H367IPI NETEX® Requester

for HP Integrity NonStop Systems

Release 6.1

Memo To Users

June 11, 2014

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Revision Record

Revision	Description
MTU-H367IPI-01 (01/2007)	First revision of this document for H367IPI 6.1
MTU-H367IPI-02 (02/2009)	• Added missing installation instructions. • Corrected document part number. It now reads “MTU-H367IPI”. • Added document “Revision Record” table. • Other minor documentation revisions and corrections.
MTU-H367IPI-03 (06/2009)	• Correct website references
MTU-H367IPI-6.1-04 (06/11/2014)	• Added the missing remainder for the installation section.

Notice to the Customer

Comments about this manual may be submitted via e-mail to pubs@netex.com or by visiting our website, http://www.netex.com. Always include the complete title of the document with your comments.

Information on Network Executive Software's general software support policy (e.g., alternate contact methods, support severity level descriptions, and service status definitions) may be found at http://www.netex.com/support/software-support-policy.

Software Modification Policy

Modifications to H367IPI that are not specifically authorized by NESi are prohibited.

Any unauthorized modifications to (product name) may affect its operation and/or obstruct NESi's ability to diagnose problems and provide corrections. Any work resulting from unauthorized modifications shall be paid by the customer at NESi's then-current support rates and may result in the immediate termination of warranty/support coverage.

Introduction

This release, H367IPI Release 6.1, supports the H06.03 and later, releases of the Integrity NonStop Kernel. H367IPI consists of Application Libraries and a NetEx/IP server process for each application.

New Features

Software Keys

Software key(s) from Network Executive Software are now required for product to operate.

Distribution Media

This product is now available as a software download.

Customers interested in downloading this product release should contact NetEx customer support for further details.

Service Notes

There are no known issues or limitations at this time.

Installation

Prerequisites

H367IPI is a NetEx/IP Requester software package designed to run on the HP Integrity NonStop operating system in conjunction with a Netex TNP or NESiGate LAN Offload adapter. The following prerequisites are required to install the NetEx/IP Requester:

- An HP Integrity NonStop system with an Ethernet LAN interface and operational TCP/IP network configuration.
- The Integrity NonStop Kernel at release H06.03 and later.
- At least one Netex TNP or NESiGate LAN Offload adapter.

To communicate with another processor, the customer must have:

- At least one other processor on the network running the appropriate NetEx/IP software (not required for intra-host testing/evaluation).

If a customer has the above minimum configuration, the NetEx/IP software can be installed.

Installation Overview

The product is distributed as a PAK file, NTX61PAK, as a download. The general process for installing H367IPI is as follows:

1. Receive the product distribution by download.
2. Transfer the product distribution PAK file to the Integrity NSK host.
3. Extract the contents from the PAK file and execute the installation script to install the product to the Integrity NSK host.

Installation Instructions

1. Receive the product distribution by download and LOGON to the NSK host.
2. If you are upgrading from a previous release, either BACKUP or FUP DUP the NETEX and NETEXMPL sub-volumes to another disk volume.
3. Use binary mode ftp or IXF or some other file transfer protocol to transfer the downloaded distribution file, NTX61PAK, from the CD to the NSK host, preferably $<vol>.NETEXISV.NTX61PAK.
4. At the TACL prompt, VOLUME to the $<vol>.<subvol> where the downloaded file resides.
5. At the TACL prompt, enter: “UNPAK NTX61PAK, $*.*.*, MYID, LISTALL, VOL $<vol>”, where $<vol> is the volume onto which the product is to be installed.
6. At the TACL prompt, enter: “VOLUME $<vol>.NETEX”.
7. At the TACL prompt, enter: “RUN GETSERNO”.
8. Email the displayed serial number to support@netex.com for your software key.
9. If this is the first NESI product on this host which requires a software key, create an edit file $SYSTEM.NESICONF.PRODCONF. Add a line: “LICPATH $<vol>.NETEX.NESIKEYS”.
10. When you receive your software key, edit the file pointed to by $SYSTEM.NESICONF.PRODCONF, add a line with the software key exactly as received.

Sample tests to verify the installation are in $vol.NETEXMPL. There is a "README" file in the same subvolume with instructions on how to build and run these sample tests.

