MERVA Extended Connectivity for ESA

Installation and User's Guide

Version 3 Release 2

MERVA Extended Connectivity for ESA

IBM

Installation and User's Guide

Version 3 Release 2

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This edition applies to

Version 3 Release 2 of IBM MERVA Extended Connectivity for MVS/ESA (5655-110)

Version 3 Release 2 of IBM MERVA Extended Connectivity for VSE/ESA (5686-080)

and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters.

Contents

About This Book

This book provides information about IBM MERVA Extended Connectivity for ESA Version 3 Release 2. Henceforth, this product is referred to as MERVA Extended Connectivity.

This book is intended to help you install the product, have a Network Control Program (NCP) with the product definitions loaded in a communications controller, and have the product running and ready to connect to a SWIFT X.25 Network. The book also contains information for problem determination.

MERVA Extended Connectivity interacts with IBM MERVA for ESA Version 3 Release 2 or higher, which resides on the host. Henceforth, this product is referred to as MERVA ESA.

Prerequisites for Using This Book

This book is intended for operators who are responsible for getting MERVA Extended Connectivity operational. Some tasks are performed only when installing the product and defining the system; other tasks are performed on a daily basis.

Operators who have to fix runtime problems can also find useful information.

Depending on the tasks to be performed, the operators should be familiar with IBM licensed program installation processes, NCP concepts and procedures, VTAM® operation, and MERVA ESA SWIFT Link.

Knowledge of MVS/ESA™, or OS/390®, or VSE/ESA environments, Systems Network Architecture (SNA) and X.25 protocols, 37xx communication controllers, and SWIFT X.25 Network is recommended.

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Chapter 1. Introduction

This chapter helps you get familiar with MERVA Extended Connectivity and the terminology used throughout the book.

The steps that you have to perform from product reception until having MERVA Extended Connectivity operational are described in "Getting MERVA Extended Connectivity Operational" on page 4.

MERVA Extended Connectivity Overview

MERVA Extended Connectivity is a licensed program that enables access from MERVA ESA to the SWIFT X.25 Network through a 37xx communications controller. MERVA Extended Connectivity runs in the communications controller.

As shown in Figure 1, MERVA ESA runs on the host and interacts with MERVA Extended Connectivity at networking services level.
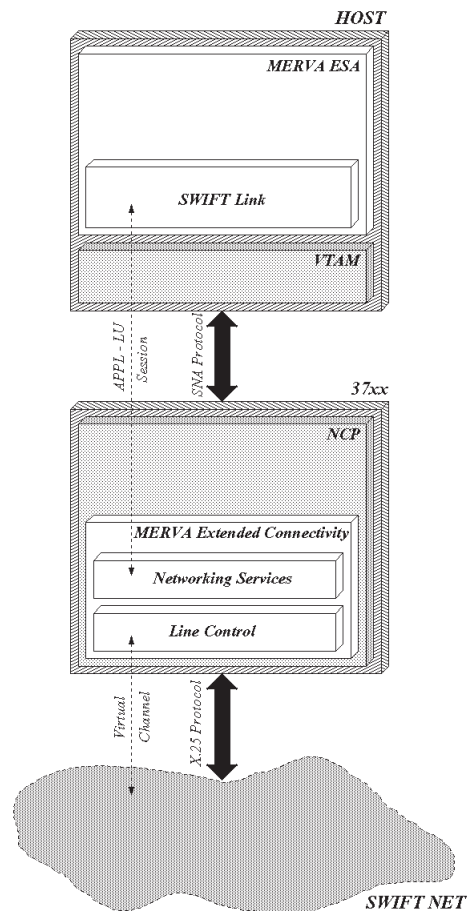
Figure 1. MERVA Extended Connectivity in System Configuration

SWIFT Link is the component of MERVA ESA that provides the link between MERVA ESA and the SWIFT network.

MERVA Extended Connectivity runs in the communications controller and accesses the SWIFT network in native NCP mode and with SNA appearance to the host. The access to the SWIFT network can be leased, or switched, or through PSDN, or all of them. The access type is selected at NCP generation time.

MERVA Extended Connectivity performs line control and error recovery procedures for the defined resources. It implements all necessary SNA functions to allow the VTAM operator to control the resources and map their status and errors in standard SNA mode.

MERVA Extended Connectivity uses two types of lines:

Real lines
> Represent an X.25 physical connection (physical line) to the SWIFT or PSDN network

Virtual lines
> Represent the connection from MERVA Extended Connectivity to the SWIFT Computer-Based Terminal (CBT) and are associated with an X.25 channel during the virtual X.25 call establishment

Figure 2 on page 3 shows real and virtual lines in a hierarchic way.
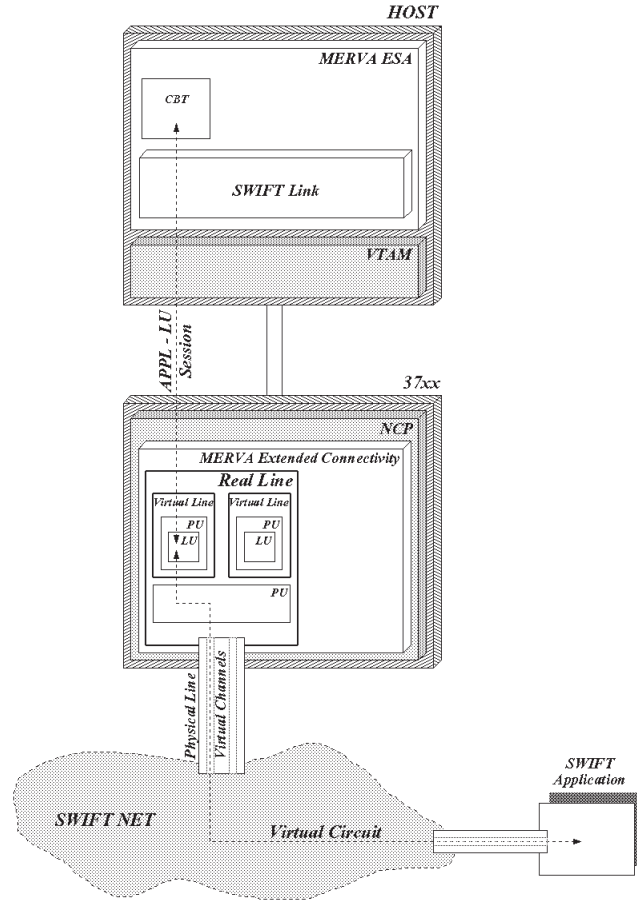
Figure 2. Hierarchy of Real and Virtual Lines

According to that hierarchy, a connection from the CBT to the SWIFT application
through a virtual X.25 channel can be established or not, depending on the real
line status. Only when the real line and the physical unit (PU) are active (physical
connection established with SWIFT network), is the CBT able to connect to SWIFT
applications.

After virtual call establishment, there is a virtual circuit from the CBT to the
SWIFT application through the network.

The number of concurrent active virtual circuits on one physical line is restricted
by SWIFT: one for shared public switched telephone network (PSTN) and 10 for
dedicated PSTN and leased lines.

If the real line becomes inactive (physical connection is terminated) during
operation, all established virtual circuits that depend on this real line are also
cleared. Although all virtual circuits are cleared, SNA sessions between CBTs and
virtual logical units (LU) are maintained.

MERVA Extended Connectivity Restrictions

For the MERVA Extended Connectivity resources, the following VTAM/NCP/37xx
functions are not supported:
- Dynamic reconfiguration

- Wrap test
- LL2 test
- LPDA test
- NPA

  The following keyword and operand are generated by NDF in all the MERVA Extended Connectivity resources statements:
  - NPACOLL=NO

MERVA Extended Connectivity does not provide any information about accounting, performance, or error reporting to be used by communication network management (CNM) products.

Getting MERVA Extended Connectivity Operational

To get MERVA Extended Connectivity running in the 37xx communications controller and enabling connection to the SWIFT X.25 Network, go through the following steps:

1. Installing MERVA Extended Connectivity

   Upon reception of MERVA Extended Connectivity, install the product on the host.

   For detailed information, refer to "Chapter 2. MERVA Extended Connectivity Installation" on page 5.

2. Generating NCP

   Install an NCP with MERVA Extended Connectivity product in the communications controller.

   This step involves:
   - Defining MERVA Extended Connectivity resources
   - Generating the NCP module
   - Loading the NCP module

   For detailed information, refer to "Chapter 3. NCP Generation" on page 7.

3. Activating MERVA Extended Connectivity resources

   On a daily basis, you should activate the virtual and real lines that are defined at generation time.

   For detailed information, refer to "Chapter 5. VTAM Operation" on page 19.

Chapter 2. MERVA Extended Connectivity Installation

This chapter helps you install MERVA Extended Connectivity on the host.

To carry out some preliminary tasks, refer to "Planning for Installation". For the actual program installation, see "Installing MERVA Extended Connectivity" on page 6.

Planning for Installation

Before you install MERVA Extended Connectivity, ensure that the system meets the requirements shown in the following sections:
- Hardware Requirements
- Software Requirements
- Storage Requirements

Hardware Requirements

MERVA Extended Connectivity supports the following communications controllers:
- IBM 3720 Communications Controller
- IBM 3725 Communications Controller
- IBM 3745 Communications Controller

IBM 3720 Communications Controller and IBM 3725 Communications Controller do not support V.25 bis host-initiated dialing. A modem configured for data terminal ready (DTR) dialing or manual dialing must be used, instead.

Physical connections require LIC type 1 (EIA RS 232 or CCITT V24) or LIC type 3 (CCITT V35) in the communications controller.

For modem requirements, refer to "Appendix B. Modems" on page 31. See also *S.W.I.F.T. Modem Guide*, which describes SWIFT recommendations for usage of modem devices on the SWIFT Transport Network.

Software Requirements

Table 1 shows the software required by MERVA Extended Connectivity on the host:

Table 1. Software on the Host

Operating system	OS/390 or MVS/ESA or VSE/ESA
Access methods	Same as those for NCP. See *Planning and Reference for NetView, NCP, and VTAM.*
Resident programs	MERVA ESA V3 R2 or higher

The supported NCP versions depend on the communications controller and operating system: MVS/ESA (see Table 2 on page 6) or VSE/ESA (see Table 3 on page 6).

