



---

**H140IP NetEx/IP™**  
**for Windows NT™ and Windows 2000™**  
**x86 Systems**

**Release 6.0-6.6.0**

---

**Memo To Users**  
December 13, 2002

# Introduction

---

This document provides information for the following product:

**Product Number:**

H140IP

**Product Description:**

NetEx/IP for Windows NT and Windows 2000 x86 Intel-based processors.

The H140IP product implements host based NetEx/IP for Windows NT and Windows 2000 running on 32-bit Intel x86 platforms. This product has been tested with Windows NT Workstation 4.0 SP6, and Windows 2000 Professional SP3, using IP over 100BaseT Ethernet.

## Support

Support for NetEx and associated products is available via:

- 24x7 telephone at (800) 854-0359
- the worldwide web: [www.netex.com/nesi/support/](http://www.netex.com/nesi/support/)
- email: <mailto:support@netex.com>

An on-line version of the current Memo To Users and Reference Manual may be found at:

[www.netex.com/support/](http://www.netex.com/support/)

## Related Publications

The following book provides more information about this software product:

- *NetEx/IP for Windows NT and Windows 2000 Systems Software Reference Manual*
- *“C” Configuration Manager and NetEx® Alternate Path Retry (APR)*

## Prerequisites

- Windows NT version 4.0+, Windows NT Server version 4.0+ or Windows 2000 Professional SP3 installed and running on an Intel-based processor.
- The privileges to create directories and a system Service.
- A PC network interface card (NIC) installed and fully supported by Windows NT, Windows 2000 TCP/IP.
- An encrypted Software Key obtained from Network Executive Software that licenses the current release of the H140IP product on the Windows system on which it is to be installed. The MAC address of an installed network interface card must be provided to NESi in order to obtain a valid Software Key.

# Service Notes

---

- **IMPORTANT NOTE** - Performance problems have been observed in NESi's lab when running eFT143 over H140IP with protocol 4 mode being selected in H140IP. Avoid using protocol 4 with eFT143 until a fix is available from NESi.
- The user configuration files, 'site\ntx\_default' and 'site\pam\_default', which by default reside in the C:\NESI\netex installation directory, should be backed up or copied to another directory prior to performing the software configuration if you are updating from a prior release of H140IP. Restore these files to their respective locations after completing the new installation.
- NetEx/IP is designed to run over standard IP networks. H140IP NetEx/IP for Windows NT and Windows 2000 supports IP products developed to Microsoft Windows Winsock socket APIs. The current version of NetEx/IP on Windows NT and Windows 2000 runs as a Winsock 2 application per the following Winsock specification:

Microsoft Windows Sockets Version 2, which ships with Window NT and Windows 2000 and is a superset of the widely deployed Windows Sockets 1.1 interface. It uses the WS2\_32.lib library that expects exclusively 32-bit arguments.
- The NetEx/IP modules installed will run as Windows NT or Windows 2000 32-bit applications. The NETEX-IP Server Log viewer program runs as a WIN32 application. The NETEX-IP ntx Server, and NetEx/IP utility and test programs run as Windows NT or Windows 2000 32 bit console (text) applications. The ntx Server will be initiated by a system Service called the NETEX-IP Server Service, "ntxIPServer" (see **Appendix B: Internal Functions** for more information on the NETEX-IP Server modules).
- There is a known problem with software keys generated based on the MAC address generated by the genMAC utility on NT or 2000 systems with more than one Ethernet interface. Please refer to **Appendix C: Obtaining Platform Finger-print via genMAC** for additional information.
- Windows networking (I.e., IP address, DNS server address, domain name, default gateway, etc) must be configured before attempting to start NetEx. Since NetEx is a system service that starts automatically, once Windows networking is configured, the machine will need to be rebooted. If Windows networking is not correctly configured, NetEx may not be able to access the DNS server, so will not be able to determine routes to other NetEx hosts.

## Special Features

### IP Support

NetEx release 6.0-6.6.0 provides support for communicating over standard IP networks.

At initialization time (and when LOAD NCT is done) all remote host GNA addresses are resolved to IP addresses via DNS lookups. These addresses comprise the HYPERChannel *toGNA* address, as defined in the NetEx NCT by the NETADDR (*uu*) and SMGDREF (*ss*) parameters. If the DNS lookup is successful, an entry is dynamically created in the routing table that maps the *toGNA* and *toIP* addresses. Subsequent searches of the table on behalf of new messages will find this new entry, thus avoiding additional DNS lookups.

