

StorageTek®

H280

IBM VM/ESA NETEX

Release 3.0 9902

Memo To User

(C) 1999

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1.0 Service Notes

This memo to users contains any last minute installation change instructions that are not included in the H280 Software Reference Manual that is shipped with the product. It contains a list of notes that should be reviewed prior to the installation of the H280 product.

1. H280 Release 3.0 requires VM/ESA for installation and usage of all components of this product. The modules, as distributed, have been assembled on a VM/ESA system.
2. It is best that you increase the amount of space needed for each minidisk by about 10% to allow for future expansion of this product through maintenance releases.

2.0 Update Summary

2.1 Release 3.0 Features

New features supported with this base tape include:

1. VM/ESA Virtual Machine Support:

The H280 virtual machine support has been significantly modified to enable VM/ESA virtual machine support. The H280 virtual machine is no longer required to be generated or executed in VM/370 mode. VM/ESA I/O architecture has been implemented for both the H280 virtual machine nucleus generation and for the normal execution of the H280 virtual machine.

2. PB250 and PB251 ESCON Host Adapter Support:

An ESCON PB250 or PB251 host adapter connection is supported by H280.

3. Year 2000 Support:

The only requirements here were to upgrade the time and date facilities to be able to support a four digit year and to use a four digit year in any appropriate messages that are displayed.

Previous features incorporated from currently available H280 maintenance updates and service tape includes:

1. NRF Interface:

The 'Network Recording Facility' is a central collection point for network data including alarms, events, messages and statistics information. H280 can now send certain types of records to NRF, including NETEX initiation, session events (Offer and Connect completions and session termination), and session statistics. Site configuration and operator control is allowed through the use of the START NRF, HALT NRF, and DISPLAY NRF initialization and operator commands.

2. One-Way Adapter support:

A special quote feature to certain HYPERchannel adapter models disables their ability to transmit associated data, while allowing message propriers to be transmitted, and both messages and associated data to be received. This satisfies security requirements for some sites.

In order to indicate to NETEX that a particular adapter is a one-way adapter, an option

has been added to the Configuration Manager. On the ADAPTER statement, OPTIONS=ONEWAY may now be specified.

Certain restrictions are placed on applications and configurations using this feature.

- User Odata is not allowed when using a one-way adapter. The Maxodata parameter can be set to 0 to assure this is true.
 - A host should not have both normal and one-way adapters on the same Localnet. This is not specifically checked, but if allowed, Alternate Path Retry could cause an automatic switch from a 'secure' to a 'non secure' adapter.
 - SLS-formatted messages are not allowed. SLS links using A710 or 'transparent' mode can be used.
3. Additional information has been added to the "Display Host", "Display Unit", and "Display Parm" operator commands.
 4. A new "Display Summary" operator command has been implemented.
 5. Support for 3390 DASD for CMS support when generating the NETEX virtual machine nucleus.
 6. The "Load Balancing" option and the "LBROTATE" option have been implemented.
 7. A new "SET RSETPATH xxxx" operator command has been implemented.

3.0 New Operator and Initialization Commands

The following commands have been incorporated from previously available H280 maintenance updates and service tapes.

3.1 DISPLAY NRF

The format of the command is:

```
DISPLAY NRF
```

The output response from this command is, for example:

```
NRF Status RDref LDref TM Retry Delay Xtime Sperf Sevent
      NORMAL 14CF 4D00 FF      3    20    60    600  001A
```

See 'Start NRF' for descriptions of the various values. Status may be "normal" or "halted".

3.2 START NRF

This is a new START command which will turn NRF processing on and optionally change the value of the various parameters. If any option is omitted, its current value is maintained.

The format of the command is:

START NRF	<RDREF=uuss>	<LDREF=ffcc>	<TMASK=tt>
	<SEVENT=hhhh>	<SPERF=ppp>	<DELAY=ddd>
	<RETRY=rrr>	<XTIME=xxxx>	

The variables in the START NRF command are described in [Table 1](#).

Table 1. START NRF Command Variables

Name	Description
uuss	The NRF adapter unit number and subchannel/port number in hex (must be greater than zero).
ffcc	The local adapter unit number and subchannel/port number in hex. Zero is allowed and implies first configured adapter.
tt	The trunk mask for NRF messages in hex (11 <= tt <= FF).
hhhh	Session event mask of events to record (in hex). Any combination of the following bits may be set: 0000 No events are recorded 0002 SOFFER completion 0008 SCONNECT completion 0010 session termination
ppp	The NRF Session Performance data generation interval in seconds (Value must be greater than 0. 60 or greater is recommended).
ddd	The delay between retries of unacknowledged blocks in seconds. Zero implies one timer interval, usually 1-2 seconds (10 or greater is recommended).
rrr	The number of retries for unacknowledged blocks.
xxxx	The maximum record accumulation time between block transmissions in seconds (Value must be greater than 0. 60 or greater is recommended)

When NETEX is first initialized, the NRF parameters have the following defaults:

- RDREF=0000
- LDREF=0000
- TMASK=FF
- SEVENT=0000
- SPERF=000
- DELAY=20
- RETRY=3
- XTIME=60

The START NRF and HALT NRF commands may be included in the NETEX initialization file to initialize the NRF parameters.

3.3 HALT NRF

Stop NRF record collection.

```
HALT NRF <SPERF> <SEVENT>
```

Currently queued records will be kept for possible future transmission, but no new records will be generated and no new blocks will be sent until a START NRF is issued.

If SPERF is not specified, it does not have to be specified on a subsequent START NRF command. The previous value will be used. If SPERF is specified, the performance record generation interval is reset to 0. To restart it and assign a new interval, SPERF=ppp must be specified on a subsequent START NRF command.

If SEVENT is not specified, it does not have to be specified on a subsequent START NRF command. The previous value will be used. If SEVENT is specified, the session events mask is cleared. To resume recording events, SEVENT=hhhh must be specified on a subsequent START NRF command.

3.4 HDWLOOP (HW)

Generate and transmit an adapter loopback message (x'FF00'). The format of the command is:

Command	Parameters
HDWLOOP	RHOST hostname { SIZE nnnn }
HW	LADAPT aa RDREF rrdd { TMASK tt }

The variables in the HDWLOOP command are described in [Table 2](#).

Table 2. HDWLOOP Command Variables

Name	Description
hostname	A NETEX defined remote host name.
aa	The local adapter to use to transmit the message.
rr	The remote adapter to which the message should be sent.
dd	This should always be set to '00'.
nnnn	The length of associated data to send (0-4096).
tt	The trunk mask to use.

The data will have a pattern that is verified on return. If not specified, 'nnnn' defaults to 4096, and 'tt' defaults to X'FF'.

The host adapter directly selected by the 'LADAPT aa' parameter or the selected host adapter associated with a path to 'RHOST hostname' must have at least two or more 'FREE' subchannels available to execute a HDWLOOP network I/O request.

3.5 SET LOADBAL

Enable or disable network I/O load balancing. If LOADBAL is set ON, every session connect will choose the path to the remote host which involves the least used local adapter. "Use" is based on the number of sessions currently using a host adapter.

The format of the command is:

Command	Parameters
SET LOADBAL	ON OFF

The default is OFF.

3.6 SET LBROTATE

Enable or disable network I/O path rotation. This command is associated with the network I/O load balancing feature. When operational, the LBROTATE command varies the path chosen when there are two or more local adapters with an equal "use" count.

The format of the command is:

Command	Parameters
SET LBROTATE	ON OFF

The default is OFF.

3.7 SET RSETPATH

Reset the current path (PAM allocation) to be used for path selection to a remote host. The combination of optional parameters will permit a large variety of path reset options to control connectivity to remote hosts.

The format of the command is:

Command	Parameters
SET RSETPATH	[nref] [PATH nnn]

Optional Command Specification:

1. SET RSETPATH
Reset all active sessions to the first path (PAM) in the allocation list.
2. SET RSETPATH nref
Reset active session "nref" to the first path (PAM) in the allocation list.
3. SET RSETPATH PATH nnn
Reset all active sessions to the specific path "nnn" (PAM) in the allocation list.
4. SET RSETPATH nref PATH nnn
Reset active session "nref" to the specific path "nnn" (PAM) in the allocation list.

3.8 DISPLAY SUMMARY

The format of the command is:

```
DISPLAY SUMMARY
```

The output response from this command is, for example:

```
Host hostname Session Summary
Name      Host      Sref# Tref# Nref# Segsz Blksin Rxmt Blkout Rxmt Path
-----
```

The variables in the DISPLAY SUMMARY command are described in [Table 3](#).

Table 3. DISPLAY SUMMARY Command Variables

Name	Description
hostname	The NETEX name of the operator's host.
Name	The identifier that the program used to allow the connection to take place.
Host	The name of the destination host to which the user is connected.
Sref#	The session reference number for this active session.
Tref#	The NETEX transport reference identifier.
Nref#	The network reference number for this network connection.
Segsz	The maximum segment size used for this connection. All blocks of data transmitted during this connection will be less than or equal to the segment size.
Blksin	The number of network messages that have been received for this transport connection. This figure includes all overhead, acknowledgment, and idle messages.
Rxmit	The number of retransmitted messages that have been received by this transport connection.
Blkout	The number of network messages that have been transmitted for this transport connection. This figure includes all overhead, acknowledgment, and idle messages.
Rxmit	The number of retransmitted messages that have been sent for this transport connection.
Path	The path type or "TO" address. This information is displayed as either "Intr" for intrahost, "Exp" for explicit, or as the "TO" address of the destination host adapter.

3.9 New NRBSTAT Return Codes

The new NRBSTAT return codes are described in [Table 4](#).

Table 4. NRBSTAT Return Codes

Number	Description
3551	The remote application is not OFFERed at the Administrator (the remote host <u>is</u> in the Administrator's domain). The SCONNECT is rejected.
4521	An attempt was made to send Pdata via a one-way adapter.

4.0 Release 3.0 Capabilities

The following features were added at Release 2.n versions and continue to be supported in Release 3.0.

1. **Hyperbus Support:** Provides the ability in the Network Layer to establish a virtual circuit and communicate through a HyperBus network.
2. **User Odata:** Data that is subject to assembly/disassembly or code conversion is referred to as Pdata. Odata is that data which is sent as unconverted 8 bit binary quantities (typically protocol data). Previously, the NETEX Session interface allowed the user to send only one buffer of data with each call. The user could specify if this data was to be converted or not. In effect, this gave one the ability to send Pdata and Odata, but only in separate messages. Release 2.2 allows the user to send two data buffers in one message, a Pdata buffer and an Odata buffer. NETEX has always transmitted the two types of data, however, the Odata has always been internal protocol used by the various NETEX layers. User specified Odata (if any) will now be tacked on to the internal protocol Odata for transmission to the remote user.
3. **Driver Interface:** This interface to NETEX conforms to the General Network Adapter Driver interface (DCONNECT, DWRITE, DREAD, DDISCONNECT, and DSTATUS). Diagnostic capabilities are not supported.
4. **START/HALT Adapter:** The ability to take an adapter away from NETEX (for maintenance possibly) and to give it back without taking NETEX down and back up. The HALT adapter command halts any I/O in progress to that adapter (if locally attached) and adds the adapter to a list of halted adapters. Thereafter, whenever a new connection is to begin, the PAM is checked to see if any adapters along the path are in the list of halted adapters. If so, the connection will fail and Transport may alternate path retry or Session may alternate host retry (host groups). The START adapter command removes the adapter from the list of halted adapters, allowing any new connections to now use a path which includes that adapter. Also, the Network Reader is spawned for any locally attached STARTed adapters, enabling incoming messages to be read in. Note that one is not able to START a local adapter which was not initially configured with NETEX.
5. **Host Groups:** NETEX has had the capability of using alternate paths to a remote host when necessary. This is accomplished by generating multiple PAMs, each describing a particular physical route through the network, for any one remote host. The Transport layer is able to detect any loss of communications (or failure to create an initial connection) and automatically shift to another route to the same host. With the implementation of host groups, an alternate path capability (actually alternate host capability) is created in the Session layer. If a connect to a remote application fails, NETEX will attempt to connect to the same application on another host which is in the same host group. The Pascal Pam Configurator must be used in order to specify and logically name host groups.
6. **Message Timestamps:** The ability to add timestamps to error and informational messages has been added.
7. **SWAIT(-1):** When SWAIT(-1) is issued, NETEX will wait for any event to complete for that user. It is not necessary to pass in a list of NRBs. If there is no request in progress at the time, control will be returned to the user immediately. Otherwise, control will not be returned until a request completes and the NRB is marked complete. It remains the user's responsibility for checking all of his NRB's to determine which one

completed.

8. **Remote Operator:** Provides the ability to request a NETEX operator display from a remote host on the network.
9. **Drain/Start NETEX, Halt Sref:** The Drain command allows all sessions in progress to complete, any new Connects or Offers will be rejected, and any outstanding Offers will be terminated.

Start brings NETEX back to the normal state after being drained.

Halt will kill a particular session.

10. **Pascal Configuration:** The new Pascal Configuration Manager is executed by the user "offline" to NETEX. The output of this process is a file of PAMs, that will be sent to NETEX through an intra-host connection. This connection will take place at initialization time, and also whenever the operator issues a LOAD NCT command.

