LUNAME? APPL ACBNAME=?LUNAME?,AUTH=(ACQ,PASS,VPACE), X # notes 2,3,4
 MODETAB=?MODETABLE?,EAS=200,PARSESS=YES,VPACING=0, X # notes 5,6
 SONSCIP=YES
```

Figure 25. VTAM Application Major Node - SYS1.VTAMLST(?APPLNODE?)

**Notes:**

1. By convention, the major node name (the label on the VBUILD statement) is also the name of the member in SYS1.VTAMLST.
2. The ACBNAME must match the APPLID parameter in the CICS System Initialization Table. If the ACBNAME is not specified, it defaults to the name directly preceding the APPL keyword (?LUNAME? in this figure).
3. The mode table ?MODETABLE? must contain the mode names used by partner LUs that initiate connections to this CICS. VTAM only checks the name (the parameters can be anything or nothing). VTAM does not check outbound BINDs for mode names, only inbound BINDs. So you may run into a situation where you can acquire a session from CICS successfully but a CNOS from a remote system will fail.
4. The continuation character (X in this example) must be in column 72, and continuation lines (here the MODETAB = ...) must begin in column 16.



Below is a sample VTAM switched major node.

```

?SWNETNODE? VBUILD TYPE=SWNET,MAXGRP=6,MAXNO=6 # note 1
?LINKNAME? PU ADDR=04, X # note 2
 CPNAME=?PARTNERCP?, X # note 3
 PUTYPE=2, X
 MAXDATA=2057, X
 MAXPATH=1
?PARTNERLU? LU LOCADDR=0, ISTATUS=ACTIVE, X # note 4
 MODETAB=?MODETABLE?, DLOGMOD=?MODE? # note 5

```

Figure 27. VTAM Switched Major Node - SYS1.VTAMLST(?SWNETNODE?)

**Notes:**

1. The name of the switched node (?SWNETNODE?) is the label of the VBUILD statement.
2. VTAM thinks of PUs as links; this name is strictly internal to VTAM.
3. The CPNAME in this definition is obtained from the partner (or defined by the VTAM system programmer and given to the person setting up the partner computer). It *must* match exactly. The network name is by default the same as VTAM's (see "How to find..." on page 55).
4. On the platforms that will use this form of VTAM definition, it is quite likely that ?PARTNERLU? and ?PARTNERCP? are one and the same. In fact, for Networking Services/DOS, this is a requirement.
5. VTAM only requires that the mode name be in the mode table. Making it the default (DLOGMOD) just makes things tidier. Note that the mode name SNASVCMG must also be in the mode table.

If the partner computer has a different network name than VTAM's, then you must have VTAM Version 3 Release 4 or later to use the following definition. The partner computer is said to be in a *non-native* network.

```

?SWNETNODE? VBUILD TYPE=SWNET,MAXGRP=6,MAXNO=6
?LINKNAME? PU ADDR=04, X
 CPNAME=?PARTNERCP?, X
 PUTYPE=2, X
 MAXDATA=2057, X
 MAXPATH=1, X
 XNETALS=YES, X # note 1
 NETID=?PARTNERNET? # note 2
?PARTNERLU? LU LOCADDR=0, ISTATUS=ACTIVE, X
 MODETAB=?MODETABLE?, DLOGMOD=?MODE?

```

Figure 28. VTAM Switched Major Node, Non-Native Network - SYS1.VTAMLST(?SWNETNODE?)

**Notes:**

1. The XNETALS = YES is needed here only if it is not coded in the VTAM start options. It is only valid with VTAM V3R4 or later.
2. The NETID is the partner network name from the worksheet in "CICS Configuration Worksheet" on page 36.

## Configure to run as a server

To configure CICS as a server you must define the following:

- a CONNECTION object (with the partner LU name)
- a SESSIONS object (with the mode name for the session)
- a TRANSACTION object (with the TP Name to be started)
- a PROGRAM object (used by the TRANSACTION object)

In CICS, *objects* have properties such as authorization lists (what user-ids can use the object), resources required (memory, buffers), etc. CICS manages all these to provide low response time.

**Note:** To distinguish CICS objects, such as a CONNECTION, from more generic usages, the CICS object names will be in upper case. For example, a PROGRAM refers to the CICS definition for a program object, while a program can be any executable file or load module.

To create and modify definitions in CICS start the CEDA transaction. All definitions in CICS are kept in *groups*. Most object identifiers must be globally unique, that is, cannot be used in any other group. SESSIONS objects are an exception to this rule. In the following sections all the definitions are in the same group.

## Defining a CONNECTION

To define a connection in CICS, type the following at a clear screen:

```
ceda define group(?GROUP?) connection(?CON?)
```

CICS folds all characters to upper-case, so you don't have to worry about typing lower-case characters. If the group does not exist, CICS will create it for you automatically. Figure 29 on page 47 shows the 3270 screen that results from this command. CICS fills in the group name and the CONNECTION identifier from the values you typed. On this screen and all other CICS screens, if a value must be selected from a list, then the part of the list value that is upper-case serves as a short-name. For example, the ACCESSMETHOD parameter has options of Vtam, IRc, INdirect, and Xm. To select Vtam, typing "V" is the same as typing "VTAM."

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
Connection : ?CON? # note 1
Group : ?GROUP?
Description ==> PARTNER LU
CONNECTION IDENTIFIERS
Netname ==> ?PARTNERLU? # note 2
INDsys ==>
REMOTE ATTRIBUTES
REMOtesystem ==>
REMOteName ==>
CONNECTION PROPERTIES
ACcessmethod ==> Vtam Vtam | IRc | INdirect | Xm
Protocol ==> Appc Appc | Lu61 # note 3
Singleless ==> No No | Yes # note 4
DATAstream ==> User User | 3270 | SCs | STRfield | Lms
RECORDformat ==> U U | Vb
OPERATIONAL PROPERTIES
+ AUTOconnect ==> No No | Yes | All # note 5
INSERVICE ==> Yes Yes | No
SECURITY
SECURITYname ==>
ATTACHsec ==> Local Local | Identify | Verify | Persistent # note 6
| Mixidpe
BINDPassword ==> PASSWORD NOT SPECIFIED
BINDSecurity ==> No No | Yes

APPLID=TOCICS3

```

Figure 29. CEDA DEFINE GROUP(?GROUP?) CONNECTION

**Required parameters:**

1. *Connection* is a 1-4 character nickname for this partner LU.
2. *Netname* is the partner LU name. The netname must match a VTAM definition, either from a dynamically-defined cross-domain resource (CDRSC) or from a static definition in a VTAMLST member. (See Figure 27 on page 45.) CICS uses netname to refer to ?PARTNERLU? and doesn't allow you to set the partner network name. Remember, the fully-qualified partner name is ?NETWORK?.?PARTNERLU? (for example, USNET1.PARTNER).
3. *Protocol* must be entered and must be APPC.
4. *Singleless* must be set to NO. The example definitions in this guide all require parallel sessions.
5. The "+" sign indicates the bottom of the first screen displayed by CEDA. The function key settings are displayed at the bottom of the screen (but not shown here).
6. *Attachsec* specifies the type of security that can be used. Persistent means that this partner sends a user-ID and password the first time it tries to start a transaction; subsequent transactions are sent with just the user-ID and some bits that say "persistent verification - already signed on." CICS V3R3 will keep a table of logged-on users. The partner system can still try to start a program with no security and if the transaction does not require security, it will run. However, transactions that require RACF user-ID authorization would fail in such cases.

Here the default, "Local," means that any transaction that can be run by the default user-ID, CICSUSER, can be run by this partner LU.

## Defining SESSIONS

To define the mode name and session characteristics for the partner LU a SESSIONS definition must be created. The following command builds a 3270 screen that allows you to do so.

```
ceda define group(?GROUP?) sessions(?SESSION?)
```

Figure 30 shows the 3270 screen that you should see as a result.

```
OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
Sessions : ?SESSION? # note 1
Group : ?GROUP?
Description ==> ?MODE? SESSIONS FOR PARTNER LU
SESSION IDENTIFIERS
Connection ==> ?CON? # note 2
SESSName ==>
NETnameq ==>
MOdename ==> ?MODE? # note 3
SESSION PROPERTIES
Protocol ==> Appc Appc | Lu61
MAXimum ==> 008 , 004 0-999 # note 4
RECEIVEPfx ==>
RECEIVECount ==> 1-999
SENDPfx ==>
SEHDCount ==> 1-999
SEHDSIZE ==> 04096 1-30720
+ RECEIVESIZE ==> 04096 1-30720

APPLID=TOCICS3
```

Figure 30. CEDA DEFINE GROUP(?GROUP?) SESSIONS

### Required parameters:

1. *Sessions* is the CICS name for this session set. The name must be unique within this group.
2. *Connection* identifies the CICS connection in this group (in other words, the partner LU) associated with this mode name.
3. *Modename* specifies the mode for this group of sessions.
4. *Maximum* specifies the number of sessions for this mode name. The values shown here match the default values for the mode names #INTER and #BATCH as defined in APPN end nodes and network nodes.

## Define transaction program - server

To define a transaction program in CICS requires two things, a TRANSACTION and a PROGRAM. The TRANSACTION definition assigns the unique four-character transaction identifier for this CICS region, while the PROGRAM establishes characteristics of the executable code. The examples here show the server side of APING, namely APINGD.

To define the APINGD program, type the following command:

```
ceda define group(?GROUP?) program
```

You should see the screen shown in Figure 31 on page 49.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
PROGRAM : ?SERVERPGM? # note 1
GROUP : ?GROUP?
DESCRIPTION ==> TEST PROGRAM TO ALLOCATE AND DEALLOCATE
LANGUAGE ==> C # note 2
 CObol | Assembler | Le370 | C | Pli
 | Rpg
RELOAD ==> No No | Yes
RESIDENT ==> No No | Yes
USAGE ==> Normal Normal | Transient
USEIpcopy ==> No No | Yes
STATUS ==> Enabled Enabled | Disabled
RS1 : 00 0-24 | Public
CEDF ==> Yes Yes | No
DATAlocation ==> Below Below | Any
EXECKey ==> User User | Cics
REMOTE ATTRIBUTES
REMOTESystem ==>
+ REMOTEName ==>
APPLID=TOCICS3

```

Figure 31. CEDA DEFINE GROUP(?GROUP?) PROGRAM

**Required parameters:**

1. *Program* is the name of the member of ?APINGLIB? that contains the APINGD executable code. (See Figure 23 on page 42 for the JCL to include this load library in CICS' search list.)
2. *Language* specifies the source language of the program. The APINGD sample program is written in C, so the default, Cobol, must be changed. There is a Cobol version of APINGD that will run on CICS systems that do not have CPI-C support (such as CICS Version 2 Release 1.2) or that do not have the C run-time libraries. The Cobol source code is available on CompuServe, the IBM BBS, and MKTTOOLS.

To define the transaction, type the following command:

```
ceda define group(?GROUP?) transaction
```

The resulting screen should resemble that shown in Figure 32 on page 50.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
Transaction : ?SERVERTRAN? # note 1
Group : ?GROUP?
Description ==> APING SERVER TRANSACTION
PROGRAM ==> ?SERVERPGM? # note 2
TWasize ==> 00000 0-32767
PROFile ==> DFHCICST
PARTitionset ==>
STATUS ==> Enabled Enabled | Disabled
PRIHedsiz : 00000 0-65520
TASKDATAloc ==> Below Below | Any
TASKDATAKey ==> User User | Cics
REMOTE ATTRIBUTES
DYNAMIC ==> No No | Yes
REHOTESystem ==>
REHOTEName ==>
TRProf ==>
+ Localq ==> No | Yes

APPLID=TOCICS3

```

Figure 32. CEDA DEFINE GROUP(?GROUP?) TRANSACTION

**Required parameters:**

1. *Transaction* is the one-to-four character transaction id. The APING client specifies a remote TP name of APINGD (as a default). When CICS receives a request to start a transaction, it only looks at the first four characters of the TP name. Therefore APIN must be the transaction id used by this program.
2. *Program* is a pointer to the PROGRAM definition. In this case the PROGRAM definition has the same name as the program.

The other values shown in this example are local system defaults.

**INSTALLing the Definitions**

Before **any** definitions can be used they must be added to the running CICS System Definition (CSD) using the INSTALL command. This is accomplished by typing

```
CEDA INSTALL GROUP(?GROUP?)
```

This command will install all the objects in the group - CONNECTIONs, SESSIONs, PROGRAMs, etc. Some objects can be installed individually, too. Here is an example of installing a change to the program APING:

```
CEDA INSTALL GROUP(?GROUP?) PROGRAM(APING)
```

If a resource is in use, or *In Service* in CICS terms, the installation will fail. If you get the INSTALLATION FAILED message, you can display the messages by pressing the PF9 key. This shouldn't happen the first time, though.

If you need to take a CONNECTION out of service, or disable a TRANSACTION or PROGRAM, use the CEMT transaction (see "Working with CICS and VTAM" on page 39).

## Configure to run as a client

Only the client has to deal with CPI-C side information and CICS provides a default entry that allows programs to use CPI-C with no predefined side information. APING will accept a fully-qualified partner LU name (?NETWORK?.?PARTNERLU?) as the partner LU parameter. Therefore, the following two definitions are not necessary if the connection and sessions definitions follow the guidelines stated above.

The PARTNER definition contains most of the details, but the default profile uses a blank mode name. The PROFILE definition uses the #INTER mode name.

## Define CPI-C Side Information (OPTIONAL)

To define CPI-C side information in CICS you must create a PARTNER definition and a PROFILE definition. Both are optional. You can invoke APING with either the CICS netname (?PARTNERLU?) or a fully-qualified partner LU name (?NETWORK?.?PARTNERLU?) and APING will work properly.