Product Configuration Steps

After the software distribution is installed, you must take some additional configuration actions before this NetEx installation is integrated into your wider NetEx deployment.

Configure installation files for local TCP/IP (optional)

Note: If TCP/IP is in $SYSTEM.ZTCPIP, go on to "Step 5. Install the NETEX Environment".

Otherwise, the references to TCP/IP files must be modified. This can be accomplished by entering the following commands:

```
VOLUME $vol.NETEXSRC
EDIT TCPDECS;CBA/$SYSTEM.ZTCPIP/$tcpvol.tcpsubvol/A;E
VOLUME $vol.NETEX
EDIT BUILDSRV;CBA/$SYSTEM.ZTCPIP/$tcpvol.tcpsubvol/A;E
EDIT INSTALL;CBA/$SYSTEM.ZTCPIP/$tcpvol.tcpsubvol/A;E
```

where:

$vol This is the volume where the H367IP PAK was extracted.

$tcpvol.tcpsubvol This is the volume name where TCP/IP is installed.

Verify network connectivity to Netex TNP or NESiGate-LO (optional)

Determine the Internet Protocol (IP) address of the NESiGate LAN Offload adapter or TNP service (for example, 129.191.18.18). Verify that network connectivity exists to the Netex on the network by entering the command:

```
# Run $vol.NETEX.PING ipaddr 500 15
```

where:

ipaddr This is the IP address of NESiGate-LO adapter or TNP service; for example 129.191.18.18.

Note: To run this ping program, the user must be logged on to SUPER group.

Check the ping statistics to ensure that the number of packets sent is the same as the number of packets received, and that there was no loss of data.

Install the NETEX Environment

To install the NETEX environment, enter the following commands:

```
#  VOLUME $vol.NETEX
# RUN INSTALL
```

where:

$vol This is the volume where PAK distribution was extracted.

By entering the above commands, the following message will appear:

* * * H367IP Install completed Normally * * *

Once this command is displayed on the terminal or the Peruse file, the NETEX Requester environment is installed.

Customize the DXCILRC Configuration File

Step 1. Build the NETEX Configuration File for TCP/IP

The NETEX configuration file for TCP/IP is used by the server process to select a NESiGate LAN Offload ("NESiGate-LO") adapter. The configuration file associates site-determined NetEx/IP host names with the IP address(es) of the appropriate NESiGate-LO adapter. When a NETEX application is started and an SOFFR or SCONNECT request is executed, the server process will examine the configuration file to select the appropriate NESiGate adapter.

Figure 1 shows an example network that includes an IBM zOS mainframe system connected to a NESiGate-Channel Attached ("NESiGate-CA") adapter by ESCON channels to gain access to the NetEx/IP network. The NonStop and NonStop Integrity hosts communicate with the NESiGate-LO adapter directly over the IP network. Today, IBM zOS may be connected directly to the IP network via an OSA adapter, and the NESiGate-LO may be replaced by a TNP service in IBM zOS or in either of the HP NonStop systems.

