



NESiGate-CA
NetEx/IP Host Channel-to-IP Gateway

Release 2.9

Reference Manual

Revision Record

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02 (Jan 2001)	Added procedures for new CDROM distribution and software keys
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05 (xxx 2002)	Added documentation for Hitachi IBM-compatible configuration requirements.
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Table of Contents

Revision Record	ii
Copyrights and Trademarks	v
Notice to the Customer	vi
NESiGate Modification Policy.....	vi
Introduction	1
Customization	3
Overview	3
Configure NESiGate.....	3
Device Number	3
GNA Address	4
IP Address	4
Using a Web Browser to Configure NESiGate	4
Define the Channel Board(s).....	4
Define the Devices	4
Add Routes (optional)	4
Define IP Interface	5
Reboot NESiGate	5
Web Browser Interface	7
Overview	7
Browser Considerations	7
Initial Screen	7
Common Command Frame	7
System, Product, SNMP & Network Configuration	7
NESiGate Board/Channel Commands	8
Display Board Config.....	8
Channel Define Board and Channel Undefine Board	8
Channel Command drop-down menu.....	9
Channel Display Interface Config.....	9
Channel Display ESCON Config.....	10
Channel Display Info.....	10

Channel Display Stats	10
Channel Clear Stats	11
Channel Start Interface	12
Channel Stop Interface	12
Channel Undefine Interface	12
Channel Define Interface	12
Channel Set Debug	13
NESiGate Router Commands	15
Command drop-down menu	15
Route Display Config	15
Route Display Info	15
Route Display Locals	15
Route Display Routes	15
Route Display Stats	16
Route Clear Stats	16
Route Set Debug	17
Help Debug	17
Route Add Route	17
Route Delete Route	18
Route Delete All Routes	18
NESiGate IP Interface Commands	19
Command drop-down menu	19
IP Interface Display Config	19
IP Interface Display Info	20
IP Interface Display Stats	21
IP Interface Clear Stats	22
HELP Debug	22
IP Interface Set Debug	22
IP Interface Define Interface	23
Appendix A: Configuration Worksheet	25
Appendix B: NESiGate Sense Bytes	27

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NESiGate Modification Policy

NESiGate is an appliance that contains proprietary software and firmware. Modifications to the software, firmware, or hardware platform that are not specifically authorized by NESi are prohibited.

Examples of prohibited activities include (but are not limited to) the following items:

- Installing other software on NESiGate
- Modifying the file system through means other than NESiGate's defined User Interfaces (including adding, deleting, or moving files and/or directories, or changing permission levels, ownership, or other attributes of files and/or directories)
- Adding or deleting user accounts via the root userid
- Starting or stopping system services through means other than NESiGate's defined User Interfaces
- Adding or removing hardware components

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Introduction

This manual provides an overview of the procedures used to integrate and customize the NetEx/IP components onto a NESiGate-CA (“NG-CA”) host channel platform, and to provide a description of the command and web browser interfaces.

This manual is divided into three sections:

- 1) **Integration:** Integration of NESiGate software on the hardware platform is covered in the NESiGate Software Installation Guide. Refer to that guide, then return to this manual to complete the configuration of NESiGate as a Channel Adapter (CA) type device
- 2) **Customization:** this section is targeted to the end-user who is responsible for customizing NESiGate for use as a host-based NetEx/IP channel device. It is assumed the NESiGate already has the appropriate NESiGate-OS installed. To complete the customization, the reader must be familiar with channel device and network addressing concepts.
- 3) **Web Browser Interface:** this section is targeted to the end-user who is responsible for customizing the NESiGate for use as a host-based NetEx/IP channel device, and who is responsible for configuring and controlling operational aspects of the device.

Overview

This section provides an overview of the procedures used to complete the customization of the NESiGate-CA for use with host-based NetEx/IP products. This section is targeted to the end-user responsible for customization. The reader must be familiar with channel device and network addressing concepts.