To create a PARTNER definition, type the following command in CICS:

```
ceda define group(?GROUP?) partner
```

The 3270 screen shown in Figure 33 should appear. Type in the values for Partner, Netname, Network, and TP name from the worksheet in "CICS Configuration Worksheet" on page 36.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DFFine
PARTner : ?SYMDEST? # note 1
Group : ?GROUP?
Description ==> CPI-C SIDE INFO
REMOTE LU NAME
NETname ==> ?PARTNERLU? # note 2
NETwork ==> ?PARTNERNET? # note 2
SESSION PROPERTIES
Profile ==> DFHCICSA # note 3
REMOTE TP NAME
Tpname ==> ?TPNAME? # note 4
 ==>
Xtpname ==>
 ==>
 ==>

APPLID=TOCICS3
```

Figure 33. CEDA DEFINE GROUP(?GROUP?) PARTNER. The CPI-C side information.

### Required parameters:

1. *Partner* is the name for this resource in CICS.
2. *Netname* is the partner's LU name. *Network* is the partner's network name.
3. *Profile* is the set of characteristics this partner has. The most important of these is the modename. The default profile, DFHCICA, works if the program sets the mode name explicitly. APING does set the mode name to #INTER as the default.
4. *Tpname* is the initial setting for the remote TP name. This can be overridden in the program using Set\_TP\_Name (CMSTPN). The TP name must match a corresponding TP definition at the remote system.

To define a PROFILE to explicitly set the mode name for the CPI-C side information, type the following command:

```
ceda define group(?GROUP?) profile
```

The screen shown in Figure 34 should appear. Type in the values for ?PROFILE? and ?MODE? from the worksheet in "CICS Configuration Worksheet" on page 36.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
Profile : ?PROFILE? # note 1
Group : ?GROUP?
Description ==> CPI-C PROFILE TO CHANGE MODE NAME
Scrnsz ==> Default Default | Alternate
Uctran ==> No No | Yes
MModename ==> ?MODE? # note 2
PRIntercomp ==> No No | Yes
JOURNALING
Journal ==> No No | 1-99
MSGJrn1 ==> No No | INPut | OutPut | INOut
PROTECTION
MSGInteg ==> No No | Yes
Onewte ==> No No | Yes
PROtect ==> No No | Yes
Chaincontrol ==> No No | Yes
PROTOCOLS
+ DVsuprt ==> All All | Nonvtam | Vtam
APPLID=TOCICS3

```

Figure 34. CEDA DEFINE GROUP(?GROUP?) PROFILE

**Required parameters:**

1. *Profile* is the name for this resource. This name must match the Profile parameter in the PARTNER definition.
2. *Mode name* identifies the mode for this side info entry. There must be a SESSIONS definition with the same modename. (Remember, this profile entry is optional if the application uses a default mode name, as APING does.) We recommend that ?MODE? be #INTER or one of the other mode names that ship with APPN products - #BATCH, #INTERSC, or #BATCHISC.

**Define transaction program - client**

Defining the client TRANSACTION and PROGRAM is just like defining the server as described in "Define transaction program - server" on page 48. To define the PROGRAM, type the following in CICS:

```
ceda define group(?GROUP?) program
```

You should get the screen shown in Figure 35 on page 53.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
PROGRAM : ?CLIENTPGM? # note 1
Group : ?GROUP?
Description ==> APING CLIENT PROGRAM
Language ==> C CObo1 | Assembler | Le370 | C | Pl1 # note 2
 | Rpg
RELoad ==> No No | Yes
RESident ==> No No | Yes
USAge ==> Normal Normal | Transient
USElpacopy ==> No No | Yes
Status ==> Enabled Enabled | Disabled
RS1 : 00 0-24 | Public
Cedf ==> Yes Yes | No
Datalocation ==> Below Below | Any
EXECKey ==> User User | Cics
REMOTE ATTRIBUTES
REHOTESystem ==>
REHOTENAME ==>
Transid ==>
EXECUTIONset ==> Fullapi Fullapi | Dplsubset

APPLID=TOCICS3

```

Figure 35. CEDA DEFINE GROUP(?GROUP?) PROGRAM. Here you tell CICS about the executable program.

**Required parameters:**

1. *Program* is a member of the MVS load library ?APINGLIB? included in the DFHIRPL DD concatenation list in the CICS start-up procedure. (See Figure 23 on page 42.)
2. *Language* must be set to C.

To define the TRANSACTION, type the following in CICS:

ceda define group(?GROUP?) transaction .

You should get the screen shown in Figure 36. Modify the Transaction and Program fields as described in the notes.

```

OVERTYPE TO MODIFY CICS RELEASE = 0330
CEDA DEFINE
Transaction : ?CLIENTTRAN? # note 1
Group : ?GROUP?
Description ==> APING CLIENT TRANSACTION
PROGRAM ==> ?CLIENTPROG? # note 2
TWasize ==> 00000 0-32767
PROFile ==> DFHCICST
PArTitionset ==>
STatus ==> Enabled Enabled | Disabled
PRIMedsize : 00000 0-65520
TASKDATAloc ==> Below Below | Any
TASKDATAKey ==> User User | Cics
REMOTE ATTRIBUTES
DYNAMIC ==> No No | Yes
REHOTESystem ==>
REHOTENAME ==>
TRProf ==>
+ Localq ==> No | Yes

APPLID=TOCICS3

```

Figure 36. CEDA DEFINE GROUP(?GROUP?) TRANSACTION

**Required parameters:**

1. *Transaction* is the four-character transaction id. This must be unique in this CICS region. As this transaction is started by a local terminal user, it does not need to match anything specified at the remote system.
2. *Program* is a pointer to the PROGRAM object defined in Figure 35

**Remember to CEDA INSTALL your new definitions!** (See "INSTALLING the Definitions" on page 50.)

---

## Running APING

To run APING, type any of the following commands at a clear CICS screen (don't forget the period if you use the first format):

```
?CLIENTTRAN? -n ?PARTNERNET?.?PARTNERLU?
?CLIENTTRAN? -n ?PARTNERLU?
?CLIENTTRAN? -n ?SYNDEST?
```

You should see the APING logo and output. The "-n" switch tries to start the APINGD transaction on the remote computer without any security information (user-ID and password).

**Note:** If you are running with RACF, your transaction must be authorized and your user-ID must be authorized to use it. If you get an error message like "DFHAC2033 ... You are not authorized to use transaction XXXX." you will need to contact your RACF administrator.

You may need to manually start a session between CICS and the partner LU, since CICS does not do this automatically. To start a session with the partner session, at a CICS screen type this command:

```
cent inq con(?CON?)
```

You will get the screen shown in Figure 37. By the connection and netname for the partner LU you should see "Ins Acq." This is CICS short-hand for "In-service, acquired." If the status is "Ins Rel," overwrite the "Rel" with "Acq" and press the enter key. The resulting screen should now have "Ins Acq" as the status. If not, contact your VTAM systems programmer and make sure that the partner LU is active. You can also use the commands described in "Other commands" on page 40 to display or activate the partner LU or switched major node.

```
INQ CON(?CON?)
STATUS: RESULTS - OVERTYPE TO MODIFY
Con(?CON?) Net(PARTNERLU?) Ins Rel NORMAL
```

Figure 37. CICS Status for Connection ?CON?

---

## How to find...

- LU Name

If you can logon to the CICS region to begin defining partners, the CICS LU name appears on the bottom right of the screen as `APPLID = ?LUNAME?`. Here that's TOCICS3.

- Control Point (CP) Name

In MVS systems, the CP name is equivalent to the name of the VTAM System Services Control Point (SSCP). It takes its value from the `SSCPNAME` parameter in `ATCSTRxx` (see Figure 38).

- Network Name

The network name can be found in the VTAM start list member of `SYS1.VTAMLST`. Look for a member named `ATCSTRxx`, where `xx` is 00 or TS or something. It should look like this:

```
HOSTSA=1, X
SSCPID=01, X
SSCPNAME=?CPNAME?, X
DYNASSCP=NO, X
NETID=?NETWORK?, X
MAXSUBA=63, X
CONFIG=00, X
NOPROMPT, X
etc. X
```

Figure 38. The VTAM Start Parameter List - `SYS1.VTAMLST(ATCSTR00)`

- LAN Address

The LAN address for a CICS host connected to a token ring through a 3745, 3720, or 3725 is in the NCP gen in `SYS1.VTAMLST`. Look for a `GROUP` macro statement with `ECLTYPE = PHYSICAL` and immediately after that should be a `LINE` macro with a `LOCADD` parameter. That is the LAN address. Here is an example:

```
* BUILDING RING DEFINITIONS (PHYSICAL)
T030T2PG GROUP ECLTYPE=(PHYSICAL,ANY), *
 TYPE=NCP, *
etc.

T030T2PL LINE ADDRESS=(1089,FULL),LOCADD=?LANADDRESS?,PORTADD=2, *
 RCVBUFC=4095,MAXTSL=692,ADAPTER=TIC2,TRSPPEED=4, *
 UACB=(X$P2AX,X$P2AR)
```

Figure 39. Portion of NCP Gen with LAN Address



---

## Networking Services/DOS Configuration

Networking Services/DOS is a software product that supports APPC in the DOS and Microsoft Windows 3.0 and 3.1 environments. Networking Services/DOS allows a DOS machine to participate as a low entry networking node (see "What Is APPN?" on page 6 for a discussion of node types). This chapter describes how to configure Networking Services/DOS running on DOS 3.3 or later on a workstation with a token-ring adapter connecting it to a token ring local area network.

### Prerequisites

- Networking Services/DOS, Version 1.0, Part number 20G0437
- DOS, Version 3.3 or greater
- Local Area Network Support Program, Version 1.3 (Supplied with Networking Services/DOS)
- Token ring adapter

For additional configuration information, refer to the *Networking Services/DOS User's Guide and Reference*, S20G-0438-00

---

### Terminology

The terminology table maps the standard networking terms defined in "How do I Configure a Network?" on page 7 to the terms used by Networking Services/DOS.

| <i>Standard Term</i> | <i>Networking Services/DOS Term</i> |
|----------------------|-------------------------------------|
| Link Name            | link name                           |
| Network Name         | network ID or NETID                 |
| LU Name              | local LU name                       |
| Partner LU Name      | partner LU name                     |
| Local LAN Address    | adapter address                     |
| Adjacent LAN Address | remote computer LAN address         |

---

### Networking Services/DOS Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

For example, if you are following the recommendations in the Worksheet, you will write #INTER in the right column on the ?MODE? line. Then in Figure 42 on page 62 you will type #INTER on the line to replace "?MODE?" like this:

?SYMDEST? ?PARTNERNET?.?PARTNERLU? #INTER ?TPNAME?

Likewise, the other symbols on the line above will be replaced with the appropriate values from the right column of the Configuration Worksheet.

| <i>Symbol</i>                                   | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                        | <i>Fill in value here</i> |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Values that must match with other places</b> |                                                                                                                                                                                                                                                                                                                                                                          |                           |
| ?LUNAME?                                        | This is the LU name of the machine you are defining to the network. Refer to "How do I Configure a Network?" on page 7 for information on how to define this value.                                                                                                                                                                                                      |                           |
| ?NETWORK?                                       | This is the network name of the machine you are defining to the network. Refer to "How do I Configure a Network?" on page 7 for information on how to define this value.                                                                                                                                                                                                 |                           |
| ?PARTNERLU?                                     | This is the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                                                                                                                                     |                           |
| ?PARTNERNET?                                    | This is the network name of the partner computer. Use the network name from the partner computer's "How to find..." section.                                                                                                                                                                                                                                             |                           |
| ?LANADDRESS?                                    | This is the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                              |                           |
| ?TPNAME?                                        | This is the name of the transaction program at the partner computer. It is a name that is sent across the network to the server machine. The server machine then maps this TP Name to an executable program. The TP Name is usually specified in a client server product's documentation. For APING, the TP Name on the server is <b>APINGD</b> .                        |                           |
| ?MODE?                                          | See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client-server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is #INTER. It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. |                           |
| <b>Local values</b>                             |                                                                                                                                                                                                                                                                                                                                                                          |                           |
| ?LINKNAME?                                      | 1 to 8 letters or numbers which will be used as a local name on the Networking Services/DOS machine to refer to the link to a partner computer. Suggestion: <b>LINK0001</b>                                                                                                                                                                                              |                           |

| <i>Symbol</i> | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                    | <i>Fill in value here</i> |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?SYMDEST?     | This is the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It will be used locally on the Networking Services/DOS machine to refer to a CPI-C side information entry. Suggestion: use the same value as ?LUNAME?.        |                           |
| ?TPPATH?      | This is the fully-specified path and filename of the executable code for a server transaction program located on your machine. For example, if Networking Services/DOS is installed on the C:\ drive, this value could be:<br><b>C:\NSD\SAMPLES\APING\APINGD.EXE</b> |                           |

---

## Working with Networking Services/DOS

### Starting/stopping APPC

Once your Networking Services/DOS configuration files are set up, you start Networking Services/DOS by issuing this command:

```
NSD START CONFIG.NSD
```

You can stop Networking Services/DOS and unload it from memory by issuing the command

```
NSD STOP /U
```

### Other commands

You can display active APPC sessions by issuing the command:

```
NSD LIST /SESSION
```

This command may be useful in determining where an error may be occurring if APING does not run successfully.

---

## Configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
  - a. Additional LEN configuration
  - b. Other link configuration
3. Configure to run as a client
  - a. Define CPI-C side information
  - b. Other client configuration

4. Configure to run as a server
  - a. Define transaction programs
  - b. Other server configuration

## Working with APPC configuration

Networking Services/DOS configuration is done through configuration files that are loaded and interpreted when an NSD START command is issued. These files are:

- CONFIG.NSD
- SIDEINFO.NSD
- DEFINETP.NSD
- MODE.NSD

All these files need to be in the same directory. When Networking Services/DOS is started, it searches for these files in the current directory. To get Networking Services/DOS up and running from the .NSD files supplied with NS/DOS (in the \NSD\EXAMPLES subdirectory), you only need to alter the CONFIG.NSD and DEFINETP.NSD files.

## Define yourself to the network

Before an Networking Services/DOS machine can communicate on a network, it must define itself to the network. This is done with an NSDN statement in the Networking Services/DOS's CONFIG.NSD file. The NSDN statement specifies the fully-qualified LU name of the DOS machine.

Networking Services/DOS provides many sample configuration files in the \NSD\EXAMPLES directory. To use the token-ring example as your base configuration file, copy TKRING.NSD from the \NSD\EXAMPLES directory to \NSD\CONFIG.NSD. Then, throughout this chapter, make changes to this CONFIG.NSD as indicated in the examples.