NETEX configuration input can come from two sources: the configuration file and/or NETEX macro definitions in the ROOT. Any hosts defined by the macros will be appended to the list of hosts defined by the configuration file. If a host is defined in both the configuration file and the ROOT, the one in the configuration file takes precedence.

11. **Initialization file:** The initialization file provides the ability to change memory values, timing values, and other control parameters at NETEX initialization time instead of reassembling the Root to incorporate changes. Refer to the manual for an explanation of all parameters and their syntax.

VM NETEX assumes that any class A file in the spooled reader at initialization time is the initialization file.

12. **Subchannel multiplexing:** Subchannels are now allocated dynamically on DWRITES. This allows many connections to share the same output subchannels.

Input messages are now distributed to the correct user by the new NETWORK layer. This feature allows many connections to share the same input subchannels. Usually there will be one subchannel allocated for input for each adapter. The remaining attached subchannels will be used for output.

13. **Type 2 Protocol:** A new protocol was implemented for Release 2.0. This includes changes to the old Session and Transport protocols, as well as a new Network layer protocol.

Releases 2.0 - 3.0 NETEX have the capability to concurrently run both new and old protocols, selectable by class of service and remote host capabilities.

The type 2 protocol enables the use of the new alternate path retry, segmentation, and SCLOSE service features.

14. **Alternate Path Retry:** If an in progress session loses communications, (link goes down, etc.), the NETEX Transport layer will attempt to continue the delivery of data for that session through an alternate route. This rerouting of data is transparent to the user.

The NXVROO assemble file must be set up correctly at installation time (or the PASCAL CONFIGURATION MANAGER used, or both), in order to define the possible paths to each remote host. Refer to the installation section of the manual.

15. **Segmentation:** NETEX may break up a block of data sent by the user into several smaller blocks for transmission over the network. This fragmenting of data is

transparent to the user.

Segmenting will occur when the user sends an amount of data greater than: 1) the minimum of the local and remote hosts' segment sizes (set at installation time or by the operator), or 2) the transmission size limit for the current route (specified in the NTCROUTE macro at installation time, or set by the PASCAL CONFIGURATION MANAGER.

16. SCLOS service: This service provides a 'graceful' disconnect. Upon issuing a SCLOS function, the user will still accept input, but output will be inhibited. Upon receiving a CLOSE from the remote side, the connection is severed.
17. Intrahost connections: Intrahost connections are now maintained at the Network layer, enabling the full use of all Transport and Network services.
18. HELP facility: A series of NETEX Help files has been provided on the distribution tape. These files may be unloaded to any desired disk (or optionally, not unloaded), in order to provide HELP information for NETEX messages and return codes.

5.0 Compatibility with Prior NETEX Releases

1. User programs:

Existing user programs do not have to be reassembled or relinked in order to use this release. Although the user interface was completely changed in Release 2.2, the old interface is incorporated into it in order to allow existing linked programs to remain operable.

Note: If the program has the old DCSS interface (NXUIF) linked in, it will not work. Relink the program with the new NETEX TXTLIB.

2. Inter-NETEX communications:

This release will communicate with all releases of NETEX. Any release previous to 2.0 must be defined as a type 1 protocol host in the NTCROUTE macros or the configuration file.

6.0 Installation Tips for Existing NETEX Users

IMPORTANT NOTE: This is a complete replacement for all previous NETEX versions. The general installation requirements for this new version are the same as the steps described within the Installation section of the H280 Software Reference Manual. Specific installation information and instructions that completely replace the Installing NETEX section have been included in [Appendix A.2, "Installing NETEX"](#). This section will help you eliminate certain installation steps and simply reinstallation. Each step outlined below conforms to the corresponding step in the H280 Installation Section.

6.1 VM/ESA Section

Step 1: Backup

Backup your current NETEX 191, 192, and 292 disks.

Step 2: I/O Generation

Skip unless you require additional adapters to be defined.

Step 3: DCSS Space

The space required is still 12K.

Step 4: CP nucleus Regeneration

Skip, unless action taken in steps 2 or 3.

Step 5: VM Directory

Refer to H280 Software Reference Manual to ensure adequate space is available for 191, 192 and 292 mini-disks.

Step 6: IUCV authority

Skip. No change from NETEX 2.3.

6.2 NETEX Generation

Step 1: Format 191

Skip, unless additional space was gotten for minidisks. If you do format this minidisk, be sure to save NXVROO and NXUOPT ASSEMBLES, and the initialization file, as these contain your configuration from 2.3.

Also be sure to save any of your own files on this disk.

Step 2: Format 192, 292

Be sure to save any of your own files that you may have placed on these mini-disks.

Step 3: Load the tape

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

Step 4: Install Service tape if supplied

Not necessary for this release 3.0 9902 level.

Step 5: Assemble the ROOT (NXVROO)

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#). We distribute NXVROO SAMPLE on your A disk. You may just assemble your own ROOT that you saved from step 1. NXVROO MINIMUM and TEXT are also distributed. If the configuration manager is to be used for all routing information, and the NTCROOTG macro does not need to be changed, then step 5 may be skipped. This will result in the distributed NXVROO TEXT to be used, which contains the default NTCROOTG values and no routing information. Be sure to include the HOST NAME= statement in the initialization file so that the local host name is identified correctly.

Step 6: Generate NETEX

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

Step 7: Update NXUOPT and the NETEX TXTLIB

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

Step 8: Generate DCSS

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

Step 9: MOVE Libraries

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

Step 10: Prepare the Configuration sender

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#). If you have a configuration file already, be sure to process it with the new distributed CONFMANG to create a new PAM file.

You must be a VM/SP3 or later user to utilize this component.

A sample configuration file, CONFSAMP SAMPLE, is distributed.

The virtual machine designated as the configuration sender can operate in two different ways. Whichever way is chosen, you must use the CONFIG initialization statement or set up a default in the ROOT.

It may be a logged off machine which is autologged by NETEX when NETEX initializes or processes the LOAD NCT command. The supplied NXVCF exec will be executed when the virtual machine is autologged. This exec simply sets up a FILEDEF for the Pamfile and calls the NXVCF module, which reads the Pamfile and sends it to NETEX.

An alternate way to utilize the configuration sender virtual machine is to let it run as a disconnected machine. Just run the NXVCF exec (modify the FILEDEF if necessary) and then disconnect. Whenever NETEX is initialized or processes a LOAD NCT command, an SMSG is sent via IUCV to the configuration sender to wake it up and send a new configuration to NETEX.

Step 11: Initialization File

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#). It may be convenient to insert the necessary commands to punch the initialization file to the reader into the NETEX exec or a PROFILE exec.

Step 12: IPL NETEX

Perform this step as explained in [Appendix A.2, "Installing NETEX"](#).

7.0 NETEX Example and Exerciser Programs

The following programs are distributed as part of this release:

- REQUEST SAMPLE: reads and verifies data sent by SERVER.
- SERVER SAMPLE: sends data to REQUEST.
- NETEXGEN FORTRAN, TEXT, and MODULE: sends fabricated data asynchronously to NETEXEAT, who discards it. Designed to be a performance test.
- NETEXEAT FORTRAN, TEXT, and MODULE
- NETEXER1 FORTRAN and MODULE: with NETEXER2, transfers and verifies data. Designed to be a functional test.

- NETEXER2 FORTRAN and MODULE
- MAPNET exec, PASCAL, and MODULE: scans the network for operational adapters.

Refer to the code for more detailed documentation.

8.0 Tape Contents

The following files are contained on this service tape:

File 1: Installation Materials					
H280	PRODUCT	A1	NXVNET	TEXT	A1
H280LOAD	EXEC	A1	NXVNRD	TEXT	A1
File 2: NETEX Text Files			NXVNRF	TEXT	A1
NXVADA	TEXT	A1	NXVNRG	TEXT	A1
NXVADC	TEXT	A1	NXVNRH	TEXT	A1
NXVADO	TEXT	A1	NXVNRJ	TEXT	A1
NXVADP	TEXT	A1	NXVNRK	TEXT	A1
NXVADR	TEXT	A1	NXVNRN	TEXT	A1
NXVCCV	TEXT	A1	NXVNRQ	TEXT	A1
NXVCFA	TEXT	A1	NXVNRW	TEXT	A1
NXVCFG	TEXT	A1	NXVN01	TEXT	A1
NXVCFI	TEXT	A1	NXVN02	TEXT	A1
NXVCFO	TEXT	A1	NXVN03	TEXT	A1
NXVCFR	TEXT	A1	NXVN04	TEXT	A1
NXVCFE	TEXT	A1	NXVN05	TEXT	A1
NXVCFG	TEXT	A1	NXVN06	TEXT	A1
NXVCFH	TEXT	A1	NXVN07	TEXT	A1
NXVCFI	TEXT	A1	NXVN08	TEXT	A1
NXVCFJ	TEXT	A1	NXVN09	TEXT	A1
NXVCFK	TEXT	A1	NXVN10	TEXT	A1
NXVCFL	TEXT	A1	NXVN11	TEXT	A1
NXVCFM	TEXT	A1	NXVN12	TEXT	A1
NXVCFN	TEXT	A1	NXVN13	TEXT	A1
NXVCFO	TEXT	A1	NXVN14	TEXT	A1
NXVCFP	TEXT	A1	NXVN15	TEXT	A1
NXVCFQ	TEXT	A1	NXVN16	TEXT	A1
NXVCFR	TEXT	A1	NXVN17	TEXT	A1
NXVCFE	TEXT	A1	NXVN18	TEXT	A1
NXVCFG	TEXT	A1	NXVN19	TEXT	A1
NXVCFH	TEXT	A1	NXVN20	TEXT	A1
NXVCFI	TEXT	A1	NXVN21	TEXT	A1
NXVCFJ	TEXT	A1	NXVN22	TEXT	A1
NXVCFK	TEXT	A1	NXVN23	TEXT	A1
NXVCFL	TEXT	A1	NXVN24	TEXT	A1
NXVCFM	TEXT	A1	NXVN25	TEXT	A1
NXVCFN	TEXT	A1	NXVN26	TEXT	A1
NXVCFO	TEXT	A1	NXVN27	TEXT	A1
NXVCFP	TEXT	A1	NXVN28	TEXT	A1
NXVCFQ	TEXT	A1	NXVN29	TEXT	A1
NXVCFR	TEXT	A1	NXVN30	TEXT	A1
NXVCFE	TEXT	A1	NXVN31	TEXT	A1
NXVCFG	TEXT	A1	NXVN32	TEXT	A1
NXVCFH	TEXT	A1	NXVN33	TEXT	A1
NXVCFI	TEXT	A1	NXVN34	TEXT	A1
NXVCFJ	TEXT	A1	NXVN35	TEXT	A1
NXVCFK	TEXT	A1	NXVN36	TEXT	A1
NXVCFL	TEXT	A1	NXVN37	TEXT	A1
NXVCFM	TEXT	A1	NXVN38	TEXT	A1
NXVCFN	TEXT	A1	NXVN39	TEXT	A1
NXVCFO	TEXT	A1	NXVN40	TEXT	A1
NXVCFP	TEXT	A1	NXVN41	TEXT	A1
NXVCFQ	TEXT	A1	NXVN42	TEXT	A1
NXVCFR	TEXT	A1	NXVN43	TEXT	A1
NXVCFE	TEXT	A1	NXVN44	TEXT	A1
NXVCFG	TEXT	A1	NXVN45	TEXT	A1
NXVCFH	TEXT	A1	NXVN46	TEXT	A1
NXVCFI	TEXT	A1	NXVN47	TEXT	A1
NXVCFJ	TEXT	A1	NXVN48	TEXT	A1
NXVCFK	TEXT	A1	NXVN49	TEXT	A1
NXVCFL	TEXT	A1	NXVN50	TEXT	A1
NXVCFM	TEXT	A1	NXVN51	TEXT	A1
NXVCFN	TEXT	A1	NXVN52	TEXT	A1
NXVCFO	TEXT	A1	NXVN53	TEXT	A1
NXVCFP	TEXT	A1	NXVN54	TEXT	A1
NXVCFQ	TEXT	A1	NXVN55	TEXT	A1
NXVCFR	TEXT	A1	NXVN56	TEXT	A1
NXVCFE	TEXT	A1	NXVN57	TEXT	A1
NXVCFG	TEXT	A1	NXVN58	TEXT	A1
NXVCFH	TEXT	A1	NXVN59	TEXT	A1
NXVCFI	TEXT	A1	NXVN60	TEXT	A1
NXVCFJ	TEXT	A1	NXVN61	TEXT	A1
NXVCFK	TEXT	A1	NXVN62	TEXT	A1
NXVCFL	TEXT	A1	NXVN63	TEXT	A1
NXVCFM	TEXT	A1	NXVN64	TEXT	A1
NXVCFN	TEXT	A1	NXVN65	TEXT	A1
NXVCFO	TEXT	A1	NXVN66	TEXT	A1
NXVCFP	TEXT	A1	NXVN67	TEXT	A1
NXVCFQ	TEXT	A1	NXVN68	TEXT	A1
NXVCFR	TEXT	A1	NXVN69	TEXT	A1
NXVCFE	TEXT	A1	NXVN70	TEXT	A1
NXVCFG	TEXT	A1	NXVN71	TEXT	A1
NXVCFH	TEXT	A1	NXVN72	TEXT	A1
NXVCFI	TEXT	A1	NXVN73	TEXT	A1
NXVCFJ	TEXT	A1	NXVN74	TEXT	A1
NXVCFK	TEXT	A1	NXVN75	TEXT	A1
NXVCFL	TEXT	A1	NXVN76	TEXT	A1
NXVCFM	TEXT	A1	NXVN77	TEXT	A1
NXVCFN	TEXT	A1	NXVN78	TEXT	A1
NXVCFO	TEXT	A1	NXVN79	TEXT	A1
NXVCFP	TEXT	A1	NXVN80	TEXT	A1
NXVCFQ	TEXT	A1	NXVN81	TEXT	A1
NXVCFR	TEXT	A1	NXVN82	TEXT	A1
NXVCFE	TEXT	A1	NXVN83	TEXT	A1
NXVCFG	TEXT	A1	NXVN84	TEXT	A1
NXVCFH	TEXT	A1	NXVN85	TEXT	A1
NXVCFI	TEXT	A1	NXVN86	TEXT	A1
NXVCFJ	TEXT	A1	NXVN87	TEXT	A1
NXVCFK	TEXT	A1	NXVN88	TEXT	A1
NXVCFL	TEXT	A1	NXVN89	TEXT	A1
NXVCFM	TEXT	A1	NXVN90	TEXT	A1
NXVCFN	TEXT	A1	NXVN91	TEXT	A1
NXVCFO	TEXT	A1	NXVN92	TEXT	A1
NXVCFP	TEXT	A1	NXVN93	TEXT	A1
NXVCFQ	TEXT	A1	NXVN94	TEXT	A1
NXVCFR	TEXT	A1	NXVN95	TEXT	A1
NXVCFE	TEXT	A1	NXVN96	TEXT	A1
NXVCFG	TEXT	A1	NXVN97	TEXT	A1
NXVCFH	TEXT	A1	NXVN98	TEXT	A1
NXVCFI	TEXT	A1	NXVN99	TEXT	A1
NXVCFJ	TEXT	A1	NXVUBM	TEXT	A1

