

# **NonStop NET/MASTER Tips and Techniques**

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## ***Introduction***

This is an ongoing column with NonStop NET/MASTER tips and techniques. Each column is also accessible from <http://www.greshamsoftwarelabs.com.au/> (Gresham Software Labs). Please send all comments and suggestions to John New at [jnew@greshamsoftwarelabs.com.au](mailto:jnew@greshamsoftwarelabs.com.au).

## ***Biography***

John New is a technical writer. He has written and updated various Tandem manuals. He currently writes hard-copy, online, and web documents for a variety of software products.

## Accessing Existing Databases From NCL Requesters

This article discusses how to access existing databases from NCL requesters running under NonStop NET/MASTER.

It shows how NCL requesters can easily interact with existing server classes running in a typical Pathway environment. It describes how to open and close communication between NCL requesters and Pathway server classes, and it discusses how to specify the structure of messages that travel between them. Finally, it explains the commands to obtain information about the Pathway systems to which NonStop NET/MASTER is connected.

For more information about this subject, refer to the *NonStop NET/MASTER NCL Programmer's Guide*.

### ***Pathway, NonStop NET/MASTER, and NCL***

NCL processes, which run under NonStop NET/MASTER, can easily communicate with existing Pathway server classes to gain access to existing databases. As Figure 1 shows, they do so using the Pathway PATHSEND interface, which bypasses TCPs and Pathway requesters, to communicate directly with Pathway server processes. An NCL process that uses the PATHSEND interface is called an NCL requester. The NCL procedure is coded to use NCL statements (described later) that are specifically designed to communicate with server classes.

It is convenient to divide NCL requesters into two types:

An interactive NCL requester is functionally very similar to a SCOBOL requester, although implemented with a different language and executed from a different environment. An interactive NCL requester presents a panel interface at a NonStop NET/MASTER terminal. NonStop NET/MASTER users make requests from the terminal. The NCL requester passes requests to a server process. The server process sends the reply back to the NCL requester, which displays the results at the terminal.

An automated NCL requester monitors a Tandem system or network for certain event messages. When an automated NCL requester receives predetermined event messages, it automatically takes some action. This includes making a request of a server class. The server process sends the reply back to the NCL requester, which can then take further action based on the reply.

### ***Benefits of NCL Requesters***

The main benefit of using NCL requesters to communicate with a Pathway system to access existing databases is that it circumvents the need to maintain separate copies of data for operations purposes. This ensures that the NCL requester has access to data that is usually the most up-to-date.

Using a simple interactive NCL requester to communicate with a Pathway system provides a straightforward way for NonStop NET/MASTER operators to access data when necessary. Automated NCL requesters can be designed to be more powerful because they can process a mix of data from both event messages and databases.

The benefits of using automated NCL requesters to access a Pathway database may best be illustrated by an example. Assume that an automated NCL requester needs to obtain the contact details of a hardware supplier following a certain system event that reports the failure of a piece of computer hardware.

Instead of maintaining a separate lookup file in the operations environment, the NCL requester could access an existing corporate database that contains the hardware supplier details. The NCL requester could retrieve the name, address, and telephone number of the company. It could add these to an event message that is displayed on the screen, logged in an event log, or passed to another Tandem system or host for further display, logging, or processing.

The hardware supplier details may include a pager number and the pager service may permit digital access. If so, the NCL requester could even create a message reporting the hardware failure, dial the pager service, and send the message to the pager service without any human operator intervention.

## ***Establishing Communication***

Before an NCL requester can communicate with a Pathway server class, the requester and the server class must establish communication. This requires two steps. NonStop NET/MASTER, then the NCL requester, must open a connection with the server class.

Commands that are available to control the connection between NonStop NET/MASTER and a specific server class include PSNDCTL OPEN (to open a NonStop NET/MASTER connection) and PSNDCTL CLOSE (to close the NonStop NET/MASTER connection). You can enter the PSNDCTL commands from two main locations.

First, a user can type the commands from the Operator Control Services (OCS) command input line:

```
PSNDCTL OPEN=\SYS.$PM.SC1 ID=MYID
PSNDCTL CLOSE=\SYS.$PM.SC1
```

Second, an NCL requester can programmatically enter the commands during or after NonStop NET/MASTER startup:

```
INTCMD "PSNDCTL OPEN=\SYS.$PM.SC1 ID=MYID"
INTCMD "PSNDCTL CLOSE=\SYS.$PM.SC1"
```

The PSNDCTL commands are global commands in the sense that they control access to a Pathway server class from NonStop NET/MASTER rather than from a specific NCL requester. When a connection is open, all appropriately coded NCL processes can access the Pathway server class. Therefore the commands have a relatively high authority level of 3 (CLOSE and STOP) and 4 (OPEN).