Remote host addresses that are not in the local NCT, but that may send messages to the local host, can also be added to the lookup table via the SET IPRROUTE command.

## Network Configuration Table

No changes were made to either the Network Configuration Table (NCT) or the Configuration Manager in support of NetEx/IP on Windows NT and Windows 2000. The mechanism for adapting the NCT to support IP networks is as follows:

- Use the TRUNK statement to define the IP network.
- Use the T0 parameter on the ADAPTER statement(s) of the NetEx/IP host to indicate connectivity on the IP network
- Use the ADAPTER statement to define the Network Adapter
- Use the NETADDR and SMGDREF parameters on each NetEx/IP ADAPTER statement to identify a unique network device address

The following commands have been added to support the new IP addressing features:

- SET IPROUTE
- DISPLAY IPROUTE
- CLEAR IPROUTE

Details of the format and effect of these commands may be found in software reference manual.

Three new NTX\_DEFAULT commands have also been implemented: IPRECV, IPSEND, IPCHKSUM. Refer to **Installation Notes** of this document for details.

## Code Conversion Table

The code conversion table can now be modified without a recompile.

Customers can execute the command “C:\NESI\netex\cmds\cctbld.exe” to create a text file version that may be edited. The default location for the file is **C:\NESI\netex\site\cctable**.

If, however, the customer creates the file in an alternate location, the variable “cctable” must be added to NTX\_DEFAULT along with the fully qualified pathname of the file.

NetEx checks for the existence of a code conversion file during startup. If an alternate code conversion table does not exist, NetEx will use the built-in default table.

# Installation Notes

---

This section provides complete installation procedures for the H140IP Windows NT and Windows 2000 NetEx/IP product.

## Before You Begin

Before you begin installation, note the following:

1. Make certain that you have all of the items listed in **Prerequisites** in the **Introduction**.
2. Customers must obtain a software KEY from NESi prior to running the H140IP software.

Customers must contact NESi customer support with the customer site name, MAC address of the NetEx host (see **Appendix C**), and the NetEx/IP product designator (e.g., H140IP). NESi customer support will supply the necessary key once this information has been received. The customer needs to place this key into the NESikeys.ini file as discussed later in this section under **Configuration of H140IP**. On Windows NT and Windows 2000, this should be done prior to installing the product since the install program automatically installs the NETEX-IP Server Service “ntxIPServer”, which starts the NETEX-IP ntx Server. If this software key has not been installed or is invalid, the log file, ntx.log, which may be viewed by the NETEX-IP ntx Server Log viewer subsequent to the installation, will contain an error message indicating that the Server failed to start.

3. If you have previously installed NetEx/IP on your NT or 2000 system and are ready to install a new release, terminate any currently running NetEx/IP processes prior to installing a new distribution.
  - Terminate the NETEX-IP Server Service. The NETEX-IP Server Service, ntxIPServer, starts automatically each time the Operating System is initialized. Use the "NETEX-IP Delete Service" icon in the Netex folder to stop the "NETEX-IP Server Service."

Other methods that may be used to stop the NETEX-IP Server Service include:

Windows NT – Go to Start menu, Settings, Control Panel, Services tab. locate the NETEX-IP Server and verify the status is blank. If the status indicates “started”, highlight the service and click the STOP button. Wait for the status to indicate the service is stopped.

Windows 2000 – Go to Start menu, Setting, Control Panel. Click on the Administrative Tools icon, then the Services icon. Locate the “NETEX-IP Server” service and verify that the status is blank. If the status is “Started”, right click and select “Stop” from the menu then wait for the status to clear.

or:

In the C:\NESI\netex directory, where **C:\NESI** is the NetEx/IP default install directory, enter:

```
C:\NESI\netex\setup delete
```

or:

Use “Start->Programs->Netex->NETEX-IP Command Prompt” to invoke the NetEx/IP operator interface command:

```
KILL NETEX
```

- Verify that the NETEX-IP ntx Server has terminated by bringing up “Task Manager”. When the NETEX-IP ntx Server is running, its image name displayed by Task Manager is “ntx.exe”. The image name of the parent ntxIPServer is “ntxiserv.exe”.

# Distribution Media

The H140IP NetEx product and control files are distributed on CD-ROM media.

The H140IP product distribution does not include source files. If source files are required, they will be distributed on a per request basis made to NESi Customer Support after the customer agrees to a non-disclosure agreement.