```
NSDN ?NETWORK?.?LUNAME?
```

Figure 40. Define yourself to the network - (in CONFIG.NSD)

## Additional common configuration

There are several more statements that can be added to your CONFIG.NSD to improve performance or to specify more detailed information about how Networking Services/DOS runs in your machine. See the *Networking Services/DOS User's Guide and Reference* to learn more about them. Here we will discuss just two of these statements that you may have to configure to get Networking Services/DOS to run. These statements control access to resources within your machine that may already be used by something else.

The NSDI statement controls which DOS interrupt Networking Services/DOS will claim. You only need to use this statement if there are problems running the NSD START command. The default interrupt is 0x68. If you receive an error message when running the NSD START command that indicates that an interrupt is already in use, change (or add) the following line in your CONFIG.NSD, specifying a different interrupt number:

```
NSDI 68 /* valid values are 60 through 68 */
```

Another problem you may encounter, due to possible conflicts with other software running on your machine, is a conflict in which SAP (service access point) Networking Services/DOS uses when it opens the LAN adapter. The default value is 04. If you receive an error message when running the NSD START command that indicates there is a SAP conflict, add the following line to your CONFIG.NSD, specifying a different SAP:

```
TRSS 04 /* valid values are X'04' through X'FC' and must be */
 /* divisible by 4. X'08' is recommended as a */
 /* second choice. Then try '0C', '10', '14', '18'...*/
```

**Note:** The SAP you use must also be within the partner computer's valid range, so try to use as small a value as possible, such as 08 or 0C.

## Define a link to a partner or network node

In order to start a conversation with another node, you must define a link to that node, or a link to a network node.

If you choose to define multiple links, you may also need to execute a command that tells Networking Services/DOS which link to use to find a particular partner LU.

### Defining a link

A link is defined with the TRLD statement:

```
TRLD ?LINKNAME?, ?LANADDRESS?
```

Figure 41. Define a link - (in CONFIG.NSD).

### Other link configuration

You can define more than one link by including more than one TRLD statement in your CONFIG.NSD file. When an APPC program attempts to establish a conversation with another node, Networking Services/DOS has to determine which link to route APPC traffic on. Networking Services/DOS will first search to see if a link has been assigned to the partner LU by a previous session activation. If so, that link is used; if not, Networking Services/DOS will send the request to find the partner LU to the first link specified in your CONFIG.NSD. If the partner LU is to be located through a different link, you must, in addition to defining the link with a TRLD statement, specify which link the LU should be found through. To do this, you must run the NSD ACTIVATE command after starting Networking Services/DOS with NSD START. The NSD ACTIVATE command looks like this:

```
NSD ACTIVATE LU=?PARTNERNET?.?PARTNERLU? LINK=?LINKNAME?
```

## Configure to run as a client

### Define CPI-C side information

Some applications, like APING, do not require CPI-C side information to run. These applications use programming calls available on a particular platform to dynamically create side information when running. Networking Services/DOS provides the programming calls that allow APING (and other applications) to do this, so for APING, you do not need to create this Side Information profile. For those applications that require CPI-C Side Information, this is how to create a profile:

CPI-C side information is defined in the SIDEINFO.NSD file. To add a CPI-C side information entry, edit this file and add a line specifying the Symbolic Destination Name, Partner LU Name, Mode Name, and Transaction Program Name as follows:

```
?SYMDEST? ?PARTNERNET?.?PARTNERLU? ?MODE? ?TPNAME?
```

Figure 42. Define CPI-C side information - (in SIDEINFO.NSD)

## Configuring to run as a server

### Define transaction programs

To run Networking Services/DOS as a server, you must, in addition to the common configuration steps above, define a transaction program (TP) on your machine that will be started when the client establishes the conversation. The TP is defined in the DEFINETP.NSD configuration file. Here is the syntax of this statement in DEFINETP.NSD:

```
?TPNAME? ?TPPATH? * * OPERATOR_STARTED
```

Figure 43. Define a transaction program - (in DEFINETP.NSD). The asterisks indicate that you want to accept the default timeout values when starting the transaction program.

The last value on the line specifies the "TP program operation". This parameter indicates how the TP is started. It can be one of the following:

#### AM\_STARTED

the Program Launcher starts the program. The Program Launcher operates only in the Microsoft(TM) Windows environment.

#### OPERATOR\_STARTED

the Networking Services/DOS user starts the program. If you are not running in the Microsoft Windows environment, this is your only option. (Actually, if you're not running in the Microsoft Windows environment, the TP program operation parameter is ignored because OPERATOR\_STARTED is the only valid operation).

## Running APINGD

After running NSD START with the updated information in DEFINETP.NSD, you should be able to APING the Networking Services/DOS machine from another machine. If you are using the Program Launcher in the Microsoft Windows environment, you must start the Program Launcher before starting APING on the partner machine. To start the Program Launcher, double-click an icon created from the \NSD\NSDPLW.EXE file, or place this icon in the startup folder to have the program launcher started whenever Windows is started.

If you are not using the Program Launcher, you will have to manually start APINGD.EXE on the Networking Services/DOS machine. This can be done before or after you start APING on the partner machine.

---

## Running APING

You should now be able to APING any of the computers you configured to using the steps above.

To run APING, issue this command:

```
APING -n ?SYMDEST?
```

or you can specify the fully-qualified LU name of your partner:

```
APING -n ?PARTNERNET?.?PARTNERLU?
```

If Networking Services/DOS should try to locate the partner machine on a link other than the first one specified in your CONFIG.NSD, you need to run the "NSD ACTIVATE" command after starting Networking Services/DOS, and before APING that partner machine. For example:

```
NSD ACTIVATE LU=?PARTNERLU?.?PARTNERNET? LINK=?LINKNAME?
```

---

## How to find...

- LU name

The LU name is specified in the CONFIG.NSD file on the NSDN line. The LU name consists of the entire string following the period.

- Network Name

The network name is specified in CONFIG.NSD on the NSDN line. The network name is the 1-8 characters preceding the period. See "Define yourself to the network" on page 60 for details on the syntax of the NSDN statement.

- Control Point (CP) name

The CP name is the same as the LU name.

- LAN address

The LAN address is a 12-digit hexadecimal value that identifies your token-ring adapter to the network. There is a LAN address hard-coded on the Token-Ring adapter in the Networking Services/DOS machine. This hard-coded value is sometimes be over-ridden with something called a "locally administered address." You can find the LAN address on your Token-Ring card by running the program LANADDR, which is supplied with Networking Services/DOS. When you run LANADDR, the LAN address of your machine will be displayed as the "Adapter 0 in-use address". Use the 12 hexadecimal digits displayed. (If you have a secondary adapter installed and are accessing it with the Networking Services/DOS optional keyword TRAN, you would use the "Adapter 1 in-use address".) The "in-use address" displays the "locally administered address" if there is one being used.



---

## APPC/MVS Configuration

This chapter describes how to configure APPC/MVS. The configuration is spread among the APPC/MVS subsystem, VTAM, and NCP. Examples of configuration of each are shown.

### Prerequisites

Software and hardware prerequisites for APPC/MVS include:

- MVS/ESA V4.2 or later
- VTAM V3.3 or later
- NCP V5.2 or later
- 3745 with Token-ring attachment
- Using the transaction program(TP) APING as a sample TP
- Single SNA domain.

While the 3745 is not a strict prerequisite (a 3172, for example, can be used instead) this document only describes configuration with a 3745 as gateway.

For more detailed information on APPC/MVS configuration and operation refer to:

- *MVS/ESA Planning: APPC Management*, GC28-1110
- *VTAM Resource Definition Reference*, SC31-6438
- *NCP Resource Definition Reference*, SC30-3448

---

### Terminology

The terminology table maps the standard networking terms defined in "How do I Configure a Network?" on page 7 to the terms used by APPC/MVS.

| <i>Standard Term</i> | <i>APPC/MVS Term</i>                                           |
|----------------------|----------------------------------------------------------------|
| Network Name         | NETID                                                          |
| LU Name              | name supplied for APPL definition in APPL major node           |
| Partner LU Name      | name supplied for LU definition in major nodes other than APPL |
| Local LAN Address    | LOCADD (in NCP gen)                                            |
| Adjacent LAN Address | DIALNO (on PATH definition in switched major node)             |

## APPC/MVS Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

| <i>Symbol</i>                                   | <i>How to determine this value</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Fill in value here</i> |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Values that much match with other places</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |
| ?LUNAME?                                        | <p>This is the symbol that refers to the LU name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the same network name. Refer to "How do I Configure a Network?" on page 7 for more information about LU names.</p> <p>The value specified for the ACBNAME on the LUADD statement in the PARMLIB member APPCPMxx defines an APPC/MVS LU. Look in this PARMLIB member to see if one has already been created.</p>                                                                                                                                              |                           |
| ?CPNAME?                                        | <p>This is the symbol that refers to the Control Point name of your machine. Refer to "What Is APPN?" on page 6 for more information about control points.</p> <p>VTAM, being a LEN node, does not have a CP (Control Point) name for APPN use. It does, however, have an SSCPNAME (System Services Control Point Name). Use the SSCPNAME in lieu of a CP name. It is the value specified for SSCPNAME in the VTAM start options (ATCSTRxx is the start options member of the VTAMLST dataset).</p>                                                                                                                                                                                              |                           |
| ?NETWORK?                                       | <p>This is the symbol that refers to the network name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network name. Refer to "How do I Configure a Network?" on page 7 for more information about network names.</p> <p>For systems with VTAM already configured, this value is found in the VTAMLST start options (ATCSTRxx) member. The option name is NETID.</p> |                           |
| ?PARTNERLU?                                     | <p>This is the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                           |

| <i>Symbol</i>       | <i>How to determine this value</i>                                                                                                                                                                                                                                                                                                                                                                                     | <i>Fill in value here</i> |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?LANADDRESS?        | This is the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value. Refer to "How do I Configure a Network?" on page 7 for more information about the partner network name.                                                                    |                           |
| ?TPNAME?            | This is the symbol for the Transaction Program name. This is the name of the transaction program at the partner computer. For APING, the TP Name on the server is <b>APINGD</b> .                                                                                                                                                                                                                                      |                           |
| ?MODE?              | This is the symbol for the mode name. See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client-server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is <b>#INTER</b> . It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. |                           |
| <b>Local values</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |
| ?NCPLANADDR?        | This is the local LAN address coded in NCP on a LINE macro using the LOCADD parameter.                                                                                                                                                                                                                                                                                                                                 |                           |
| ?MODETAB?           | Name of a logon mode table in VTAM. It is assembled and link-edited into a VTAM LOADLIB dataset. The systems programmer should know the names of the logon mode tables defined on the system. This should be the name of the table where the APPC modes are included.                                                                                                                                                  |                           |
| ?SYMDEST?           | This is the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It is included when creating a side information entry. Its value matches that provided on the DESTNAME parameter of the side information entry. parameter.                                                                                                                                                      |                           |
| ?VOL?               | This is the name of a volume on which VSAM datasets for APPC MVS will be created. It is a maximum of six characters.                                                                                                                                                                                                                                                                                                   |                           |
| ?JES?               | The actual JES subsystem type (JES2 or JES3) should be substituted for this.                                                                                                                                                                                                                                                                                                                                           |                           |
| ?CLIST.DATASET?     | The CLIST dataset in which you put the APINGD CLIST.                                                                                                                                                                                                                                                                                                                                                                   |                           |
| ?APPC.LOADLIB?      | The load library dataset in which you put the APING program.                                                                                                                                                                                                                                                                                                                                                           |                           |

---

## Working with APPC/MVS

## Starting/stopping APPC

The commands to start APPC/MVS are:

```
START APPC,SUB=MSTR,APPC=xx
START ASCH,SUB=MSTR,ASCH=xx
```

The xx is the identifier of the parmlib member. The default is 00.

APPC/MVS is ended by issuing:

```
C APPC
C ASCH
```

## Other commands

Once APPC/MVS is activated, there are several commands that can be used to monitor APPC/MVS operation. A subset of these commands is shown below:

```
DISPLAY APPC,TP,ALL
DISPLAY APPC,LU,ALL
DISPLAY ASCH,ALL
```

These commands provide information on APPC/MVS TPs, LUs, and scheduler operations, respectively.

---

## Configuration

### Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
  - a. Additional LEN configuration
  - b. Other link configuration
3. Configure to run as a client
  - a. Define CPI-C side information
  - b. Other client configuration
4. Configure to run as a server
  - a. Define transaction programs
  - b. Other server configuration

For APPC/MVS, configuration is done in the following places:

- SYS1.PARMLIB - Two parmlib members are added with parameters for the APPC and ASCH subsystems, respectively.
- VSAM - Datasets are needed for TP definitions and CPI-C side information.
- VTAM - Definitions are required in an application major node for the APPC/MVS LU or LUs, as well as partner definitions in a switched major node for LAN attached nodes, such as workstations. Additions are also need in logon mode tables for APPC modes.
- NCP - The token-ring adapter must be configured, and a parameter added to the NCP definition to support reserve storage for APPC LUs.

### Define yourself to the network

1. Create Parmlib members

Place two members (ASCHPM00 and APPCPM00) in SYS1.PARMLIB. These two members have startup parameters for the two applications that make up APPC/MVS; APPC, the base APPC support, and ASCH, the job scheduler that handles starting applications when incoming requests are received.