Configure NESiGate

There are three important addressing elements involved in delivering NetEx/IP channel data that is not IP-aware, and transferring it over an IP network to the correct destination:

- Device Number
- GNA Address
- IP Address

Device Number

The Device Number on the host and Device Index on the NESiGate channel board are numeric representations of the same unique “device”. On the host operating system, a “Device Number” is defined as a Unit Address on a Logical Control Unit (a physical control unit may consist of from 1-16 logical control units). The Physical Control Unit may be connected to a Port on an ESCON Director. Multiple inbound Host channels may be connected to the ESCON Director and provide connectivity to the device from multiple partitions (LPARs) across multiple hosts.

Similarly, on the NESiGate ESCON board, a “Device Index” is defined as a Unit Address on a Logical Control Unit (up to 16 may exist). The Physical Control Unit may be connected to a Port on an ESCON Director, which may provide connectivity to multiple LPARs across multiple hosts. If the connected host is an IBM system that supports logical channel subsystems, each NESiGate channel board can be connected to any one of the logical channel subsystems, ESCON addressing restrictions prevent the single board from being shared across multiple logical channel subsystems.

Since both the Device Number and Device Index represent the same unique device (from different perspectives), the same addressing components must be specified *exactly the same* in both definitions. Failure to do so will prevent the NESiGate devices from functioning properly.

When defining devices on the ESCON channel board, the following items are specified: Device Unit Address, Logical Control Unit, the Director port to which the host channel is connected, and Partition-id (LPAR). The Device Index values are not specified by the user. They are automatically generated when the channel configuration is defined.

A maximum of 64 active devices are supported on each ESCON interface.

Refer to the “Channel Define Interface” button on page 12 for a description on defining the channel devices.

GNA Address

The GNA address represents a NetEx/IP network address that is associated with a given device. It is specified in the NetEx/IP Network Configuration Table (NCT). It is also specified during the customization of the NESiGate Channel Driver. At that time, an association is established between a particular GNA address and a Device Index.

IP Address

The IP address represents a NetEx/IP network node address. There is no channel device awareness inherent in an IP address. However, during the NESiGate customization task, IP host names are defined, each having a format based on its GNA address. This enables NESiGate to perform a direct mapping between GNA and IP addresses. This mapping is transparent to the NetEx/IP running on the host, as well as to all NetEx/IP applications.

Using a Web Browser to Configure NESiGate

The NESiGate Web Browser Interface may be used to configure NESiGate. Before configuring the NG-CA specific items, the common System and Network configuration should be completed. See the “NESiGate Installation Guide” manual (part number *MAN-REF-NESiGateSW*) for details.

Refer to the “Web Browser Interface” section on page 7 for a complete description of the commands used in this section.

Define the Channel Board(s)

The channel board(s) are automatically configured by the NESiGate initialization software. Normally, no re-configuration of the board configuration is required.

Define the Devices

This step is required. If this step is not performed, the ESCON devices will respond as the correct device without regard to LPAR or ESCON director port affinity. If this does not match the real configuration, incorrect results will occur.

Select the ***Board/Channel*** link in the navigation menu. This will open the page that is titled: ***NESiGate CA Board/Channel***.

Using the device configuration data from a completed worksheet provided in “Appendix A: Configuration Worksheet” on page 25, use the “Channel Define Interface” button to define the devices. Refer to page 12 for a description of this command.

Repeat this step as many times as necessary until all required channel interfaces are defined.

Add Routes (optional)

This step is only necessary if static GNA routes are to be defined, and have NOT been configured using the System page “GNA-host Mapping” command. If static GNA routes are not defined, NESiGate will use DNS services to resolve GNA to IP addressing.

Select the ***Router*** link in the navigation menu. This will open the page that is titled: ***NESiGate Router***.

Using the device configuration data from a completed worksheet provided in “Appendix A: Configuration Worksheet” on page 25, use the “Route Add Route” button to define the routes. Refer to page 17 for a description of this command.

Repeat this step as many times as necessary until all required routes are defined.