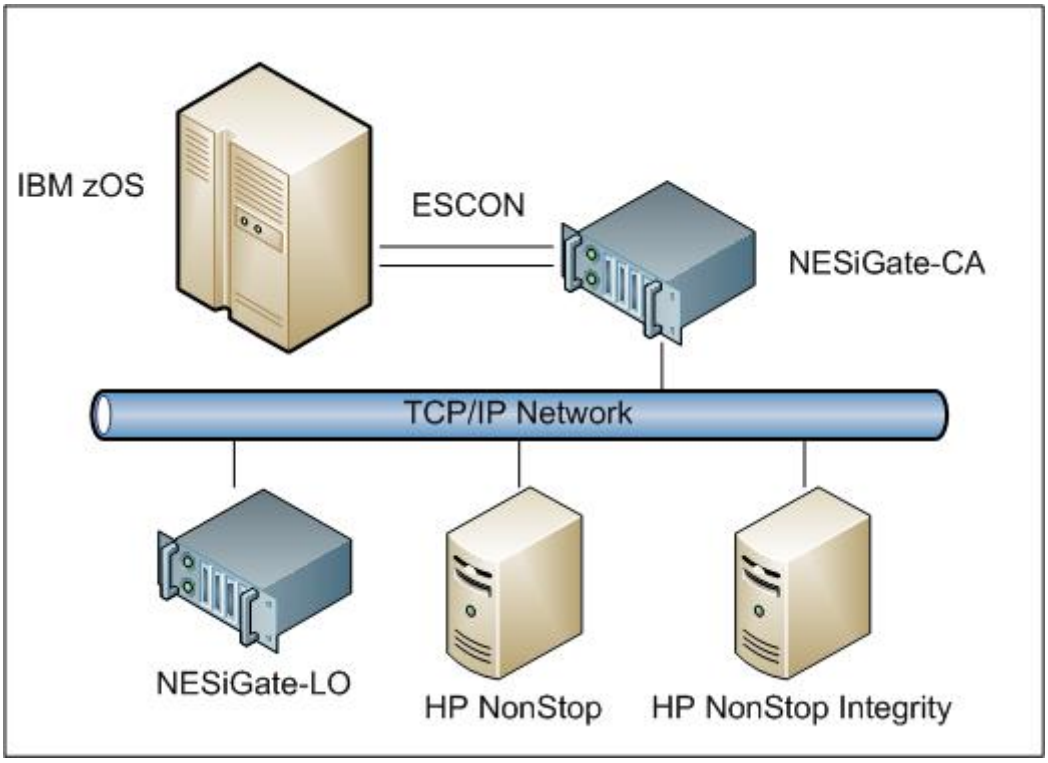

Figure 1. Example NetEx/IP network

An example of a simple configuration file is Figure 2. The file, DXCILSMP, is on the installation package. Use the sample below and the file, DXCILSMP, to write your own configuration file; however, the name of the file must remain $SYSTEM.NETEX.DXCILRC.

```
*
* Simple DX Client Interface Library (DXCILRC) configuration file
* example
*
local  TX1
netex  dxnsp1     129.191.18.101     tcp 5001
```

Figure 2. Default Configuration File ($SYSTEM.NETEX.DXCILRC)

Lines beginning with an asterisk (*) are comments. The keywords are "local," "netex" and "tcp" (with "local" and "netex" being directive identifiers). The "tcp" is required and constant.

The "local" directive is the local NetEx host name ("TX1" for this example). This name will be associated with offers (SOFFRs) originating from the local host and will allow the NESiGate LAN Offload/TNP

service software to select the correct offer (SOFFR) if the same application name is offered (SOFFR) by applications on multiple hosts attached to the same adapter. For multiple hosts with same name offered to be serviced, the MULTIHOST parameter in the adapter must be set to ON (the default setting).

The "netex" directive defines the NESiGate adapter/TNP service to be used by this process. The second field in the directive is a name for the NESiGate LAN Offload/TNP software. For this purpose, it is "dxnsp1" (see Figure 2). The IP address for the NESiGate adapter or TNP service is the third field in the "netex" entry and may be specified in either numeric or name form. Each NESiGate adapter and TNP service listens at TCP port 5001.

When a TCP connection to an adapter needs to be established by the server process, a NETEX name is used to select all entries from the configuration file that matches the specified name. The selected entries are tried in turn, until a connect succeeds. If no connect is successful, the session request is terminated.

Note: You can have two or more hosts using the same NESiGate adapter or TNP service. The "netex" directive names must be different.

The NETEX name used for selection is by default set by an application process environment variable. If no name can be determined, all entries in the configuration file are selected. The default for the configuration file is $SYSTEM.NETEX.DXCILRC. The default configuration file can be overridden (see "Step 2. Setup Default Overrides (optional)").

Step 2. Setup Default Overrides (optional)

To override defaults to the NonStop's TCP/IP, the override values must be passed as environment variables to the server process. To set environment variables for the server process, create and edit a TYPE file with one PARAM line for each environment variable to be passed. The PARAM lines have the following format:

```
PARAM envar value
```

where:

envar This parameter is the name of the environment variable.

value This parameter is the value assigned to the environment variable.