```

CLASSADD CLASSNAME(FAST) /* Specify the name of the class to be */
 /* added */
 /* Specify that the maximum number */
MAX(10) /* of transaction initiators allowed */
 /* for this class is 10 */
MIN(2) /* Specify that the minimum number */
 /* of transaction initiators to be */
 /* brought up for this class is 2 */
RESPGOAL(.02) /* Specify that the response time */
 /* goal for transaction programs */
 /* executing within this class is 0.02 */
 /* seconds */
MSGLIMIT(500) /* Specify that the maximum size of */
 /* the job logs for TPs is 500 */
 /* messages */
OPTIONS DEFAULT(FAST) /* Specify the default class */
SUBSYS(?JES?) /* Specify the name of a subsystem */
TPDEFAULT REGION(4M) /* Change the region size to 4M */
OUTCLASS(A) /* Change the output class to A */

```

Figure 44. SYS1.PARMLIB(ASCHPM00) - ASCHPM00.LIB

```

/* APPCPM00
LUADD ACBNAME(?LUNAME?) /* Add LU MVSLU01 to the */
 /* APPC/MVS configuration */
 /* Specify that the APPC/MVS */
SCHED(ASCH) /* transaction scheduler is associated */
 /* with this LU name */
BASE /* Designate this LU as the base LU */
TPDATA(SYS1.APPCTP) /* Specify that VSAM data set */
 /* SYS1.APPCTP is the permanent */
 /* repository for the TP profiles */
 /* for this LU */
TPLEVEL(USER) /* Specify the search order for TP */
 /* profiles as : */
 /* 1. TP profiles associated with */
 /* a specific user */
 /* 2. TP profiles associated with */
 /* a group of users */
 /* 3. TP profiles associated with */
 /* all users of the LU name */
SIDEINFO DATASET(SYS1.APPCSI) /* Specify that VSAM data set */
 /* SYS1.APPCSI is the permanent */
 /* repository for the side */
 /* information */

```

Figure 45. SYS1.PARMLIB(APPCPM00) - APPCPM00.LIB

## 2. Create VTAM Application Major Node

Place the following in a VTAMLST library (usually SYS1.VTAMLST):

```
APPCAPP VBUILD TYPE=APPL
?LUNAME? APPL ACBNAME=?LUNAME?,APPC=YES,AUTOSES=1,DDRINL=NALLOW, *
 DMINWNL=1,DMINWNR=1,DRESPL=NALLOW,DSESLIM=2,EAS=509, *
 MODETAB=?MODETAB?,SECACPT=CONV,VPACING=0,VERIFY=NONE, *
 SRBEXIT=YES,DLOGMOD=?MODE?
```

Figure 46. VTAM definition of APPC LU - APPLMVS.VTM

### 3. Add APPC Modes to the Logmode Table

APPC modes are shown in Figure 47 on page 72. Add them to your logmode table, compile, and then link-edit the member into a VTAM library. Also include them in the default logmode table (ISTINCLM) so that dynamically created LUs can use them.

```

* LOGHODE TABLE ENTRY FOR RESOURCES CAPABLE OF ACTING
* AS LU 6.2 DEVICES
* *****
SHASVCHG MODEENT LOGHODE=SHASVCHG, FHPRF=X'13', TSPRF=X'07',
* PRIPROT=X'BO', SECPRF=X'BO', COMPRF=X'DOB1',
* RUSIZES=X'8686', ENCR=B'0000', SSNDPAC=7,
* PSERVIC=X'0602000000000000000300',
* SRCVPAC=7, PSNDPAC=7, TYPE=0
* TITLE '#BATCH'

*
* LOGHODE TABLE FOR BATCH SESSIONS ON RESOURCES CAPABLE
* OF ACTING AS LU 6.2 DEVICES
* *****
#BATCH MODEENT LOGHODE=#BATCH,
* ENCR=B'0000', SSNDPAC=3,
* SRCVPAC=3, PSNDPAC=3, RUSIZES=X'F7F7'
* TITLE '#INTER'

*
* LOGHODE TABLE FOR INTERACTIVE SESSIONS ON RESOURCES
* CAPABLE OF ACTING AS LU 6.2 DEVICES
* *****
#INTER MODEENT LOGHODE=#INTER,
* ENCR=B'0000', SSNDPAC=7,
* SRCVPAC=7, PSNDPAC=7, RUSIZES=X'F7F7'
* TITLE '#BATCHSC'

*
* LOGHODE TABLE FOR BATCH SESSIONS REQUIRING SECURE
* TRANSPORT ON RESOURCES CAPABLE OF ACTING AS LU 6.2
* DEVICES
* *****
#BATCHSC MODEENT LOGHODE=#BATCHSC,
* ENCR=B'0000', SSNDPAC=3,
* SRCVPAC=3, PSNDPAC=3, RUSIZES=X'F7F7'
* TITLE '#INTERSC'

*
* LOGHODE TABLE FOR INTERACTIVE SESSIONS REQUIRING
* SECURE TRANSPORT ON RESOURCES CAPABLE OF ACTING AS
* LU 6.2 DEVICES
* *****
#INTERSC MODEENT LOGHODE=#INTERSC,
* ENCR=B'0000', SSNDPAC=7,
* SRCVPAC=7, PSNDPAC=7, RUSIZES=X'F7F7'
* TITLE 'CPSVCHG'

*
* LOGHODE TABLE FOR CP-CP SESSIONS ON RESOURCES CAPABLE
* OF ACTING AS LU 6.2 DEVICES
* *****
CPSVCHG MODEENT LOGHODE=CPSVCHG,
* RUSIZES=X'8686', ENCR=B'0000',
* SSNDPAC=7, SRCVPAC=7, PSNDPAC=7

```

Figure 47. APPC Logon Mode Entries - APPCMODE.ASM

## Define a link to a partner or intermediate node

1. Define the Token-ring adapter in NCP

The following is a sample token-ring connection from NCP:

```

T030T2PG GROUP ECLTYPE=(PHYSICAL,ANY)
T030T2PL LINE ADDRESS=(1089,FULL),LOCADD=?NCPLANADDR?,PORTADD=2, X
RCVBUFC=4095,MAXTSL=2044,ADAPTER=TIC2,TRSPEED=4
*
T030TRL0 GROUP ECLTYPE=LOGICAL,AUTOGEN=10,PHYPORT=2,CALL=INOUT

```

Figure 48. LAN definitions on NCP

## 2. Provide for use of independent LUs on the token-ring connection

Once the token-ring is defined in the NCP, the only additional parameter that is required is NUMILU on the LUDRPOOL macro. An example is:

```
POOL1 LUDRPOOL NUMILU=100,NUMTYP1=20,NUMTYP2=20
```

In this example the NCP will be able to support up to 100 independent LUs that are using dial connections (token-ring or switched lines).

### Additional LEN configuration

Place the following in a VTAM switched major node definition. It assumes that the partner is not another VTAM. If the partner LU is on another VTAM system, then the link definitions for the token-ring shown above need to be for a subarea link, or the cross-domain links need to be defined so that normal LU routing within the subarea network will resolve the locations of the session partners.

```

WSN VBUILD TYPE=SWNET,MAXGRP=2,MAXNO=2
PARTPU PU ADDR=04, X
 CPNAME=?PARTNERLU?, X
 PUTYPE=2, X
 MAXDATA=2012, X
 MAXPATH=1, X
?PARTNERLU? LU LOCADDR=0,MODETAB=?MODETAB?,DLOGMOD=?MODE?

```

Figure 49. SYS1.VTAMLST(WSN) - WSN.VTM

## Configure to run as a client

### Define CPI-C side information

Create VSAM Dataset for CPI-C Side Information

The following job creates the VSAM dataset for Common Programming Interface-Communications(CPI-C) Side Information. It is needed for APPC/MVS to be able to initiate TPs that use side information. While it is used exclusively when APPC/MVS is acting as a client, it is included here so that the entry in SYS1.PARMLIB(APPCPM00) will reference an existing dataset. Later, side information entries may be added to it. local volume.

```

//APPC002 JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
/*JOBPARM LINES=9999,TIME=1440
//SISAMPLE EXEC PGM=IDCAMS
//TSSC01 DD DISP=OLD,UNIT=3380,VOL=SER=?VOL?
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//AMSDUMP DD SYSOUT=*
//SYSIN DD *
 DEFINE CLUSTER (NAME(SYS1.APPCSI) -
 VOLUME(TSSC01) -
 INDEXED REUSE -
 SHAREOPTIONS(3 3) -
 RECORDSIZE(248 248) -
 KEYS(112 0) -
 RECORDS(50 25)) -
 DATA -
 (NAME(SYS1.APPCSI.DATA)) -
 INDEX -
 (NAME(SYS1.APPCSI.INDEX))

```

Figure 50. JCL for Side Information VSAM dataset - ATBSIVSM.JCL

CPI-C side information is saved in the VSAM dataset created by ATBSIVSM.JCL. Below is a sample job to create a side information entry.

```

//SIADDO JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//*****
//STEP EXEC PGM=ATBSDFMU
//SYSPRINT DD SYSOUT=*
//SYSSDLIB DD DSN=SYS1.APPCSI,DISP=SHR
//SYSSDOUT DD SYSOUT=*
//SYSIN DD *
 SIADD
 DESTNAME(?SYMDEST?)
 TPNAME(?TPNAME?)
 MODENAME(?MODE?)
 PARTNER_LU(?PARTNERLU?)
/*

```

Figure 51. Sample CPI-C Side Information Job - SIADD.JCL

## Other client configuration

It will not usually be necessary to connect from VTAM out to other nodes. However, if it becomes necessary to do so, a line must be added to the switched major node defined above (WSN.VTM). The following line can be added just before the LU definition:

```
PATH1 PATH GRPNM=T030TRL0,DIALNO=?LANADDRESS?,PID=1
```

The GRPNM parameter references a group of logical LAN lines defined in the NCP. See Figure 48 on page 73 for an example of defining logical LAN lines in the NCP.

## Configure to run as a server

### Define transaction programs

Create VSAM Dataset for Transaction Program (TP) Profiles

The following job creates the VSAM dataset for TP profiles. It is needed for APPC/MVS to be able to associate TP names with particular job streams when an incoming request to start a TP is received. volume.

```
//APPC001 JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
/*JOBPARM LINES=9999,TIME=1440
//TPSAMPLE EXEC PGM=IDCAMS
//VOL1 DD DISP=OLD,UNIT=3380,VOL=SER=?VOL?
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//AMSDUMP DD SYSOUT=*
//SYSIN DD *
 DEFINE CLUSTER (NAME(SYS1.APPCTP) -
 VOLUMES(VOL1) -
 INDEXED REUSE -
 SHAREOPTIONS(3 3) -
 RECORDSIZE(3824 7024) -
 KEYS(112 0) -
 RECORDS(300 150)) -
 DATA -
 (NAME(SYS1.APPCTP.DATA)) -
 INDEX -
 (NAME(SYS1.APPCTP.INDEX))
/*
```

Figure 52. JCL for TP profile VSAM dataset - ATBTPVSM.VTM

### Add APINGD to a CLIST library

If you have the APINGD REXX CLIST, add it to a public CLIST dataset. The TP profile example below assumes it has been added to dataset APPC.CLIST.

### Create TP profile for APINGD

The following job runs the APPC/MVS administrative utility to add a TP profile for APINGD. It starts the TSO Terminal Monitor Program IKJEFT01, which in turn calls the REXX CLIST located in the APPC.CLIST dataset.