## Installation For 32-bit Windows NT and Windows 2000 x86 Environments

### Step 1. Install the Distribution

**Note:** We recommend that you remove the previous NetEx/IP release before proceeding with installation. See **To Remove NetEx/IP** on page 1.

Insert the NetEx/IP installation CD into the CD-ROM drive on your Windows NT or Windows 2000 machine.

This version of NetEx/IP requires 2.5 MB of disk space. The NetEx/IP distribution may be easily loaded onto any Windows NT or Windows 2000 system.

To install NetEx/IP on Windows NT or Windows 2000, follow the procedure below:

1. Select the “Add/Remove Programs” Applet from the Windows Control Panel. Click the “Install” button. Click “next” and the Applet will find the “Setup” application on the CD-ROM drive. Click “Finish” to start the install.
2. Select the destination directory and folder.
3. The install program will then prompt that it is creating a “Netex” Folder, copying the files, and adding icons to the “Netex” Folder.
4. The “Netex” Folder will include the following icons:
  - **NETEX-IP Command Prompt** Starts up the NETEX-IP Operator Interface program.
  - **NETEX-IP Delete Service** Deletes the NETEX-IP Server Service. It simply runs the “\NESI\netex\setup delete” command.
  - **NETEX-IP Server Log** Allows users to view the NETEX-IP Server log file.

### Step 2. Verify that the ntx Server is Started

NetEx/IP Setup will install and start a system service called the NETEX-IP Server. To verify that the service is running, start the “NETEX-IP Server Log” application and verify that the line “NETEX Initialization Complete” is at the end of the log. If this line is not present, check the log for an error message that may indicate why this service failed to start. For example, the following message will indicate that a valid encrypted Software Key for the current release of H140IP does not exist in the NESi License Key file:

```
ntx license: Product 'H140IP' not licensed to run on this platform
```

By default, the NETEX-IP Server service will start each time the system is started/re-started. For more information on this service, see **Appendix B: Internal Functions**.

# Configuration of H140IP

Once NetEx/IP has been successfully installed, various configuration files must be updated. The following instructions concern updating the License Verification Software configuration files (*Prodconf.ini* and *NESikeys.ini*), the configuration file for NetEx (the *ntx\_default* file), and creating a Network Configuration Table (NCT) and the Physical Address Map file (PAM file).

To test and implement the configuration changes, you should stop and restart the NETEX-IP Server service via the Windows Control Panel “Services” icon as described above in the “Before You Begin” section of the **Installation Notes**.

## Step 1: Edit the ‘Prodconf.ini’ file (optional)

Each NESi software product that has integrated the License Verification Software facility now contains a product configuration file. The NetEx/IP product includes this file in its installation distribution set.

The default location for *Prodconf.ini* is **C:\NESI\netex\site**.

The default *Prodconf.ini* file shipped with NetEx/IP contains the following:

```
# Network Executive Software, Inc.  
# H140IP Netex Product Configuration file  
LICPATH      C:\Winnt\NESikeys.ini      #NESi License Key file
```

A ‘#’ character denotes a comment. Non-comment records must contain a keyword/value string. The initial version of this file contains only a single keyword/value record:

- LICPATH – this keyword defines the full path to the NESi License Key File (see Step 2).

NESi recommends that the *NESikeys.ini* file be left in the default location.

## Step 2: Edit the ‘NESikeys.ini’ file

A single NESi License Key file must reside on each system where one or more NESi products containing license support will be installed. The following guidelines apply:

- The default file name is *NESikeys.ini*.
- The LICPATH keyword/value pair in the product configuration file (see “Step 1: Edit the ‘Prodconf.ini’ file”) specifies the full path name to this file. The default is: *C:\Winnt\NESikeys.ini*.
- The systems programmer installing the software must initially create this file prior to invocation of any NetEx/IP components.
- A leading ‘#’ character in a file record denotes a comment line.
- The systems programmer installing NetEx/IP must edit this file to add a new encrypted Software Key for each NESi product. Editing the key file should be done prior to installing the product, and must be done prior to any attempt to use the product.
- The file may contain multiple keys per product due to new product releases or a change to the platform’s fingerprint (on NT and Windows 2000, this corresponds to the MAC address of a configured network card). To make the file easier to maintain over time, it is recommended that you precede each Key entry with a comment line that documents the product designator (e.g., H140IP) and release level of the product that the key is associated with. It will then be easier to delete older Keys that are no longer valid for the product.