Table 2. NCP for OS/390 or MVS/ESA (Controller)

37xx|NCP	V4R3.1	V5R4	V6R1	V6R2	V6R3	V7R1	V7R2	V7R3	V7R4	V7R5	V7R6	V7R7	V7R8
3720		X											
3725	X												
3745		X	X	X	X	X	X	X	X	X	X	X	X

Table 3. NCP for VSE/ESA (Controller)

37xx|NCP	V4R3.1	V5R4	V7R1	V7R4	V7R5	V7R6	V7R7	V7R8
3720		X						
3725	X							
3745		X	X	X	X	X	X	X

Storage Requirements

Table 4 shows the storage required in the communications controller. Storage requirements for NCP control blocks are not included.

Table 4. Storage in the Communications Controller

Component	Storage
MERVA Extended Connectivity	80KB
Each virtual line	0.5KB
Each physical connection	1.2KB

Installing MERVA Extended Connectivity

Follow the external description on the tape layout and refer to *Program Directory* in order to unload MERVA Extended Connectivity and to install it under MVS/ESA, or OS/390, or VSE/ESA operating systems.

Chapter 3. NCP Generation

This chapter explains the NCP generation steps, as shown in Figure 3.
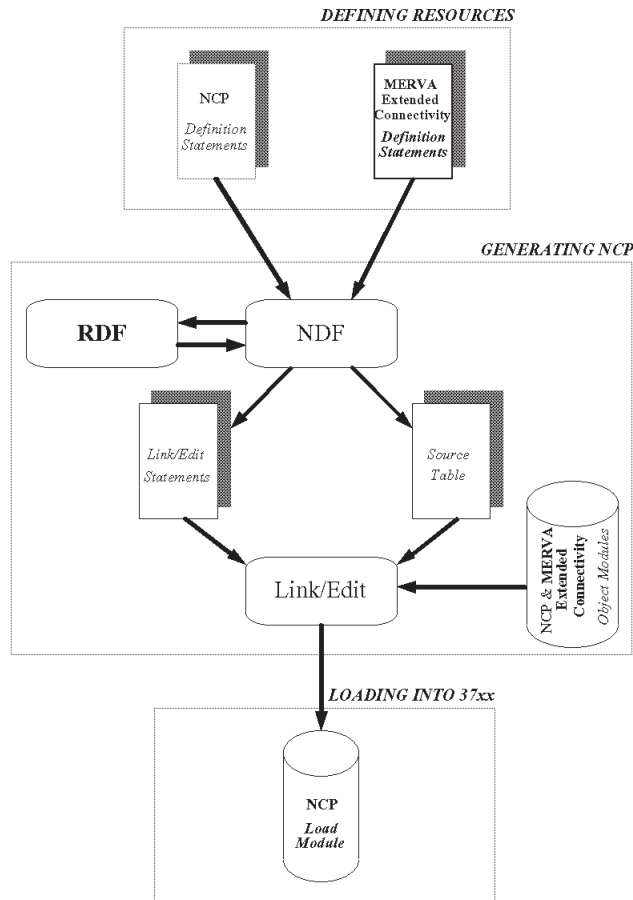
Figure 3. NCP Generation Steps

Defining Resources

How to specify MERVA Extended Connectivity definition statements is described in "Chapter 4. Defining Resources for MERVA Extended Connectivity" on page 9.

You can specify definition statements for other products before or after the MERVA Extended Connectivity definition statements.

Generating NCP

Using both NCP and MERVA Extended Connectivity definition statements, the NDF Standard Attachment Facility produces the link-edit statements and the source table. In turn, they are used to link-edit the NCP and MERVA Extended Connectivity object modules and to produce the load module.

To generate NCP, follow the standard procedures described in the *NCP, SSP and EP Generation and Loading Guide*.

The Resource Definition Facility (RDF) is provided by MERVA Extended Connectivity and loaded as an NDF exit routine at installation time. It verifies MERVA Extended Connectivity input, and generates MERVA Extended Connectivity control blocks and INCLUDE and ORDER statements. The return codes generated by the RDF are described in "Appendix C. Generation Return Codes" on page 33.

Loading NCP into the Communications Controller

The load module corresponding to both NCP and MERVA Extended Connectivity is loaded into the communications controller. To load NCP into a channel-attached communications controller, you can use one of the following:
- The SSP loading utility
- The VTAM loading utility

For information on how to use the VTAM loading utility to load NCP into a channel-attached or a link-attached communications controller, refer to *VTAM Network Implementation Guide*.

For information on how to load NCP into a remote communications controller, refer to *NCP, SSP and EP Generation and Loading Guide*.

Chapter 4. Defining Resources for MERVA Extended Connectivity

This chapter describes how to specify MERVA Extended Connectivity definition statements:

- Read "How Reference Information Is Presented" to become familiar with the way in which the information is presented.
- Refer to "Definintion Statements" on page 10 to actually define resources.
- As a quick path, use the sample in "Appendix A. Sample of Resource Definitions" on page 29. This sample helps you get started and you can add further definitions according to the installation needs. The sample is supplied as member CMVXMP. After installation, for MVS you can find it in the partitioned data set with qualifier SCMVINS0; for VSE you can find it in the source sublibrary.

How Reference Information Is Presented

This section explains how reference information to specify MERVA Extended Connectivity definition statements is structured, as well as which conventions are used to present that information.

Information Structure

There is a separate section for each definition statement. Each section covers the following issues:

USAGE
> Lists the functions or resources to which the definition statement applies.

POSITION
> Indicates where the definition statement must be placed, relative to other statements.

FORMAT and KEYWORDS
> Shows the format of the statement and the keywords that can be specified in the statement.
>
> NCP/VTAM keywords also appear. For information on NCP keywords in the virtual line, PU, and LU statements, refer to *NCP, SSP and EP Resource Definition Reference*.
>
> VTAM keywords provide information about the VTAM initialization process and are not required in the definitions you use to generate MERVA Extended Connectivity. The MERVA Extended Connectivity generation procedure does not check the VTAM keywords for proper syntax or verify whether any related keywords are present or absent. For more information on VTAM keywords, refer to *VTAM Resource Definition Reference*.

RESERVED NCP/VTAM KEYWORDS
> Lists the NCP/VTAM keywords for which you can not supply values, but MERVA Extended Connectivity automatically assigns values to them.

Conventions Used

The following conventions are used throughout this chapter:

- **BOLD UPPERCASE CHARACTERS** represent values you specify as shown, without any change.
- **BOLD UPPERCASE UNDERLINED VALUES** represent the default.
- *Italic characters* represent variables for which you can supply values.
- Commas separate keywords and parameter values.
- Parentheses ( ) enclose a sequence of parameters that correspond to one keyword.
- Braces { } enclose required keywords and symbols.
- Brackets [ ] enclose *optional* or *conditional* keywords and symbols.

An *optional* keyword can be coded or omitted, independent of other keywords. If certain keywords are omitted, default values are used. Default values are always given as one of the choices.

A *conditional* keyword can be coded or omitted, depending on how you code or omit other keywords in the same or other definition statements.

Within the definition statement description, required keywords appear first. Optional keywords follow in alphabetical order.

Definintion Statements

To define MERVA Extended Connectivity resources, use a text editor to place MERVA Extended Connectivity definition statements within NCP definition statements, according to the following sequence:

1. The OPTIONS statement:

   ```
   OPTIONS USERGEN=CMVRDF,NEWDEFN=(YES,,,NOREUSE),[NDNAME=n]
   ```

   The NDNAME keyword applies only to VSE with SSP V3 R5, or later.
2. All NCP statements (PCCU, BUILD, ...), except for the GENEND statement.
3. All MERVA Extended Connectivity statements, except for the CMV.ZGENEND statement:
   a. One CMV.GEN statement to define the installation.
   b. One CMV.NET statement plus one CMV.LINE statement to define the PSDN or SWIFT network characteristics and the real line to access the network. You can define up to 35 real lines per installation.
   c. One CMV.LINE statement to define a virtual line. You can define up to 10 virtual lines per real line.
   d. One CMV.PU statement to define a PU and one CMV.LU statement to define an LU. You must define one LU per PU and one PU per line.
   e. One CMV.SVC statement to define the logical channels to be used for the SWIFT connection through a packet switched data network (PSDN). You must specify one CMV.SVC statement for each network that accesses SWIFT through a PSDN.
   f. For definitions common to a set of resources, you may use CMV.GROUP statements. When you define a real or virtual line, a CMV.GROUP statement is required.
4. The CMV.ZGENEND statement, which indicates the end of MERVA Extended Connectivity statements.
5. The GENEND statement, which must be the last statement and cannot contain any keyword.

Figure 4 shows the hierarchy of the MERVA Extended Connectivity definition statements and how they fit within the NCP definition statements.

```
                         NCP definition statements
       OPTIONS USERGEN=CMVRDF
       PCCU...
       .
       .
       .
       BUILD...
       .
       .
       .
       MERVA Extended Connectivity definition statement
       CMV.GEN...

         CMV.NET...
            CMV.GROUP TYPE=REAL...
               CMV.LINE...
                  CMV.PU
                     CMV.LU

            CMV.GROUP TYPE=VIRTUAL

               CMV.LINE
                  CMV.PU
                     CMV.LU

               CMV.LINE
                  CMV.PU
                     CMV.LU

             .
             .
             .

               CMV.LINE
                  CMV.PU
                     CMV.LU

          .
          .
          .
            CMV.SVC

         CMV.NET...
         .
         .
         .

       .
       .
       .
       CMV.ZGENEND

       GENEND
```

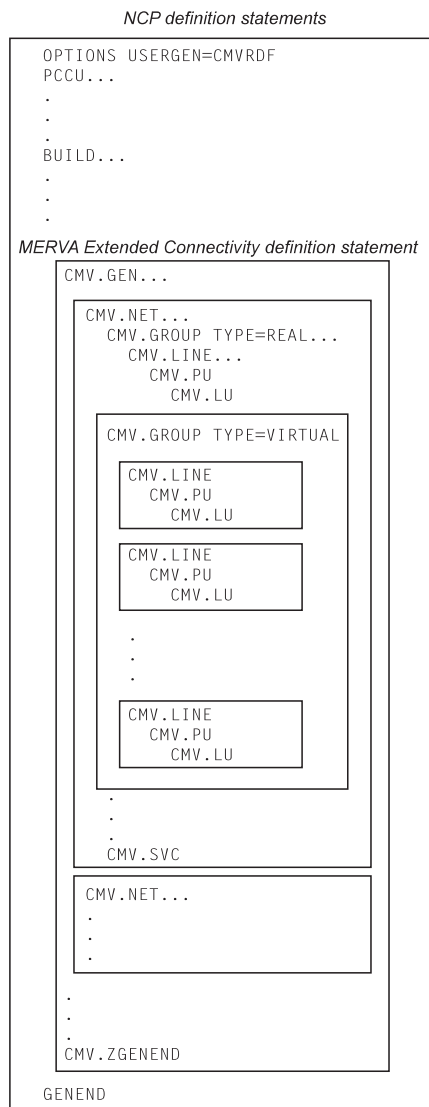*Figure 4. MERVA Extended Connectivity Definition Statements*

Comment statements are ignored and not copied to the output generated by NDF.