Define IP Interface

This step is only necessary if default IP parameters are to be modified. It is rarely needed.

Select the *IP Interface* link in the navigation menu. This will open the page that is titled: *NESiGate IP Interface*.

Use the “IP Interface Define Interface” button to define the IP interface parameters. Refer to page 23 for a description of this command.

Reboot NESiGate

After the configuration changes have been made, the NESiGate unit must be rebooted to make the changes effective:

- Vary the devices offline to the host operating system.
- Browse to the “System Config” page of the NESiGate
- In the “Misc Commands” menu, select “Config NG On”
- Click the “DoIt” button
- In the “Misc Commands” menu, select “REBOOT”
- Click the “DoIt” button
- After NESiGate is back up vary the devices online to the host operating system.

Web Browser Interface

Overview

The Apache web server is used on NESiGate to provide a web-enabled configuration facility. Connecting NESiGate to an intranet infrastructure enables usage of a web browser to configure the Channel, Router, IP, and Control components. The browser can also be used to display configuration information and control various operational aspects of the components.

Browser Considerations

The browser can be hosted on any system, as long as that system has connectivity to NESiGate. However, the browser must be configured to refresh pages on each page reference.

Initial Screen

When the browser first connects to NESiGate, a password entry window will be displayed. Enter the userid you have been assigned and its password to gain access to the NESiGate. Default userids and passwords are described in the common NESiGate Installation Manual.

The initial screen displayed when the password has been accepted includes a “Welcome” screen with general information on the right.

Common Command Frame

In the top, left frame is a dropdown navigation list of the available command pages, and some common display commands, as well as commonly used miscellaneous commands. Command page specific functions are below this area. Help for each selected page can be accessed by clicking on the HELP button in the top left frame.

System, Product, SNMP & Network Configuration

The navigation links will bring you to the area for re-configuring and displaying common information. Refer to the “NESiGate Installation Manual” for a description of these commands.

NESiGate Board/Channel Commands

Display Board Config

This button displays the channel boards that have been previously defined.

Prior to selecting this button, provide the following data on the selection screen:

Board Name the name of the board to display.

If no name is specified in the Board Name window, then all defined channel boards are displayed.

Channel Define Board and Channel Undefine Board

This button deletes or adds the specified channel board from the configuration.

Prior to selecting this button, provide the following data on the selection screen:

Board Name a 1-8 character name by which the board will be identified in subsequent define and display commands.

For 'Define Board' the following additional information is needed:

Channel Type select either **ESCON/SBCON**; (Do not select Bus & Tag as these are no longer supported in Release 2.9 and beyond.)

PCI Bus PCI bus number on which the ESCON board is installed.

PCI Device PCI device in which the ESCON board is installed.

The PCI Bus and Device numbers are dynamically determined and the channel boards are automatically defined. The Bus and Device numbers can be viewed by selecting the "Display Board Config" button.

Channel Command drop-down menu

From this drop-down menu, the following commands can be initiated:

- Channel Display Interface Config
- Channel Display ESCON Config
- Channel Display Info
- Channel Display Stats
- Channel Clear Stats
- Channel Start Interface
- Channel Stop Interface
- Channel Undefine Interface

After selecting the desired command and entering the necessary parameters, click the **GO** button to process. Results of the command will be returned to the browser for display.

Channel Display Interface Config

This command displays the current channel configuration. Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface to display.

If IFname is not specified, all defined channel interfaces are displayed.

Channel Display ESCON Config

This command shows the currently defined and currently loaded ESCON subchannel ranges and their index values, as illustrated in Figure 1.

Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface to display.

If IFname is not specified, all defined channel interfaces are displayed.