- The following is an example of how a *NESikeys.ini* file might look after adding several Keys.

```
# Network Executive Software, Inc. Software License Key file
# Key for EFT143 N1 (4-15-01):
86481096ff6c3ebb9b34099b7e639fef
# Key for H140IP R6.3:
e0fef4aaae2aa01e3d7f35d53039612da5e4abcd05a829a4
```

### Step 3: Edit the NTX\_DEFAULT file

The file *C:\NESI\netex\site\ntx\_default* is included in the distribution and contains defaults for NetEx parameters. The default NetEx parameter values are shown in the following table. The first entry in the file defines the name of your local host. Edit the entry to reflect the name of your system as it appears in the Network Configuration Table (NCT).

NTX Parameter	Default	Definition
local	NT	The name of your host. The local host name is the same name defined in the HOST statement in the NCT and during the MAKEPAM phase of building the PAM file.
logerrors	Default	The two allowed values are “default” and “all”:  <b>DEFAULT</b>  This value logs adapter and communications errors that are uncommon. Some of these errors are normal but can occur only once every few hours.  <b>ALL</b>  This value logs all adapter and communications errors.
mbxname		This parameter is not used by NetEx/IP for Windows.
pamfile	site\pam_default	This is the name of the PAM file NetEx will use to load the initial NCT. This name should match the name specified in the Configuration Manager MAKEPAM command. The default is a file whose path is relative to the default install directory: <i>C:\NESI\netex</i> . If you create this file in a different directory, the full path file name must be specified.
ntxlogname	ntx.log	This is the name of the NetEx log file. Messages associated with the operation of H140IP NetEx are logged in this file. The default is a file whose path is relative to the default install directory: <i>C:\NESI\netex</i> . If you create this file in a different directory, the full path file name must be specified.
cctable	site\cctable	This is the name of a site modified NetEx code conversion table.

NTX_Parameter	Default	Definition
ackcredit	2	This is the number of buffers that NetEx sends without returning an explicit ack.  <b>Note:</b> More buffers may be in the process of being sent. Increasing this value has little effect on system load and may decrease NetEx throughput.
bufcnt	96	This is the number of “segment” sized buffers available for all input and output.  <b>Note:</b> This parameter should be increased to match the maximum amount of data expected to be in transit (being sent but not yet acknowledged) divided by “segment”.
connto	25	This is the initial value for CONNECT TIMEOUT
datato	300	This is the initial value for DATA TIMEOUT. In a heavily loaded system or during transfers to tape, this value should be increased to about 1000.
deadto	60	This is the initial value for DEAD TIMEOUT.
defblkln	32768	This is the default value for NRBBLKLN, if the value zero is specified.
defblkout	32768	This is the default value for NRBBLKOUT, if the value zero is specified.
defmsecsonewaydelay	0	This is the propagation delay of the network, expressed in milliseconds, and is used if there is no delay value specified in the PAM for this network path.  For Type 2 protocol connections, this value represents a fixed propagation delay that never changes.  For Type 4 protocol connections, this value represents a starting point that is used for internal bandwidth capacity calculations. However, the delay is continuously measured during each session, and if it changes, the updated value is used for subsequent internal bandwidth capacity calculations.
dreadqueue	6	This is the number of reads that NetEx has outstanding to the DRIVER. This value may need to be increased, if many very small transfers are needed.
highresmsecs	10	This is the value of the internal high resolution timer. It is used for internal rate throttling, and should not be changed.
idleto	6	This is the initial value for IDLE TIME. In networks with many errors or contention, it may help to drop this value to 2 or 3.

<b>NTX_Parameter</b>	<b>Default</b>	<b>Definition</b>
maxblkin	32768	This is the maximum NRBBLKIN value in bytes.
maxblkout	32768	This is the maximum NRBBLKOUT value in bytes.
maxkbitspersec	0	This is the maximum rate at which NetEx/IP will deliver data to the network for each network connection. If zero is specified, data will be delivered with no internal throttling. This value is only used for connections to hosts that do not have a 'rate' value specified in the PAM. This value is specified in Kbits per second.  For example, a value of 50 means 50Kbs; a value of 50000 means 50Mbs (i.e., 50,000 Kbs).
maxmbxxfer	32768	This is the maximum block that can be sent across the STREAMS pipe facility.
mbufin	5	This is the number of input blocks that NetEx will allow to be outstanding for each user. This may have to be increased for long telecommunications delays.
mbufout	5	This is the number of output blocks that NetEx will allow to be outstanding for each user. This may have to be increased for long telecommunications delays.
msglvl	immediate	This is the value that controls the verbosity of the message displays. A value must be specified as one of the following: <ul style="list-style-type: none"> <li>• immediate</li> <li>• important</li> <li>• interesting</li> <li>• moderate</li> <li>• monitor</li> <li>• debug</li> <li>• blither</li> </ul> A value of 'important' (or lower) must be specified to enable NetEx/IP session establishment messages to be recorded in the 'ntx.log' file.
numlogs	5	This value defines the maximum number of 'ntx.log' files that are saved by the 'swlog' command.
rcvratesecs	6	This is the time interval (in seconds) after which the receive rate for a network connection is recalculated. The receive rate refers to the rate at which the application is receiving data from NetEx.