NXVURD	TEXT	A1	NXVCNP	ASSEMBLE	A1
NXVUX1	TEXT	A1	NXVCNS	ASSEMBLE	A1
NXVUX2	TEXT	A1	NXVCVT	ASSEMBLE	A1
NXVUX3	TEXT	A1	NXVDIF	ASSEMBLE	A1
NXVUX4	TEXT	A1	NXVDIR	ASSEMBLE	A1
NXVUX5	TEXT	A1	NXVDIS	ASSEMBLE	A1
NXVVMC	TEXT	A1	NXVDLP	ASSEMBLE	A1
NXVWDG	TEXT	A1	NXVDSP	ASSEMBLE	A1
NXVXME	TEXT	A1	NXVD1A	ASSEMBLE	A1
NXVXMI	TEXT	A1	NXVD1E	ASSEMBLE	A1
NXVXMO	TEXT	A1	NXVD1I	ASSEMBLE	A1
NXVXMR	TEXT	A1	NXVD1W	ASSEMBLE	A1
NXVXPO	TEXT	A1	NXVEND	ASSEMBLE	A1
NXVCF	MODULE	A1	NXVERM	ASSEMBLE	A1
FILE 3: Cntrl, Execs, and Examples			NXVERT	ASSEMBLE	A1
BFXBATFE	EXEC	A1	NXVFLI	ASSEMBLE	A1
INITPARM	SAMPLE	A1	NXVGIO	ASSEMBLE	A1
NXUCTL	CNTRL	A1	NXVGSCH	ASSEMBLE	A1
NXVCTL	CNTRL	A1	NXVINI	ASSEMBLE	A1
NXVROO	SAMPLE	A1	NXVINR	ASSEMBLE	A1
NXVROO	MINIMUM	A1	NXVINT	ASSEMBLE	A1
SECUSER	MODULE	A1	NXVIN1	ASSEMBLE	A1
NXVUX1EX	SAMPLE	A1	NXVIOS	ASSEMBLE	A1
NXVUX2EX	SAMPLE	A1	NXVIPL	ASSEMBLE	A1
NXVUX3EX	SAMPLE	A1	NXVLVL	ASSEMBLE	A1
FILE 4: NETEX Maclib			NXVMEM	ASSEMBLE	A1
NXVMAC	MACLIB	A1	NXVMIH	ASSEMBLE	A1
FILE 5: Product Source			NXVMIN	ASSEMBLE	A1
NXVADA	ASSEMBLE	A1	NXVNAV	ASSEMBLE	A1
NXVADC	ASSEMBLE	A1	NXVNET	ASSEMBLE	A1
NXVADO	ASSEMBLE	A1	NXVNRD	ASSEMBLE	A1
NXVADP	ASSEMBLE	A1	NXVNRF	ASSEMBLE	A1
NXVADR	ASSEMBLE	A1	NXVNRR	ASSEMBLE	A1
NXVCBLOK	ASSEMBLE	A1	NXVN2A	ASSEMBLE	A1
NXVCCV	ASSEMBLE	A1	NXVN2C	ASSEMBLE	A1
NXVCFA	ASSEMBLE	A1	NXVN2D	ASSEMBLE	A1
NXVCFG	ASSEMBLE	A1	NXVN2W	ASSEMBLE	A1
NXVCFI	ASSEMBLE	A1	NXVODN	ASSEMBLE	A1
NXVCFO	ASSEMBLE	A1	NXVOPD	ASSEMBLE	A1
NXVCFR	ASSEMBLE	A1	NXVOPE	ASSEMBLE	A1
NXVCFS	ASSEMBLE	A1	NXVOPF	ASSEMBLE	A1
NXVCFT	ASSEMBLE	A1	NXVOPG	ASSEMBLE	A1
			NXVOPH	ASSEMBLE	A1
			NXVOPM	ASSEMBLE	A1
			NXVOPN	ASSEMBLE	A1
			NXVOPP	ASSEMBLE	A1
			NXVOPR	ASSEMBLE	A1
			NXVOPS	ASSEMBLE	A1
			NXVPSA	ASSEMBLE	A1
			NXVQUE	ASSEMBLE	A1
			NXVRDR	ASSEMBLE	A1
			NXVROP	ASSEMBLE	A1
			NXVRRQ	ASSEMBLE	A1
			NXVSCN	ASSEMBLE	A1

NXVSES	ASSEMBLE	A1	NTCAUTH	COPY	A1
NXVSIN	ASSEMBLE	A1	NTCBLKDS	COPY	A1
NXVSMG	ASSEMBLE	A1	NTCBUFF	COPY	A1
NXVSOC	ASSEMBLE	A1	NTCCALL	MACRO	A1
NXVSRD	ASSEMBLE	A1	NTCCBD	COPY	A1
NXVSVC	ASSEMBLE	A1	NTCCCBLK	COPY	A1
NXVS2C	ASSEMBLE	A1	NTCCWS	COPY	A1
NXVS2M	ASSEMBLE	A1	NTCCONWR	MACRO	A1
NXVS2R	ASSEMBLE	A1	NTCCPRML	COPY	A1
NXVS2W	ASSEMBLE	A1	NTCCUB	COPY	A1
NXVTAB	ASSEMBLE	A1	NTCCVA	MACRO	A1
NXVTMR	ASSEMBLE	A1	NTCCVE	MACRO	A1
NXVTRC	ASSEMBLE	A1	NTCCWA	COPY	A1
NXVTRT	ASSEMBLE	A1	NTCCXWA	COPY	A1
NXVT1A	ASSEMBLE	A1	NTCDCON	MACRO	A1
NXVT1C	ASSEMBLE	A1	NTCDDB	COPY	A1
NXVT1D	ASSEMBLE	A1	NTCDDIS	MACRO	A1
NXVT1O	ASSEMBLE	A1	NTCDEQUO	MACRO	A1
NXVT1P	ASSEMBLE	A1	NTCDEV	COPY	A1
NXVT1R	ASSEMBLE	A1	NTCDIREN	COPY	A1
NXVT1W	ASSEMBLE	A1	NTCDIRHD	COPY	A1
NXVT2A	ASSEMBLE	A1	NTCDOIO	MACRO	A1
NXVT2C	ASSEMBLE	A1	NTCDRB	COPY	A1
NXVT2D	ASSEMBLE	A1	NTCDRD	MACRO	A1
NXVT2O	ASSEMBLE	A1	NTCDREAD	MACRO	A1
NXVT2R	ASSEMBLE	A1	NTCDRIVE	COPY	A1
NXVT2W	ASSEMBLE	A1	NTCDRST	COPY	A1
NXVUBM	ASSEMBLE	A1	NTCDSTAT	MACRO	A1
NXVURD	ASSEMBLE	A1	NTCDUB	COPY	A1
NXVUX1	ASSEMBLE	A1	NTCDWB	COPY	A1
NXVUX2	ASSEMBLE	A1	NTCDWR	MACRO	A1
NXVUX3	ASSEMBLE	A1	NTCDWRT	MACRO	A1
NXVUX4	ASSEMBLE	A1	NTCEMSG	MACRO	A1
NXVUX5	ASSEMBLE	A1	NTCENTER	MACRO	A1
NXVVMC	ASSEMBLE	A1	NTCENTTB	COPY	A1
NXVWDG	ASSEMBLE	A1	NTCERM	MACRO	A1
NXVXME	ASSEMBLE	A1	NTCERMB	COPY	A1
NXVXMI	ASSEMBLE	A1	NTCERQB	COPY	A1
NXVXMO	ASSEMBLE	A1	NTCESTVC	COPY	A1
NXVXMR	ASSEMBLE	A1	NTCEVCON	COPY	A1
NXVXPO	ASSEMBLE	A1	NTCEVDSC	COPY	A1
			NTCFBUFF	COPY	A1
			NTCFMEM	MACRO	A1
			NTCFRBUF	MACRO	A1
			NTCGMEM	MACRO	A1
			NTCGOTO	MACRO	A1
			NTCGTBUF	MACRO	A1
			NTCHAD	COPY	A1
			NTCHALT	MACRO	A1
			NTCHDW1	COPY	A1
			NTCHDW2	COPY	A1
			NTCHFULL	MACRO	A1
			NTCIORB	COPY	A1
			NTCLEAVE	MACRO	A1
FILE 6: Macro and Copy Source					
NTCABEND	MACRO	A1			
NTCACB	COPY	A1			
NTCACON	MACRO	A1			
NTCADAPL	MACRO	A1			
NTCADAPT	MACRO	A1			
NTCADAP1	MACRO	A1			
NTCAKA	COPY	A1			

NTCLVL	COPY	A1	NTCSPI2	COPY	A1
NTCMOD	MACRO	A1	NTCSPI3	COPY	A1
NTCNASGN	MACRO	A1	NTCSPL	COPY	A1
NTCNCFM	MACRO	A1	NTCSPLD	COPY	A1
NTCNCON	MACRO	A1	NTCSR	COPY	A1
NTCNDIS	MACRO	A1	NTCSR	MACRO	A1
NTCNETCN	COPY	A1	NTCSUB	COPY	A1
NTCNETPR	COPY	A1	NTCSUSPD	MACRO	A1
NTCNIT	COPY	A1	NTCSWRT	MACRO	A1
NTCNOFR	MACRO	A1	NTCSYSLR	MACRO	A1
NTCNRB	MACRO	A1	NTCTASGN	MACRO	A1
NTCNRFDT	COPY	A1	NTCTCFM	MACRO	A1
NTCNRFMP	COPY	A1	NTCTCLS	MACRO	A1
NTCNTRB	COPY	A1	NTCTCON	MACRO	A1
NTCNUB	COPY	A1	NTCTDIS	MACRO	A1
NTCNWRT	MACRO	A1	NTCTENTR	MACRO	A1
NTCOPT	COPY	A1	NTCTERM	MACRO	A1
NTCPAML	COPY	A1	NTCTIMER	MACRO	A1
NTCPAM1	COPY	A1	NTCTOFR	MACRO	A1
NTCPAM2	COPY	A1	NTCTPLB	COPY	A1
NTCPDBUF	COPY	A1	NTCTRB2	COPY	A1
NTCPFREC	COPY	A1	NTCTRCBF	COPY	A1
NTCPROTS	COPY	A1	NTCTRCRC	COPY	A1
NTCQAC	MACRO	A1	NTCTRD	MACRO	A1
NTCQACD	COPY	A1	NTCTUB2	COPY	A1
NTCQACIN	MACRO	A1	NTCTWORK	COPY	A1
NTCQUEMG	MACRO	A1	NTCTWRT	MACRO	A1
NTCRCBAS	COPY	A1	NTCT1ACK	COPY	A1
NTCREFTB	COPY	A1	NTCT1BAS	COPY	A1
NTCREGS	COPY	A1	NTCT1CON	COPY	A1
NTCRETR	MACRO	A1	NTCT1DAT	COPY	A1
NTCRMTRQ	COPY	A1	NTCT1DIS	COPY	A1
NTCROOT	COPY	A1	NTCT1SUB	COPY	A1
NTCROOTG	MACRO	A1	NTCT2ACK	COPY	A1
NTCROUTE	MACRO	A1	NTCT2BAS	COPY	A1
NTCROUTL	MACRO	A1	NTCT2CON	COPY	A1
NTCROUT1	MACRO	A1	NTCT2DAT	COPY	A1
NTCRUNAL	MACRO	A1	NTCT2DIS	COPY	A1
NTCSAVE	COPY	A1	NTCT2SUB	COPY	A1
NTCSCAN	MACRO	A1	NTCUBMGR	MACRO	A1
NTCSCFM	MACRO	A1	NTCVCBLK	COPY	A1
NTCSCINI	MACRO	A1	NTCVCON	MACRO	A1
NTCSCKW	MACRO	A1	NTCWDOG	MACRO	A1
NTCSCLS	MACRO	A1	NTCW	COPY	A1
NTCSCON	MACRO	A1	NTMTRTB	COPY	A1
NTCSCTEL	MACRO	A1	NTVARLN	MACRO	A1
NTCSDATA	COPY	A1	NTVBKIO	MACRO	A1
NTCSDIS	MACRO	A1	NTVCABND	MACRO	A1
NTCSEGH	COPY	A1	NTVCALL	MACRO	A1
NTCSLSEX	COPY	A1	NTVCLAS	MACRO	A1
NTCSOFR	MACRO	A1	NTVMSAB	MACRO	A1
NTCSPAM	MACRO	A1	NTVMSOP	MACRO	A1
NTCSPAMD	COPY	A1	NTVDEST	MACRO	A1
NTCSPAWN	MACRO	A1	NTVDIAG	MACRO	A1
NTCSPI1	COPY	A1			