NESIGate Channel Display Escon Config

Current Loadable (/etc/nesigate/conf/chlescon.cfg)

```
;ESCON configuration
;indexNN=subchannel,emulation,controlunit,channellink,lpar,tag
slot=196609
index1=0,HCM,1,ef,0,nesiweb
index2=1,HCM,1,ef,0,nesiweb
index3=2,HCM,1,ef,0,nesiweb
index4=3,HCM,1,ef,0,nesiweb
index5=4,HCM,1,ef,0,nesiweb
index6=5,HCM,1,ef,0,nesiweb
index7=6,HCM,1,ef,0,nesiweb
index8=7,HCM,1,ef,0,nesiweb
```

Figure 1. Output from ‘Display ESCON Config’

Channel Display Info

This command displays detailed channel interface information. Prior to selecting this button, provide the following data on the selection screen:

IFname The name of the channel interface to display. If not specified, all defined channel interfaces are displayed.

Device# Limit the display of the channel interface to a particular device. For an ESCON channel interface running in “configured” mode, this parameter is the Device Index. For an ESCON channel interface running in “non-configured” mode,, this parameter is an offset from the UADD specification. If the UADD parameter is not used, this parameter is an offset from the low-order byte of the start-GNA address.

Channel Display Stats

This command displays statistics for a particular channel interface. Prior to selecting this button, provide the following data on the selection screen:

IFname The name of the channel interface to display. If not specified, all defined channel interfaces are displayed.

Device# Limit the display of the channel statistics to a particular device. For an ESCON channel interface running in “configured” mode, this parameter is the Device Index. For an ESCON channel interface running in “non-configured” mode, this parameter is an offset from the UADD specification. If the UADD parameter is not used, this parameter is an offset from the low-order byte of the start-GNA address.

Example: specific interface

id	txpacks	txbytes	rxpacks	rxbytes		
2	0	0	0	0		
txMiscEr	rxMiscEr	haltIO	streamTo	sysReset	cmdRej	intvReq
0	0	0	0	0	0	0
busOutCk	equipCk	dataCk	overRun	delayTx	delayRx	dataTo
0	0	0	0	0	0	0

Where:

- id : id for display only – minor number
- txpacks : # messages sent to the channel
- txbytes : # data bytes sent to the channel
- rxpacks : # messages read from the channel
- rxbytes : # data bytes read from the channel
- txMiscEr : # transmit to the channel errors
- rxMiscEr : # receive from the channel errors
- haltIO : halt I/O count
- streamTo : I/O streaming timeout count
- sysReset : system reset count
- cmdRej : command reject count
- intvReq : intervention required count
- busOutCk : bus out check count
- equipCk : equipment check count
- dataCk : data check count
- overRun : overrun count
- delayTx : # stream delayed messages destined for the channel
- delayRx : # stream delayed messages coming from the channel
- dataTo : data timeout count

Channel Clear Stats

This command clears all or selected channel statistics. Prior to selecting this button, provide the following data on the selection screen:

- IFname Specify the name of the channel interface to clear.
- Device# Limit the clear of the channel interface to a particular device. For an ESCON channel interface running in “configured” mode, this parameter is the Device

Index. For an ESCON channel interface running in “non-configured” mode, this parameter is an offset from the UADD specification. If the UADD parameter is not used, this parameter is an offset from the low-order byte of the start-GNA address.

Channel Start Interface

This command starts a defined channel interface. Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface to start.

Channel Stop Interface

This command stops a defined channel interface. Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface to stop.

Channel Undefine Interface

This command removes a defined channel interface. Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface to stop.

Channel Define Interface

This button defines a channel interface, which consists of a range of devices for use by a particular NetEx/IP.

Note: a channel board must be defined first before defining any channel interfaces.

Prior to selecting this button, provide the following data on the selection screen:

IFname a name by which the interface will be identified.

Prot the channel protocol version.

HCM is the traditional HYPERchannel mode message/data format.

HCM2 is a single-CCW protocol which is more efficient for small channel transfer applications. The host NetEx must support this (currently only supported in H210IP 6.1 and later).

On board the name of the board on which this interface is being defined. Auto-Define uses ‘board1’ and ‘board2’

StartGna the GNA address of the first device in the form ‘UUSS’, where ‘UU’ is the NETADDR for this ADAPTER definition in the NCT. ‘SS’ must be the same as the first device address lower byte. The SMGDREF definition for this ADAPTER definition in the NCT must be in the range ‘SS’ to ‘SS’ + Number of devices.