CMV.GEN Statement

USAGE
Specifies the general characteristics of the MERVA Extended Connectivity installation. The statement is required.

POSITION
First statement of MERVA Extended Connectivity.

FORMAT and KEYWORDS

`CMV.GEN` keywords

Available keywords:

```
[,ISANUM=1|xx]
[,TRCINT=YES|NO]
```

ISANUM

>Identifies the MERVA Extended Connectivity system to be generated. The parameter value is a string of up to two alphanumeric characters.

TRCINT

>Specifies whether internal traces are active since start time, or not.

CMV.NET Statement

USAGE

>Specifies the access type to the SWIFT network as well as the characteristics of the network connection.

POSITION

>First statement of SWIFT network connection.

FORMAT and KEYWORDS

```
CMV.NET    keywords
```

Available keywords:

```
{ACCESS=LEASED|SWITCHED}
[,ENABLTO=30|900|xxxx]
[,FRMN1=10|xxx]
[,FRMT1=30|xxx]
[,FRMWDW=7|x]
[,PKMOD=8|128]
[,PKTLNG=(128,128)|(xxx,xxx)]
[,PKTSZFAC=YES|NO]
[,PKTWDW=(2,2)|(xxx,xxx)]
[,SABMNUM=20|xxx]
[,SHANGTO=30|xxx]
[,STIMFCI=30|xxx]
[,WINSZFAC=YES|NO]
```

ACCESS

>Specifies the access type to the SWIFT network.

>Specifies the LEASED parameter value for access to SWIFT through a PSDN.

ENABLTO

>Specifies the time period, in tenths of second, the machine waits for the physical connection to be established.

>The parameter value ranges from 15 to 3000. The default is 30 for leased access to the SWIFT network (ACCESS=LEASED) and 900 for switched access (ACCESS=SWITCHED).

FRMN1

>Specifies the maximum number of retries in case of reply timeout.

>The parameter value ranges from 10 to 255.

FRMT1

>Specifies the time period, in tenths of second, to be used as reply timeout.

>The parameter value ranges from 30 to 255.

FRMWDW

Specifies the window at frame level.

The parameter value ranges from 1 to 7.

PKMOD

Specifies the module at frame level.

PKTLNG

Specifies the input and output packet length.

You can specify up to two parameters. The first parameter corresponds to the input packet; the second parameter corresponds to the output packet. The value of both parameters can be 128, 256, or 512. If only one parameter value is specified, it is used for both parameters.

PKTSZFAC

Specifies whether the X.25 Packet Size Negotiation Optional Facility is supported by DCE:

- If PKTSZFAC=YES is specified, MERVA Extended Connectivity includes "packet size negotiation facility" field ID = x'42' in the CALL REQUEST packet sent. This is the default.
- If PKTSZFAC=NO is specified, MERVA Extended Connectivity does not field ID = x'42' in the CALL REQUEST packet sent.

PKTWDW

Specifies the window at packet level to be used in reception and transmission mode.

You can specify up to two parameters. The first parameter corresponds to the reception mode; the second parameter corresponds to the transmission mode. The value of both parameters ranges from 1 to the module at frame level (value assigned in the PKMOD keyword) minus 1. If only one parameter value is specified, it is used for both parameters.

SABMNUM

Specifies the maximum number of retries in case of reply timeout (FRMT1 keyword) for a SABM frame transmitted over a switched link.

If this number is exceeded, MERVA Extended Connectivity drops the switched connection to avoid long dial-up connections, that are unsuccessful.

The keyword applies only to switched access to the SWIFT network (ACCESS=SWITCHED).

The parameter value ranges from 10 to 255. The default is 20.

SHANGTO

Specifies the X.25 inactivity timer, in seconds, after which, if no virtual circuit is established, the physical connection is terminated. In case of timeout, MERVA Extended Connectivity drops the physical connection and turns the real line to *monitor for call* status.

The keyword applies only to switched access to the SWIFT network (ACCESS=SWITCHED).

The parameter value ranges from 10 to 255. The 0 value is also valid and it means that no timer is set.

STIMFCI

Specifies the call indication timer, in seconds, for the reception of the X.25 call indication, after X.25 level 2 connection establishment with SWIFT network (during CALL BACK procedure). In case of timeout, MERVA Extended Connectivity drops the physical connection and turns the real line to *monitor for call* status.

The keyword applies only to switched access to the SWIFT network (ACCESS=SWITCHED).

The parameter value ranges from 10 to 255.

WINSZFAC

Specifies whether the X.25 Window Size Negotiation Optional Facility is supported by DCE:

- If WINSZFAC=YES is specified, MERVA Extended Connectivity includes the "window size negotiation facility" field ID = x'43' in the CALL REQUEST packet sent. This is the default.
- If WINSZFAC=NO is specified, MERVA Extended Connectivity does not include field ID = x'43' in the CALL REQUEST packet sent.

CMV.GROUP Statement

USAGE

Specifies the type of line.

POSITION

For real lines, follows CMV.NET statement, and must be followed by CMV.LINE, CMV.PU, and CMV.LU statements corresponding to the real line. For virtual lines, follows the real line statements, and must be followed by virtual lines statements.

FORMAT and KEYWORDS

```
{symbol}    CMV.GROUP    keywords
```

where *symbol* is the statement label.

Available keywords:

```
{TYPE=REAL|VIRTUAL}
[NCP/VTAM keywords]
```

TYPE   Specifies the type of line.

CMV.LINE Statement for Real Lines

USAGE

Specifies the characteristics of a real line. The statement is required.

POSITION

Follows the CMV.GROUP statement with TYPE=REAL and is followed by the CMV.PU statement.

FORMAT and KEYWORDS

```
{symbol}    CMV.LINE    keywords
```

where *symbol* is the name assigned to the real line, and the statement label.

Available keywords:

```
{ADDRESS=xxx}
[,STIMER=35|xxx]
{,STATOPT=text string}
[NCP/VTAM keywords]
```

ADDRESS

Specifies the duplex line interface address.

The parameter value is a string of up to 9 decimal digits and must be in the range allowed by the NCP, according to the USGTIER and MODEL values specified in the BUILD statement, for the 37xx TSS (transmission subsystem) adapter. For further information, refer to *NCP, SSP and EP Resource Definition Reference*.

STIMER

Specifies the time period, in tenths of second, to be used to send S frames (RR or RNR, depending on the status) when there is no traffic through the SWIFT network. It is used to check a remote modem disconnection.

The parameter value ranges from 35 to 255. The 0 value is also valid and it means that no S frame is sent.

STATOPT

Specifies whether the NetView status monitor is used for this resource.

The parameter value is a text string. If the string contains blanks or commas, specify the value between single quotes.

The keyword and its text string operand are copied as specified into the comment statement following the LINE statement generated by NDF.

CMV.LINE Statement for Virtual Lines

USAGE

Specifies the characteristics of a virtual line. The statement is required.

POSITION

Follows the CMV.GROUP statement with TYPE=VIRTUAL and is followed by CMV.PU statement.

FORMAT and KEYWORDS

```
{symbol}   CMV.LINE   keywords
```

where *symbol* is the name assigned to the virtual line, and labels the statement.

Available keywords:

```
{,STATOPT=text string}
[NCP/VTAM keywords]
```

STATOPT

Specifies whether the NetView status monitor is used for this resource. The parameter value is a text string. If the string contains blanks or commas, specify the value between single quotes. The keyword and its text string operand are copied as specified into the comment statement following the LINE statement generated by NDF.

CMV.PU Statement

USAGE
Defines the PU associated with the real or virtual line.

POSITION
Follows the CMV.LINE statement for a real or virtual line.

FORMAT and KEYWORDS

```
{symbol}    CMV.PU    keywords
```

where *symbol* is the name assigned to the PU, and labels the statement.

Available keywords:

```
{,STATOPT=text string}
[NCP/VTAM keywords]
```

RESERVED NCP/VTAM KEYWORDS
PUTYPE
XID

STATOPT

Specifies whether the NetView status monitor is used for this resource.

The parameter value is a text string. If the string contains blanks or commas, specify the value between single quotes.

The keyword and its text string operand are copied as specified into the comment statement following the PU statement generated by NDF.

CMV.LU Statement

USAGE
Defines the LU associated with the PU.

POSITION
Follows the CMV.PU statement.

FORMAT and KEYWORDS

```
{symbol}    CMV.LU    keywords
```

where *symbol* is the name assigned to the LU, and the statement label.

Available keywords:

```
{,STATOPT=text string}
[NCP/VTAM keywords]
```

RESERVED NCP/VTAM KEYWORDS
LOCADDR

STATOPT

Specifies whether the NetView status monitor is used for this resource.

The parameter value is a text string. If the string contains blanks or commas, specify the value between single quotes.

The keyword and its text string operand are copied as specified into the comment statement following the LU statement generated by NDF.

CMV.SVC Statement

USAGE

Specifies the X.25 logical channels to be used for a PSDN connection.

POSITION

Follows the CMV.LU statement of the last virtual line associated to the CMV.NET statement that defines an access to SWIFT through a PSDN.

FORMAT and KEYWORDS

> `CMV.SVC`   keywords

Available keywords:

> [`NUMLC=`**`(10,1)`**|*`(xxx,xxx)`*]

NUMLC

Specifies the X.25 logical channels to be used when accessing the SWIFT network through a public or private PSDN.

Two parameters must be specified:

- The first parameter specifies the number of X.25 logical channels to be used (1 to 4095).
- The second parameter specifies the first (lowest) X.25 logical channel number to be used (1 to 4095).

The sum of the parameter values cannot exceed 4096. The values specified must be in accordance with those agreed with the X.25 network provider.

CMV.ZGENEND Statement

USAGE

Indicates the end of MERVA Extended Connectivity statements.