Add a map "DEFINE =NTXDEF" to point to the edit file containing the PARAMs. For example, to use the file $DATA.NTX.NTXDEF to contain the override PARAMs, issue the following command:

```
ADD DEFINE =NTXDEF, CLASS MAP, FILE $DATA.NTX.NTXDEF
```

Note: The default for NTXDEF is the $vol.subvol where H367IP is installed. Otherwise, the "define =NTXDEF" must be added to this environment to point to NTXDEF file.

This overrides the default NETEX configuration file when necessary by the environment variable DXCILRC. For example, if the configuration file to be used is $DATA.NTX.CONFIG, the following line would be added to the file pointed to by the DEFINE =NTXDEF:

```
PARAM DXCILRC $DATA.NTX.CONFIG
```

Similarly, if the TCP/IP process name is $ZTC1, then the following line would be added:

```
PARAM TCPIP^PROCESS^NAME $ZTC1
```

Note: The default TCPIP process name is $ZTC0.

To continue the example of the above procedure, type in the following command at the TACL prompt:

```
ADD DEFINE =NTXDEF, CLASS MAP, FILE $DATA.NTX.NTXDEF
```

The file $DATA.NTX.NTXDEF now contains the following statements:

```
PARAM TCPIP^PROCESS^NAME $ZTC1
PARAM DXCILRC $DATA.NTX.CONFIG
```

See Figure 3 below for an example of what file $DATA.NTX.CONFIG now contains.

```
*
* Simple DXCIL configuration file example
*
local TX1
netex dxnsp1 129.191.18.18 tcp 5001
```

Figure 3. Simple DXCIL Configuration File Example

Verify Operation

To verify that the Requester Library and NESiGate-LO or TNP service are working, enter the following command:

```
RUN $vol.NETEX.NTXVERFY
```

where:

$vol is the volume where H367IP was installed.

This program will retrieve the current local host name and execute a simple intrahost session test.

Note: Sample tests are included on the release tape in $vol.NETEXMPL. There is also a "README" file in this volume with instructions on how to build and run these jobs.

Review and Modify NCT File(s)

The NETEX Configuration table (NCT) contains all of the information that NETEX needs to make connections to other NetEx hosts on the network. The sample NCT file ($vol.NETEXMPL.SAMPNCT) provides only an example and must be modified to describe all the NETEXes on the network before NETEX can be started. Refer to the *"'C' Configuration Manager and NETEX Alternate Path Retry (APR) User Guide"* for more information on creating this file.

If there are multiple NETEX providers in the environment, then there must be a PAM file for each NETEX provider. A recommended naming convention is to have each PAM file name suffixed with a number corresponding to the NETEX provider that it accesses.

Invoke the Configuration Manager (CM) to process the text file. There are two major components in 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 Network Configuration Table (NCT). The second component creates a binary file (the PAM file) based on user commands and the NCT. This binary file is used by the NETEX routing mechanism. The CONFMANG (CM) program is interactive and various commands can be given to generate what the user desires. To run the Configuration Manager, enter the command:

```
RUN $vol.NETEX.CM
```

where:

$vol is the volume where H367IP was installed.

What follows is a sample execution of the CONFMANG program.

```
Config> nct $vol.NETEXMPL.SAMPNCT
.
.
.
Config> select *
.
.
.
Config> makepam hostname cm.pam
.
.
.
```

```
Config> exit
```

A HELP command is also available to assist in the operation of this utility.

Each RUN CM allows only one use of the NCT preprocessor command. Multiple MAKEPAM statements are allowed to build output PAM files for various hosts, if desired. Subsequent uses of the NCT statement are rejected and not processed.

Load NCT

To load the NCT, issue the following command:

```
RUN $vol.NETEX.NCTL
```

where:

$vol is the volume where H367IPI was installed.

A HELP command is also available to assist in the operation of this utility.

At the “nctl:” prompt, enter the following command:

```
nctl: LOAD pamfile localhostname
```

where:

pamfile This variable is the name of the output file from the Configuration file, created in “Review and Modify NCT File(s)”.

localhostname This optional parameter is the name of the host where the file will be loaded.

To exit, enter QUIT at the prompt:

```
nctl: QUIT
```

For more information on NCT Loader commands, refer to the NCT Loader Software Reference Manual.