FSCLOS	ASSEMBLE	A1
FSCONF	ASSEMBLE	A1
FSCONN	ASSEMBLE	A1
FSDISC	ASSEMBLE	A1
FSOFFR	ASSEMBLE	A1
FSREAD	ASSEMBLE	A1
FSWAIT	ASSEMBLE	A1
FSWRIT	ASSEMBLE	A1
NXUUIF	ASSEMBLE	A1
NXUUSR	ASSEMBLE	A1
NXUU2F	ASSEMBLE	A1
NXUWAI	ASSEMBLE	A1
OLDUSR	ASSEMBLE	A1

FILE 11: Interface Macro and Copy Source

DCONNECT	MACRO	A1
DDISCONN	MACRO	A1
DREAD	MACRO	A1
DSTATUS	MACRO	A1
DWAIT	MACRO	A1
DWRITE	MACRO	A1
NRB	MACRO	A1
NRBD	MACRO	A1
NTCBUFF	COPY	A1
NTCLVL	COPY	A1
NTCNRB	MACRO	A1
NTCOPT	COPY	A1
NTCREGS	COPY	A1
NTCSYSLR	MACRO	A1
NTVARLN	MACRO	A1
NTVBKIO	MACRO	A1
NTVCABND	MACRO	A1
NTVCALL	MACRO	A1
NTVCLAS	MACRO	A1
NTVCMSAB	MACRO	A1
NTVCMSOP	MACRO	A1
NTVDEST	MACRO	A1
NTVDIAG	MACRO	A1
NTVDMOD	MACRO	A1
NTVENTER	MACRO	A1
NTVHALT	MACRO	A1
NTVIOSIN	MACRO	A1
NTVMXRT	MACRO	A1
NTVNAME	MACRO	A1
NTVNDR1	MACRO	A1
NTVNREF	MACRO	A1
NTVNREQ	MACRO	A1
NTVOALN	MACRO	A1
NTVPATHB	COPY	A1
NTVPRUN	MACRO	A1
NTVPSA	COPY	A1

NTVSSOP	MACRO	A1
NTVSTATB	COPY	A1
NTVTIME	MACRO	A1
NTVUBIT	MACRO	A1
NTVUENTR	MACRO	A1
NTVUID	MACRO	A1
NTVULEAV	MACRO	A1
NTVUSERB	COPY	A1
NTVUSRKB	COPY	A1
NTVUTR	MACRO	A1
NTVUWAIT	MACRO	A1
NTVWAIT	MACRO	A1
NTVXMUB	COPY	A1
PCNRB	COPY	A1
PCNRBI	COPY	A1
PCPROCD	COPY	A1
PCPROCS	COPY	A1
SCLOSE	MACRO	A1
SCONFIRM	MACRO	A1
SCONNECT	MACRO	A1
SDISCONN	MACRO	A1
SOFFER	MACRO	A1
SREAD	MACRO	A1
SSTATS	MACRO	A1
SWAIT	MACRO	A1
SWRITE	MACRO	A1

FILE 12: Help Files

DISPLAY	HELPMENU	A1
DRIVER	HELPDISP	A1
HOST	HELPDISP	A1
LEVEL	HELPDISP	A1
MEMORY	HELPDISP	A1
NETEX	HELPMENU	A1
NETWORK	HELPDISP	A1
NRF	HELPDISP	A1
NXRC0001	HELPMSG	A1
NXRC0002	HELPMSG	A1
NXRC0003	HELPMSG	A1
NXRC0004	HELPMSG	A1
NXRC0005	HELPMSG	A1
NXRC0006	HELPMSG	A1
NXRC0012	HELPMSG	A1
NXRC0100	HELPMSG	A1
NXRC0310	HELPMSG	A1
NXRC0500	HELPMSG	A1
NXRC0503	HELPMSG	A1
NXRC0504	HELPMSG	A1
NXRC0505	HELPMSG	A1
NXRC0511	HELPMSG	A1

NXRC0512	HELPMMSG	A1	NXRC2308	HELPMMSG	A1
NXRC0900	HELPMMSG	A1	NXRC2309	HELPMMSG	A1
NXRC0901	HELPMMSG	A1	NXRC2400	HELPMMSG	A1
NXRC0902	HELPMMSG	A1	NXRC2401	HELPMMSG	A1
NXRC0903	HELPMMSG	A1	NXRC2402	HELPMMSG	A1
NXRC0910	HELPMMSG	A1	NXRC2403	HELPMMSG	A1
NXRC0911	HELPMMSG	A1	NXRC2500	HELPMMSG	A1
NXRC0912	HELPMMSG	A1	NXRC2501	HELPMMSG	A1
NXRC0913	HELPMMSG	A1	NXRC2503	HELPMMSG	A1
NXRC0914	HELPMMSG	A1	NXRC2505	HELPMMSG	A1
NXRC0915	HELPMMSG	A1	NXRC2506	HELPMMSG	A1
NXRC0916	HELPMMSG	A1	NXRC2507	HELPMMSG	A1
NXRC0917	HELPMMSG	A1	NXRC2509	HELPMMSG	A1
NXRC0920	HELPMMSG	A1	NXRC2510	HELPMMSG	A1
NXRC1001	HELPMMSG	A1	NXRC2511	HELPMMSG	A1
NXRC1100	HELPMMSG	A1	NXRC3004	HELPMMSG	A1
NXRC1101	HELPMMSG	A1	NXRC3005	HELPMMSG	A1
NXRC1102	HELPMMSG	A1	NXRC3100	HELPMMSG	A1
NXRC1103	HELPMMSG	A1	NXRC3101	HELPMMSG	A1
NXRC1104	HELPMMSG	A1	NXRC3106	HELPMMSG	A1
NXRC1105	HELPMMSG	A1	NXRC3300	HELPMMSG	A1
NXRC1107	HELPMMSG	A1	NXRC3301	HELPMMSG	A1
NXRC1200	HELPMMSG	A1	NXRC3302	HELPMMSG	A1
NXRC1201	HELPMMSG	A1	NXRC3303	HELPMMSG	A1
NXRC1202	HELPMMSG	A1	NXRC3304	HELPMMSG	A1
NXRC1203	HELPMMSG	A1	NXRC3305	HELPMMSG	A1
NXRC1204	HELPMMSG	A1	NXRC3306	HELPMMSG	A1
NXRC1300	HELPMMSG	A1	NXRC3307	HELPMMSG	A1
NXRC1304	HELPMMSG	A1	NXRC3308	HELPMMSG	A1
NXRC1305	HELPMMSG	A1	NXRC3309	HELPMMSG	A1
NXRC1306	HELPMMSG	A1	NXRC3310	HELPMMSG	A1
NXRC1400	HELPMMSG	A1	NXRC3401	HELPMMSG	A1
NXRC1501	HELPMMSG	A1	NXRC3402	HELPMMSG	A1
NXRC1503	HELPMMSG	A1	NXRC3403	HELPMMSG	A1
NXRC1504	HELPMMSG	A1	NXRC3410	HELPMMSG	A1
NXRC1505	HELPMMSG	A1	NXRC3422	HELPMMSG	A1
NXRC1506	HELPMMSG	A1	NXRC3500	HELPMMSG	A1
NXRC1507	HELPMMSG	A1	NXRC3501	HELPMMSG	A1
NXRC1509	HELPMMSG	A1	NXRC3502	HELPMMSG	A1
NXRC1510	HELPMMSG	A1	NXRC3503	HELPMMSG	A1
NXRC2004	HELPMMSG	A1	NXRC3504	HELPMMSG	A1
NXRC2005	HELPMMSG	A1	NXRC3505	HELPMMSG	A1
NXRC2006	HELPMMSG	A1	NXRC3506	HELPMMSG	A1
NXRC2007	HELPMMSG	A1	NXRC3507	HELPMMSG	A1
NXRC2100	HELPMMSG	A1	NXRC3508	HELPMMSG	A1
NXRC2101	HELPMMSG	A1	NXRC3509	HELPMMSG	A1
NXRC2300	HELPMMSG	A1	NXRC3510	HELPMMSG	A1
NXRC2301	HELPMMSG	A1	NXRC3511	HELPMMSG	A1
NXRC2302	HELPMMSG	A1	NXRC3512	HELPMMSG	A1
NXRC2303	HELPMMSG	A1	NXRC3513	HELPMMSG	A1
NXRC2304	HELPMMSG	A1	NXRC3515	HELPMMSG	A1
NXRC2305	HELPMMSG	A1	NXRC3520	HELPMMSG	A1
NXRC2306	HELPMMSG	A1	NXRC3522	HELPMMSG	A1
NXRC2307	HELPMMSG	A1	NXRC3550	HELPMMSG	A1

NXRC3551	HELPMMSG	A1	NXV063	HELPMMSG	A1
NXRC3552	HELPMMSG	A1	NXV064	HELPMMSG	A1
NXRC3553	HELPMMSG	A1	NXV080	HELPMMSG	A1
NXRC3908	HELPMMSG	A1	NXV081	HELPMMSG	A1
NXRC3909	HELPMMSG	A1	NXV082	HELPMMSG	A1
NXRC3915	HELPMMSG	A1	NXV084	HELPMMSG	A1
NXRC3920	HELPMMSG	A1	NXV100	HELPMMSG	A1
NXRC4004	HELPMMSG	A1	NXV101	HELPMMSG	A1
NXRC4006	HELPMMSG	A1	NXV102	HELPMMSG	A1
NXRC4007	HELPMMSG	A1	NXV103	HELPMMSG	A1
NXRC4008	HELPMMSG	A1	NXV105	HELPMMSG	A1
NXRC4100	HELPMMSG	A1	NXV110	HELPMMSG	A1
NXRC4101	HELPMMSG	A1	NXV111	HELPMMSG	A1
NXRC4102	HELPMMSG	A1	NXV112	HELPMMSG	A1
NXRC4301	HELPMMSG	A1	NXV114	HELPMMSG	A1
NXRC4302	HELPMMSG	A1	NXV120	HELPMMSG	A1
NXRC4303	HELPMMSG	A1	NXV127	HELPMMSG	A1
NXRC4501	HELPMMSG	A1	NXV128	HELPMMSG	A1
NXRC4503	HELPMMSG	A1	NXV129	HELPMMSG	A1
NXRC4506	HELPMMSG	A1	NXV130	HELPMMSG	A1
NXRC4511	HELPMMSG	A1	NXV132	HELPMMSG	A1
NXRC4521	HELPMMSG	A1	NXV134	HELPMMSG	A1
NXV000	HELPMMSG	A1	NXV136	HELPMMSG	A1
NXV001	HELPMMSG	A1	NXV160	HELPMMSG	A1
NXV005	HELPMMSG	A1	NXV161	HELPMMSG	A1
NXV010	HELPMMSG	A1	NXV162	HELPMMSG	A1
NXV011	HELPMMSG	A1	NXV163	HELPMMSG	A1
NXV012	HELPMMSG	A1	NXV164	HELPMMSG	A1
NXV015	HELPMMSG	A1	NXV165	HELPMMSG	A1
NXV016	HELPMMSG	A1	NXV200	HELPMMSG	A1
NXV017	HELPMMSG	A1	NXV201	HELPMMSG	A1
NXV020	HELPMMSG	A1	NXV202	HELPMMSG	A1
NXV021	HELPMMSG	A1	NXV203	HELPMMSG	A1
NXV022	HELPMMSG	A1	NXV209	HELPMMSG	A1
NXV023	HELPMMSG	A1	NXV210	HELPMMSG	A1
NXV024	HELPMMSG	A1	NXV211	HELPMMSG	A1
NXV026	HELPMMSG	A1	NXV212	HELPMMSG	A1
NXV027	HELPMMSG	A1	NXV213	HELPMMSG	A1
NXV028	HELPMMSG	A1	NXV214	HELPMMSG	A1
NXV029	HELPMMSG	A1	NXV215	HELPMMSG	A1
NXV030	HELPMMSG	A1	NXV216	HELPMMSG	A1
NXV050	HELPMMSG	A1	NXV220	HELPMMSG	A1
NXV051	HELPMMSG	A1	NXV221	HELPMMSG	A1
NXV052	HELPMMSG	A1	NXV222	HELPMMSG	A1
NXV053	HELPMMSG	A1	NXV223	HELPMMSG	A1
NXV054	HELPMMSG	A1	NXV224	HELPMMSG	A1
NXV055	HELPMMSG	A1	NXV229	HELPMMSG	A1
NXV056	HELPMMSG	A1	NXV230	HELPMMSG	A1
NXV057	HELPMMSG	A1	NXV231	HELPMMSG	A1
NXV058	HELPMMSG	A1	NXV232	HELPMMSG	A1
NXV059	HELPMMSG	A1	NXV233	HELPMMSG	A1
NXV060	HELPMMSG	A1	NXV234	HELPMMSG	A1
NXV061	HELPMMSG	A1	NXV235	HELPMMSG	A1
NXV062	HELPMMSG	A1	NXV240	HELPMMSG	A1