POSITION

Last statement of MERVA Extended Connectivity.

FORMAT

`CMV.ZGENEND`

Chapter 5. VTAM Operation

To make MERVA Extended Connectivity ready to connect to the SWIFT network:

1. For each CBT to be used, make sure one virtual line and the associated real line are active.
2. Activate the virtual lines as described in "Activating a Virtual Line".
3. Activate the sessions between the CBTs and their correspondent virtual LUs as described in "Activating a Session".
4. Depending on the type of line access, activate the real lines as described in "Activating a Leased Real Line" on page 20 or "Activating a Switched Real Line" on page 21.

If you experience problems, refer to "Chapter 6. Problem Determination" on page 25.

Activating a Virtual Line

The first step in the SWIFT Link activation process is to activate the virtual lines. They remain active until the VTAM operator issues a command to inactivate them. Virtual lines never get inactivated due to MERVA Extended Connectivity operation.

To activate a virtual line, do the following:

1. Activate the virtual line with the following VTAM command:

   ```
   V NET,ACT,ID=linename,SCOPE=ALL
   ```

2. Verify the status of the resource:

   ```
   D NET,ID=linename,SCOPE=ALL
   ```

   After issuing this command, the following information is displayed on the screen:

   ```
   IST075I  NAME = linename          , TYPE = LINE
   IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
   IST087I  TYPE = LEASED              , CONTROL = SDLC
   IST134I  GROUP = GRPV0001, MAJOR NODE = NCPname
   IST084I  NETWORK NODES:
   IST089I  PUname    TYPE = PHYSICAL UNIT    , ACTIV
   IST089I  LUname    TYPE = LOGICAL UNIT     , ACTIV
   IST314I  END
   ```

Activating a Session

The next step is to establish the session between the CBTs and their correspondent virtual LUs.

To activate a session, do the following:

1. Verify that the SLUNAME parameter value (DWSVLINE statement, MERVA ESA line definition) matches with the virtual LU you are going to use.
2. Verify the status of the correspondent virtual line, PU, and LU with the following VTAM command:

   ```
   D NET,ID=linename,SCOPE=ALL
   ```

After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename        , TYPE = LINE
IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED            , CONTROL = SDLC
IST134I  GROUP = GRPV0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , ACTIV
IST089I  LUname   TYPE = LOGICAL UNIT     , ACTIV
IST314I  END
```

The status of the resources must be **ACTIV**.

3. Activate the session with the following MERVA ESA command:

   SETLT ltname,line

4. Verify the status of the correspondent LU with the following VTAM command:

   D NET,ID=LUname,SCOPE=ALL

After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = LUname , TYPE = LOGICAL UNIT
IST486I  STATUS= ACT/S     , DESIRED STATE= ACTIV
IST977I  MDLTAB=***NA*** ASLTAB=***NA***
IST861I  MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I  DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I  CAPABILITY-PLU INHIBITED,SLU ENABLED  ,SESSION LIMIT 00000001
IST081I  LINE NAME = linename , LINE GROUP = GRPR0001
IST135I  PHYSICAL UNIT = PUname
IST082I  DEVTYPE = LU
IST654I  I/O TRACE = OFF, BUFFER TRACE = OFF
IST228I  ENCRYPTION = NONE
IST171I  ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I  SESSIONS:
IST634I  NAME     STATUS       SID          SEND RECV VR TP NETID
IST635I  applname ACTIV-P    F19F27D7C5435470 0000 0000  1  0 ESIBMBAR
IST314I  END
```

The LU must be in **ACTIV-P** status and in session with the MERVA ESA application (applname).

Activating a Leased Real Line

To activate a leased real line, do the following:

1. Verify that the scanner port (LIC) specified in the MERVA Extended Connectivity resource definitions (ADDRESS parameter) is connected to your modem.

2. Activate the real line with the following VTAM command:

   V NET,ACT,ID=linename,SCOPE=ALL

After issuing the command, the scanner raises the DTR lead on the RS-232-C interface.

Then the X.25 link level activation process takes place. If you have a datascope, you can observe:

- Flags being sent by both data terminal equipment (DTE) and data circuit-terminating equipment (DCE)
- A successful SABM-UA exchange

- An X.25 level 3 RESTART packets exchange.

When you receive confirmation of X.25 level 2 activation and RESTART, both real line and PU are active.

3. Verify the status of these resources:

```
D NET,ID=linename,SCOPE=ALL
```

After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename        , TYPE = LINE
IST486I  STATUS= ACTIV      , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED           , CONTROL = SDLC
IST134I  GROUP = GRPR0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , ACTIV
IST089I  LUname   TYPE = LOGICAL UNIT     , NEVAC
IST314I  END
```

PU in *ACTIV* status means that X.25 level 2 is set up, and RESTART request and confirmation have been exchanged between MERVA Extended Connectivity, and SWIFT, or PSDN network.

LU never gets active: LU definition is only provided for NCP requirements and is not used by MERVA Extended Connectivity.

4. When the real line and the PU are active, go on with the LOGIN procedure provided by MERVA ESA. Through this procedure an X.25 CALL REQUEST is sent to the SWIFT, or PSDN network, and X.25 level 3 is activated.

Activating a Switched Real Line

The procedure for activating a switched real line depends on the dialing type. This is specified in the MERVA ESA resource definitions (PHONE parameter, DWSVLINE statement). Depending on the dialing type refer to one of the following:
- "V.25 bis Dialing"
- "DTR or Manual Dialing" on page 22

V.25 bis Dialing

To activate the switched real line, do the following:
1. Verify that the V.25 bis modem is properly configured.
2. Verify that the scanner port (LIC) specified in the MERVA Extended Connectivity resource definitions (ADDRESS parameter) is connected to your modem.
3. Activate the real line with the following VTAM command:

```
V NET,ACT,ID=linename,SCOPE=ALL
```

After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename         , TYPE = LINE
IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED             , CONTROL = SDLC
IST134I  GROUP = GRPR0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , PCTD2
IST089I  LUname   TYPE = LOGICAL UNIT     , NEVAC
IST314I  END
```

PU in *PCTD2* status means that X.25 level 2 can be activated when the physical connection is established. At this moment, the real line is in *monitor for call* status.

4. When the real line is active and PU is in *PCTD2* status, continue with the LOGIN procedure provided by MERVA ESA. As a result:
   - DTR, CTS, and CD are raised from the scanner.
   - The telephone number provided by MERVA ESA is sent to the modem through V.25 bis commands.

   If the call succeeds, the X.25 link level activation is initiated. On the physical line you can observe:
   - Flags being sent by both DTE and DCE
   - A successful SABM-UA interchange
   - An X.25 level 2 RESTART request packet sent by MERVA Extended Connectivity to the SWIFT network and answered by a RESTART confirmation.

   When you receive confirmation of X.25 level 2 activation and RESTART, both real line and PU are active.

5. Verify the status of these resources:

   `D NET,ID=linename,SCOPE=ALL`

   After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename         , TYPE = LINE
IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED             , CONTROL = SDLC
IST134I  GROUP = GRPR0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , ACTIV
IST089I  LUname   TYPE = LOGICAL UNIT     , NEVAC
IST314I  END
```

   At this point, an X.25 CALL REQUEST is sent to the SWIFT network and X.25 level 3 is activated.

DTR or Manual Dialing

To activate the switched real line, do the following:

1. Verify that the modem is properly configured for DTR or manual dialing. For DTR dialing, the dial number is stored in the modem.
2. Connect the scanner port (LIC) specified in the MERVA Extended Connectivity resource definitions (ADDRESS parameter) to your modem.
3. Activate the real line with the following VTAM command:

   `V NET,ACT,ID=linename,SCOPE=ALL`

After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename        , TYPE = LINE
IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED             , CONTROL = SDLC
IST134I  GROUP = GRPR0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , PCTD2
IST089I  LUname   TYPE = LOGICAL UNIT     , NEVAC
IST314I  END
```

PU in **PCTD2** status means that X.25 level 2 can be activated when the physical connection is established. At this moment, the real line is in *monitor for call* status.

4. When the real line is active and PU is in **PCTD2** status, continue with the LOGIN procedure provided by MERVA ESA. As a result:
   - DTR is raised from scanner.
   - For DTR dialing, the modem dials the number provided during modem customization. For manual dialing, the user dials the number.

   If the call succeeds, the X.25 link level activation is initiated. On the physical line you can observe:
   - Flags being sent by both DTE and DCE
   - A successful SABM-UA interchange
   - An X.25 level 2 RESTART request packet sent by MERVA Extended Connectivity to the SWIFT network and answered by a RESTART confirmation.

   When you receive confirmation of X.25 level 2 activation and RESTART, both real line and PU are active.

5. Verify the status of these resources:

   ```
   D NET,ID=linename,SCOPE=ALL
   ```

   After issuing this command, the following information is displayed on the screen:

```
IST075I  NAME = linename        , TYPE = LINE
IST486I  STATUS= ACTIV     , DESIRED STATE= ACTIV
IST087I  TYPE = LEASED             , CONTROL = SDLC
IST134I  GROUP = GRPR0001, MAJOR NODE = NCPname
IST084I  NETWORK NODES:
IST089I  PUname   TYPE = PHYSICAL UNIT    , ACTIV
IST089I  LUname   TYPE = LOGICAL UNIT     , NEVAC
IST314I  END
```

At this point, an X.25 CALL REQUEST is sent to the SWIFT network and X.25 level 3 is activated.

Chapter 6. Problem Determination

This chapter provides information to diagnose and fix problems that can arise when activating and operating MERVA Extended Connectivity resources:

- The tables in this section describe the specific procedures to solve problems related to VTAM operation when you try to activate MERVA Extended Connectivity resources.
- In case of abnormal termination (abend), refer to "Dealing with Abends" on page 26.
- For information on how to obtain traces and what kind of information you can gather, refer to "Diagnostic Aids and Debugging Tools" on page 27.

If the CBT application is in session with the corresponding MERVA Extended Connectivity virtual line LU, the MERVA ESA operator might receive MERVA Extended Connectivity return codes. For information about the meanings of these codes as well as the action to be taken, refer to "Appendix D. Runtime Return Codes" on page 35.

Note: If you cannot fix the problem or if you get a MERVA Extended Connectivity abend, contact your IBM representative. Provide a detailed description of the problem, environment, resource definitions, release and revision level of the products you are using (VTAM, NCP, MERVA ESA, and MERVA Extended Connectivity), hardware, and all trace material you have collected.