Number of devices the number of devices being defined for this interface (4 is normally sufficient). The maximum number of devices that can be defined per interface definition is 16.

Input	(optional) the low-order byte of the input device.
UADD	the unit address of the device.
Max Data	(optional) the memory allocation size used by the Channel driver to buffer data coming off or going on the channel. This value must be at least as large as the NetEx/IP segsize parameter. The default is 65535 bytes.

For ESCON devices only

CU	the control unit number. Up to sixteen control units can be specified, ranging from 0-F. A unique Control Unit should be defined for each concurrent host, or host partition, running NetEx/IP. Note: CU 0 must be used if connection is to a Unisys system.
CHlink -	<p>the ESCON director port number to which the channel is connected that is used for communicating to the ESCON board. If the ESCON interface is connected directly to the channel without going through an ESCON Director, a port number of 1 (or 01) should be specified if connection is to an IBM or Hitachi IBM-compatible system; a port number of 2 (or 02) should be specified if connection is to a Unisys system.</p> <p>If the ESCON interface is connected from an IBM system through an ESCON Director, but the port-to-port connection is defined as Dedicated in the channel subsystem (HCD or IOCP), and the port-to-port connection is also defined as Dedicated on the ESCON Director, then a port number of 1 (or 01) must be specified. This configuration is treated the same as a point-to-point non-switched connection.</p>
LPAR -	<p>the partition number of the host driving this interface if the channel is defined as SHARED. If the system is running in BASIC mode, or if the system is running in LPAR mode but the channels are defined as either RECONFIGURABLE or DEDICATED, then the value specified for LPAR must be zero.</p> <p>On an IBM system that supports logical channel subsystems, NESiGate is configured the same way as on systems that do not support logical channel subsystem. The partition number (referred to as the MIF ID) is used as the LPAR number. It is still a number in the range of x0-xF regardless of the logical channel subsystem number.</p>

Caution: It is extremely important that the values specified for UADD, CU, CHlink, and LPAR exactly match the values specified in the host system's device configuration. Failure to do so will make the devices unusable.

The total number of devices supported on each ESCON interface board is 64. Use this selection button multiple times until all required device interfaces are defined.

It is possible to define more than 64 devices to satisfy specific configuration requirements (e.g., extra devices that are only used when needed on backup systems), but care must be taken so that no more than 64 devices are active at any point in time. "Over-configuring" the ESCON interfaces with many devices being used concurrently will have a negative impact on performance.

Channel Set Debug

This button sets the debug trace level for all interfaces, or for a specific channel interface. Prior to selecting this button, provide the following data on the selection screen:

IFname the name of the channel interface for which to enable debug.

VALUE:

- 0 : no console tracing
- 1 : console trace only H level messages
- 2 : console trace level H and M messages
- 3 : console trace level H, M, and L messages
- 4 : console trace level H, M, L, and D messages
- 5 : console trace the actual streams messages
- 6 : console trace the message data
- 7 : console trace all the data

global set Channel debug level globally

NESiGate Router Commands

This screen is used to define, process, or view router configuration data.

Command drop-down menu

From this drop-down menu, the following commands can be initiated:

- Route Display Config
- Route Display Info
- Route Display Locals
- Route Display Routes
- Route Display Stats
- Route Clear Stats

After selecting the desired command, click the **GO** button to process. Results of the command will be returned to the browser for display.

Route Display Config

This command displays the current configured routes.

Route Display Info

This command displays information for the router control stream or a particular stream identified by Link Index. The Link Index (l_index) can be obtained by first displaying the channel configuration with the “Channel Display Interface Config” command.

Route Display Locals

This command displays all current defined local routes (device to GNA mappings).

Route Display Routes

This command displays all current defined external routes (IP address to GNA mappings).