CONFPARS	TEXT	A1
CONFVERI	TEXT	A1
FILEIO	TEXT	A1
SCANNER	TEXT	A1
CONFTEXT	TXTLIB	A1
CONFMAN	MODULE	A1
CONFMAN	MAP	A5
CONFCON	COPY	A1
CONFEXT	COPY	A1
CONFTYPE	COPY	A1
CONFVAR	COPY	A1
COPYRITE	COPY	A1
DIRTYP	COPY	A1
DIRVAR	COPY	A1
FIOCON	COPY	A1
FIOEXT	COPY	A1
FIOEXT	COPY	A1
FIOEXT	COPY	A1
SCANCON	COPY	A1
SCANEXT	COPY	A1
SCANTYPE	COPY	A1
CONFLIB	MACLIB	A1
CONFCOMP	EXEC	A1
CONFLIB	EXEC	A1
CONFLINK	EXEC	A1
CONFMAN	EXEC	A1
CONFTEXT	EXEC	A1
CONFSA	SAMPLE	A1

9.0 Updates -- Release 3.0 Base

The following fixes have been incorporated into this base release:

Update	Description
QV00000	ALTIO SUPPORT
QV00000	ADD POSSIBLE EXTRA TPL LENGTH TO MAXNETP
QV00000	LOAD BALANCING SUPPORT
QV00000	ADD MORE INFORMATION TO "D H" COMMAND
QV09738	UPDATE TO SERVICE LEVEL 8809
QV09738	ADD FIELDS TO ROOT FOR NRF INTERFACE
QV09738	ADD BYTE COUNT FIELDS AND TIME TO SUB
QV09738	ADD NRF COPY FILES
QV09738	ADD MSGS FOR NRF
QV09738	CALL NRF INIT IF START NRF WAS IN INIT FILE
QV09738	ADD DISPLAY, START, AND HALT NRF CMDS
QV09738	ADD CHECK FOR NRF MSG 'FE03'
QV09738	ADD OFFER COMPLETE NRF CALL
QV09738	FIX SEVENT FLAGS CHECK IN NRR
QV11111	MASK OUT CRC BIT IN SENT PAM IF NECESSARY
QV11223	ADD ADAPTER NUMBER AND TRUNK MASK TO MSGS 214 AND 216
QV11322	MODIFY READ SIO OP CODE FOR XA
QV11325	AVOID UBM ABEND2
QV11419	ADD ONEWAY ADAPTER OPTION
QV11419	ADD NETWORK PROTOCOL TYPE 3 FOR 1-WAY ADAPTERS
QV11419	ADD FLAG TO NUB TO INDICATE USING ONEWAY ADAPTER
QV11419	ADD FLAG TO KILL CONNECTION FOR RC4521
QV11419	ADD PROTOCOL 3 FOR ONE-WAY ADAPTERS
QV11419	ADD INDICATION OF 1-WAY ADAPTER TO D U
QV11419	ADD SUPPORT FOR NLEVEL 3 INCOMING MSGS
QV11419	ADD CHECK FOR MAX USER ODATA
QV11419	ADD CHECK FOR 4521 RC FROM N2C
QV11419	CHECK FOR KILLING THE CONNECTION
QV11419	ADD REASON CODE 21 TO MSG 660 (MAX ODATA TOO SMALL)
QV11419	ADD REASON CODE 26 TO MSG 260 (MAX ODATA TOO SMALL)
QV11420	CHANGE MSGLVL OF MSG 016 FROM 8 TO 6
QV11638	CORRECT MODULE LITERAL LOCATE

Update	Description
QV11642	MVS/ESA, VM/XA ENHANCEMENTS
QV11653	CORRECT REGRESSION PROCESSING
QV11656	RETURN TRBIND EVEN IF TRBRC <> 0
QV12345	AS FUNCTION BYTE AS PAM
QV12346	ADD 16 SUBCHANNEL BOUNDARY VALUE TO CUB
QV14681	CHANGE MSGVLV of MSG 235 FROM 6 TO 8
QV16444	REMOVE FORTRAN 77 CHECKS FROM SUBROUTINES
QV16493	ADD CHECK FOR RDS/NETEX DX UNIT
QV17647	ADD MORE CHANGES TO ELIMINATE NRBSTAT-1 PROBLEM
QV17753	NAV - CLEAR SUBCHANNEL BETWEEN ATTEMPTING SENSE ADAPTER
QV17980	ADD CHECK FOR PAM OFFSET IN BYTES OR WORDS
QV18719	RUN DISCONNECTED OFFERS BETWEEN COMPLETING THE SDISC
QV18985	MAKE SURE TPL IS FREED WHEN USING GROUP HOSTS
QV19008	ADD SSNM TO PARM LIST FOR FDCONN
QV19270	FIX WATCH DOG INTERVAL TO BE 1,000,000 MICRO-SECONDS
QV19759	FIX CRC OPTION WITH SLS
QV19918	CORRECT BLOCK SIZE CHECK FOR EXACTLY 64K
QV20197	ADD SUPPORT FOR 3390 DASD
QV22222	FIX INACTIVE ALGORITHM
QV22222	DON'T ALLOW DRIVER LVL CALLS ON SESS LVL CONNECTION
QV22597	VM/ESA - UPDATE NETEX VERSION AND MAINTENANCE LEVEL
QV22600	VM/ESA - UPDATE PSA CONTROL BLOCK LAYOUT
QV22601	VM/ESA - UPDATE I/O CONTROL BLOCK LAYOUT
QV22602	VM/ESA - VIRTUAL MACHINE SUPPORT
QV22603	VM/ESA - VIRTUAL MACHINE I/O SUPPORT
QV22604	VM/ESA - YEAR 2000 SUPPORT
QV22790	RETURN FULLWORD SIZE FROM STORAGE FREE
QV22902	ADD FLAG FOR RESETTING TO 1ST PATH IN PAMLIST
QV22902	ADD "SET RSETPATH XXXX" COMMAND
QV23305	ADD FIELD FOR SPECIFIC PATH NUMBER FOR RSETPATH COMMAND
QV22790	RETURN FULLWORD SIZE FROM STORAGE FREE
QV22902	ADD FLAG FOR RESETTING TO 1ST PATH IN PAMLIST

Update	Description
QV22902	ADD "SET RSETPATH XXXX" COMMAND
QV23305	ADD FIELD FOR SPECIFIC PATH NUMBER FOR RSETPATH COMMAND
QV23305	ADD "DISPLAY SUMMARY" COMMAND
QV23305	FOR RSETPATH COMMAND - ADD ABILITY TO PICK A PATH
QV23846	ACK DUPLICATE RETRANSMITS BY REMOTE WHEN CLOSING
QV25338	ALLOW RECEIVE TO HALTED ADAPTER, IF LOCAL, BUT DIFFERENT SUBCHANNEL RANGE
QV25338	ALLOW SEND TO HALTED ADAPTER, IF LOCAL, BUT DIFFERENT SUBCHANNEL RANGE
QV44444	LOAD BALANCING SUPPORT
QV44444	DX SUPPORT
QV55555	ADD LBROTATE OPTION TO LOAD BALANCING
QV55555	ADD LBROTATE TO "D P" COMMAND
QV55556	NOT USING 1ST PATH WITH LOAD BALANCING AND LBROTATE
QV77777	CRC SUPPORT
QV88888	CORRECT "D NRF" PROBLEM
QV99999	ADD SUPPORT FOR ALTERNATE TPL CONNECTS
QV99999	ADD ALTERNATE 1ST PAMS FOR CONNECT
QV99999	ADD HDW LOOPBAK SUPPORT
QV99999	ADD HDW LOOPBAK COMPLETION MSGS
QV99999	ADD HW CMD

Appendix A. Manual Corrections and Changes

This appendix provides corrections and changes to the H280 NETEX Software Reference Manual, publication number 460237 currently at revision 04. Changes and corrections are provided for the following chapters:

- Introduction
- Driver Interface
- Installation
- Set Commands
- Display Commands
- Miscellaneous Operator Commands

Appendix A.1 Changes to Publication Number 460237-04

In the "Introduction" chapter, paragraph 1 on page 3, change the second sentence to read as follows:

The NETEX software family consists of different versions of NETEX for use with different operating systems, such as this version for use with VM/ESA.

In the "Driver Interface" chapter, under the heading "Hardware Protocols" on page 127, change the first sentence in the second paragraph to read as follows:

The H280 NETEX Release 3.0 provides the capability to specify data to be included in, or in the case of the Driver Interface, to constitute the message proper.

In the "Driver Interface" chapter, under the heading "START/HALT Adapter" on page 149, change the sentence to read as follows:

The ability to START/HALT an adapter while NETEX is running is available in release 3.0 of H280 NETEX.

In the "Installation" chapter, under the subheading "Supported Configurations" on page 153, change the text for the first and second bullet to read:

- An IBM (or compatible) processor running VM/ESA
- At least one StorageTek A22x Adapter, or NB220 or PB225 interface attached to a block multiplexor channel or at least 1 PB250 or PB251 attached to an ESCON channel.

In the "Installation" chapter, under the subheading "Installation Statements", change the first paragraph under "CONFIG Initialization Statement on page 171 to read:

The CONFIG statement specifies if the configuration manager is to be used instead of the NTCROUTE statements. Note that the configuration manager requires VM/ESA. Using the configuration manager is described in step 11 in "Installing NETEX on page 155.

In the "Initialization Statements" chapter, under the heading "TRACE Initialization Statement" on page 189, the following information replaces the text in the software reference manual:

The TRACE statement specifies the trace options selected. The trace may be off, on memory or

on tape, and on for either specified events or classes of events. The TRACE statement is intended for use by the Network Systems personnel.

If this statement is not coded, TRACE=OFF is assumed.

The TRACE statement has the format:

Keyword	Operand
TRACE=	ON MEMORY EVENTS=events OFF TAPE=cuu CLASS=class

where:

ON (either ON or OFF must be specified) - trace enabled.

OFF (either ON or OFF must be specified) - trace disabled.

MEMORY (default) - trace memory will be used for the trace file.

TAPE = cuu (optional) - trace will be sent to the tape unit specified by 'cuu'.

EVENTS (default between CLASS and EVENTS) - the trace events to be saved. One or more trace events (shown in the following figure) may be selected. If no events are selected, the default is ALL.

CLASS (optional) - the class of events to be saved. One or more trace classes (shown in Figure 48 on page 191) may be selected. If no classes are selected, the default is ALL.

Trace Events	Description
All	All events listed in this table
DI	Driver input
DO	Driver output
DS	Dispatch
ED	Enter dispatcher
EX	External interrupt
IC	CSCH initiation
IH	HSCH initiation
IO	I/O interruption
IS	SSCH initiation
IT	TSCH initiation
IU	IUCV inbound message
MC	Module call
MF	Memory free
MG	Memory get

Trace Events	Description
MR	Module return
OU	IUCV outbound message
QD	Queue dequeue
QQ	Queue queue
SC	Sense completion
SP	Spawn
ST	STimer
SU	Suspend
UR	User request in
US	User request out

Trace Class	Description
ALL	All classes listed in this table
CALL	Call (Events MC, MR, SP, SU, ED, DS)
IO	I/O (Events DO, DI, IC, IH, IO, IS, IT, SC)
MEM	Memory (Events MC, MF)
MSG	Message (Events DO, DI)
QUE	Queue (Events QQ, QD)
TIME	Time (Event EX, ST)
UREQ	User requests (Events UR, US)
XMEM	Cross memory (Event OU, IU, EX)

In the "Installation" chapter, under the subheading "Installation Statements" under the description of the "NTCADAPT Macro command on page 209, change the description of the NETADD parameter to read:

NETADD - (Required) specifies the network address of the adapter being described. The parameters in the NETADDR operand have the format xx00 where xx is the adapter address.

In the "Configuration Manager Statements" subheading under "Installation", change the opening paragraph on page 213 to read as follows:

NETEX provides a configuration manager that may be used in place of, or in addition to the NETEX root statements (NTCROUTE, NTCADAPT, and so on) for users who have VM/ESA. The configuration manager statements describe the topology of the entire network. Using the configuration manager is described in step 11 in "Installing NETEX" on page 155. Reconfiguring using the manager is described at the end of "Installing NETEX". Installers will generally prefer to use the configuration manager because one configuration file defines the network for all hosts, rather than generating

different files for each host.