Table 5. Virtual Line Problems

Symptom	Probable Cause	User Response
Problems activating line, PU, or LU.	Error in line, PU, or LU definition or MERVA Extended Connectivity internal error.	- To isolate the problem, try to activate separately the line, PU, and LU specifying the SCOPE=ONLY option in the VTAM command. - Look up VTAM log. - Check the MERVA Extended Connectivity installation procedure. - Check the MERVA Extended Connectivity generation process.
Session between CBT and virtual line LU can not be started after issuing MERVA ESA SETLT command.	VTAM or BIND parameter definition errors or LU not active.	- Check that the corresponding LU is in *active* status (SLUNAME parameter, DWSVLINE statement, MERVA ESA resource definitions). - Obtain a VTAM buffer trace to get the SNA traffic between MERVA ESA application and MERVA Extended Connectivity virtual line LU. Using the trace, you can identify the reason why the session can not be started (UNBIND, sense code, or other).

Table 6. Leased Real Lines Problems

Symptom	Probable Cause	User Response
PALNK status when trying to activate the real line, and SENSE 08220000 after a while.	Local or remote modem problems.	- Check physical connection (cables, connector) from scanner port (LIC) to modem. - Check modem status. - Check line status during the activation sequence from communications controller maintenance and operator subsystem (MOSS) console, through LID command. - Get line trace.

Table 7. Switched Real Lines Problems. To solve problems when activating a switched real line, take into account the dialing type (V.25 bis, DTR, or manual). This is specified in the MERVA ESA resource definitions (PHONE parameter, DWSVLINE statement).

Symptom	Probable Cause	User Response
Dial timeout when using V.25 bis dialing	Incorrect modem configuration or no physical connection.	Check modem configuration or connections.
Dial timeout when using DTR dialing	Incorrect modem configuration, invalid dialed number, or busy line.	• Check modem configuration. • Check the physical connection from modem to packet switching data network (PSDN). • Check the dial number stored in the modem.
Dial timeout when using manual dialing	Incorrect modem configuration, invalid dialed number, or busy line.	• Check modem configuration. • Check the physical connection from modem to packet switching data network (PSDN). • Check the number dialed by the user.

Dealing with Abends

NCP or MERVA Extended Connectivity abends occur because of unusual events. For example, when a buffer containing data is corrupted during normal operation and causes an error.

When unusual events occur, NCP and MERVA Extended Connectivity check for certain conditions and abends and stop in case of severe errors. You must always obtain a dump of the NCP plus MERVA Extended Connectivity that issued the abend.

When you get an abend, the first indication usually is a message at the host operating system console. The message states that an I/O error has occurred for the channel address of the communications controller and that initial program load (IPL) is required.

In case of an abend, go through the following steps:

1. Find the abend code in the NCP dump. In a formatted dump, the abend code is at the top of every page. In an unformatted dump, find the abend code for the communications controller as follows:
   • XDH pointer at X'6E4'
   • XDH + X'60' = abend code

   When NCP abends, the Dump Formatter prints out the exact input that you need to search the RETAIN database and see whether the problem was previously identified and solved. The RETAIN search string appears on the first page of the report in the format:

   `RIDS/wwwwwwww PIDS/xxxxxxxxx AB/Syyyy ADRS/zzzzzz`

2. Determine the cause of the abend, using the table in "Appendix E. Runtime Abend Codes" on page 45. NCP, MERVA Extended Connectivity, some program running in the communications controller, or the hardware can cause a communications controller abend.

3. For MERVA Extended Connectivity abends, contact your IBM representative. For all other abends, refer to *NCP, SSP and EP Diagnosis Guide*.

Diagnostic Aids and Debugging Tools

Diagnostic aids and debugging tools are available to help you examine the data flow through your network, and isolate and identify the source of suspected MERVA Extended Connectivity errors. If you identify an error and need to contact an IBM representative, the information gathered using these tools is often of interest to the people who will assist you. The following sections describe how to operate these tools, and the kind of information you can gather with them.

NCP Line Trace

The NCP line trace records activity on a specified real line that is attached to the communications controller. NCP collected data is sent to the host and formatted by ACF/TAP.

OPERATION

To start the NCP line trace from the host processor, issue the following command when VTAM is started:

```
F NET,TRACE,TYPE=LINE,ID=<real linename>
```

ACF/TAP, which produces output in easy-to-read format, processes the NCP line trace. To get detailed decoding of X.25 traffic, specify the NPPRT=YES parameter value into the ACF/TAP options.

For further information, refer to the *NCP, SSP and EP Diagnosis Guide*.

INFORMATION GATHERED

Level 2 and level 3 X.25 traffic on the real line, which can help determine SWIFT network or X.25 level MERVA Extended Connectivity problems related to line control.

Scanner Interface Trace

The scanner interface trace (SIT) records the operating parameters of a line when the communications controller sends or receives data. The SIT records inbound data before it is passed to NCP and outbound data after NCP processes it.

OPERATION

To start the SIT from the host processor, issue the following command when VTAM is started:

```
F NET,TRACE,TYPE=SIT,ID=<real linename>
```

ACF/TAP, which produces output in easy-to-read format, processes the SIT.

For further information, refer to the *NCP, SSP and EP Diagnosis Guide*.

INFORMATION GATHERED

Internal scanner parameters.

VTAM Buffer Trace

The VTAM buffer trace records LU activation procedures and session establishment.

OPERATION

To start the VTAM buffer trace from the host processor, issue the following command when VTAM is started:

```
F NET,TRACE,TYPE=BUF,ID=<LU name (virtual line)>
```

ACF/TAP, which produces output in easy-to-read format, processes the VTAM buffer trace.

For further information, refer to *NCP, SSP and EP Diagnosis Guide*.

INFORMATION GATHERED
Data exchange between VTAM and MERVA Extended Connectivity.

NLDM Trace

The network logical data manager (NLDM) trace records LU activation procedures and session establishment.

OPERATION
To start the NLDM trace from the host processor, issue the following command when NetView and NLDM are started:

```
NLDM TRACE START CPIU <LU name (virtual line)>
```

NLDM, which produces output in easy-to-read format, processes the path information unit (PIU) trace.

For further information, refer to *NetView Operation*.

INFORMATION GATHERED
Data exchange between VTAM and MERVA Extended Connectivity.

Communications Controller Console

MOSS is the service processor of the 37xx communication controller, provided for problem isolation and determination and for maintenance. The MOSS operator functions are performed through the control panel of the operator console.

OPERATION
To display information about lines, use the line interface display (LID) function. For information on this function, refer to *IBM 3745 Communication Controller Advanced Operations Guide*.

INFORMATION GATHERED
The following information is displayed for each line:
- NCP
- Line parameters:
  - Line interface standard
  - Line type
  - Line protocol
  - Cable identification
  - Transmission mode
  - Clock type
  - Line speed
- States of the data set leads
- Transmit and receive data

Appendix A. Sample of Resource Definitions

```
******************************************************************
***    General MERVA Extended Connectivity statement       ***
******************************************************************
        CMV.GEN
******************************************************************
***    First physical connection (leased) statement        ***
******************************************************************
        CMV.NET ACCESS=LEASED
******************************************************************
***    Real line definition for first physical connection  ***
******************************************************************
X01GRR1  CMV.GROUP TYPE=REAL
*
ALRECOT1 CMV.LINE  ADDRESS=16
APRECOT1 CMV.PU
AURECOT1 CMV.LU
******************************************************************
***    Virtual lines definition for first physical connection ***
******************************************************************
X01GVP1  CMV.GROUP TYPE=VIRTUAL
*
ALVECO11 CMV.LINE
APVECO11 CMV.PU
AUVECO11 CMV.LU
*
ALVECO12 CMV.LINE
APVECO12 CMV.PU
AUVECO12 CMV.LU
******************************************************************
***    Second physical connection (switched) statement     ***
******************************************************************
        CMV.NET ACCESS=SWITCHED
******************************************************************
***    Real line definition for second physical connection ***
******************************************************************
X02GRR1  CMV.GROUP TYPE=REAL
*
ALRECOT2 CMV.LINE  ADDRESS=17
APRECOT2 CMV.PU
AURECOT2 CMV.LU
******************************************************************
***    Virtual lines definition for second physical connection ***
******************************************************************
X02GVP1 CMV.GROUP TYPE=VIRTUAL
*
ALVECO21 CMV.LINE
APVECO21 CMV.PU
AUVECO21 CMV.LU
******************************************************************
***    Third physical connection (PSDN) statement          ***
******************************************************************
CMV.NET ACCESS=LEASED
******************************************************************
***    Real line definition for third physical connection  ***
******************************************************************
X03GRR1  CMV.GROUP TYPE=REAL
*
ALRECOT3 CMV.LINE ADDRESS=18
APRECOT3 CMV.PU
AURECOT3 CMV.LU
******************************************************************
***    Virtual lines definition for third physical connection  ***
```

```
                     ****************************************************************
                     X03GVP1 CMV.GROUP TYPE=VIRTUAL
                     *
                     ALVECO31 CMV.LINE
                     APVECO31 CMV.PU
                     AUVECO31 CMV.LU
                     *
                     ALVECO32 CMV.LINE
                     APVECO32 CMV.PU
                     AUVECO32 CMV.LU
                     *
                     ALVECO33 CMV.LINE
                     APVECO33 CMV.PU
                     APVECO33 CMV.LU
                     ****************************************************************
                     *** Logical Channels definition for third physical connection ***
                     ****************************************************************
                             CMV.SVC NUMLC=(3,25)
                     ****************************************************************
                     ***    Closing MERVA Extended Connectivity statement           ***
                     ****************************************************************
                             CMV.ZGENEND
```

Appendix B. Modems

This appendix helps you with the setup of the modems to be used to access the SWIFT X.25 Network.

Refer to the following sections, depending on the line type to be used:
* Modems for Leased Lines
* Modems for Switched Lines

Modems for Leased Lines

The only role of the modem is to extend the lines length. Because the destination of the connection is always the same, no dial operation is required. No call back is expected.

Set the modem so that it works with the following characteristics:
* Bit-synchronous
* NRZI = NO
* Internal clock
* CTS tracks RTS
* Speed according to partner modem

Modems for Switched Lines

The role of the modem is to establish the physical link to be used for the connection. The remote phone number has to be provided.