<b>NTX_Parameter</b>	<b>Default</b>	<b>Definition</b>
segsize	32768	This is the maximum size of a single transmission across the HYPERchannel medium. The maximum for “A”, “N”, or “P” series is probably determined by existing NetEx programs. A common value for “A” or “N” is 16384.
sesmax	32	This is the maximum number of users active at any one time.
timer	2	This is the initial value for the watchdog timer.
dbgdata	0	This is the maximum number of data bytes to trace for any associated data blocks.
dbgmsg	0	This parameter enables or disables the tracing of HYPERchannel messages between NetEx and the network. A value of 0 turns tracing off; any other value turns tracing on.
dbgreq	0	This parameter enables or disables the tracing of user requests arriving at the NetEx protocol stack. A value of 0 turns tracing off; any other value turns tracing on.
dbgret	0	This parameter enables or disables the tracing of user responses being returned from the NetEx protocol stack. A value of 0 turns tracing off; any other value turns tracing on.
iprecv	250000	IP Receive buffer size
ipsend	250000	IP Send buffer size
ipchksum	1	Not implemented
ip1intrf	1	If true (1), one IP socket/device for all interfaces. If false (0), a socket/device for each IP interface.
device1	UDP-6950-0000UUSS	This is the device name of the IP device interface. UUSS is the NETADDR and SMGDREF specified in the NCT for the IP interface. The ‘6950’ is the UDP port.
device2	(blank – this indicates other interfaces do not exist)	This is the device name of the second network device interface.
device3	(blank – this indicates other interfaces do not exist)	This is the device name of the third network device interface.
device4	(blank – this indicates other interfaces do not exist)	This is the device name of the fourth network device interface.
The following parameters are only applicable to protocol type 4 connections:		

<b>NTX_Parameter</b>	<b>Default</b>	<b>Definition</b>
defstartkbitspersec	0	<p>This is the starting throughput rate at which NetEx/IP will attempt to deliver data to the network for each network connection. If zero is specified, data will be delivered with no internal throttling. This value is only used for connections to hosts that do not have a 'rate' value specified in the PAM or NRB.</p> <p>This value is specified in Kbits per second. For example, a value of 50 means 50Kbs; a value of 50000 means 50Mbs (i.e. 50,000 Kbs).</p>
ratedelaydecp	250 (25.0%)	<p>This is the percentage factor used to decrease the sending rate of a network connection if the round-trip delay increases. This recalculation is performed after the expiration of each interval specified by the 'rtdelayincsecs' parameter. The value specified represents a percentage multiplied by a factor of 10.</p>
rateequivph	975 (97.5%)	<p>This is the high bound of the send and receive equivalence adjustment (see 'rateequivps'). The value specified represents a percentage multiplied by a factor of 10.</p>
rateequivpl	500 (50.0%)	<p>This is the low bound of the send and receive equivalence adjustment (see 'rateequivps'). The value specified represents a percentage multiplied by a factor of 10.</p>
rateequivps	850 (85.0%)	<p>This is the percentage factor used to determine equivalence of the send and receive rates for each network connection. These rates are assumed to be equal if they fall within this percentage of each other. This is the initial value used for each network connection, and can be dynamically adjusted based on activity and performance of the network. The value specified represents a percentage multiplied by a factor of 10.</p>
rcvdataqhbytes	5000000	<p>This is the high threshold value (in bytes) for the size of the receiving NetEx DataQue for each network connection. If the size of the Data Queue exceeds this value, subsequent blocks received on the network that are greater than the highest received LRN are NAK'ed and discarded. Subsequent blocks will continue to be discarded until the size of the DataQue is reduced to the value specified by 'rcvdataqlbytes'.</p>
rcvdataqlbytes	3000000	<p>This is the low threshold value (in bytes) for the size of the receiving NetEx DataQue for each network connection. See the 'rcvdataqhbytes' parameter for the description of how this value is used.</p>