Under the heading "Configuration File on page 213, change the description of the LINK statement type to read as follows:

LINK - describes a connection to another local network via an A710, A715, or B715 Link Adapter, an S720 Satellite Link Subsystem, a B800 Direct Bus-to-Bus Link, a B900 Network-to-Network Link, P70x, or P75x Communications Interface

Under the ADAPTER Statement heading on page 220, change the second paragraph in the description of SMGDREF to read as follows:

The SMGDREF assigned must be the complete dref for that adapter. For IBM host adapters, this means adding in the offset of the two low-order hex digits from the CHANADDR (example: CHANADDR=240, if dref=01 then SMGDREF=41.) For A4xx and B4xx adapters, the SMGDREF must represent the PORT number in the two low-order bits (example: PORT=1, if dref=04 then SMGDREF=05.) In these cases, the SMGDREF must be defined, unless it computes to be 00.

Under the ADAPTER Statement heading, change the description of the CHANADDR control word on page 221 to read as follows:

CHANADDR - (required for IBM host adapters, optional for all others) specifies the lowest channel unit address of a group of units to be used by the NETEX software on an IBM system. This channel unit address must be expressed as three or four hexadecimal digits (example: CHANADDR=3C0.) Normally NETEX is given a contiguous range of channel unit addresses responded to by the host adapter. CHANADDR specifies the first subchannel. The specified subchannel cannot be shared by any other application that may use the same host adapter. If a multi-task adapter is defined, each CHANADDR must be unique.

Under the ADAPTER Statement heading, change the description of the NUMADDRS control word on page 222 to read as follows:

NUMADDRS - (required for IBM host adapters only, optional for all others) specifies the maximum number of channel unit addresses that will be used by the IBM NETEX software. The number of addresses must be expressed as a decimal number (example: NUMADDRS=32.) The minimum required is two, the maximum is the number specified in the VM I/O generation. Optionally, NETEX will use a subchannel for every adapter in its local host network.

In the “SET Commands” chapter, under the heading “SET MIHTM Command” on page 293, remove the second sentence.

In the “SET Commands” chapter, change Figure 59 Trace Events for the SET TRACE command on page 300 to the following:

Trace Events	Description
All	All events listed in this table
DI	Driver input
DO	Driver output
DS	Dispatch
ED	Enter dispatcher
EX	External interrupt
IC	CSCH initiation
IH	HSCH initiation
IO	I/O interruption
IS	SSCH initiation
IT	TSCH initiation
IU	IUCV inbound message
MC	Module call
MF	Memory free
MG	Memory get
MR	Module return
OU	IUCV outbound message
QD	Queue dequeue
QQ	Queue queue
SC	Sense completion
SP	Spawn
ST	STimer
SU	Suspend
UR	User request in
US	User request out

In the “SET Commands” chapter, change Figure 60 Classes Of Trace Events for the SET TRACE command on page 300 to the following:

Trace Events	Description
ALL	All events listed in this table
CALL	Call (Events MC, MR, SP, SU, ED, DS)
IO	I/O (Events DO, DI, IC, IH, IO, IS, IT, SC)
MEM	Memory (Events MG, MF)
MSG	Message (Events DO, DI)
QUE	Queue (Events QQ, QD)
TIME	Time (Events EX, ST)
UREQ	User requests (Events UR, US)
XMEM	Cross memory (Events EX, IU, OU)

In the “DISPLAY Commands” chapter, change the sample display for the DISPLAY HOST command on page 307 to the following:

Dest Host	Prot	Type	# of Routes	Flags
IBM4341	2		4	
NTXHOST1	2		4	
NTXHOST2	1		1	
NTXHOST3	1		1	Drained
NTXHOST4	2		2	
NTXHOST5	2		3	

The Flag field added to the DISPLAY HOST command has the following description:

Flags - The current TPL control flags

In the “DISPLAY Commands” chapter, change the sample display for the DISPLAY LEVEL command on page 309 to the following:

```
NXVOPR000I NETEX VM/ESA Release yyy Level zzzz
```

In the “DISPLAY Commands” chapter, change the sample display for the DISPLAY PARMS command on page 315 to the following:

Host IBM4341 Parameters							
Contime=	30	Deadtime=	60	Idletime=	5	Readtime=	60
Maxbi=	32767	Maxbo=	32767	Defbi=	4096	Defbo=	4096
Lim Ses=	32	Lim Tran=	0	Lin Netw=	0	Lin Driv=	0
Max Ses=	32	Max Tran=	0	Max Netw=	0	Max Driv=	0
Avg Ses=	32	Avg Tran=	32	Avg Netw=	32	Avg Driv=	0
Cur Ses=	1	Cur Tran=	3	Cur Netw=	2	Cur Driv=	0
Maxddb=	6	Bitmint=	3600	Maxdread=	2	Maxdwrit=	2
Smwtm=	15	Cfotm=	30	Admtm=	900	Mihtm=	15
Maxseg=	32767	Wdogint=	2	Msglvl=	8	Msgxl=	OFF
Maxodata=	3072	TwoPart=	0	NCTVersion	2	Msgtm=	OFF
Backoff=	50	TrunkMask=	FF	Inactive	OFF	Inactime=	6,240
LoadBal=	OFF	Lbrotate=	OFF				
Exits	OFF						
Con=	01F	RDR=	00C	Prt=	00E	Conqlim=	10
Vmcf=	Any						
Trace=	OFF	Num Bufs=	4	Buf Size=	8176		
Status=	NORMAL	Rmtop=	ON	Class=	G CP SM		

The LoadBal and Lbrotate fields added to the DISPLAY PARMS command are described as follows (see page 319):

LoadBal - specifies whether network I/O load balancing is enabled or disabled. The SET LOADBAL operator command is used to set this value ON or OFF. The default is OFF.

Lbrotate - specifies whether network I/O path rotation is enabled or disabled. The SET LBROTATE operator command is used to set this value ON or OFF. The default is OFF. This command is associated with the network I/O load balancing feature.

In the “DISPLAY Commands” chapter, change Figure 73 Trace Events for the DISPLAY PARMS command on page 320 to the following:

Trace Events	Description
All	All events listed in this table
DI	Driver input
DO	Driver output
DS	Dispatch
ED	Enter dispatcher
EX	External interrupt
IC	CSCH initiation
IH	HSCH initiation
IO	I/O interruption
IS	SSCH initiation
IT	TSCH initiation
IU	IUCV inbound message
MC	Module call

Trace Events	Description
MF	Memory free
MG	Memory get
MR	Module return
OU	IUCV outbound message
QD	Queue dequeue
QQ	Queue queue
SC	Sense completion
SP	Spawn
ST	STimer
SU	Suspend
UR	User request in
US	User request out

In the “DISPLAY Commands” chapter, change Figure 74 Classes Of Trace Events for the DISPLAY PARMS command on page 321 to the following:

Trace Events	Description
ALL	All events listed in this table
CALL	Call (Events MC, MR, SP, SU, ED, DS)
IO	I/O (Events DO, DI, IC, IH, IO, IS, IT, SC)
MEM	Memory (Events MG, MF)
MSG	Message (Events DO, DI)
QUE	Queue (Events QQ, QD)
TIME	Time (Events EX, ST)
UREQ	User requests (Events UR, US)
XMEM	Cross memory (Events EX, IU, OU)

In the “DISPLAY Commands” chapter, add the following text to the description of the Type parameter for the DISPLAY UNIT command on page 333:

Type - The adapter model type

A one-way indicator (-1) will be appended to the adapter type if the unit is operating in One-Way mode.

In the “DISPLAY Commands” chapter, add the following text to the note describing the DRVLOOP Command on page 341:

The host adapter directly selected by the ‘LADAPT aa’ parameter or the selected host adapter associated with a path to ‘RHOST hostname’ must have at least two or more FREE subchannels available to execute a DRVLOOP network I/O request.

Appendix A.2 Installing NETEX

Replace the entire “Installing NETEX” subsection in the “Installation” chapter beginning on page 155 through page 165 with the following text:

Introduction

This section describes the procedure for installing NETEX. The macros described in the following section are required when using this procedure.

VM NETEX can be considered a guest SCP. That is, it is an operating system that resides in a virtual machine. NETEX has no CP modifications, and virtually no VM dependencies (with the exception of a few DIAGNOSE instructions). The installation of NETEX requires the VM Systems Programmer to perform the following functions:

- I/O Generation:

The HCPRIO module must be reassembled to make available the host adapter connection to the VM/ESA system.

- Shared Segment Definition (optional):

The CMS/NETEX interface runs in a Discontiguous Shared Segment (DCSS) and space must be set aside for the saving of this segment.

- Virtual machine Definitions:

The NETEX and PAM sender virtual machines must be defined. Also, all users of NETEX (e.g. PAM sender, BFX, etc.) must be given IUCV authority.

- System Backup:

This is only necessary in case the I/O gen or DCSS gen did not go properly. There is a predefined restart point for the VM system.

All other installation functions can be performed by anyone familiar with the concept and structure of a virtual machine. The installer must have access to a virtual machine that has class B, E and G authority.

VM/ESA System Configuration File Considerations

This section provides considerations for unsupported devices (host adapters).

VM/ESA Version 1 release 1.2 and higher level environments consider NETEX host adapter subchannels to be unsupported devices. These subchannels can be added to VM/ESA as either static or dynamic devices.

Static Devices

Define NETEX host adapter subchannels in the VM/ESA system configuration (SYSTEM CONFIG) configuration file using the RDEVICE statement. The RDEVICE statement preserves devices across IPLs. The following is an example RDEVICE system configuration statement that statically defines the NETEX host adapter subchannels.

```
RDEVICE 05C0-05DF TYPE UNSUPPORTED DEVCLASS SWITCH
```

Refer to the IBM publication *VM/ESA Planning and Administration* (SC24-5521) for more information describing the RDEVICE system configuration file statement.

Dynamic Devices

Define NETEX host adapter subchannels by issuing SET RDEVICE commands. The SET RDEVICE command dynamically defines the NETEX host adapter subchannels to the VM/ESA environment. The following is an example CP SET RDEVICE command that dynamically defines the NETEX host adapter subchannels.

```
SET RDEVICE 05C0-05DF TYPE UNSUPPORTED DEVCLASS SWITCH
```

Refer to the IBM publication *VM/ESA CP Command and Utility Reference (SC24-5519)* for more information describing the SET RDEVICE command.

Note: Devices added using the SET RDEVICE command are not preserved across IPLs. StorageTek recommends adding an RDEVICE statement to the system configuration file for the host adapter to preserve devices across IPLs. See "Static Devices" for more information on the RDEVICE statement.

IOCP Generation Considerations

For Bus/Tag Channel Protocol Host Adapter Connections

If the processor H280 is being installed on requires an IOCP Generation, the HYPERchannel adapter subchannels should be defined as follows:

```
CNTLUNIT CUNUMBR=ccc , PATH=pp , SHARED=N , UNIT=3705 , UNITADD=( bbb , nn ) , PROTOCOL=D
IODEVICE ADDRESS=( bbb , nn ) , UNIT=BSC1 , CUNUMBR=ccc , ADAPTER=BSCA , TCU=270x
```

where:

ccc = Control Unit Number
 pp = Channel path the adapter is on
 bbb = Base address of the adapter or beginning subchannel address
 nn = Number of subchannels defined

Note: For PB22x/PB225 DX host processor adapters, specify PROTOCOL=D (DCI) on the CNTLUNIT definition unless this processor has data streaming protocol enabled in its profile. In that case, specify PROTOCOL=S (3.0 MB data streaming) or PROTOCOL=S4 (4.5 MB data streaming) for the host interface. If defining data streaming protocol, then UNIT=3745 should also be specified.

For ESCON Channel Protocol Host Adapter Connections

Please refer to the PB250 ESCON Host Controller Interface Installation and Reference Manual or PB251 ESCON Host Controller Interface Installation and Reference Manual for additional information

This section provides information on the following topics:

- CNTLUNIT and IODEVICE statements
- ESCON
- Boundary requirements

- Data conflicts
- Multiple operating systems/channels
- EMIF configuration

CNTLUNIT and IODEVICE Statements

Specify up to sixteen CNTLUNIT and IODEVICE statements for each PB250 or PB251 interface. Each CNTLUNIT and IODEVICE statement corresponds to a control unit profiled in the PB250 or PB251. If the DXU has multiple PB250 or PB251 host interfaces, specify up to sixteen CNTLUNIT and IODEVICE statements for each PB250 or PB251 in the DX unit.

ESCON

The PB250 or PB251 must be defined on an ESCON CNC (type “S”) channel.

The most common problem users have when installing the PB250 is correctly defining the System Generation file. Before configuring an EMIF environment, review the following documents:

“Input/Output System Generation” in the *PB250 ESCON Host Controller Interface Installation and Reference Manual* or *PB251 ESCON Host Controller Interface Installation and Reference Manual* and the associated example in Appendix C “System Generation Examples” in these documents.

StorageTek Network Systems Group applications (for example, RDS, NETEX and TCP/IP) do not share ESCON host device addresses. The PB250 and PB251 maintains these conventions.

Boundary Requirements

There are no boundary requirements regarding the base address of the PB250 or PB251. All 256 possible device addresses may be attached to the same control unit or split between the control units. The same device address may not be attached to more than one control unit.

Data Conflicts

Disable data conflicts for proper NETEX operation.