Take into account the dialing type specified in the MERVA ESA resource definitions (PHONE parameter, DWSVLINE statement) and refer to:
* Modems for V.25 bis Dialing
* Modems for DTR Dialing
* Modems for Manual Dialing

Modems for V.25 bis Dialing

The phone number to dial is provided by the CBT. The V.25 bis recommendation describes how the V.24 interface is managed in order to transfer the phone number from the DTE to the modem.

Set the modem so that it works with the following characteristics:
* Bit-synchronous.
* NRZI = NO.
* Internal clock.
* CTS tracks RTS.
* Speed according to partner modem.
* Autoanswer.
* Pulse dialing or tone dialing according to local PTT. This information can be specified in the MERVA ESA resource definitions (PHONE parameter, DWSVLINE statement) or stored in the modem.
* The dial number is also specified in the PHONE parameter.
* HDLC V.25 bis commands. The CRN command has to be accepted.

Modems for DTR Dialing

The phone number to dial is stored in the modem. The modem dials this number when the DTR signal in the V.24 interface is raised.

Set the modem so that it works with the following characteristics:
* Bit-synchronous
* NRZI = NO
* Internal clock
* CTS tracks RTS
* Speed according to partner modem
* Autoanswer
* Pulse dialing or tone dialing according to local PTT
* DTR dial
* Remote phone number stored properly

Modems for Manual Dialing

Wait until the DTR pin is active and dial the phone number manually. When the switched connection is established, press the DATA button or equivalent.

Set the modem so that it works with the following characteristics:
* Bit-synchronous
* NRZI = NO
* Internal clock
* CTS tracks RTS
* Speed according to partner modem
* Autoanswer
* Manual dial

Appendix C. Generation Return Codes

When you use the NDF Standard Attachment Facility at NCP generation time, the RDF program, provided by MERVA Extended Connectivity, can return the codes in Table 8.

Return codes marked with an asterisk (*) correspond to warning errors. The output should be usable.

Table 8. Generation Return Codes

Return Code	Cause	Action
CMV001 *	NAME TOO LONG	Check for the length of the name assigned to the resource
CMV002	INVALID DEFINITION STATEMENT NAME	Check for the name assigned to the resource
CMV003	NULL VALUE KEYWORDS	Check for the parameter values specified for the current keyword
CMV004	KEYWORD xxxxxxxx TOO LONG	Check for the length of the current keyword
CMV005	DELIMITER ',' REQUIRED BEHIND ')'	Specify comma
CMV006	DELIMITER ',' REQUIRED	Specify comma after current keyword
CMV007	CMV.GEN MUST BE THE FIRST USER-DEFINED STATEMENT	Place CMV.GEN statement in correct position
CMV008	INVALID KEYWORD xxxxxxxx	Check for the parameter value specified for the current keyword
CMV009	KEYWORD xxxxxxxx REQUIRED OR DEFINED INCORRECTLY	Specify required keyword, or correct parameter value
CMV010	KEYWORD xxxxxxxx HIGHER THAN xxxx	Correct parameter value
CMV011	KEYWORD xxxxxxxx LOWER THAN xxxx	Correct parameter value
CMV012	MORE THAN 35 CMV.NET STATEMENTS DEFINED	Check the number of CMV.NET statements for CMV.GEN statement: a maximum of 35 can be defined
CMV013	KEYWORD xxxxxxxx INVALID WITH TYPE	Check keyword: it is not compatible with TYPE keyword
CMV014	UNKNOWN KEYWORD xxxxxxxx	Check keyword name
CMV015	MORE THAN ONE REAL LINE DEFINED FOR CMV.NET	Ensure that only one real line has been defined for CMV.NET statement
CMV017	INVALID SEQUENCE STATEMENT	Check the definition statements sequence
CMV018	CONTINUATION CHARACTER REQUIRED	Specify continuation character
CMV019	KEYWORD VERSION INVALID WITH 37xx	Check NCP version: it is not compatible with the communications controller
CMV020	STATEMENT CMV.PU REQUIRED	Specify CMV.PU statement
CMV021	STATEMENT CMV.LINE REQUIRED	Specify CMV.LINE statement
CMV022	STATEMENT CMV.NET REQUIRED	Specify CMV.NET statement
CMV023	INTERNAL STOAR AREA EXCEEDED	Contact your IBM representative
CMV024	CMV.PU NOT PRECEDED BY CMV.LINE	Check the definition statements sequence

Table 8. Generation Return Codes (continued)

Return Code	Cause	Action
CMV025	INVALID CONTINUATION CARD	Check continuation sentence and ensure it begins at column 16
CMV026 *	KEYWORD xxxxxxxx IGNORED	Remove keyword: default values are used
CMV028	NUMBER OF RESOURCES TOO HIGH: EXCEEDS TABLE	Contact your IBM representative
CMV029	ONE REAL LINE REQUIRED BY CMV.NET STATEMENT	Ensure that one real line has been defined for CMV.NET statement
CMV030 *	STIMER KEYWORD FUNCTION NOT USED	Check the parameter value for the STIMER keyword
CMV031 *	CMV.ZGENEND DOUBLY DEFINED: IGNORED	Remove one of CMV.ZGENEND statements
CMV032	CMV.LINE REQUIRED ON PREVIOUS CMV.NET	Ensure that one real line and at least one virtual line have been defined for CMV.NET statement
CMV033	STATEMENT CMV.GROUP xxxxxxxx REQUIRED	Specify CMV.GROUP statement
CMV034	NAME REQUIRED ON CMV.xxxxxxxx	Specify the name assigned to the resource in current statement
CMV035	CMV.GROUP MUST BE FOLLOWED BY CMV.LINE	Check the definition statements sequence
CMV036	INVALID SEQUENCE OF STATEMENT CMV.SVC	Ensure that CMV.SVC statement follows the last CMV.LU for a PSDN connection
CMV037	CMV.xxxxxxxx REQUIRED ON PREVIOUS CMV.LINE	Ensure that one PU and one LU have been defined for CMV.LINE statement
CMV038	NUMBER OF VIRTUAL LINES (NET) EXCEEDS 10	Check the number of virtual lines for CMV.NET statement: a maximum of 10 can be defined

Appendix D. Runtime Return Codes

At runtime MERVA Extended Connectivity can return the codes in Table 9.

Table 9. Runtime Return Codes

Return Code	Cause	Action
X'0100' to X'0126'	Scanner down or modem problems	Use ELD command on MOSS console to verify the scanner status. Check your modem and physical connection. Reset the scanner and retry the connection.
X'0127'	V.25 BIS CALL REQ not valid. INV response returned by modem to CRN command	Check PHONE parameter (DWSVLINE statement, MERVA ESA line definition). You can use a datascope to verify the V.25 bis call format.
X'0128'	V.25 BIS CALL REQ failure. Received 'Delayed physical call' (DLC) indication from modem	Request the network operator to reset the DELAYED modem condition. Retry the connection.
X'0129'	V.25 BIS CALL REQ failure. Physical call collision. Ring indicator — ″RI″ on	Retry the connection: for LOGIN procedure you can specify RETRY parameter value higher than 1 for automatic retry, (DWSVLINE statement MERVA ESA line definition)
X'012A'	V.25 BIS CALL REQ failure. Engaged line. Received ″engaged tone″	Retry the connection: for LOGIN procedure, you can specify RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'012B'	V.25 BIS CALL REQ failure. Local DCE busy	Retry the connection: for LOGIN procedure, you can specify RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'012C'	V.25 BIS CALL REQ failure. Ring tone was received	Retry the connection: for LOGIN procedure, you can specify RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'012D'	V.25 BIS CALL REQ failure. Abort physical call	Retry the connection: For the LOGIN procedure you can specify a RETRY parameter value higher than 1 for automatic retry, (DWSVLINE statement, MERVA ESA line definition)
X'012E'	V.25 BIS CALL REQ failure. Answer tone not detected	Retry the connection: For LOGIN procedure, you can specify RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'012F'	V.25 BIS CALL REQ failure. Forbidden physical call	Check PHONE parameter (DWSVLINE statement, MERVA ESA line definition)
X'0130' to X'0132'	V.25 BIS CALL REQ failure. Modem problems	Check modem configuration. Retry the connection: For LOGIN procedure, you can specify RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'0133'	Receive modem check	Check modem configuration. Retry the connection, or reset the scanner (IML) and retry the connection

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0134'	Transmit modem check	Check modem configuration. Retry the connection, or reset the scanner (IML) and retry the connection
X'0135'	Monitor for call hardware error	Check modem configuration. Retry the connection, or reset the scanner (IML) and retry the connection
X'0136'	Physical call request hardware error	Check modem configuration. Retry the connection, or reset the scanner (IML) and retry the connection
X'0137'	3720/3725 monitor incoming call failure. Modem problem	Check the modem configuration. Retry the connection: For LOGIN procedure, you can specify a RETRY parameter value higher than 1 for automatic retry (DWSVLINE statement, MERVA ESA line definition)
X'01FE'	DISCONNECT for real line received from host	Activate real line and PU. Contact your VTAM operator. Check system netview log
X'0201'	Received incorrect level 2 frame. Can be: • 'I' frame no command, or • 'S' frame no RR-RNR-REJ, or • 'U' frame no command and no UA-DM-FRMR, or • 'U' frame command and no SABM-DISC	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0202'	Maximum number of RR frames, specified in parameter FRM1, sent without response	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0203'	Received incorrect level 2 frame. Can be: • 'S' frame with data, or • 'U' frame SABM-DISC-UA-DM with data, or • 'U' frame FRMR w/o 3 bytes of data	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0204'	Received incorrect level 2 frame. 'I' frame too long	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist.
X'0205'	Maximum number of RNR frames, specified in parameter FRMN1, sent without response	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0208'	Received incorrect level 2 frame. 'I' or 'S' frame not valid N(R).	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0209'	maximum number of SABM frames sent over a switched link w/o response. Parameter SABMNUM	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'020F'	Received DM frame during data transfer phase	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'022F'	Received SABM frame during data transfer phase	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0243'	Received DISC frame during data transfer phase	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0263'	Received UA frame during data transfer phase	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist
X'0287'	Received FRMR frame during data transfer phase	Obtain a LINE or SIT trace. Use a protocol analyzer. Contact your X.25 network specialist