The value of entering PSNDCTL commands separately, rather than from an NCL requester, is that a NonStop NET/MASTER operator can globally enable or disable access to certain Pathway systems as required. NCL requesters can only access Pathway systems that a NonStop NET/MASTER operator has previously enabled.

NCL statements that are available to control the connection between a specific NCL requester and the server class include PSEND OPEN (to open a requester connection) and PSEND CLOSE (to close the requester connection). While the connection is open, the NCL requester can use the PSEND SEND statement to send request messages to and receive reply messages from the server class. For example:

```
PSEND OPEN=MYID FORMAT=MAPPED MAP=MYMAP
PSEND SEND ID=MYID MDO=&REQUEST. TO MDO=&REPLY.
PSEND CLOSE ID=MYID
```

## ***Specifying Message Structure***

For successful communication, both an NCL requester and a server class must understand the structure of the messages that flow between them.

For example, if an NCL requester sends a request to read records from, and add records to, a customer database, then the server class must be able to analyze the request messages. These will specify the required operation (read or add) and, if an add operation, specify the customer record in the correct structure.

The server class must be able to send reply messages that the NCL requester can analyze. These will report the success or failure of the operation and, if a read operation, send the requested customer record from the database.

The most common way of defining shared messages in a Pathway environment is to use DDL. NonStop NET/MASTER can process DDL. Therefore the most straightforward way of ensuring that NCL requesters can understand message data structures is to use existing NonStop NET/MASTER facilities to leverage existing DDL message definitions.

NonStop NET/MASTER and DDL interface at two points.

First, when you are compiling DDL. If appropriate, the DDL [NO]NCLCONSTANT command directs the DDL compiler to generate NCL constant output. The result is a series of NCL %%DEFINE compiler directives in a file. Later you can use the NCL %%INCLUDE compiler directive in an NCL requester to include this file containing the %%DEFINE compiler directives. The *Data Definition Language (DDL) Reference Manual* describes the [NO]NCLCONSTANT command. The *NonStop NET/MASTER NCL Reference Manual* describes NCL compiler directives.

Second, after you have compiled the DDL, the data dictionary can be used to create a map that NonStop NET/MASTER can use. A map is simply a representation of data structures. NCL requesters use maps to consistently understand the data structures of request and reply messages. When an NCL requester sends a request message, it uses a map to structure the message so that a Pathway server process can understand it. When the Pathway server process sends a reply message, the NCL requester uses a map to understand the structure of the message. The *NonStop NET/MASTER NCL Programmer's Guide* describes how to create a map.

In summary, the main steps to enable NonStop NET/MASTER to access shared message definitions in a Pathway environment are:

1. If appropriate, recompile the DDL using the DDL [NO]NCLCONSTANT command to direct the DDL compiler to generate NCL constant output.
2. Create a NonStop NET/MASTER map from the data dictionary. NonStop NET/MASTER supplies a utility program (called MDMAINT) for this purpose.

When the new map is created it is automatically made available for use by NCL requesters. The NonStop NET/MASTER SHOW MAPS command shows currently loaded maps. (The SYSPARMS MAPLOAD command explicitly loads a map. An NCL process implicitly loads a map when it refers to the map.)

## Displaying Information

Two NonStop NET/MASTER commands are available to display information about server classes to which NonStop NET/MASTER has established a connection.

You can display status information about server classes by using the SHOW PSND command:

SHOW PSND								
NNM0322	PATHMON.SERVERCLASS		PSNDID	ACTIVE-USERS	STATUS			
NNM0323	\SYS1.\$PPPP.SERVER-1		DYNAMIC	1	AVAL			
NNM0999	*END* 1 SERVERCLASSES DISPLAYED							

You can display information about the NCL requesters that are using the server class by using the SHOW PSNDUSER command:

SHOW PSNDUSER									
NNM0320	PSNDID	USERID	NCL-PROC	NCLID	TX	AVG-RT	AVG-MSG	TIME-OPEN	
NNM0321	DYNAMIC	SMITHJ	CALL_SE*	007999	0000005	002.305	00000054	002241.37	
NNM0999	*END*								

## Conclusion

Accessing an existing Pathway database from NonStop NET/MASTER and automated NCL procedures (NCL requesters) is very easy. Such access adds value to NCL automation because automated NCL requesters can extract the most current data from existing databases and merge this information with information in event messages. These enhanced messages can be displayed, logged, routed to other systems, or used as the basis for additional automation.