Compile Application Programs

TAL Application Programs

TAL compile units must be named. This is required because of the inclusion of the named NETEX global data block.

There are two required source modules that must be included (?SOURCE) in the compile unit: $vol.NETEX.NETXGLOB and $vol.NETEX.NEXTDECS.

- The NETEX global data block, $vol.NETEX.NETXGLOB, must be the first global declaration in the compile unit. This data block contains the data space, defines, and literals used by the TAL Interface Library.
- The NETEX procedure declarations is $vol.NETEX.NEXTDECS. This module must be included after the user’s global declarations. The user needs only to declare those NETEX calls that pertain to the compile unit.

Specify NETEX Library

There are two NETEX libraries available to the user:

- $SYSTEM.NETEX.NETXFLIB
- $SYSTEM.NETEX.NETXTLIB

NETXFLIB is used for application programs written in FORTRAN or COBOL.

NETXTLIB is used for application programs written in C or TAL.

C Application Programs

The C library may be specified at compile time, run time or when creating run unit using BINDER.

The NETEX library may be specified at compile time by including the compiler directive ?LIBRARY, for example:

```
?LIBRARY $vol.NETEX.NETXTLIB
```

When using the NETEX library during run time, include the option LIB in the run statement, for example:

```
RUN prog /LIB $vol.NETEX.NETXTLIB/
```

where:

prog This is the name of the C output object file.

$vol This variable is the volume where NETEX is stored.

To include the NETEX library when building a run unit, use the SET LIBRARY command before the object is built, for example:

```
SET LIBRARY $vol.NETEX.NETXTLIB
```

COBOL Application Programs

The NETXFLIB library may only be referenced during compile time. To reference the library during compile time, place a ?SEARCH statement before the PROCEDURE DIVISION in the source code, for example:

```
?SEARCH $vol.NETEX.NETXFLIB
```

FORTRAN Application Programs

All FORTRAN object files must be bound to produce executable code. Enter the following commands interactively to produce executable code:

```
BIND
@ADD DATA AP^INTERFACE FROM NETEX.NETXFLIB
@ADD * FROM xxxxxxxx
@SET LIBRARY NETEX.NETXFLIB
@BUILD yyyyyyyy !,LIST * OFF
```

where:

xxxxxxxx This parameter is the name of the FORTRAN object file.

yyyyyyyy This parameter is the name of the object file that can be run.

To end this interactive session, press the <CTRL> and <Y> keys simultaneously.

The file $vol.NETEXMPL.BINDFTN contains an example of the binder commands used in this step.

Run the Operator Interface

To run the Operator Interface without message logging, enter the following command:

```
RUN $vol.NETEX.NTXOPER
```

Where:

$vol This variable is the volume where NETEX is stored.

To run the Operator Interface when console logging will be activated, enter the following command:

```
RUN $vol.NETEX.NTXOPER -n $name -L $vol.subvol.logname -o
$vol.subvol.object
```

Where:

$vol This variable is the volume where NETEX is stored.

$name This specifies any valid process name that the message logging process will be called, for example:

```
-n $NLOG
```

$vol.subvol.logname This specifies a valid filename that will be used for the log file, for example:

```
$SYSTEM.NETEX.LOGFILE
```

$vol.subvol.object This specifies the object file name of the logging program. Usually, this will be $vol.NETEX.NTXILOG.

Note: Logging will not be initiated until the NTXOPER command SLOGGER is issued.

Update Summary

6.1 (2006/12)

The following known problems have been corrected in the 6.1 (2006_12) release:

1. Prevent NTXOPER from looping if the virtual terminal session is lost.
2. NTXOPER “VERSION” command responds correctly.

6.1 (2005/05)

The following known problems have been corrected in the 6.1 (2005/05) release:

1. NTXVERFY fails if the first of multiple paths is not functional.
2. NTXVERFY default changed to only do session test, driver test is still available, but will only function with DX hardware.
3. Remove obsolete files from distribution media.
4. Fix loop in tio_receive.
5. Fix problems in INSTALL macro when user specified file output as opposed to spooler output. All INSTALL output now goes to file. Users can FUP COPY to spooler if required.