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0401'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0502'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0510' to X'0514'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0520' to X'0524'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0530'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0531'	Destination phone number specified for a LEASED or an X.25 network (PSDN) connection	PHONE parameter value (DWSLINE statement, MERVA ESA line definition) must not be specified. Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0532'	Null destination phone number length (V.25 bis switched connection, or DTR dialing)	Specify PHONE parameter (DWSVLINE statement, MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0533'	Phone number longer than 20 digits	Check PHONE parameter value (DWSVLINE statement, MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0534'	V.25 bis dialing not available for 3720 or 3725 Communications Controller	Use DTR or manual dialing. Modify PHONE parameter value (DWSVLINE statement, MERVA ESA line definition), phone number must be omitted.
X'0535'	The real line is not a SWITCHED line	Check ACCESS parameter value (CMV.NET statement, MERVA Extended Connectivity resource definitions) and LINETYP parameter value (DWSVLINE statement, MERVA ESA line definition) for matching
X'0536'	MERVA Extended Connectivity internal error	Check PHONE parameter value (DWSVLINE statement, MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0537'	MERVA Extended Connectivity internal error	Check PHONE parameter value (DWSVLINE statement, MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0540' to X'0550'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0551'	Null local DTE address length	Check LDTEADR (leased lines) or LPHONE (switched lines) parameter value (MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0554'	Local DTE address for a switched line longer than 20 digits	Check LDTEADR (leased lines) or LPHONE (switched lines) parameter value (MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0555'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0556'	Local DTE address not alphanumeric	Check LDTEADR (leased lines) or LPHONE (switched lines) parameter value (MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0558' to X'055C'	Error in remote DTE address	Check RDTEADR parameter value (MERVA ESA line definition). Get a buffer trace of the MERVA Extended Connectivity secondary LU
X'0560' to X'0575'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0601' to X'0607'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0608'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Obtain a LINE or SIT trace. Contact your IBM representative
X'0609'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Obtain a LINE or SIT trace. Contact your IBM representative
X'06E7'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0702'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0703'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0801' to X'0808'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0901' to X'0903'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0A01' to X'0A06'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0B06'	X.25 protocol error. Received unexpected reset indication packet	Get a line trace showing the X.25 packet. Contact your X.25/SWIFT representative
X'0B07'	X.25 protocol error. Received unexpected reset confirmation packet	Get a line trace showing the X.25 packet. Contact your X.25/SWIFT representative
X'0B08'	X.25 protocol error. Received unexpected call connected packet	Get a line trace showing the X.25 packet. Contact your X.25/SWIFT representative

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0B09'	X.25 protocol error. Received unexpected call indication packet	Get a line trace showing the X.25 packet. Contact your X.25/SWIFT representative
X'0B0A'	Error in X.25 call indication packet	Get a line trace showing X.25 packet. Contact your IBM representative
X'0C01' to X'0C07'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0D01' to X'0D05'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0D07'	Data received from MERVA ESA, and the virtual circuit is not established, or it went down	Check if the real line PU is active. Start a trace line of the real line, and a buffer trace of the MERVA Extended Connectivity secondary LU
X'0D08'	X.25 protocol error. Received unexpected data from network	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Get a line trace. Contact your X.25/SWIFT representative
X'0D09'	Data received from MERVA ESA, and the virtual circuit is not active	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Get a line trace. Contact your IBM representative.
X'0D0A' to X'0D0D'	MERVA Extended Connectivity internal error	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Contact your IBM representative
X'0E01'	Error in Call Connected packet: not enough data for DTE address	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E02'	Error in Call Connected packet: facilities length exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E03'	Error in Call Connected packet: not enough data for facility length	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E04'	Error in Call Connected packet: call user data found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E05'	Error in Call Connected packet: facility marker second byte not found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E06'	Error in Call Connected packet: facility marker second byte not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E07'	Error in Call Connected packet: unknown class-A facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E08'	Error in Call Connected packet: Called Line Address Modification Notify parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E09'	Error in Call Connected packet: unknown class-B facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E0A'	Error in Call Connected packet: packet size negotiation first parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E0B'	Error in Call Connected packet: called DTE packet shorter than minimum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E0C'	Error in Call Connected packet: called DTE packet length exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E0D'	Error in Call Connected packet: packet size negotiation second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E0E'	Error in Call Connected packet: calling DTE packet shorter than minimum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0E0F'	Error in Call Connected packet: calling DTE packet length exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E10'	Error in Call Connected packet: window size negotiation first parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E11'	Error in Call Connected packet: called DTE window not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E12'	Error in Call Connected packet: window size negotiation second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E13'	Error in Call Connected packet: calling DTE window not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E14'	Error in Call Connected packet: class-C facility code found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E15'	Error in Call Connected packet: class-D facility not protection facility	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E16'	Error in Call Connected packet: protection facility, no data after facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E17'	Error in Call Connected packet: protection facility, null field length	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E18'	Error in Call Connected packet: protection facility, not enough data	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E19'	Error in Call Connected packet: throughput class negotiation facility, not enough data	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1A'	Error in Call Connected packet: called address extension facility, no data after facility code	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1B'	Error in Call Connected packet: called address extension facility, null field length	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1C'	Error in Call Connected packet: called address extension facility, not enough data after field length	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1D'	Error in Call Connected packet: input packet size greater than in call request packet	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1E'	Error in Call Connected packet: output packet size greater than in call request packet	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E1F'	Error in Call Connected packet: input window size greater than in call request packet	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E20'	Error in Call Connected packet: output window size greater than in call request packet	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E21'	Error in Incoming Call packet: no data after packet type identifier	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E22'	Error in Incoming Call packet: not enough data for DTE address	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E23'	Error in Incoming Call packet: no facilities field found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E24'	Error in Incoming Call packet: null facilities length found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E25'	Error in Incoming Call packet: facilities length exceeds 110	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0E26'	Error in Incoming Call packet: packet too short for facility length	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E27'	Error in Incoming Call packet: unknown class-A facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E28'	Error in Incoming Call packet: not enough data for Called Line Address Modification Notify	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E29'	Error in Incoming Call packet: facility marker second byte not found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2A'	Error in Incoming Call packet: facility marker second byte not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2B'	Error in Incoming Call packet: unknown class-B facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2C'	Error in Incoming Call packet: not enough data for packet size negotiation	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2D'	Error in Incoming Call packet: called DTE packet shorter than minimum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2E'	Error in Incoming Call packet: called DTE packet length exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E2F'	Error in Incoming Call packet: packet size second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E30'	Error in Incoming Call packet: calling DTE packet shorter than minimum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E31'	Error in Incoming Call packet: calling DTE packet length exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E32'	Error in Incoming Call packet: window size negotiation first parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E33'	Error in Incoming Call packet: called DTE packet window not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E34'	Error in Incoming Call packet: window size negotiation second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E35'	Error in Incoming Call packet: calling DTE packet window not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E36'	Error in Incoming Call packet: class-C facility code found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E37'	Error in Incoming Call packet: unknown class-D facility code found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E38'	Error in Incoming Call packet: calling address extension first parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E39'	Error in Incoming Call packet: calling address extension first parameter null	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E3A'	Error in Incoming Call packet: calling address extension first parameter exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E3B'	Error in Incoming Call packet: calling address extension second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E3C'	Error in Incoming Call packet: calling NSAP not found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0E3D'	Error in Incoming Call packet: called address extension first parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E3E'	Error in Incoming Call packet: called address extension first parameter null	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E3F'	Error in Incoming Call packet: called address extension first parameter exceeds maximum	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E40'	Error in Incoming Call packet: called address extension second parameter missing	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E41'	Error in Incoming Call packet: called NSAP not found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E42'	Error in Incoming Call packet: call user data field not found	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E43'	Error in Incoming Call packet: protocol identifier not X'CA'	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E44'	Error in Incoming Call packet: protocol identifier user data length longer than 8	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E45'	Error in Incoming Call packet: not enough data for closed user group	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E46'	Error in Incoming Call packet: not enough data for reverse changing	Get a line trace showing the X.25 packet and contact your SWIFT representative
X'0E47'	Error in Incoming Call packet: no data after protection facility code	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E48'	Error in Incoming Call packet: null facility protection length	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E49'	Error in Incoming Call packet: not enough data for protection facility	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E4A'	Error in Incoming Call packet: not enough data for throughput class negotiation facility field	Get a line trace showing the X.25 packet, and contact your X.25/SWIFT representative
X'0E61'	Error in Incoming packet: length error, input packet shorter than 3 bytes	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E62'	Error in Incoming packet: input packet with GFI Q or D bits is not valid	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E63'	Error in Incoming packet: input packet with unmatching GFI module	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E64'	Error in Incoming packet: input packet received in INOP status	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E65'	Error in Incoming packet: received unknown packet type	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E66'	Error in Incoming packet: received data or data flow control (DAFC) packet in not valid status	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E67'	Error in Incoming packet: data packet too short	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E68'	Error in Incoming packet: data packet too long	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E69'	Error in Incoming packet: received RR or RNR packet with M bit on	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative

| *Table 9. Runtime Return Codes (continued)*

Return Code	Cause	Action
X'0E6A'	Error in Incoming packet: unknown data flow control (DFC) packet	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E6B'	Error in Incoming packet: not valid PR counter received	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E6C'	Error in Incoming packet: not valid PS counter received	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E6D'	Error in Incoming packet: level 3 receive window exceeded	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E6E'	Error in Incoming packet: received unexpected RESET confirmation	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E6F'	Error in Incoming packet: received unexpected CLEAR confirmation	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E70'	Error in Incoming packet: received CLEAR indication without cause or diagnostic	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E71'	Error in Incoming packet: received CALL indication while not in *ready for call* status	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E73'	Error in Incoming packet: received unexpected CALL connected	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E77'	Error in Incoming packet: received input packet after CLEAR indication	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E78'	Error in Incoming packet: received RESET without cause or diagnostic	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E7D'	Error in Incoming packet: unresponded RESET request	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E7E'	Error in Incoming packet: unresponded CALL request	Get a line trace showing the X.25 packet and contact your X.25/SWIFT representative
X'0E7F'	RESET, DISABLE or DISCONTACT request received from host	Get a buffer trace of the MERVA Extended Connectivity secondary LU. Check the system log
X'0E81' to X'0E8B'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0E8C'	No physical connection to SWIFT/X.25 network. X.25 Level 3 is not active.	Check real line status and refer to "Activating a Leased Real Line" on page 20 or "Activating a Switched Real Line" on page 21
X'0E8D'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0E8E'	No free logical channel available for the requested connection	Wait until a logical channel is available. Retry the connection
X'0E8F' to X'0EA0'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0EA1'	MERVA Extended Connectivity internal error	Get a VTAM buffer trace of MERVA/ECO secondary LUs
X'0EA2'	MERVA Extended Connectivity internal error	Get a VTAM buffer trace of MERVA/ECO secondary LUs
X'0EA3'	MERVA Extended Connectivity internal error	Get a VTAM buffer trace of MERVA/ECO secondary LUs
X'0EA4'	MERVA Extended Connectivity internal error	Get a VTAM buffer trace of MERVA/ECO secondary LUs. Get a line trace of the real line
X'0EA5'	Real line not in *monitor for call* status	Activate real line and PU