```

//TPADD0 JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//STEP EXEC PGM=ATBSDFMU
//SYSPRINT DD SYSOUT=*
//SYSSDLIB DD DSN=USER.APPCTP,DISP=SHR
//SYSSDOUT DD SYSOUT=*
//SYSIN DD DATA,DLM=XX
TPADD
TPNAME(APINGD)
ACTIVE(YES)
TPSCHED_DELIMITER(##)
TAILOR_SYSOUT(NO)
TAILOR_ACCOUNT(NO)
CLASS(FAST)
TPSCHED_TYPE(STANDARD)
JCL_DELIMITER(END_OF_JCL)
//APPC04 JOB MSGLEVEL=(1,1),MSGCLASS=A
//IKJACCNT EXEC PGM=IKJEFT01,
// PARM='EXEC '?CLIST.DATASET?(APINGD)''
//SYSUADS DD DISP=SHR,DSN=SYS1.UADS
//SYSLBC DD DISP=SHR,DSN=SYS1.BROADCAST
//STEPLIB DD DSN=ISP.V3R2M0.ISPLOAD,DISP=SHR
//SYSTSPRT DD SYSOUT=*,FREE=CLOSE
//SYSTSIN DD DUMMY
//SYSPRINT DD SYSOUT=*,FREE=CLOSE
END_OF_JCL
KEEP_MESSAGE_LOG(NEVER)
##
XX
/*

```

Figure 53. JCL to add a TP profile to the VSAM dataset - TPADD.JCL

---

## Running APING

To run APING from TSO enter:

```
CALL '?APPC.LOADLIB?(APING)' '?SYMDEST?'
```

It can also be run from a batch program. Below is a sample job:

```

//APING0 JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1),NOTIFY=NEALS
//*****
//STEP EXEC PGM=APING,PARM='?SYMDEST?'
//STEPLIB DD DSN=?APPC.LOADLIB?,DISP=SHR
// DD DSN=PLI.V2R3M0.SIBMLINK,DISP=SHR
// DD DSN=EDC.V2R1M0.SEDCLINK,DISP=SHR
//SYSPRINT DD SYSOUT=*
/*

```

Figure 54. JCL to run APING - APING.JCL

**Note:** It may be necessary to change the PLI.V2R3M0.SIBMLINK and the EDC.V2R1M0.SEDCLINK DD statements to match levels of C and PL/1 on your system.

---

## How to find ...

- LU name

For APPC/MVS, this is configured in SYS1.PARMLIB(APPCPMxx). The LUADD parameter includes an ACBNAME. The ACBNAME defines an APPC/MVS LU Name. This name is also included on an APPL definition statement in an APPL major node of VTAM.

- Control Point (CP) name

VTAM, being a LEN node, does not have a CP (Control Point) name for APPN use. It does, however, have an SSCPNAME (System Services Control Point Name). If in configuring a partner platform a CP name is needed, use the SSCPNAME instead. It is also set in the ATCSTRxx member of the VTAMLST dataset.

- Network Name

It is defined in a member named ATCSTRxx of a dataset with the DDNAME of VTAMLST in the VTAM start procedure. The "xx" is two digits, and the default is 00. ATCSTRxx is the VTAM start options. The NETID parameter defines the network name.

- LAN address

The LAN address is coded in NCP on a LINE macro using the LOCADD parameter.



---

## OS/2 Configuration

This chapter describes how to configure APPC on an OS/2 workstation that is connected to a token ring local area network. It is directed at the following software configuration:

### Prerequisites

- OS/2 EE 1.3 with Networking Services/2 or OS/2 2.0 Extended Services
- Token-Ring Adapter card

This chapter describes how to configure OS/2 on a workstation connected to a LAN. For more information:

- *SAA Networking Services/2 Administrator's Guide*, SC52-1110-00
- *ES OS/2 APPC Programming Reference*, S04G-1025-00
- *ES OS/2 APPN LU6.2 Connection and Management*, SG22-1052-00

---

## Terminology

The terminology table maps the standard networking terms defined in "How do I Configure a Network?" on page 7 to the terms used by OS/2.

| <i>Standard Term</i> | <i>OS/2 Panel Config Term</i> | <i>OS/2 NDF Term</i> |
|----------------------|-------------------------------|----------------------|
| Network Name         | Network Name                  | Network Name         |
| LU Name              | Local Node Name               | Local LU Name        |
| Partner LU Name      | Partner Node Name             | Partner LU Name      |
| Local LAN Address    | Local MAC Address             | N/A                  |
| Adjacent LAN Address | LAN Destination Address       | Destination Address  |

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

For example, if you are following our excellent recommendations, you will write *#INTER* in the right column on the *?MODE?* line. Then in Figure 62 on page 88 you will type *#INTER* on the OS/2 screen that looks like this:

```
H0dename ==> #INTER
```

| <i>Symbol</i>                                   | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>Fill in value here</i> |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Values that much match with other places</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |
| ?LUNAME?                                        | This is the symbol that refers to the LU name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the same network name. An LU name is defined by defining a CPNAME in OS/2. Refer to "How do I Configure a Network?" on page 7 for more information about LU names.                                                                                                                                        |                           |
| ?CPNAME?                                        | This is the symbol that refers to the Control Point name of your machine. It should be the same as your ?LUNAME?. Refer to "What Is APPN?" on page 6 for more information about control points.                                                                                                                                                                                                                                                                                                                                            |                           |
| ?NETWORK?                                       | This is the symbol that refers to the network name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network name. Refer to "How do I Configure a Network?" on page 7 for more information about network names. |                           |
| ?PARTNERLU?                                     | This is the symbol for the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value. Refer to "How do I Configure a Network?" on page 7 for more information about the partner LU name.                                                                                                                                                                                                                                                                                     |                           |
| ?PARTNERCP?                                     | This is the symbol for the Control Point(CP) name of your partner. Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                                                                                                                                                                                                                                                                   |                           |
| ?PARTNERNET?                                    | This is the symbol for the network name of the partner computer. Use the network name from the partner computer's "How to find..." section.                                                                                                                                                                                                                                                                                                                                                                                                |                           |
| ?LANADDRESS?                                    | This is the symbol for the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                                                                                                                                                                                 |                           |
| ?TPNAME?                                        | This is the Transaction Program name. It is a name that is sent across the network to the server machine. The server machine then maps this TP Name to an executable program. The TP Name is usually specified in a client/server product's documentation. For APING, the TP Name on the server is APINGD.                                                                                                                                                                                                                                 |                           |
| ?TPPATH?                                        | This is the fully-specified path and filename of the transaction program's executable code. For example, if OS/2 is installed on the C:\ drive, this value could be:<br>C:\OS2\SAMPLES\APING\APINGD.EXE                                                                                                                                                                                                                                                                                                                                    |                           |

| <i>Symbol</i>       | <i>How to determine the value for this symbol</i>                                                                                                                                                                                                                                                                                                                                                              | <i>Fill in value here</i> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?MODE?              | This is the symbol for the mode name. See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client/server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is #INTER. It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. |                           |
| <b>Local values</b> |                                                                                                                                                                                                                                                                                                                                                                                                                |                           |
| ?NODETYPE?          | This is the symbol for the APPN node type. This should be EN to be configured as an end node, or NN to be configured as a network node. In most cases, you will configure as a EN.                                                                                                                                                                                                                             |                           |
| ?PLUALIAS?          | This is the symbol for the Partner LU Alias. 1 to 8 characters that designates a nickname for the Partner LU. Alias names are case sensitive.                                                                                                                                                                                                                                                                  |                           |
| ?LINKNAME?          | This is the symbol for the link name of a logical link. 1 to 8 letters or numbers which will be used as a local name on the OS/2 machine to refer to the link to a partner computer. You can choose any name you like, but since you will use this name later to refer to this link, choose a meaningful name. (suggestion:LINK001)                                                                            |                           |
| ?SYMDEST?           | This is the symbol for the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It will be used locally on the OS/2 machine to refer to a CPI-C side information entry.                                                                                                                                                                                                  |                           |

---

## Working with OS/2 Configuration

### Starting/stopping APPC

APPC is started and ended by starting and stopping Communications Manager.

- Starting: Type "STARTCM" from the OS/2 command prompt or mouse click on "Communications Manager".
- Stopping: In Communications Manager, choose 'Exit' from the Action Bar.

### Other commands

- Displaying link information: To display link information, choose "SNA Logical Links" from the Communications Manager Folder or type "APPNLINK" from an OS/2 command prompt. You can also use APPNLINK to activate and deactivate links. This command is only available in ES OS/2 2.0.
- Displaying active SNA Config Info: To display active configuration information, choose "Display active SNA Configuration" from the Communications Manager Folder or type "APPNLINK" from "PMDSPY" from an OS/2 command prompt to display active configuration information.

- APPNV.CTL: This file serves two purposes. It gives a description of the node definitions file and the format of the commands that can be placed in this file. This file also defines the **command**, parameter, and value names that are allowed in the node definitions file.

---

## Configuration

### Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or **intermediate** node
  - a. Additional LEN configuration
  - b. Other link configuration
3. Configure to run as a client
  - a. Define CPI-C side information
  - b. Other client configuration
4. Configure to run as a server
  - a. Define transaction programs
  - b. Other server configuration

OS 2 configuration for APPC/APPN can be accomplished via several methods:

- Panel Configuration for OS/2 2.0
- Text editing a Node Definitions File (NDF) for OS/2 1.3 or OS/2 2.0
- Panel Configuration for OS/2 1.3 + NS/2.

The Panel Configuration facility accomplishes the same function as text editing the NDF file and adding the configuration statements. This chapter will discuss both Panel Configuration for OS/2 2.0 and NDF file editing for OS/2 1.3 + NS/2 and OS 2 2.0. It will not discuss Panel Configuration for NS/2.

Your NDF file is located in the \CMLIB\APPN directory. It has the same filename as your Communication Manager configuration file whose file extension is ".CFG". However, the NDF file has the file extension ".NDF".

There are example NDF and CFG files provided with this guide called BASE.NDF and BASE.CFG. If you wish to configure a machine from with no current configuration, copy the BASE.NDF file into the \CMLIB\APPN directory and the BASE.CFG file into the \CMLIB directory. If you do not want to lose a current configuration, do not copy the BASE files. You can, however, cut and paste the commands needed from the BASE.NDF file to your own NDF file. The NDF File Configuration instructions show what commands and parameters should be in the NDF file.

If you wish to use the Panel Configuration for OS/2 2.0, follow the Panel Configuration instructions in this chapter. This method also will place the correct commands in your NDF file.

## Define yourself to the network

Before an OS/2 machine can communicate on a network, it must define itself to the network. This configuration is usually done when OS/2 is installed.

### Panel configuration:

1. Define LU name You can define (or find if it is already configured) your LU name in the Local Node Characteristics panel.

Follow this sequence of panels:

- Select Communications Manager from the OS/2 Window List
- Advanced
  - Configuration, type Config file name and press ENTER
  - SNA feature profiles
    - SNA Network Definitions
    - Local Node Characteristics

```
Required Features:
Network ID: ?NETWORK?
Local node name: ?LUHAME?
Node type:
 o End Node to Network Node Server
 o End Node - No Network Node Server
 o Network Node
Your network node server address: ?LANADDRESS?
Optional Features
Local Node ID 050 _____
Local Node Alias Name _____
Comment Configuration is Fun! _____
_ Activate Attach Manager at start up
```

Figure 55. Local Node Characteristics. This screen displays the Local Node characteristics. The LU name is the Local node name on this screen.

2. Define your node type

OS/2 can be either an end node or network node. If you choose the End Node to Network Node Server and fill in the network node address, a connection will

automatically be configured to your network node and you can skip the "Define a link to a partner or intermediate node" configuration step.

### NDF file Configuration:

1. Define LU name You can define (or find if it is already configured) your LU name in the DEFINE\_LOCAL\_CP command in the following Node Definitions File excerpt:

```
define_local_cp
fq_cp_name(?NETWORK?.?LUNAME)
cp_alias(mylu)
node_id(x'00000')
node_type(?NODETYPE?);
```

Figure 56. NDF file excerpt from BASE.NDF for DEFINE\_LOCAL\_CP.

2. Define Node Type

OS/2 can be either an end node or a network node.

- end node - ?NODETYPE?=EN
- network node -?NODETYPE?=NN

### Define a link to a partner or intermediate node

A link is configured by defining a connection on the panels or a logical link in the NDF file.

### Panel configuration:

1. To define a link, follow this sequence of panels:

```
-- Communications Manager from the OS/2 Window List
-- Advanced
-- Configuration. type configuration file name and press ENTER
-- SNA feature profiles
-- SNA Network Definitions
-- Connections
```

2. A list of nodes will be display. Select the type of node you are connecting to:

- Network Node - choose Network Node
- Partner Node - choose Peer Node
- Host Node - choose Primary Host

3. Select the type of connection you desire (e.g. IBMTRNET for token-ring)

4. The screen, "Creating a Connection to a Peer Node" will be shown. Fill in the appropriate values from the Required Values Table

```

Creating a Connection to a Peer Node - ESBASE

Link Name: ?LINKNAME?
Partner network ID: ?PARTNERNET?
Partner node name: ?PARTNERLU?
LAN destination address: ?LANADDRESS?
Comment: _____

```

Figure 57. Creating a Connection. This screen displays the parameters for defining a connection to a peer node.

**NDF file Configuration**

**Define a link to the network node:** To define a link to your network node, your Node Definitions File should contain a "define\_logical\_link" command,

```

define_logical_link
 link_name(?LINKNAME?)
 adjacent_node_type(learn)
 preferred_nn_server(yes)
 dlc_name(ibmtrnet)
 adapter_number(0)
 destination_address(x'?LANADDRESS?')
 cp_cp_session_support(yes)
 activate_at_startup(yes);

```

Figure 58. NDF file excerpt from BASE.NDF for DEFINE\_LOGICAL LINK for network node link.

**Define a link directly to your partner or to a LEN node.:** To define a link directly to your partner, your Node Definitions File should contain a "define\_logical\_link" command like this:

```

define_logical_link
 link_name(?LINKNAME?)
 fq_adjacent_cp_name(?PARTNERNET?.?PARTNERCP?)
 adjacent_node_type(learn)
 dlc_name(ibmtrnet)
 adapter_number(0)
 destination_address(x'?LANADDRESS?')
 cp_cp_session_support(no)
 activate_at_startup(no);
 solicit_sscp_session(no);

```

Figure 59. NDF file excerpt from BASE.NDF for DEFINE\_LOGICAL LINK for partner link.

For a link to a host LEN node that requires 3270, the following `define_logical_link` parameter should be changed to yes.