Multiple Operating Systems/Channels

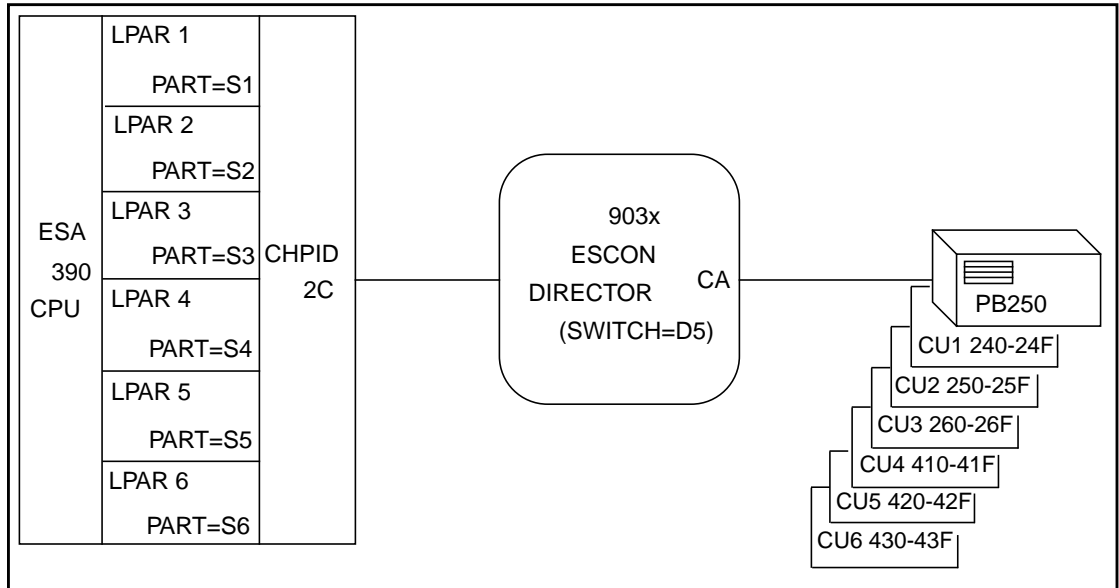
A single PB250 control unit and the associated devices cannot be shared between multiple operating systems or a single operating system with multiple channels (without an ESCON Director). However, a single PB250 or PB251 with multiple control units defined can be shared between multiple systems (each using a unique control unit) using an ESCON director or an ESCON EMIF channel.

EMIF Configuration

In an EMIF configuration, use the PART= parameter in the I/O gen process to limit the device access to the specific logical partition (LPAR) that owns the control unit and devices (For HCD, only attach the devices to the correct LPAR). ESCON establishes a logical path between the processor and the control unit that attaches devices that are defined to the LPAR. If the device access is not limited to the correct LPARs, then control unit and device addresses may be inadvertently shared between multiple operating systems, in violation of the previous

restriction.

The following configuration shows a system generation for the PB250 operating in an EMIF environment with six logical partitions. Each logical control unit profiled within the PB250 should have its own pair of CNTLUNIT and IODEVICE definitions.



The following definition statements provide the input for the Input/Output Configuration Program (IOCP) for the configuration shown above.

```

*           Define CHPID
* -----
          CHPID PATH=2C,TYPE=CNC,SHARED,SWITCH=D5
*           Begin statements for PB250
* -----
          CNTLUNIT CUNUMBR=240,PATH=(2C),UNIT=3745,UNITADD=((40,16)),
          LINK=(CA),CUADD=1
          IODEVICE CUNUMBR=240,ADDRESS=(240,16),UNIT=3745,UNITADD=40,
          ADAPTER=CA1,PART=S1
* -----
          CNTLUNIT CUNUMBR=250,PATH=(2C),UNIT=3745,UNITADD=((50,16)),
          LINK=(CA),CUADD=2
          IODEVICE CUNUMBR=250,ADDRESS=(250,16),UNIT=3745,UNITADD=50,
          ADAPTER=CA1,PART=S2
* -----
          CNTLUNIT CUNUMBR=260,PATH=(2C),UNIT=3745,UNITADD=((60,16)),
          LINK=(CA),CUADD=3
          IODEVICE CUNUMBR=260,ADDRESS=(260,16),UNIT=3745,UNITADD=60,
          ADAPTER=CA1,PART=S3
* -----
          CNTLUNIT CUNUMBR=410,PATH=(2C),UNIT=3745,UNITADD=((10,16)),
          LINK=(CA),CUADD=4
          IODEVICE CUNUMBR=410,ADDRESS=(410,16),UNIT=3745,UNITADD=10,
          ADAPTER=CA1,PART=S4
* -----
          CNTLUNIT CUNUMBR=420,PATH=(2C),UNIT=3745,UNITADD=((20,16)),
          LINK=(CA),CUADD=5
          IODEVICE CUNUMBR=420,ADDRESS=(420,16),UNIT=3745,UNITADD=20,
          ADAPTER=CA1,PART=S5
* -----
          CNTLUNIT CUNUMBR=430,PATH=(2C),UNIT=3745,UNITADD=((30,16)),
          LINK=(CA),CUADD=6
          IODEVICE CUNUMBR=430,ADDRESS=(430,16),UNIT=3745,UNITADD=30,
          ADAPTER=CA1,PART=S6
* -----

```

Installation Procedure

The following steps must be performed to install and obtain a working NETEX subsystem. Some steps may already be done and can, therefore, be skipped.

1. Backup the current production system. This ensures a starting point in case of catastrophic mistakes.
2. Define the local HYPERchannel adapters. Add the required definitions to define the HYPERchannel adapters to the VM system. They should be defined as follows:

```
RDEVICE ccuu-ccuu TYPE UNSUPPORTED DEVCLASS SWITCH
```

On new installations, ensure that the I/O generation gives the adapter address a one-to-one logical to physical mapping.

3. Create space for the NETEX Discontiguous Shared Segment (DCSS). This optional portion is installation-dependent. Use the DEFSEG and SAVESEG commands to

define and save the shared segment.

The DEFSEG DSSNETEX command has the format:

Command	Parameters
DEFSEG	DSSNETEX

The SAVESEG DSSNETEX command has the format:

Command	Parameters
SAVESEG	DSSNETEX

See the appropriate IBM manual - *VM/ESA CP Command Reference* for definitions of the commands and their parameters.

4. Regenerate your CP nucleus. If you are adding RDEVICE statements to HCPRIO to define the NETEX host adapter connections, then HCPRIO must be assembled and the new CP nucleus may be generated. Use whatever means your installation uses to accomplish this task. Once this is complete, the new system will have to be IPLed before these changes are in place, however, some of the following steps may be still be performed
5. Define the NETEX and PAM sender virtual machines.
 - a. Update the VM directory. The NETEX virtual machine must be defined. Refer to the example provided below for the necessary directory statements.

```

USER NETEX NETEX 3M 16M BG
  ACCOUNT *NETEX* *NETEX*
  OPTION ECMODE MAXCONN nnnnn
  IPL CMS
  IUCV ANY
  CONSOLE 01F 3215 T secuser
  SPOOL 00C 2540 READER A
  SPOOL 00D 2540 PUNCH A
  SPOOL 00E 1403 A
  LINK MAINT 190 190 RR
  LINK MAINT 19E 19E RR
  MDISK 191 3330 cyl num volser mm passwords
  MDISK 192 3330 cyl num volser mm passwords
  MDISK 192 3330 cyl num volser mm passwords
  MDISK 193 3330 cyl num volser mm passwords
  MDISK 293 3330 cyl num volser mm passwords
  (the following are example subchannel dedicate statements)
  DEDICATE 140 140
  DEDICATE 141 141
  (plus all additional subchannels available to NETEX)

```

The virtual machine class must be "B" and "G". (NETEX uses "MSGNOH" which requires class B). Either include ATTACH statements into the startup exec after NETEX is installed, or set up a procedure to autolog and then ATTACH the devices to NETEX (assuming NETEX runs from the same service machine). Note that the virtual address must equal the real address on the ATTACH statements.

Also, the IUCV option is required (this is how the virtual machines communicate

with NETEX). The MAXCONN operand defines the maximum number of IUCV paths that may be established concurrently with NETEX. This is essentially the number of sessions that NETEX will support. A number between 1 and 65,535 may be coded for nnnnn.

The virtual machine size is variable. The size depends on the number of concurrent connections and the size and rate of the data blocks being sent on the network. The NETEX nucleus takes approximately 200K bytes and the rest of the virtual machine memory is buffer space, trace tables, and control block storage. The maximum virtual machine size is 16 megabytes. A virtual machine in the 3 to 4 megabyte range is average. This may have to be changed once the uses of NETEX have been determined. If necessary, performance of the NETEX virtual machine may be improved by using CP commands such as SET SHARE or SET QUICKDSP.

The 191 minidisk will contain the NETEX text files, startup execs, maclibs, txtlibs, and the NETEX IPLable nucleus. The minidisk requirements are as follows:

MDISK	Usage	1K Blocks
191	NETEX Text/Nucleus	4000/550*
192***	NETEX Source	7000
193**	BFX Source	1800
292***	NETEX Service	1200
293**	BFX Service	1000
191 or 192	NETEX Help files*** (you choose disk)	1400
191 or 192	PASCAL configuration Manager*** (you choose disk)	1500
* Nucleus requires approximately 550 blocks		
** When BFX is also installed		
*** Optional		

The 192 minidisk is optional and will contain all of the NETEX source, macro and copy files.

The 292 minidisk is optional and is used for updates to the base product on the 192 disk.

The 193 minidisk is used for BFX source code, text, and modules, if BFX is to be installed.

The 293 minidisk is optional and is used for updates to the BFX base product on the 193 minidisk, if BFX is installed.

A series of NETEX HELP files is provided on the distribution tape. These files may be unloaded to the 191 or 192 minidisk (or optionally, not unloaded) to provide HELP information for NETEX messages and return codes. Make sure to add the size of the HELP files when determining disk size. For more information on the HELP facility, refer to the CMS User's Guide.

Similarly, the PASCAL configuration manager files are also provided on the tape and may be unloaded to either the 191 or 192 disk (or optionally, not unloaded if

only the NTCROUTE statements are used).

- b. Define the PAM sender virtual machine using the following example:

```

USER NTXPAM NTXPAM 1M 2M G
ACCOUNT *NTXPAM* *NETEX*
IPL CMS
CONSOLE 3215
SPOOL...009
.
\
\
MDISK 191...

```

6. **IUCV authority.** The directory must be further modified to allow whichever CMS users that desire NETEX services to access them. This is accomplished by adding the IUCV control statement to the directory entries of these users. Also, the MAXCONN nnnnn option must be added to the OPTION directory control statement. The IUCV statement determines which virtual machines the user can access. At a minimum, you must code the NETEX virtual machine ID. You may also code ANY or a list of machines that you desire to access. The MAXCONN nnnnn option defines the maximum number of concurrent NETEX sessions that this user may establish. Establishing more than one concurrent NETEX session is a complex procedure that should not be attempted by the average user. It is recommended that this parameter be set to "10."

The following steps pertain to installation and generation of the NETEX SCP, CMS/NETEX DCSS, NETEX TXTLIB user interface, the configuration file and the PAM sender virtual machine.

1. **LOGON to the NETEX virtual machine.** The minidisks must be formatted first. The 191 disk must first be formatted in the usual way (FORMAT 191 A BLKSIZE bbbb where bbb is a standard CMS blocksize), and then formatted a second time to allocate space for the NETEX nucleus. Perform the second formatting step as follows:

```

FORMAT 191 A nn (RECOMP

```

The "nn" parameter is the number of cylinders to be made available for CMS usage (if you are using FBA DASD, the number of blocks should be substituted). The space requirement by device type is illustrated in the following table.

Devtype	191	192	193	292	293	191 Recomp
3330	24	30	10	8	6	20
3350	12	15	5	4	3	10
3370	12000	14000	4000	3600	2400	9612
3375	16	20	8	6	5	14
3380	11	14	4	3	3	9
3390*	11	14	4	3	3	9

*PASCAL configuration manager files add three 3390 cylinders

2. **Format the other minidisks.** This step is optional and only required if the optional NETEX/BFX minidisks exist. Format the disks just as you would format any other newly-acquired CMS minidisk using a standard CMS blocksize.
3. **Load the NETEX distribution tape.** Attach a tape drive to the NETEX virtual machine as 181 and issue the following command:

```
TAPE REW
TAPE LOAD * * A
```

After the first files have been loaded, issue the following commands:

```
ACC 191 C
H280LOAD
```

You will then be prompted concerning what parts of NETEX you want loaded and where they should reside. Once the H280LOAD exec has completed, issue the following command:

```
ACC 191 A
```

4. If there is a service tape supplied with the base tape, install the service tape at this time.
5. **Update the NETEX Root.** If all three of the following conditions are met, you may skip this step:
 - a. The Configuration Manager will be used for all routing information.
 - b. No changes to the NTCROOTG macro defaults are desired.
 - c. The local host name is specified in the HOST NAME= initialization statement.

(See step 11 and “Installation Statements” on page 167 and “Configuration Manager Statements on page 213 in the H280 NETEX Software Reference Manual for more information.) The NETEX Root is an installation dependent module that defines the NETEX virtual machine environment. Refer to the “Installation Statements on page 167 defining the NTCROOTG, NTCROUTE, and NTCADAPT macros.