Route Display Stats

This command displays statistics for the router control stream or for a particular stream identified by the Link Index. The Link Index (*l_index*) can be obtained by first displaying the channel configuration with the “Channel Display Interface Config” command.

Sample output:

id	txmsgs	txbytes	rxmsgs	rxbytes	outDrop	inDrop
2	0	0	0	0	0	0

where -

- id** : control or *L_INDEX*
- txmsgs** : the number of messages sent from the router to the lower stream
- txbytes** : the number of bytes sent from the router to the lower stream
- rxmsgs** : the number of messages received from a lower stream
- rxbytes** : the number of bytes received from a lower stream
- outDrop** : the number of dropped messages from an upper stream
- inDrop** : the number of dropped messages from a lower stream

Route Clear Stats

This command clears statistics for the router control stream or for a particular stream identified by the Link Index. The Link Index (*l_index*) can be obtained by first displaying the channel configuration with the “Channel Display Interface Config” command.

control clear statistics for the Control stream

index clear statistics for the stream linked under the Router at *L_INDEX*. *L_INDEX* can be obtained by first displaying the channel configuration.

Route Set Debug

This button sets the debug trace level globally, for the control stream or for a particular stream identified by the Link Index. The Link Index (*l_index*) can be obtained by first displaying the channel configuration with the “Channel Display Interface Config” command.

VALUE:

- 0 : no console tracing
- 1 : console trace only H level messages
- 2 : console trace level H and M messages
- 3 : console trace level H, M, and L messages
- 4 : console trace level H, M, L, and D messages
- 5 : console trace the actual streams messages
- 6 : console trace the streams message data
- 7 : console trace all the data

global set Router debug level globally

control set Router debug level for the Router control stream.

L_INDEX set Router debug level for the stream linked under the Router at *L_INDEX*. *L_INDEX* can be obtained by first displaying the channel configuration

Help Debug

This button displays help information for the "Route Set Debug" command in a separate window.

Route Add Route

This button defines a mapping of a GNA route to an IP address. If the GNA already has a route defined, it will be changed.

Prior to selecting this button, provide the following data on the selection screen:

- StartGNA specify the GNA address of the destination host.
- IP Addr specify the IP address to which the StartGNA value should be routed.
- Num specify the number of consecutive StartGNA addresses to route.
- Chg running (temp) select this box to make a temporary change. The change will only remain in effect until the unit is restarted.
- Chg file (perm) select this box to make a permanent change.

Route Delete Route

This button deletes a currently defined route. Prior to selecting this button, provide the following data on the selection screen:

- | | |
|--------------------|--|
| StartGNA | specify the GNA address of the destination host to delete. |
| Chg running (temp) | select this box to make a temporary change. The change will only remain in effect until the unit is restarted. |
| Chg file (perm) | select this box to make a permanent change. |

Route Delete All Routes

This button deletes all defined routes. Prior to selecting this button, provide the following data on the selection screen:

- | | |
|--------------------|--|
| Non-Configured | select this box to delete only the routes that were found by DNS look-ups. |
| Configured | select this box to delete only the routes that were defined with Route Add commands. |
| Chg running (temp) | select this box to make a temporary change. The change will only remain in effect until the unit is restarted. |
| Chg file (perm) | select this box to make a permanent change. |

NESiGate IP Interface Commands

This screen is used to define, control, or view IP configuration data. They are normally used under the guidance of NESi support personnel.

Command drop-down menu

From this drop-down menu, the following commands can be initiated:

- IP Interface Display Config
- IP Interface Display Info
- IP Interface Display Stats
- IP Interface Clear Stats

After selecting the desired command, click the **GO** button to process. Results of the command will be returned to the browser for display.