```
solicit_sscp_session(yes);
```

Also, to configure 3270 sessions the `?LANADDRESS?` should match the Destination Address in 3270 Feature Profile Connections.

### Additional configuration

**Define partner LU's:** When the partner LU is NOT accessible through a NN, as in a LEN node connection or a direct link to your partner, you must define the path to the partner LU.

For your machine to be able to locate the partner LU, a correlation between your link definition and the partner LU must be established. This is done by associating the partner LU to a particular link.

**Panel configuration:** Follow this sequence of panels:

- Communications Manager from the OS/2 Window List
- Advanced
  - Configuration, type config file name and press ENTER
  - SNA feature profiles
    - SNA Network Definitions
      - Connections
        - Link Name defined above for the host or partner connection
        - Define Partner LU's

To add a Partner LU, enter the LU name, alias, and comment. Then select Add button.

To change a Partner LU, select an LU from the list, change the LU name, and/or Comment fields and select the Change button.

To Delete a Partner LU, select an LU from the list and select the Delete

|                       |             |            |
|-----------------------|-------------|------------|
|                       | LU name     | Alias      |
| LU name: ?PARTNERLU?  | ?PARTNERLU? | ?PLUALIAS? |
| Alias: ?PLUALIAS?     |             |            |
| Comment: UNC #1 _____ |             |            |

Figure 60. Partner LU. This screen displays the Partner LU parameters.

### NDF file Configuration:

```

define_partner_lu
 fq_partner_lu_name(?PARTNERNET?..?PARTNERLU?)
 description(partner lu for appc on the host)
 partner_lu_alias(?PLUALIAS?)
 partner_lu_uninterpreted_name(?PARTNERLU?)
 max_mc_ll_send_size(32767)
 conv_security_verification(NO)
 parallel_session_support(YES);

define_partner_lu_location
 fq_partner_lu_name(?PARTNERNET?..?PARTNERLU?)
 wildcard_entry(NO)
 fq_owning_cp_name(?PARTNERNET?..?PARTNERCP?)
 local_node_nn_server(NO);

```

Figure 61. NDF file excerpt for define\_partner\_lu and define\_partner\_lu\_location.

## Configure to run as a client

### Define CPI-C side info entry

APING and many other applications do not require CPI-C side information. Refer to -- Heading 'OVRSPIC' unknown -- for a discussion fo CPI-C side info entries. If you wish to use a symbolic destination name as the target of a conversation, you must define a CPI-C side info entry.

**Panel Configuration:** Follow this sequence of panels:

```

-- Communications Manager from the OS/2 Window List
-- Advanced
 -- Configuration, type config file name and press ENTER
 -- SNA feature profiles
 -- SNA Network Definitions
 -- Additional SNA Features
 -- CPI-C Communications Side Info

```

```

Creating a Side Information -

Partner LU

o Fully qualified name ?PARTNERNET?.?PARTNERLU?
o Alias ?PLUALIAS?

Partner TP

 _ Service TP
 TP name: ?TPNAME?

Security Type

o Same o None o Program

Node Name: ?MODE?

Comment: _____

```

Figure 62. CPI-C Side Info. This screen displays the CPI-C Side Information parameters.

**NDF File Configuration:** To define a CPI-C side info entry, your Node Definitions File should contain a "define\_cplic\_side\_info" command,

```

define_cplic_side_info symbolic_destination_name(?SYMDEST?)
 fq_partner_lu_name(?PARTNERNET?.?PARTNERLU?)
 mode_name(?MODE?)
 tp_name(?TPNAME?);

```

Figure 63. NDF file excerpt for defining a CPI-C side info entry.

## Other Client Configuration

**Define Partner LU Alias:** An additional feature of defining partner LUs is that you can provide an alias for the actual partner LU name. For example, you could define SERVER to be an alias for PARTNERNET.PARTNERLU. Alias's are case sensitive; SERVER is a different alias than "server."

If you choose to define partner LUs, either to provide an alias for use when running a client program, or to restrict the names of partner clients that can contact you, use a "define\_partner\_lu" command as follows in the NDF:

**Panel configuration::** Follow the below sequence of panels:

```

-- Communications Manager from the OS/2 Window List
-- Advanced
 -- Configuration, type config file name and press ENTER
 -- SNA feature profiles
 -- SNA Network Definitions
 -- Connections
 -- Link Name defined above for the host connection
 -- Define Partner LU's

```

Creating a Partner LU - ESBASE

Fully Qualified  
LU name:           ?PARTNERNET?.?PARTNERLU?  
Alias:               ?PLUALIAS?

0 Conversation security verification

Comment: \_\_\_\_\_

Figure 64. Partner LU. This screen displays the Partner LU parameters.

#### NDF File Configuration:

```

define_partner_lu
 fq_partner_lu_name(?PARTNERNET?.?PARTNERLU?)
 partner_lu_alias(?PLUALIAS?,?plualias?);

```

Note: Because the alias is case sensitive, it is recommended that you define the alias (PLUALIAS) in both upper and lowercase. This can only be done in the NDF file as in the example above.

Figure 65. NDF file excerpt for Partner LU..

## Configure to run as a server

### Define transaction programs

To run OS/2 as the target of a conversation, you must, in addition to the common configuration steps above, define a TP on your machine that will be the target program of the conversation.

**Panel configuration::** Follow this sequence of panels:

```

-- Communications Manager from the OS/2 Window List
-- Advanced
-- Configuration, type config file name and press ENTER
-- SNA feature profiles
-- SNA Network Definitions
-- Additional SNA Features
-- Transaction Program Definitions

```

Creating a Transaction Program

Options:

Conversation security required                     Service TP

Transaction Program (TP) name :    ?TPNAME?

OS/2 program path and file name:    ?TPPATH?

Program parameter string            :    see note 1 below

Icon path and file name            :   

Comment                               :

Figure 66. TP definition. This screen displays the TP definition parameters.

Click on the 'Continue' button and see see note 2 below for TP program operation parameter.

**NDF File Configuration:** To define a transaction program to your network node, your Node Definitions File should contain a "define\_tp" command,

```

define_tp
 tp_name(?TPNAME?)
 filespec(?TPPATH?)
 parm_string() see note 1 below
 tp_operation(nonqueued_am_started) see note 2 below
 program_type(vio_windowable);

```

Figure 67. NDF file excerpt from BASE.NDF for DEFINE\_TP.

**Notes:**

1. Parameter string

Any command line parameters that need to be run with the program are entered here.

2. TP program operation

This parameter indicates how the local TP is started as a server. It can be one of the following:

- QUEUED\_OPERATOR\_STARTED

- QUEUED\_OPERATOR\_PRELOADED
- QUEUED\_AM\_STARTED
- NONQUEUED\_AM\_STARTED

### Other Server Configuration

Since both Extended Services and Networking Services/2 support APPN, you do not need to define partner LU names. The partner LU can be located through APPN services.

When inbound implicit partner LU support is enabled, the computer has the capability to accept an incoming BIND request that contains a partner LU name that is not defined at the local node. To enable any partner to call you when your computer is a server, make sure your Node Definitions File contains the following:

```
define_defaults
 implicit_inbound_plu_support(yes);
```

Figure 68. NDF file excerpt for implicit\_inbound\_plu\_support.

Note: The implicit\_inbound\_plu\_support cannot be changed from the panel configuration.

### Verifying configuration

You must verify the changes you make to the configuration by using one of the following methods.

- Panel configuration: Choose Verify from the action bar to verify and update your configuration. Answer "Yes" to "Do you want to update active configuration?"
- Panel Configuration: Choose the Verify icon from the Communications Manager Folder
- NDF Configuration - Run the following 'appnv' command from the OS/2 Command prompt with the /e option to verify and update your configuration. Type APPNV, then your NDF file name.  
'appnv <NDF file name> .NDF'

You should stop and restart Communications Manager to make changes active.

---

## Running APING

Run the APING executable from the OS/2 Command prompt with the following parameters:

- Parameter = ?PARTNERNET?..?PARTNERLU? or ?PLU\_ALIAS? or ?SYMDEST?
- Options = Any options flags you wish to run with APING. Type 'APING ?' for list.

APING ?PARTNERNET?..?PARTNERLU?

---

## How to find...

### Panel Configuration

- LU name

You can find your local LU in the Local Node Characteristics panel.

```
-- Communications Manager from the OS/2 Window List
-- Advanced
 -- Configuration, type Config file name and press ENTER
 -- SNA feature profiles
 -- SNA Network Definitions
 -- Local Node Characteristics
```

The LU name is the Local Node Name on the panel.

- CP name

The CP name is the same as the LU name found above (Local Node Name).

- Network Name

The Network Name is the Network ID in the above panel.

- local LAN address - cannot be found in the panels

### NDF File

- LU name

You can find your LU name in the DEFINE\_LOCAL\_CP command in the following Node Definitions File excerpt:

```

define_local_cp
fq_cp_name(?NETWORK?LUNAME?)
cp_alias(mylu)
node_id(x?NODEID?)
node_type(en);

```

Figure 69. NDF file excerpt from BASE.NDF for DEFINE\_LOCAL\_CP.

The LU name is LUNAME.

- CP name

The CP name is the same as the LU name found above.

- Network Name

The Network Name is the NETWORK variable in the excerpt of the DEFINE\_LOCAL\_CP command.

- local LAN address

The LAN address is a 12-digit hexadecimal value that identifies your token-ring adapter to the network. There is a LAN address hard-coded on the Token-Ring adapter in the NS/DOS machine. This hard-coded value is sometimes be over-ridden with something called a "locally administered address." You can find your LAN address in the following ways.

- Check the computer's \IBMCOM\LANTRAN.LOG file if you are using OS/2 2.0, or in the \CMLIB\ACSLAN.LOG file if you are using OS/2 1.3 + NS/2. You will see a line that says:

Adapter X has node address 'LANADDRESS' The value in LANADDRESS is your local LAN address.

- Run diagnostics on the computer's reference diskette:

1. Boot the machine on its reference diskette
2. Press Enter to clear the main panel
3. Press Ctrl + A to start advanced diagnostics
4. Select "System checkout"
5. Press "Y" to indicate the list is correct
6. Select "Run tests one time"
7. Cursor down to the "Primary Token-Ring Adapter and press Enter
8. Select the proper cable type
9. Press enter on the panel asking you to disconnect your cable (you don't actually need to disconnect it for this exercise)
10. Press enter when told the next screen will contain important information
11. On the information screen, the value after Adapter Address is you LAN address (you may need to Page Down to see this value).

12. After making note of the Adapter Address, remove the reference diskette, reconnect your cable if you disconnected it, and press Ctrl-Alt-Delete to reboot your machine.

---

## APPC/VM Configuration

This chapter describes how to configure APPC/VM. The configuration is spread among the APPC/VM VTAM Support service machine (AVS), VTAM, and NCP. Examples of configuration of each are shown.

### Prerequisites

Software and hardware prerequisites for APPC/VM include:

- VM ESA V1.0 or later
- VTAM V3.3 or later
- NCP V5.2 or later
- 3745 with Token-ring attachment
- Single SNA domain.

It also assumes that the software listed above has already been installed on the appropriate hardware platforms.

For more detailed information on APPC/VM configuration and operation refer to:

- *VM/ESA Connectivity Planning, Administration, and Operation*, SC24-5448
- *VTAM Resource Definition Reference*, SC31-6438
- *NCP Resource Definition Reference*, SC30-3448

---

### Terminology

The terminology table maps the standard networking terms defined in "How do I Configure a Network?" on page 7 to the terms used by APPC/VM.

| <i>Standard Term</i> | <i>APPC/VM Term</i>                                            |
|----------------------|----------------------------------------------------------------|
| Network Name         | NETID                                                          |
| LU Name              | name supplied for APPL definition in APPL major node           |
| Partner LU Name      | name supplied for LU definition in major nodes other than APPL |
| Local LAN Address    | LOCADD (in NCP gen)                                            |
| Adjacent LAN Address | DIALNO (on PATH definition in switched major node)             |

---

### APPC/VM Configuration Worksheet

Use the following table to determine all the values you will need while configuring this platform. The table is split into two parts: values determined by referring to the Booklet introduction or other platform chapters, and values local to this platform that you make up. There are three columns. The left-most column has a variable name that starts and ends with a question mark (?), the middle column describes

what the variable is used for and how to determine the value, and the right-most column is for you to fill in with a value. Whenever there is a reference in this chapter to a value in the left column, substitute the value you have written in the right column.

| <i>Symbol</i>                                   | <i>How to determine this value</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Fill in value here</i> |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Values that much match with other places</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |
| ?LUNAME?                                        | <p>This is the symbol that refers to the LU name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters which is the LU name of the node. Choose a name that is unique within the same network name. Refer to "How do I Configure a Network?" on page 7 for more information about LU names.</p> <p>You may already have an LU name defined. If so, it is the value specified in an "AGW ACTIVATE GATEWAY" command. This command can be included in the AGWPROF GCS exec of the AVS service machine, or it can be issued from the AVS console.</p> <p>You may also have more than one LU. There are two major types of gateways in APPC/VM; global and private. If you want to use both you will need a minimum of one LU for each type. See "Configure to run as a server" on page 104 for more information on gateways. A private gateway will be referred to by ?LUNAME_P?, while a global gateway will be called ?LUNAME_G?.</p> |                           |
| ?CPNAME?                                        | VTAM prior to V4 does not have a control point. Refer to "What Is APPN?" on page 6 for more information about control points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |
| ?NETWORK?                                       | <p>This is the symbol that refers to the network name of the machine you are defining to the network. 1 to 8 character field consisting of alphanumeric characters. There is a structured format for the network name which includes the country code, enterprise code and network suffix code. This format insures uniqueness around the world. Call your local IBM branch office for the format information and to register your network name. Refer to "How do I Configure a Network?" on page 7 for more information about network names.</p> <p>For systems with VTAM already configured, this value is found in the VTAMLST start options (ATCSTRxx) member. The option name is NETID.</p>                                                                                                                                                                                                                                                                                           |                           |
| ?PARTNERLU?                                     | This is the partner's LU name. Refer to the "How to find..." section of the partner computer's configuration chapter for this value. Refer to "How do I Configure a Network?" on page 7 for more information about the partner LU name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |

| <i>Symbol</i>       | <i>How to determine this value</i>                                                                                                                                                                                                                                                                                                                                                                                     | <i>Fill in value here</i> |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| ?LANADDRESS?        | This is the symbol for the LAN Address of the partner computer. (Or the LAN Address of a network node, if the link is being made to a network node.) Refer to the "How to find..." section of the partner computer's configuration chapter for this value.                                                                                                                                                             |                           |
| ?TPNAME?            | This is the symbol for the Transaction Program name. This is the name of the transaction program at the partner computer. For APING, the TP Name on the server is <b>APINGD</b> .<br><br>When using private gateways, an entry is made in the \$SERVER\$ NAMES file that maps the TP name to an EXEC or module. The actual TP name follows a ":nick." parameter in the file.                                           |                           |
| ?MODE?              | This is the symbol for the mode name. See "What Is a Mode?" on page 5 for a discussion of modes. Often, a client/server product's documentation specifies what mode must be used by that product. APING can use any mode (this can be specified on the APING command line), but the default is <b>#INTER</b> . It is recommended that you use one of the architected modes discussed in the "What Is a Mode?" section. |                           |
| <b>Local values</b> |                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |
| ?NCPLANADDR?        | This is the local LAN address coded in NCP on a LINE macro using the LOCADD parameter.                                                                                                                                                                                                                                                                                                                                 |                           |
| ?MODETAB?           | Name of a logon mode table in VTAM. It is assembled and link-edited into a VTAM LOADLIB dataset. The systems programmer should know the names of the logon mode tables defined on the system. This should be the name of the table where the APPC modes are included.                                                                                                                                                  |                           |
| ?SYMDEST?           | This is the CPI-C side information symbolic destination name. It is any 1-8 character name you choose. It is included when creating a side information entry. The side information is stored in communications directory files which are similar to NAMES files.                                                                                                                                                       |                           |

---

## Working with APPC/VM

### Starting/stopping APPC

APPC/VM is usually started by autologging the AVS/VM virtual machine. It can also be started by issuing AGW START once GCS is ipled in the AVSVM machine. Stopping APPC/VM is accomplished via the AGW STOP command.

---

## Other commands

APPC/VM is a VTAM application that runs in its own disconnected virtual machine (typically AVSVM) under GCS. Once APPC/VM is logged on there are several commands that can be used to monitor its operation. A subset of these commands is shown below:

```
AGW QUERY ALL
AGW CNOS
AGW ACTIVATE GATEWAY
```

The **QUERY ALL** command provides a listing of all resources in use by APPC/VM. **AGW CNOS** will negotiate session limits with partner LUs. **ACTIVATE GATEWAY** makes an LU available to APPC/VM for its own use.

---

## Configuration

### Working with APPC configuration

The following configuration steps will be discussed:

1. Define yourself to the network
2. Define a link to a partner or intermediate node
  - a. Additional LEN configuration
  - b. Other link configuration
3. Configure to run as a client
  - a. Define CPI-C side information
  - b. Other client configuration
4. Configure to run as a server
  - a. Define transaction programs
  - b. Other server configuration

For APPC/VM, configuration is done in the following places:

- AVSVM DIRECT - The directory entry for APPC/VM.
- AGWPROF GCS - This exec is called by AVSVM during startup. It starts resources for AVS,VM.
- Server commands - Certain commands are issued in any virtual machine that will be used as a server.
- COMDIR - For client virtual machines, the communications directory must be established for CPI-C applications with the SET COMDIR command.
- \$SERVER\$ NAMES - For server virtual machines, this file contains the mapping of transaction program names to executables. It is used only with private gateways.
- VTAM - Definitions are required in an application major node for the APPC/MVS LU or LUs, as well as partner definitions in a switched major node

for LAN attached T2.1 nodes, such as workstations. Additions are also need in logon mode tables for APPC modes.

- NCP - The token-ring adapter must be configured, and a parameter added to the NCP definition to support independent LUs.

## Define yourself to the network

1. Create CP Directory Entry for the APPC/VM VTAM Service Machine

APPC services in VM access an SNA network through the APPC/VM VTAM Service Machine (AVSVM). AVSVM's directory entry should look similar to the one shown below:

```
USER AVSVM AVSVM 32M 64M G 64
ACCOUNT 1 AVSVM
MACH XA
IUCV ANY
IUCV *IDENT GATEANY ?LUNAME? REVOKE
IUCV ALLOW
OPTION COMSRV MAXCONN 20 ACCT
NAMESAVE GCS
 IPL GCS PARM AUTOLOG
CONSOLE 01F 3215
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
LINK MAINT 193 193 RR
HDISK 191 3380 2209 003 SSKN05 MR RAVSOBJ WAVSOBJ MAVSOBJ
*
```

Figure 70. CP Directory Entry for AVSVM - AVSVM.DIR

2. Load AVS from the Product Tape

This step is described in the *VM/ESA Installation Guide*, SC24-5526. It is done by issuing the command:

```
vmfins install ppf esains avs (nomemo nolink
```

It is strongly recommended in the *VM/ESA Installation Guide* that none of the disk addresses in the user directory be modified. The directory entry shown above is the entry shipped with VM/ESA.

The example above is for installation on mini-disks. It may be advantageous to install AVS in the shared file system (SFS): For more information on this, see both the *VM/ESA Installation Guide* and *VM/ESA: CMS Planning and Administration Guide*, SC24-5445.

3. Create the AVS Virtual Machine Profile and AGWPROF GCS.

The PROFILE GCS contains commands to start AVS when the virtual machine is started. It is stored on the AVS 191 disk. AGWPROF GCS is called after AVS initialization, and contains commands to execute as soon as AVS is available. Samples of each are shown below.

```

/*****/
/*
/* SAMPLE PROFILE GCS FOR AVS
/*
/*****/
Trace 0
'CP SET IMSG ON'
'CP SET EMSG ON'
'CP SET RUN ON'
'CP SET PF01 IMMED AGW QUERY ALL'
'CP SET PF02 IMMED AGW QUERY GATEWAY ALL'
'CP SET PF03 IMMED AGW QUERY CNOS ALL'
'CP SET PF04 IMMED AGW QUERY USERID ALL'
'CP SET PF05 IMMED AGW QUERY CONV ALL'
'CP SET PF12 RETRIEVE'
/*****/
/*
/* Determine mode of operation. Load AGW370 loadlib if running
/* in 370 mode. Load AGW LOADLIB if running in XA mode.
/*****/
'GLOBAL LOADLIB AGWUTIL' /* Contains AGWGMD
'OSRUN AGWGMD' /* AGWGMD returns 0 if running in XA mode,
and 4 if running in 370 mode
IF RC=0 THEN /* Virtual machine is in XA mode
'GLOBAL LOADLIB AGW'
ELSE
'GLOBAL LOADLIB AGW370' /* Virtual machine is in 370 mode
'LOADCHD AGW AGW'
'Q LOADLIB'
'Q LOADCMD'
'AGW START' /* Start AVS
exit rc

```

Figure 71. PROFILE GCS - PROFILE.GCS

```

/*****/
/* AGWPROF GCS FOR AVS */
/*****/
'AGW ACTIVATE GATEWAY ?LUNAME_P? PRIVATE'
'AGW ACTIVATE GATEWAY ?LUNAME_G? GLOBAL'

```

Figure 72. AGWPROF GCS - AGWPROF.GCS

**Notes:**

- a. The names substituted for ?LUNAME? should be different. ?LUNAME? was used to designate both since they are both local LUs.

Gateways define paths (Logical Units or LUs) into the SNA network. As such these names must match names of LUs defined in a VTAM application major node described below.

**4. Create VTAM Application Major Node --**

Place the following in a VTAMLST library (usually SYS1.VTAMLST):

```

*
APLAVS VBUILD TYPE=APPL
?LUNAME_G? APPL APPC=YES, X
 AUTHEXIT=YES, X
 AUTOSES=1, X
 DSESLIM=8, X
 DHINWNL=4, X
 DHINWNR=4, X
 PARSESS=YES, X
 SYNCLVL=CONFIRM, X
 SECACPT=ALREADYV
?LUNAME_P? APPL APPC=YES, X
 AUTHEXIT=YES, X
 AUTOSES=1, X
 DSESLIM=8, X
 DHINWNL=4, X
 DHINWNR=4, X
 PARSESS=YES, X
 SYNCLVL=CONFIRM, X
 SECACPT=ALREADYV

```

Figure 73. VTAM definition of APPC LU - APPLVM.VTM

**Notes:**

- a. The names substituted for ?LUNAME? should be different. ?LUNAME? was used to designate both since they are both local
- b. If a logon mode table other than the default table (ISTINCLM) will contain the APPC mode entries, a **MODETAB** parameter should be added to the entries above. LUs.
- c. Depending on security requirements on the VM system, the **SECACPT** parameter may also need to be changed.

5. Add APPC Modes to the Logmode Table

APPC modes are shown in Figure 74 on page 102. Add them to your logmode table, compile, and then link-edit the member into a VTAM library. Also include them in the default logmode table (ISTINCLM) so that dynamically created LUs can use them.

```

* LOGMODE TABLE ENTRY FOR RESOURCES CAPABLE OF ACTING *
* AS LU 6.2 DEVICES *

SIASVCHG MODEENT LOGMODE=SIASVCHG,FMPROF=X'13',TSPROF=X'07', *
PRIPROT=X'BO',SECPROT=X'BO',COMPROT=X'DOB1', *
RUSIZES=X'8686',ENCR=B'0000',SSNDPAC=7, *
PSERVIC=X'06020000000000000000300', *
SRCVPAC=7,PSHDPAC=7,TYPE=0 *
TITLE '#BATCH'

* LOGMODE TABLE FOR BATCH SESSIONS ON RESOURCES CAPABLE *
* OF ACTING AS LU 6.2 DEVICES *

#BATCH MODEENT LOGMODE=#BATCH, *
ENCR=B'0000',SSNDPAC=3, *
SRCVPAC=3,PSHDPAC=3,RUSIZES=X'F7F7' *
TITLE '#IITER'

* LOGMODE TABLE FOR INTERACTIVE SESSIONS ON RESOURCES *
* CAPABLE OF ACTING AS LU 6.2 DEVICES *

#INTER MODEENT LOGMODE=#INTER, *
ENCR=B'0000',SSNDPAC=7, *
SRCVPAC=7,PSHDPAC=7,RUSIZES=X'F7F7' *
TITLE '#BATCHSC'

* LOGMODE TABLE FOR BATCH SESSIONS REQUIRING SECURE *
* TRANSPORT ON RESOURCES CAPABLE OF ACTING AS LU 6.2 *
* DEVICES *

#BATCHSC MODEENT LOGMODE=#BATCHSC, *
ENCR=B'0000',SSNDPAC=3, *
SRCVPAC=3,PSHDPAC=3,RUSIZES=X'F7F7' *
TITLE '#INTERSC'

* LOGMODE TABLE FOR INTERACTIVE SESSIONS REQUIRING *
* SECURE TRANSPORT ON RESOURCES CAPABLE OF ACTING AS *
* LU 6.2 DEVICES *

#INTERSC MODEENT LOGMODE=#INTERSC, *
ENCR=B'0000',SSNDPAC=7, *
SRCVPAC=7,PSHDPAC=7,RUSIZES=X'F7F7' *
TITLE 'CPSVCHG'

* LOGMODE TABLE FOR CP-CP SESSIONS ON *
* RESOURCES CAPABLE *
* OF ACTING AS LU 6.2 DEVICES *

CPSVCHG MODEENT LOGMODE=CPSCVHG, *
RUSIZES=X'8686',ENCR=B'0000', *
SSNDPAC=7,SRCVPAC=7,PSHDPAC=7 *

```

Figure 74. APPC Logon Mode Entries - APPCMODE.ASM

## Define a link to a partner or intermediate node

1. Define the Token-ring adapter in NCP

The following is a sample token-ring connection from NCP:

```
T030T2PG GROUP ECLTYPE=(PHYSICAL,ANY)
T030T2PL LINE ADDRESS=(1089,FULL),LOCADD=?NCPLANADDR?,PORTADD=2, X
 RCVBUFC=4095,MAXTSL=2044,ADAPTER=TIC2,TRSPEED=4
*
T030TRLO GROUP ECLTYPE=LOGICAL,AUTOGEN=10,PHYPORT=2,CALL=INOUT
```

Figure 75. LAN definitions on NCP

2. Provide for use of independent LUs on the token-ring connection

Once the token-ring is defined in the NCP, the only additional parameter that is required is NUMILU on the LUDRPOOL macro. For example:

```
POOL1 LUDRPOOL NUMILU=100,NUMTYP1=20,NUMTYP2=20
```

In this example the NCP will be able to support up to 100 independent LUs that are being connected via dial connections (token-ring or switched lines).

## Additional LEN configuration

Place the following in a VTAM switched major node definition. It assumes that the partner node is not another VTAM. If the partner LU is on another VTAM system, then the link definitions for the token-ring shown above need to be for a subarea link, or the cross-domain links need to be defined so that normal LU routing within the subarea network will resolve the locations of the session partners.