Table 9. Runtime Return Codes (continued)

Return Code	Cause	Action
X'0EA6' to X'0EA7'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0EA8' to X'0EAA'	MERVA Extended Connectivity internal error	Get a VTAM buffer trace of MERVA/ECO secondary LUs. Get a line trace of the real line
X'0EAB'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0EFF'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'0F74' to X'0F75'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'1092'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'1093'	Inactivity timer expired (SHANGTO parameter, CMV.NET definition)	No action
X'1094'	No CALL indication received from SWIFT network during CALL BACK procedure	Check the modem configuration. Contact your SWIFT representative
X'10A0' to X'10A4'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'10A8'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'10A9'	MERVA Extended Connectivity internal error	Contact your IBM representative
X'10AE'	MERVA Extended Connectivity internal error	Contact your IBM representative

Appendix E. Runtime Abend Codes

Use the abend code in the NCP dump and Table 10 to determine the cause of the abend.

Table 10. Runtime Abend Codes

Abend Code	Cause
X'0000'	Hardware central control unit (CCU) check, or program check for NCP level 1
X'0001' to X'7FFF'	NCP or EP ended abnormally
X'8000' to X'80FF'	Network Terminal Option (NTO) ended abnormally
X'8100' to X'81FF'	Network Routing Facility (NRF) ended abnormally
X'0A00' to X'0AFF'	X.25 NCP Packet Switching Interface (NPSI) ended abnormally
X'C000' to X'E1FF'	User code ended abnormally
X'E200' to X'E2FF'	MERVA Extended Connectivity ended abnormally
X'E300' to X'FFFF'	User code ended abnormally

Bibliography

MERVA ESA Publications

- *MERVA for ESA Version 4: Application Programming Interface Guide*, SH12-6374
- *MERVA for ESA Version 4: Advanced MERVA Link*, SH12-6390
- *MERVA for ESA Version 4: Concepts and Components*, SH12-6381
- *MERVA for ESA Version 4: Customization Guide*, SH12-6380
- *MERVA for ESA Version 4: Diagnosis Guide*, SH12-6382
- *MERVA for ESA Version 4: Installation Guide*, SH12-6378
- *MERVA for ESA Version 4: Licensed Program Specifications*, GH12-6373
- *MERVA for ESA Version 4: Macro Reference*, SH12-6377
- *MERVA for ESA Version 4: Messages and Codes*, SH12-6379
- *MERVA for ESA Version 4: Operations Guide*, SH12-6375
- *MERVA for ESA Version 4: System Programming Guide*, SH12-6366
- *MERVA for ESA Version 4: User's Guide*, SH12-6376

MERVA ESA Components Publications

- *MERVA Automatic Message Import/Export Facility: User's Guide*, SH12-6389
- *MERVA Connection/NT*, SH12-6339
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Other IBM Publications

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- *NCP, SSP and EP Generation and Loading Guide*, SC31-6221
- *NCP, SSP and EP Diagnosis Guide,* LY30-5591.
- *VTAM Operation*, SC31-6420
- *VTAM Network Implementation Guide*, SC31-6419
- *VTAM Resource Definition Reference*, SC31-6427.
- *VTAM Operation*, SC31-6408
- *VTAM Network Implementation Guide*, SC31-6404
- *VTAM Resource Definition Reference*, SC31-6412.
- *MVS/ESA Problem Determination Guide*, GC28-1167
- *VSE/ESA Guide for Solving Problems*, GC33-6510
- *IBM 3745 Communication Controller Guide*, GG24-1562
- *IBM 3745 Communication Controller Advanced Operations Guide,* SA33-0097
- *NetView Operation*, SC31-7066
- *Planning and Reference for NetView, NCP, and VTAM*, SC31-6191.

S.W.I.F.T. Publications

The following are published by the Society for Worldwide Interbank Financial Telecommunication, s.c., in La Hulpe, Belgium:

- *S.W.I.F.T. User Handbook*
- *S.W.I.F.T. Dictionary*
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Glossary of Terms and Abbreviations

This glossary defines terms as they are used in this book. If you do not find the terms you are looking for, refer to the *IBM Dictionary of Computing*, New York: McGraw-Hill, and the *S.W.I.F.T. User Handbook*.

A

abend. Abnormal end of task. That is, termination of the task before its completion because of an error condition that cannot be resolved by recovery facilities while the task is executing.

ACF/TAP. Advanced Communications Function for the Trace Analysis Program.

C

CBT. SWIFT Computer-Based Terminal.

CCITT. International Telegraph and Telephone Consultative Committee. An organization (one of four permanent organs of the International Telecommunication Union [ITU], headquartered in Geneva, Switzerland) that is concerned with the problems relating to international telephony and telegraphy. Approved recommendations are published for the use of engineers, scientists, and manufacturers around the world.

CCU. Central control unit.

channel-attached. (1) Pertaining to the attachment of devices directly by input/output channels to a host processor. (2) Pertaining to devices attached to a controlling unit by cables, rather than by telecommunication lines.

CRN. Call request with number.

CTS. Clear to send.

CNM. Communication network management.

communications controller. A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit. It manages the details of line control and the routing of data through a network.

D

definition statement. A type of instruction that defines a resource to the NCP.

DCE. Data circuit-terminating equipment.

DM. Disconnect mode.

DTE. Data terminal equipment.

DTR. Data terminal ready.

dump. Computer printout of storage.

E

EIA. Electronic Industries Association. Provides interface standards for electric and electronic equipment.

ESA. Enterprise Systems Architecture.

EP. Emulation program.

exit routine. A routine that receives control when a specified event occurs.

F

FRMR. Frame reject.

G

GFI. General format identifier.

H

HDLC. High data link control.

I

IML. Initial microcode load.

K

keyword. A predefined word that identifies a parameter or parameter set.

L

leased line. A telecommunications line on which connections do not have to be established by dialing. Synonymous with nonswitched line.

LIC. Line interface coupler.

LID. Line interface display.

linkage editor. A computer program for creating load modules from one or more object modules or load modules by resolving cross references among the modules and, if necessary, adjusting addresses.

link-attached. Pertaining to devices that are physically connected by a telecommunications line.

link-edit. To create a loadable computer program by means of a linkage editor.

LL2. Link level 2.

LNSAP. Local network service access point.

load module. A program unit that is suitable for loading into main storage for execution.

LU. A VTAM logical unit.

M

MERVA Extended Connectivity. IBM licensed program Message Entry and Routing with Interfaces to Various Applications Extended Connectivity for ESA Version 3 Release 2.

MERVA ESA. IBM licensed program Message Entry and Routing with Interfaces to Various Applications for ESA Version 3 Release 2.

MOSS. Maintenance and operator subsystem.

MVS/ESA. Multiple Virtual Storage/Enterprise Systems Architecture.

N

NCP. Network Control Program.

NDF. Network definition facility.

network definition facility. The facility that defines the identities and characteristics of each node in the network and the arrangement of the nodes in that system.

network service access point (NSAP). Endpoint of a network connection used by the SWIFT transport layer.

NLDM. Network logical data manager.

NPA. Network performance analyzer.

NPSI. X.25 NCP Packet Switching Interface.

NRF. Network Routing Facility.

NRZI. Non-return-to-zero interval.

NSAP. Network service access point.

NTO. Network Terminal Option.

O

object module. All or part of an object program sufficiently complete for linking.

P

packet. A sequence of binary digits, including data and control signals, that is transmitted and switched as a composite whole. The data, control signals, and possibly error control information are arranged in a specific format.

packet level. The packet format and control procedures for exchange of packets containing control information and user data between DTE and DCE.

physical line. See real line.

PIU. Path information unit.

PSDN. Packet switching data network.

PSTN. Public switched telephone network.

PU. Physical unit.

R

RDF. Resource Definition Facility. MERVA Extended Connectivity program, loaded as an NDF exit routine at installation time, that provides for MERVA Extended Connectivity input verification.

real line. X.25 physical connection (physical line) to the PSDN.

resident program. A program that remains in a particular area of storage.

resource. Any facility of the computing system or operating system required by a job or task and including main storage, input/output devices, the processing units, data sets, and control or processing programs.

Resource Definition Facility. See RDF.

RNR. Receive not ready.

RR. Receive ready.

RS. Recommended specification (EIA).

RTS. Request to send.

S

SABM-UA. Set asynchronous balanced mode unnumbered acknowledgement.

scanner. For communications controllers, a processor dedicated to controlling a small number of telecommunication lines. It provides the connection between the line interface coupler hardware and the central control unit.

SIT. Scanner interface trace.

SNA. Systems network architecture.

SSP. IBM System Support Programs licensed program. Its full name is Advanced Communications Function for System Support Program (ACF/SSP).

S.W.I.F.T.. Society for Worldwide Interbank Financial Telecommunication s.c.

SWIFT. Refers to the SWIFT network of the Society for Worldwide Interbank Financial Telecommunication (S.W.I.F.T.).

SWIFT Link. MERVA ESA component that provides the link between MERVA ESA and the SWIFT network.

switched connection. A connection established by dialing.

switched line. A telecommunications line on which connections are established by dialing.

U

UNBIND. In SNA, a request to deactivate a session between two LUs.

V

V.25 bis. In data communications, an interim specification of the CCITT that defines the connection of DTE to a serial-dial interface of a public switched telephone network.

virtual channel. A sending channel and a receiving channel that together are used to send and receive data over a data link at the same time.

virtual circuit. See virtual line.

virtual line. X.25 logical connection (virtual circuit) to the PSDN.

VSE/ESA. Virtual Storage Extended/Enterprise Systems Architecture.

VTAM. Virtual Telecommunications Access Method.

W

window. The number of data packets a DTE or DCE can send across a virtual channel before waiting for authorization to send another data packet.

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