NTX_Parameter	Default	Definition
rtdelayincsecs	60	This is the interval (in seconds) used by the sending side of a network connection after which a check is made for an increase in the round trip delay.
sndratedecsecs	18	This is the interval (in seconds) used by the sending side of a network connection after which a check is made for a rate decrease (i.e. the receive rate is less than 'rateequivps' of the send rate). If an adjustment is required, the sending rate is decreased by the current value of 'sndrateps'.
sndrateincsecs	60	This is the interval (in seconds) used by the sending side of a network connection after which an attempt is made to increase the sending rate, as long as a decrease in the sending rate has not occurred during the interval.
sndrateph	500 (50.0%)	This is the high bound of the 'sndrateps' adjustment for each network connection. The value specified represents a percentage multiplied by a factor of 10.
sndratepl	10 (1.0%)	This is the low bound of the 'sndrateps' adjustment for each network connection. The value specified represents a percentage multiplied by a factor of 10.
sndrateps	100 (10.0%)	This is the percentage factor used to increase or decrease the send rate for each network connection. The send rate may be increased after the expiration of the interval specified by 'sndrateincsecs'. The send rate may be decreased after the expiration of the interval specified by 'sndratedecsecs'. The value specified represents a percentage multiplied by a factor of 10.
startratep	750 (75.0%)	This is the percentage factor used to calculate the initial send rate of each network connection. This value is applied against the maximum rate for the connection, as specified in the PAM, NRB, or by the 'defstartkbitspersec' parameter. During the course of the connection, the actual send rate may be adjusted, based on network activity. The value specified represents a percentage multiplied by a factor of 10.

**Notes:**

- The "device1" entry above ('UDP-6950-0000UUSS') is not a default value for this particular NetEx parameter. The user **must** properly define this parameter in their ntx\_default file.
- The NTX\_DEFAULT file included with the distribution does NOT contain the IP related NetEx parameters in the file. The user must enter all of those parameters in the NTX\_DEFAULT file.

## Step 4: Build an NCT

You must customize the Network Configuration Table (NCT) for your system and network. As distributed, H140IP provides a default NCT (“site\nct\_default”) and PAM file (“site\pam\_default”) that contains a single host entry for a local host named ‘NT’. The name matches the *local* parameter in the ntx\_default file.

The NCT describing your network may be created locally, or copied from a master location. The Physical Address Map (PAM) is generated using the Configuration Manager.

To create an NCT file and generate the related PAM file, perform the following tasks:

1. Use the system editor to build a network configuration description file, or copy from a central repository. The network configuration describes the topology of the network. The text file consists of configuration statements describing the network. Refer to the *C Configuration Manager and NETEX Alternate Path Retry (APR) User Guide* for information on creating this file.

Several sample files (\*.conf) are provided with H140IP in the “conf” directory.

Save (or copy) the NCT to C:\NESI\netex\conf\nct\_<some name>

2. Invoke the Configuration Manager (cm.exe) to process the configuration file.

There are two major components to CM: the NCT preprocessor and the PAM file generator. The NCT preprocessor reads the configuration text file and transforms this file into an internal data structure called the NCT. The second component creates a binary file (the PAM file) based on user commands and the NCT. The data in the PAM file must then be transferred to NetEx so it can be used by the NetEx routing facility while NetEx applications are being run.

The *cm* utility is interactive and various commands may be invoked to generate the configuration that the user desires. Refer to the *C Configuration Manager and NETEX Alternate Path Retry (APR) User Guide* for more information on using this utility. A Configuration Manager “HELP” command is also available to assist in the operation of this utility.

The following sample command sequence illustrates creating a PAM file:

```
# cm
Config>
Config> nct nct_<nct name>
Config> select *
Config> makepam <local host name> C:\NESI\netex\site\<pam_name>
Config> exit
```

Where nct\_<nct name> is the name given the file in step 1

<local host name> is the local host’s name as entered in the ntx\_default file

<pam\_name> is the same as the name entered in the ntx\_default file, pamfile parameter.

## Step 5: Create NetEx/IP addressing information

There are three methods of creating/updating the IP information on your system or network to allow for NetEx/IP to operate properly. Use of the site’s DNS server is the preferred method.