```
WSN VBUILD TYPE=SWNET,MAXGRP=2,MAXNO=2
PARTPU PU ADDR=04, X
 CPNAME=?PARTNERLU?, X
 PUTYPE=2, X
 MAXDATA=2012, X
 MAXPATH=1
?PARTNERLU? LU LOCADDR=0,MODETAB=?MODETAB?,DLOGMOD=?MODE?
```

Figure 76. WSN.VTM

**PARTNERLU** should be changed to match the partner LU name. See the "How to find..." section of the partner computer's configuration chapter for this value.

## Configure to run as a client

Place the APING MODULE and APINGD MODULE on a minidisk to which you have access.

## Define CPI-C Side Information

In APPC/VM side information is stored in what is called a *communications directory*. It is a VM file similar in definition and use to VM NAMES files. Below is a sample entry:

```
:nick.?SYMDEST? :APINGD
 :luname.?LUNAME? ?PARTNERLU?
 :modename.?MODE?
 :security.NONE
```

Figure 77. Sample Communications Directory Entry - COMDIR.SMP

If this entry is included in a VM file called SAMPLE.COMDIR then it can be activated in the client virtual machine by issuing:

```
SET.COMDIR FILE USER SAMPLE.COMDIR
```

More information on this command can be found by looking at the online help text for SET.COMDIR.

## Configure to run as a server

1. Place the APINGD.EXEC or APINGD.MODULE on a public minidisk.
2. Configure the Virtual Machine to run APINGD

There are two principle methods of execution for transaction programs in APPC/VM; as global resources or as private resources. A global resource can be thought of as a resource or program available to a number of users, while a private resource or program is run within a particular users virtual machine. Which type is used by APPC/VM on incoming requests is determined by the type of gateway; if a global gateway is used, the transaction program is scheduled as a global resource, while if a private gateway is used the transaction program is assumed to be private. Gateways are APPC/VM LUs.

**Configuring a Global Gateway:** A global resource must be registered as such with VM. There are two ways to do this. First, an entry can be added to the directory of the virtual machine owning the resource, as is shown below:

```
IUCV *IDENT resrc1 GLOBAL
```

This will identify **resrc1** as a resource managed by the virtual machine in which it is included.

The other way is to use the `Identify_Resource_Manager (XCIDRM)` call. This call can be used from within a program or EXEC to register the resource with VM. This still requires an additional directory entry similar to the one below:

```
IUCV *IDENT RESANY GLOBAL
```

The "RESANY" parameter allows the resource manager virtual machine to register any resource name using the XCIDRM call. Below is an EXEC called RESAPING which registers a resource called APINGD as a global resource, and then waits for events (such as an incoming attach) to schedule the transaction program.

```

/**/
/* ARG resid */
'set ldrtbls 20'
'rtnload * (FROM VMLIB SYSTEM GROUP VMLIB)'
'global loadlib edclink'
'GLOBAL TXTLIB EDCBASE IBHLIB CHSLIB CMSSAA'
resid = word(resid userid(), 1)
original_resid = resid
'EXECIO * DISKR CHREXX COPY * (FINIS STEH CPICONST.'
if rc<>0 then exit rc
do i=1 to cpiconst.0
 interpret cpiconst.i
end
/* TRACE 'I' */
server_scope=XC_GLOBAL
service_mode=XC_SEQUENTIAL
secnone=XC_ACCEPT_SECURITY_NONE
address cpicom
RESID='APINGD '
'XCIDRM RESID SERVER_SCOPE SERVICE_MODE SECHONE IDSRV_RC'
IF IDSRV_RC <> 0 & IDSRV_RC <>24 THEN DO
 SAY 'Unable to start resource' RESID
 exit idsrv_RC
end
do forever
 say 'Waiting for ALLOCATION event, TERMINATE, STOP or CHS command'
 'XCWOE resid conversation_id event length buffer WOE_rc'
 select
 WHEN event=XC_ALLOCATION_REQUEST then do
 address cms 'VHFCLEAR'
 say 'Allocation request received for' resid
 CALL Process_Request
 end
 WHEN event=XC_CONSOLE_INPUT then
 CALL user_input left(buffer,length)
 WHEN event=XC_REVOKE_RESOURCE then do
 say 'Resource management for' resid 'has been revoked'
 SIGNAL Terminate_Server
 end
 OTHERWISE
 say 'Wait_On_Event returned event XC_INFORMATION_INPUT'
 SIGNAL Terminate_Server
 end
 end
end
Process_Request:
ADDRESS COMIAND
RESID
RETURN
User_Input:
arg user_buffer
select
 WHEN USER_BUFFER = 'STOP' THEN DO
 say 'Terminating because of stop'
 exit
 end
 OTHERWISE DO
 ADDRESS CHS USER_BUFFER
 END
end
return

```

Figure 78. EXEC to Schedule a Global Resource - RESAPING.EXC

**Configuring a Private Gateway:** A private gateway runs in a user's "private" virtual machine. Within that virtual machine the appropriate TXTLIB and LOADLIB members must be globalled to run a program such as APING that is written in C. The following EXEC gives an example of an EXEC that can be called from a user's PROFILE EXEC to set up the virtual machine to act as a server:

```

/* This exec sets parameters for APPC/VM server operation */
PARSE ARG HELP1
IF HELP1 = '?' THEN DO
 say 'This EXEC sets a user virtual machine for use as an APPC server.'
 say 'It:'
 say ' 1. Performs SET SERVER ON'
 say ' 2. Performs SET FULLSCREEN OFF'
 say ' 3. Performs SET AUTOREAD OFF'
 say ' 4. GLOBALS loadlib and txtlibs needed for C/370.'
 say
 say 'It can be called from the PROFILE EXEC to automatically enable'
 say 'APPC server function.'
 exit 0
end
TRACE 0
SET CMSTYPE HT
/* Test for existing LOADLIB defs. Add EDCLINK (C runtime) if not */
/* configured. */
'QUERY LOADLIB (STACK LIFO)'
PARSE UPPER PULL LLIBS
I = WORDS(LLIBS)
EDCADD='YES'
LOADCMD = 'GLOBAL LOADLIB '
DO J=3 TO I
 IF WORD(LLIBS,J)<>'NONE' THEN LOADCMD=LOADCMD || ' ' || WORD(LLIBS,J)
 IF WORD(LLIBS,J)='EDCLINK' THEN EDCADD='NO'
END
IF EDCADD='YES' THEN LOADCMD=LOADCMD || ' EDCLINK'
INTERPRET LOADCMD
/* Test for existing TXTLIB defs. Add EDCBASE (C libraries) and */
/* and CMSSAA (contains CPI-C routines), if necessary. */
'QUERY TXTLIB (STACK LIFO)'
PARSE UPPER PULL TLIBS
I = WORDS(TLIBS)
EDCADD='YES'
IBMADD='YES'
SAAADD='YES'
LIBCMD = 'GLOBAL TXTLIB '
DO J=3 TO I
 IF WORD(TLIBS,J)<>'NONE' THEN LIBCMD=LIBCMD || ' ' || WORD(TLIBS,J)
 IF WORD(TLIBS,J)='EDCBASE' THEN EDCADD='NO'
 IF WORD(TLIBS,J)='CMSSAA' THEN SAAADD='NO'
 IF WORD(TLIBS,J)='IBMLIB' THEN IBMADD='NO'
END
IF EDCADD='YES' THEN LIBCMD=LIBCMD || ' EDCBASE'
IF SAAADD='YES' THEN LIBCMD=LIBCMD || ' CMSSAA'
IF IBMADD='YES' THEN LIBCMD=LIBCMD || ' IBMLIB'
INTERPRET LIBCMD
'SET SERVER ON'
'SET FULLSCREEN OFF'
'SET AUTOREAD OFF'

```

Figure 79. EXEC to Enable Server Operation - RESAPING.EXC

## Notes:

1. The last three lines (SET commands) are required for private server operation.

When a private gateway is used, APPC/VM converts TP names received on ATTACHes to executable program names by mapping the TP names to entries in a file called \$SERVER\$ NAMES.

```
* This file is used by APPC server to determine what module or exec
* to call based on the TP name received in an ATTACH.
:nick.APINGD :list.*
 :APINGD
```

Figure 80. SSERVERS NAMES - TP To Executable Mapping - SSERVERS.NAM

In the above example, the TP name APINGD specified in the "nick" field is mapped to the executable. The "list" field specifies a list of userids authorized to run this TP. The asterick implies that any userid may run the TP.

If the userid on the ATTACH matches the userid of the virtual machine where the TP is to run, then the "list" entry is not needed. Similarly, if the TP name received in the ATTACH matches the executable name then the "module" entry is not required. If both of these conditions are true then the entire entry in the file can be omitted.

---

## How to find....

- LU Name

For APPC VM, this is configured in AGWPROF GCS. The command:

```
AGW ACTIVATE GATEWAY ?LUNAME? GLOBAL
```

defines a global resource manager with name ?LUNAME?.

- Control Point (CP) Name

VTAM, being a LEN node, does not have a CP (Control Point) name for APPN use. It does, however, have a SSCPNAME (System Services Control Point Name). If in configuring a partner platform a CP name is needed, use the SSCPNAME instead. It is also set in the ATCSTRxx file on the VTAM 191 disk.

- Network Name

It is defined in a file named ATCSTRxx on VTAM's 191 disk. The "xx" is two digits, and the default is 00. ATCSTRxx is the VTAM start options. The NETID parameter defines the network name.

- LAN address

The LAN address is coded in NCP on a LINE macro using the LOCADD parameter.



## Appendix A. Using Node IDs in VTAM

Prior to VTAM Version 3 Release 2, the only mechanism VTAM had for resolving dynamic connections like dial-in was the node ID. The examples in this guide all use a LAN connection which to VTAM is just like dial-in. The node ID is set in the computer dialing in and must match the value in VTAM for that physical unit.

The node ID itself was intended to have two parts: a *block number* that was to be unique for each product type and an *ID number* that was to be unique within each product type. These two parts correspond respectively to the *IDBLK* and *IDNUM* parameters in VTAM.

The examples below show for each of the pertinent platforms (LEN peripheral nodes and APPN nodes) how to code the node ID in the platform and the corresponding VTAM definition.

**Note:** Some platforms allow you to set the block number; in others it is fixed. If the block number is settable you can use any matching value for IDBLK in VTAM. If the block number is fixed and VTAM does not use the CPNAME parameter as recommended, then the VTAM IDBLK **MUST MATCH** the block number in the product. This will be indicated in the examples.

**Note:** Although the information regarding nodeids applies to VTAM releases earlier than Version 3 Release 2, the configurations in this guide require function that is only supported in Version 3 Release 2 and later.

### Node ID for SNA Services/6000

SNA Services/6000 allows you to set the block number; the default is 071. In the example below, the "bbb" values must match in VTAM and SNA Services/6000.

|                    |                   |
|--------------------|-------------------|
| PROFILE name       | = ?CPPRO?         |
| XID node ID        | = <b>bbbnnnnn</b> |
| NETWORK name       | = ?NETNAME?       |
| CONTROL POINT name | = ?SSCPNAME?      |

Figure 81. Control Point profile

The corresponding VTAM definition is as follows:

|                                         |                    |   |   |
|-----------------------------------------|--------------------|---|---|
| ?LINKNAME? PU ADDR=04,                  |                    |   | X |
| CPNAME=?AIXLUNAME?,                     |                    |   | X |
| IDBLK= <b>bbb</b> ,                     | * DEFAULTS TO 071  | * | X |
| IDNUM= <b>nnnnn</b> ,                   | * ANY 5 HEX DIGITS | * | X |
| MODETAB=?MODETAB?                       |                    |   |   |
| ?AIXLUNAME? LU LOCADDR=0,DLOGMOD=#INTER |                    |   |   |

## Node ID for AS/400

The AS/400 calls the node id the *local exchange identifier* **FIXES** the block number at 056. Below is a sample screen from the Create Controller Description command. The controller type/class is \*HOST.

```

Create Ctl Desc (SNA Host) (CRTCTLHOST)

Type choices, press Enter.

Controller description > ?CONTRNAME? Name
Link type > *LAN_ *IDLC, *LAN, *SDLC, *X25
Online at IPL *YES_ *YES, *NO
APPN-capable > *NO_ *YES, *NO
Switched line list _____ Name
 + for more values
Maximum frame size *LINKTYPE 265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR_ Name, *NETATR, *NONE, *ANY
Remote control point _____ Name, *ANY
SSCP identifier _____ 050000000000-05FFFFFFFF
Local exchange identifier . . . 056nnnnn 05600000-056FFFFF,
*LIND
Initial connection *DIAL *DIAL, *ANS

```

Figure 82. Node ID definition for AS/400

The corresponding VTAM definition is as follows:

```

?LINKNAME? PU ADDR=04, X
 CPNAME=?LUNAME?, X
 IDBLK=056, * MUST BE 056 FOR AS/400 * X
 IDNUM=nnnnn, * ANY 5 HEX DIGITS * X
 MODETAB=?MODETAB?
?LUNAME? LU LOCADDR=0,DLOGMOD=#INTER

```

## Node ID for Networking Services/DOS

Networking Services/DOS calls the block number the *block\_ID* and the ID number the *ID*. The block\_ID is *settable* but defaults to 075. In the example below, the "bbb" values must match in VTAM and Networking Services/DOS.

```
NSDN ?NETWORK?.?LUNAME?,bbbnnnn
```

The corresponding VTAM definition is as follows:

```

?LINKNAME? PU ADDR=04, X
 CPNAME=?LUNAME?, X
 IDBLK=bbb, * DEFAULTS TO 075 * X
 IDNUM=nnnnn, * ANY 5 HEX DIGITS * X
 MODETAB=?MODETAB?
?LUNAME? LU LOCADDR=0,DLOGMOD=#INTER

```