These macros must be coded into module NXVROO. Two sample NXVROO files have been provided on the NETEX 191 disk. One is named NXVROO MINIMUM and the other is NXVROO SAMPLE. Create a NXVROO ASSEMBLE file from either of these files and add the appropriate definition statements. Once this module has been coded to meet the configuration requirements, assemble it using the following command:

```
VMFHASM NXVROO NXVCTL
```

If the assembly completes without error, proceed to the next step, otherwise correct whatever errors were encountered and reassemble the file. Ignore the messages that identify VM macro libraries that could not be found.

6. **Generate the NETEX nucleus.** The NETEX nucleus generation is invoked through the use of an exec. Before invoking this exec, you need to know the cylinder address of the start of the nucleus portion of your 191 minidisk. This number was used on the “FORMAT 191 A nn (RECOMP)” statement. The starting cylinder is “nn”. The NETEX

nucleus writer needs to know the address so that the NETEX nucleus can be saved on DASD. Enter the following command:

```
GENNET
```

When prompted by the following questions, respond as follows:

```
NXVIPL452R System disk address:      191
NXVIPL453R Rewrite the nucleus?     YES
NXVIPL454R Nucleus Cyl/Blk address:  nnn (from RECOMP)
```

The nnn value will be the same value specified for the "FORMAT 191 A nn (RECOMP" command or this value can be obtained by issuing a "Q DISK" command and then using the cylinder value displayed for the 191 mini-disk.

If any message other than "Nucleus successfully written to DASD" is presented, the operation failed. Carefully recheck your responses and the formatting of the 191 disk.

If you now enter "CP CLOSE PRT", the load map will be printed. Since there is currently no support in IPCS/E for NETEX, it is not necessary to save the load map on the IPCS system. It is advisable, however, to save a copy of the load map somewhere. You may now re-IPL CMS.

7. Change the CMS DCSS interface options (optional). The CMS DCSS interface generation options may now be changed. This consists of a single option: the virtual machine ID of NETEX. It is set to NETEX by default. If this ID is satisfactory, proceed to the next step. If you wish to change the ID, you must EDIT file NXUOPT SAMPLE on the NETEX 191 disk, change the UID= parameter to the virtual machine ID you gave to NETEX, file it away with a filetype of ASSEMBLE, and reassemble it with the following command:

```
VMFHASM NXUOPT NXUCTL
```

If an error occurs during the assembly, make the required corrections and reissue the command. When the assembly completes without error, issue the following command to regenerate the CMS NETEX TXTLIB:

```
GENTXT
```

This will rebuild the CMS interface TXTLIB so that the above change can be incorporated into the DCSS about to be built.

Note: NXUOPT may be linked into a user program (using INCLUDE) to change the default NETEX virtual machine name for that program (as opposed to changing the default for all by altering NXUOPT).

8. Generate the DCSS (optional).
 - a. If the DCSS is named something other than DSSNETEX (not recommended), then it will be necessary to modify the GENDSS exec by changing all occurrences of DSSNETEX before continuing with the DCSS generation. Afterward, edit the distributed NXUSSNM SAMPLE file, change the SSNM= parameter to the correct DCSS name, file it away with a filetype of ASSEMBLE, and reassemble it with the

following command:

```
VMFHASM NXUSSNM NXUCTL
```

When the assembly completes without error, issue the following command to regenerate the CMS NETEX TXTLIB:

```
GENTXT
```

All programs using NETEX (including the distributed NXVCF MODULE and the exerciser programs) **must** be linked using NXUSSNM INCLUDE into the program if the shared segment is to be named something other than DSSNETEX. (Modify GENCF exec to relink the NXVCF MODULE.)

- b. To generate the DCSS, you must now logon to a virtual machine that has class E authority for execution of the CP SAVESEG command unless NETEX was given this authority in the directory. If this is the case, your only requirement is to provide enough virtual storage. You must define your virtual machine storage size to be large enough to load the DCSS at its desired origin. That is, if the DSS must reside at location x'400000', then enter DEFINE STOR 5008K (5008K is the minimum - more storage may be defined). This is the 4096K (x'400000') plus the 12K of DCSS. After defining the storage size, reIPL CMS. If you do not have access to the NETEX text files, you must link to the NETEX 191 disk and access it as an extension to your A disk as follows:

```
CP LINK vmid 191 vvv RR password  
ACCESS vvv B/A
```

Enter the following command to load and generate the NETEX DCSS:

```
GENDSSXA
```

Prior to executing GENDSSXA, an appropriate VM DEFSEG command must have been entered to define the shared segment. Refer to the VM/ESA CP Command Reference manual for information about this command and its parameters.

The exec will prompt you for the start address of the shared segment and then load and save the system. Once this is complete, you may redefine storage to the smaller amount more suitable to CMS and then re-IPL CMS.

Note: The START address may have to be 4K less than that defined with DEFSEG. Also, the associated routines within the DCSS only execute in 24 bit mode, therefore these routines must be defined to reside below 16M.

9. Move the user libraries to a public disk (optional). Move the NETEX TXTLIB and NXUMAC MACLIB on the NETEX 191 minidisk to a common minidisk like the CMS 190, or CMS 19E disk (or any public minidisk at your location). NETEX is a program product and appropriately the NETEX libraries should occupy the same minidisk as any other program product would. This step can be accomplished with the normal CMS COPYFILE command.
10. If you are not going to use the configuration manager (and are using NTCROUTE and NTCCADAPT statements instead), go to step 11. If you are going to use the configuration manager, perform this step.

- a. Set up the PAM sender virtual machine. This virtual machine ID will have to be specified in the CONFIG initialization statement (or CFNM parameter if you use NTCROOTG).

The PAM sender may be set up as a class G user virtual machine. (IPL CMS, etc.). It must run NXVCF exec, NXVCF MODULE, CONFMANG exec, and CONFMANG MODULE. The directory must include the IUCV control statement to allow IUCV communications to NETEX.

You probably will want to keep the NETEX configuration file on the PAM sender A disk. When the configuration file is processed, the configuration manager output file (called PAMFILE OUTPUT unless the CONFMANG exec was changed) will be created on the A disk.

The NXVCF module and the NXVCF exec (both on the NETEX 191 disk), along with the CONFMANG exec and the CONFMANG MODULE must be accessible to this virtual machine (for example, by linking to NETEX 191). If you changed the configuration manager output file name from PAMFILE OUTPUT to some other name (by changing the CONFMANG exec), you must edit the NXVCF exec to change the corresponding filedef.

If you use AUTOLOG in the CONFIG initialization statement (or CFTP=AUTO in NTCROOTG), you may want to add &STACK LOGOFF to the end of the NXVCF exec. Otherwise, the PAM sender virtual machine will stay logged on after sending the PAM file to NETEX. (Do not put NXVCF in PROFILE exec.)

- b. Create the network configuration file (if not already created), using the configuration statements described in "Configuration Manager Statements" on page 213 in the H280 Software Reference Manual. This file must be composed of 64-character fixed-length records. An example file is shown at the end of "Configuration Manager Statements."
- c. Execute the configuration manager to create the PAM file. You will need access to the distributed CONFMANG exec and the CONFMANG module. Start the configuration manager using the CONFMANG exec that is supplied. This exec sets up filedefs and runs the CONFMANG module. To run the CONFMANG exec, enter the following:

```
CONFMANG filename filetype filemode
```

where filename, filetype, and filemode identify the configuration file that you created in the previous step.

The following shows a copy of the CONFMANG EXEC:

```
&TRACE OFF
FILEDEF CONFFILE DISK &1 &2 &3 (RECFM F LRECL 64
FILEDEF INPUT TERMINAL (RECFM F LRECL 80 LOWCASE
FILEDEF OUTPUT TERMINAL (RECFM V LRECL 132
FILEDEF OUTFILE DISK PAMFILE OUTPUT (RECFM F LRECL 1024 BLOCK 1024
CP TERM CHARDEL OFF
CONFMANG
```

- NCT CONFFILE

This command starts the configuration processor using the input file you specified

when calling the CONFMANG exec. If you receive errors as a result of this step, enter EXIT to leave the configuration manager, correct the errors in your configuration file, then proceed from step 10b.

The configuration manger will automatically generate all possible loopback paths (paths out one local adapter and in another). The host name given to the PAM file with all the loopback paths is NTLXCL. A PAM file is also created for each individual loopback path. The host name given to each one of these is NTLXCLnn, where nn is the range 00-99. NTLXCL may be selected or deselected.

Note: A warning message (CONF060E) is issued if there is only one local adapter. (No path from host LCLHOST to NTLXCL.)

- If all hosts and groups defined in the configuration statements are desired as destinations, omit this step. If only selected hosts are to be defined to NETEX, (allowing them to be used as destinations), list them to NETEX using one or more SELECT commands. A group name may also be specified in a SELECT statement as a HOSTNAME. If hosts within the group will be referenced individually by NETEX user programs, these hosts must also be specified in SELECT statements. The SELECT command has the format:

```
SELECT hostname hostname...
```

where hostname is the NETEX hostname (identified in the configuration statements) for each NETEX to be defined. NTLXCL may also be SELECTed to generate local loopback paths. If the SELECT command is omitted, or if SELECT * is entered, all hosts are used.

- If any implicitly or explicitly SELECTed hosts are to be DESELECTed, list them using one or more DESELECT commands. The DESELECT command has the format:

```
DESELECT hostname hostname...
```

where hostname is a NETEX hostname or group name defined in the configuration file, or NTLXCL.

- MAKEPAM hostname OUTFILE

```
MAKEPAM hostname OUTFILE
```

where hostname is the name of the local host. The local host is where the binary file produced by this process would be used. All paths will be displayed. Assuming the CONFMANG exec has not been changed, the output of this step is placed in a file called PAMFILE OUTPUT.

- EXIT

This exits the configuration manager program.

- d. If you selected IUCV in the CONFIG initialization statement (or CFTP=IUCV in NTCROOTG), perform this step. If you selected AUTOLOG in the CONFIG statement (or CFTP=AUTO in NTCROOTG), make sure the PAM sender virtual machine is logged off, then go to the next step.

Logon to the PAM sender virtual machine. Execute the NXVCF exec by issuing:

```
NXVCF
```

Then disconnect by issuing:

```
#CP DISC
```

NETEX will issue an SMSG to this machine when the configuration file is needed, prompting it to read the PAMFILE from disk and send it to NETEX through an intra-host connection.

- e. Insert the CONFIG statement into the NETEX initialization file (on the NETEX virtual machine), or set up the NTCROOTG values to indicate CFLG=Y, CFTP=xxxx, CFNM=xxxx, and CFPW=xxxx. For more information, refer to the CONFIG initialization statement description in "Installation Statements" on page 167 in the H280 Software Reference Manual.
11. **Initialization File.** (Required if using Configuration Manager.) If the installer wishes to change NETEX defaults using the Initialization statements (described in "Installation Statements on page 167 in the H280 Software Reference Manual) create an initialization file using the initialization statements, and punch the file to the reader using the noheader option. This must be the first class A file in the reader. It may be convenient to insert the PUNCH command into the NETEX exec so that the initialization file is there whenever NETEX is started. A file INITPARM SAMPLE A is provided. If the Configuration Manager is being used, then this file must contain a CONFIG and a HOST statement.
12. **IPL NETEX.** Attempt the IPL of NETEX. If DEDICATE statements were placed in your directory entry and there were no "device unavailable" messages when you logged on, then you may bring up NETEX at this point. Otherwise, it will be necessary to VARY ONLINE, and ATTACH the desired host adapter subchannels to NETEX. An exec procedure called "NETEX" has been provided. If the NETEX virtual machine has been provided with class B authority, you may edit this exec and insert the appropriate VARY and ATTACH commands where the comments direct you.

Once all the subchannels are available and DEDICATED or ATTACHED, (or the provision for that happening during the invocation of the NETEX exec has been made), enter the following command:

```
NETEX
```

You will be prompted by message NXVIPL450R to "Enter IPL Parameters". Currently, the only IPL parameter supported is STOP. This is strictly a debug option and loads a wait PSW after NETEX has been loaded so that special VM debugging or tracing commands may be set, then "SYSTEM RESTART" resumes the NETEX initialization. At this time, a null entry, or anything other than STOP should be entered.

If no initialization file was provided, NETEX will issue the following message: "INITIALIZATION FILE NOT PRESENT".

NETEX should initialize itself and then produce message "NXVIN1001I NETEX Initialization Complete on host hhhhhhhh at hh:mm:ss on mm/dd/yyyy" informing you that it is initialized and ready. If this message is not produced, then something is wrong. Possibly the adapters are not ready or attached, or the generation of file NXVROO was not correctly done. Carefully recheck all of your previous steps.

This completes the installation of the NETEX product. It can now be used by any CMS user (provided NETEX is IPLed of course). Support is not provided for any virtual machine other than a CMS user.

Changing the Network Configuration

To change the configuration after NETEX has been initialized, perform the following procedure:

1. Make all necessary changes and/or additions to the configuration statements.
2. Execute the Configuration Manager to create a new PAM file.
3. Issue the LOAD NCT command.

The LOAD NCT command will work only if CONFIG=YES was specified in the initialization file or the NTCROOTG macro was set to default to CFLG=Y. Current connections will not be affected by the results of this command. Local configuration data (i.e. local adapter addresses and subchannels) will be ignored in any PAM received via the LOAD NCT command.

The LOAD NCT command will fail if AUTOLOG is selected and the PAM sender virtual machine is logged on. If this occurs, logoff the PAM sender virtual machine and retry. It will also fail if IUCV was selected and the PAM sender virtual machine is not running the NXVCF exec.