1. **Update DNS nameserver information.** This method requires that you update the relevant DNS lookup tables with the IP addresses and IP hostnames that will be associated with the HYPERChannel toGNA addresses. The IP hostnames **must** be in the following format:

```
NTX0000uuss
```

Where *uu* is the NETADDR defined for the host in the NCT and *ss* is the SMGDREF.

2. **Update local host table.** This method requires that you update the local host table (usually located at 'C:\WINNT\SYSTEM32\DRIVERS\ETC') with the IP address and IP hostname (same format as in #1).
3. **Use the *SET IPROUTE* command.** The third option is to update the NetEx/IP network information via the NTXOPER command **SET IPROUTE**. Please refer to the updated 'Operator Commands' section (included in this documentation) for a description of the command.

**Note:** NESi recommends that customers use options #1 or #2 when updating the IP addressing. Updates made via option #3 are only valid for as long as NetEx/IP is running. IP routing information entered with the 'set iproute' command are lost upon recycle of NetEx/IP or dynamic reload of NCT via the 'load nct' NTXOPER command.

Dynamic mapping of GNA addresses to IP addresses is performed during NetEx initialization (and when the LOAD NCT command is issued). The IP addresses that are returned from DNS are saved in an internal NetEx/IP table.

These addresses comprise the HYPERChannel *toGNA* addresses, as defined in the NetEx NCT by the NETADDR (*uu*) and SMGDREF (*ss*) parameters.

## To Remove NetEx/IP

1. Make certain you have completed all of the items in the section "Before you Begin".
2. Terminate the NETEX-IP Service.
3. Use the "Add/Remove Programs" Applet from the Windows NT Control Panel
4. Highlight NETEX-IP and click on Add/Remove.

# Update Summary

---

## **6.0-6.6.0**

1. Initial release of NetEx/IP for Windows NT and Windows 2000 32-bit Intel x86 platforms.

# Appendix A: Distribution Contents

---

Windows NetEx/IP is distributed on CD-ROM. During installation, the following files are installed (C:\NESI is the default install directory):

## C:\NESI\netex

libntx.lib	- NetEx/IP user library
libntx2.lib	- NetEx/IP internal library
ntx.exe	- executable NETEX-IP ntx Server
ntx.log	- default NETEX-IP ntx Server log file
ntxiserv.exe	- NETEX-IP Server Service executable
ntxlog.exe	- NETEX-IP ntx Server log file viewer
ntxmsg.dll	- NETEX-IP Server Service message file
setup.exe	- NETEX-IP Server Service install application

## C:\NESI\netex\cmds

cctbld.exe	- executable Code Conversion Table utility
ntxoper.exe	- executable NetEx Operator Interface
ntxrmtop.exe	- executable NetEx Remote Operator Interface

## C:\NESI\netex\conf

cm.exe	- executable NetEx Configuration Manager
cmhelp	- cm help file
dumpmam.doc	- dumpmam utility documentation file
dumpmam.exe	- executable NetEx Dump Pam program
prtpam.doc	- prtpam utility documentation file
prtpam.exe	- executable NetEx Print PAM program
sample.conf	- sample NCT file
sample2.conf	- sample NCT file

## C:\NESI\netex\site

net.txt.samp	- sample NetEx NCT file
net_default	- default NetEx/IP NCT file
ntx_default	- default NetEx/IP PAM file
ntx_default.samp	- sample NetEx/IP parameter file
pam_default	- default NetEx/IP PAM file
Prodconf.ini	- default NetEx/IP Product Configuration file

## C:\NESI\netex\tests

netexofr.exe and netexcon.exe
netexeat.exe and netexgen.exe
nsef001.exe and nsef002.exe
ntxaeat.exe and ntxagen.exe
ntxconn.exe
ntxheat.exe and ntxgen.exe
ntxmeat.exe and ntxmgen.exe
timserv.exe
timx.exe

# **Appendix B: Internal Functions**

## **NETEX-IP ntx Server**

The NetEx/IP product installs an application called the ntx Server, or NETEX-IP ntx Server. The ntx Server is a simple process that posts a listen on a specific IP socket, waiting for a connection request from a remote host or a local NetEx/IP application.

The NETEX-IP ntx Server should always be running waiting for connection requests. Without a ntx server running, a remote NetEx application cannot connect to the local Windows machine.

The standard method for starting a process at system startup on Windows NT or Windows 2000 is via a system Service. Once an NT or Windows 2000 Service is installed, it may be started automatically each time the Windows OS initializes. Furthermore, these Services do not terminate when a user logs off. Under Windows NT or Windows 2000, an application that is not a system Service does not start until a user physically logs onto the local system, and terminates when the user logs off. Therefore, a ntx Server not running as a system Service would not enable remote file transfer with an NT or Windows 2000 machine that did not have a user physically logged on.