IP Interface Display Config

This command displays the current IP configuration.

type	prot	minor	l_index	ref	optfl	lport	mxrcvbyt	mxsndbyt
MSG	UDP	2	4	c2a4ba20	0	6950	512000	512000

where -

type	: currently only MSG is supported
prot	: currently only UDP is supported
minor	: the streams minor number associated with this interface
l_index	: the streams link index associated with the router side of this IP interface
ref	: reference # for this interface (address of connection control block)
opt fl	: option flags 0x80 : checksum off
lport	: local port number associated with this interface
mxrcvbyt	: maximum socket receive byte count
mxsndbyt	: maximum socket send byte count

IP Interface Display Info

This command displays detailed information for a particular IP interface stream ID. The ID can be obtained by first displaying the IP configuration with the "IP Interface Display Config" command.

```

-----
      id          ref          state   db prot fl backlog rdCred padLen
-----
      msg:2  cf715020          0  0  UDP  80          0          -1          0

waitWrQ  waitConQ  stream      sk          sock      unsolId  saveUId  svFl
-----
      0          0  cdbdc800  cf054b80  cda4d08c          0          0          0

abrtR  rPort  rAddr  lPort  lAddr  mxRcvByt  mxSndByt  con
-----
      0      0          0  6950          0  512000  512000  cf715020

```

where -

```

id          : temporary id for display only – minor number
ref         : reference # for this connection (address of connection control block)
state       : current state of this connection (currently unused)
db          : stream debug level
prot        : protocol (currently only UDP supported)
fl          : stream flags  0x80 : read queue is being serviced
                    0x40: write queue is being serviced
                    0x20: control stream

backlog     : currently unused
rdCred:     : currently unused (should always be -1)
padLen     : currently unused
waitWrQ    : currently unused
waitConQ   : currently unused
stream     : the address of the stream control block
sk         : address of IP sock structure
sock       : address of IP socket structure
unsolId    : unsolicited id (currently unused)
saveUId    : temporary save area
svFl       : temporary save area
abrtR      : abort reason code (currently unused)
rPort      : remote port number if connected (currently unused)
rAddr      : remote IP address if connected (currently unused)
lPort      : local port number
lAddr      : local IP address (0 if any address)
mxRcvByt   : maximum socket receive byte count
mxSndByt   : maximum socket send byte count
con        : address of connection control block

```

```

      id          device  minor  db sdb gdb gsdb mt  fl  retId  hcCon
-----
      msg         4801    1  0 OFF  2  OFF  ON  0    0 cf715020

openFl  streamFl  readQ   writeQ   stream  numCons
-----
      2          2 cd80e154 cd80e190 cdbdc800      1

                                cons
-----
cf715020

```

where -

```

id          : temporary id for display only – minor number
device      : the stream device number associated with this interface
minor       : the streams minor number associated with this interface
db          : connection debug level
sdb         : socket debug level
gdb         : global debug level
gsdb        : global socket debug level
mt          : memory trace on or off
fl          : connection flags      0x80 : hc connection
                                           0x08 : no checksum socket option
                                           0x04 : debug socket option

retId       : current retry timeout id
hcCon       : address of special hc connection control block
openFl      : device open flags
streamFl    : device stream flags
readQ       : the address of the stream read queue
writeQ      : the address of the stream write queue
stream      : address of stream control block
numCons     : number of connections using this interface
cons        : list of connection control block addresses

```

IP Interface Display Stats

This command displays statistics for the stream or a connection.

Example 1: no connection specified

```

      id          txmsgs   txbytes   rxmsgs   rxbytes
-----
      msg         0         0         0         0

txdelay  rxdelay  outDrop  inDrop
-----
      0         0         0         0

```

Example 2: specific connection (1)

```
igs msg 1:
  id          txmsgs    txbytes    rxmsgs    rxbytes
-----
  msg:1      0          0          0          0

txdelay  rxdelay  outDrop    inDrop
-----
      0          0          0          0
```

where -

id : temporary id for display only – minor number:connection reference number
txmsgs : # messages sent to IP
txbytes : # bytes sent to IP
rxmsgs : # messages received from IP
rxbytes : # bytes received from IP
txdelay : # stream delayed messages destined for IP
rxdelay : # stream delayed messages coming from IP
outDrop : # dropped messages destined for IP
inDrop : # dropped messages coming from IP

IP Interface Clear Stats

This command clears the statistics for the stream or a connection.