## **NETEX-IP Server Service**

NetEx/IP for Windows NT and Windows 2000 includes a server (NETEX-IP ntx Server) and also a Service that starts the ntx Server at system boot (NETEX-IP Server Service or ntxIPServer). The install program automatically installs the ntx Server Service as a system Service with startup properties of “Automatically”, which means that the ntxIPServer application will start when the system is initialized. The NETEX-IP Server Service then starts the standard NETEX-IP ntx Server.

By default, any process running under an NT or Windows 2000 Service does not have access to a desktop or console. Therefore, the output from the ntx Server will be kept in a log file called ntx.log. To view the ntx Server log file, run the “NETEX-IP Server Log” utility. The ntx Server log files are kept in the same directory as the ntx Server executable (by default this is C:\NESI where C:\NESI is the NetEx/IP install directory).

The ntx Server can be controlled via the Services application in Windows Control Panel. By default, the ntx Server will start automatically each time Windows is initialized. The Service application startup panel allows you to change the startup parameter to manual or disabled. As installed, the ntx Server runs under a default SYSTEM ID. You may stop, pause, and restart the ntx Server from the Services application. Each time the ntx Server is started or stopped, a message is posted to the Windows Application Event Log with a source of ntxIPServer.

## NETEX-IP Server Service Event Log Messages

The following Windows Application Event Log messages may be generated by ntxIPServer.

Source	ID	Type	Message	Explanation
ntxIPServer	4200	Info	The ntx Server has started	Normal start message
ntxIPServer	4201	Err	Failed to start ntx Server with error code N	A call to the Windows Service Manager failed
ntxIPServer	4206	Info	ntx Server restarting	The service is restarting after a pause.
ntxIPServer	4292	Err	CreateProcess failed with error Code N	The call to create the NETEX-IP ntx Server process failed
ntxIPServer	4298	Info	ntx Server Paused	The service has been paused
ntxIPServer	4299	Info	ntx Server terminates with status 0	Normal termination message

## Install and Delete of the NETEX-IP Server Service

The file setup.exe, installed in the NetEx/IP “netex” directory (\NESI\netex\setup.exe) is an install utility to install or uninstall the NETEX-IP Server Service. The syntax to remove the service is:

```
SETUP delete
```

The syntax to install is:

```
SETUP create C:\NESI\netex\ntxiserv.exe
```

WHERE C:\NESI is the NetEx/IP install directory. You must first delete a currently installed NETEX-IP Server Service prior to installing a new version. The setup utility installs the module ntxiserv.exe as a Windows system Service. It will also add an entry to the Registry under:

```
HKEY_LOCAL_MACHINE\  
CurrentControlSet\  
Services\  
EventLog/  
Application
```

called ntxIPServer that denotes the location of the NETEX-IP Server Service Event Log Message file.

# Appendix C: Obtaining Platform Fingerprint via genMAC

---

The utility **genMAC.exe** is packaged with the H140IP product distribution in order to enable the Windows systems administrator to obtain a “fingerprint” of the platform on which H140IP is to be installed. This fingerprint must be submitted to Network Executive Software in order to obtain a valid encrypted Software Key for the H140IP product. The encrypted Software Key obtained from NESi will provide a valid license of the current release of the H140IP product on the Windows NT or Windows 2000 platform on which it is to be installed.

On a Windows system, a platform fingerprint consists of the MAC address of an installed network interface card. To obtain a list of one or more platform fingerprints, do the following:

1. Insert the NetEx/eFT installation disk into your Windows machine (e.g. A: drive).
2. From a MS-DOS Command Prompt window, invoke:

```
A:\genMAC
```

The genMAC utility will display output similar to the following:

```
** genMAC displays one or more platform 'fingerprints'.  
** A network adapter MAC address is a fingerprint.  
** The fingerprint(s) detected on this platform follow:
```

```
'Ethernet' adapter MAC address: 0000e898eca9
```

```
** end of genMAC report. **
```

3. Submit the returned MAC address to NESi in order to receive a valid encrypted Software Key for the current release of the H140IP product.

**NOTE:** For systems with multiple Ethernet interfaces, choose the last fingerprint reported in the display and submit it to NESi in order to receive a valid encrypted Software Key for the current release of the H140IP product.