HELP Debug

This button displays help information for the "IP Interface Set Debug" command in a separate window.

IP Interface Set Debug

This button sets the debug trace level globally or for a particular connection. The ID can be obtained by first displaying the IP configuration with the "IP Interface Display Config" command.

IP Interface Define Interface

This button defines various IP interface parameters.

Prior to selecting this button, provide the following data on the selection screen:

- port number - the local port number (normally set to 6950).
- checksum - select this box to enable the checksum of IP packets.
- Max Receive - the maximum receive buffer size (normally set to 512000).
- Max Send - the maximum send buffer size (normally set to 512000).
- Chg running (temp) - select this box to make a temporary change. The change will only remain in effect until the unit is restarted.
- Chg file (perm) - select this box to make a permanent change

Appendix A: Configuration Worksheet

This worksheet can be used to record the necessary NESiGate configuration information.

HOST & IP Information <i>(Used for Network Configuration)</i>	<i>Example</i>	Site Configuration
Host name	<i>netfin3</i>	
IP address (data)	<i>11.1.2.27</i>	
IP address (management)	<i>10.1.2.27</i>	
Domain name	<i>netexsw.com</i>	
Network mask	<i>255.255.255.0</i>	
Default gateway	<i>10.1.2.50</i>	
IP address of name server	<i>10.1.3.1</i>	
OS device information <i>(Used for OS Definitions)</i>	<i>Example</i>	Site Configuration
Device number (or name)	<i>5200</i>	
Number of devices	<i>4</i>	
Director port (device director port)	<i>F3</i>	
Control unit number (or name)	<i>1</i>	
Unit address	<i>0</i>	
LPAR number	<i>0</i>	
Channel board Information <i>(Used for NESiGate board definitions)</i>	<i>Example</i>	Site Configuration
Board name	<i>Board1</i>	
Channel type (ESCON)	<i>ESCON</i>	
Speed (DCI, 3.0MB, 4.5MB)		

NESiGate Channel Information <i>(Used for NESiGate device definition)</i>	<i>Example</i>	Site Configuration
IFname	<i>IBM5200</i>	
type (must be MSG)	<i>MSG</i>	
Board (name of channel board)	<i>Board1</i>	
UADD (unit address)	<i>0</i>	
StartGNA (starting GNA address)	<i>EA00</i>	
Number of devices	<i>4</i>	
Input device (not required)	<i>0</i>	
Max Data	<i>65535</i>	
For ESCON devices only:		
CU (control unit)	<i>1</i>	
CHlink (channel director port)	<i>EA</i>	
LPAR	<i>0</i>	
NESiGate Router Information <i>(Used for NESiGate Static Routes definitions) (Note 1)</i>	<i>Example</i>	Site Configuration
StartGNA (remote GNA address)	<i>DC00</i>	
IP Addr	<i>10.1.2.15</i>	
Num (number of consecutive addresses (repeat for all remote GNA addresses))	<i>4</i>	
NESiGate DNS Entries <i>(Used for NESiGate Dynamic Routes definitions) (Note 1)</i>	<i>Example</i>	Site Configuration
Add entries to the DNS server	<i>NTX0000A110 10.1.2.25</i>	

Note 1: Either **Static** or **Dynamic** routing definitions must be used for each NetEx/IP GNA-to-IP mapping requirement.

Appendix B: NESiGate Sense Bytes

Table 1. NESiGate Channel Sense Bytes defines the sense bytes that are returned from the NESiGate channel interface board.

Sense Bytes				
0	8	31
X'80' – Command Reject	X'80' – Data Timeout	X'2A' – Data Timeout
X'10' – Equipment Check		X'10' – Waitmsg Timeout		X'2B' – Waitmsg Timeout

Table 1. NESiGate Channel Sense Bytes

Subchannel not started error – only two bytes of sense are returned X'8200'

