

NonStop NET/MASTER Tips and Techniques

by John New

Gresham Software Labs

Email: jnew@greshamsoftwarelabs.com.au

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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.

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.

File Handling in NCL: Part 3 – Creating and Using User-Defined Maps

This article continues the series on file handling in NCL. Part 1 discussed opening and closing files. Part 2 discussed adding, reading, updating, and deleting records.

This article discusses the difference between standard and user-defined maps, creating a user-defined map from Data Definition Language (DDL), and using a user-defined map from Network Control Language (NCL). The article also discusses creating NCL defines for constants defined by DDL.

Standard and User-Defined Maps

A map defines to NonStop NET/MASTER how a piece of structured data is physically organized so that the various components can be manipulated by NCL procedures without worrying about the physical structure. NonStop NET/MASTER supports two types of maps for accessing these data structures: standard and user-defined.

Standard maps are distributed with NonStop NET/MASTER and describe data structures that are an integral part of NonStop NET/MASTER. There are four standard maps: \$MSG, \$SPI, \$SEC, and \$NCL. \$MSG and \$SPI describe messages that travel through NonStop NET/MASTER, \$SEC describes user ID records, and \$NCL is the default map used for describing data structures in mapped files. You can find more information on standard maps in the *NonStop NET/MASTER NCL Programmer's Guide*.

A user-defined map is a map that you create. This type of map describes a data structure that is not an integral part of NonStop NET/MASTER. There are two main reasons why you may want to create a user-defined map: to access data in files created externally from NonStop NET/MASTER such as existing Enscribe databases, and to send messages to and receive messages from external processes such as an existing Pathway servers.

All maps are stored in the NonStop NET/MASTER map file.

Creating a User-Defined Map From DDL

A user-defined map is created from DDL. There are three main steps:

- 1 Create a DDL source schema file using DDL statements or copy an existing source schema if one exists for the data you want to access.
- 2 Create a DDL data dictionary using the source schema file as input
- 3 Create a map definition using the DDL data dictionary as input and add the map definitions to the NonStop NET/MASTER map file.

Creating a DDL Source Schema File

A DDL source schema file consists of DDL statements that define and describe DDL data structures. Segments from a DDL source schema file (called \$DATA.MYDDL.EMPFILE) that describes employee information might look similar to this:

```
...
DEF address.
  02 street  PIC X(25).
  02 city    PIC X(14).
  02 state   PIC X(3).
  02 zip     PIC 9(5).
END
...
DEF empdef.
  02 empcode PIC 9(4).
  02 empaddr TYPE address.
...
END
...
RECORD emprec.
  FILE IS "MYFILE" KEY-SEQUENCED.
  DEF IS empdef.
  KEY IS emprec.empcode.
END
```

Creating a DDL Data Dictionary

The following TACL command creates a DDL data dictionary using the DDL source schema file (called \$DATA.MYDDL.EMPFILE) as input and adds the record EMPREC to the DDL data dictionary:

```
DDL /IN $DATA.MYDDL.EMPFILE/ DICT
```

Creating and Adding a Map Definition

The NonStop NET/MASTER product includes a utility program called MDMAINT to create and manage user-defined maps. MDMAINT creates a map definition from the data structures you specify in the DDL data dictionary and adds the map definition to the NonStop NET/MASTER map file.

Assume NonStop NET/MASTER was installed using the default process character of Z on \$DATA.ZNNM. The following TACL command runs MDMAINT, which creates a user-defined map from the record EMPREC (the letter R refers to a record) and adds the map to the NonStop NET/MASTER map file:

```
RUN MDMAINT /NAME $ZMDM/ $DATA.ZNNM.DATA.MAPFILE ADD $DATA.MYDDL EMPREC R
```

Refer to the *NonStop NET/MASTER MS System Management Guide* for the complete syntax to run the MDMAINT program.

After the user-defined map is added to the map file, NCL processes can use the map to access data. You can display available maps by using the SHOW MAPS command from Operator Control Services (OCS).

Using a User-Defined Map From NCL

Using a user-defined map from NCL is exactly the same as using a standard map.

You can open a file to use the user-defined map:

```
FILE OPEN FORMAT=MAPPED MAP=EMPREC ID=EMPFILE KEYEXTR=NO
```

You can create a variable mapped by the user-defined map, and then add data to the variable:

```
...  
ASSIGN MDO=&addmdo. MAP=EMPREC  
&addmdo.empcode = 99  
&addmdo.empaddr.street = 1 THIS STREET  
&addmdo.empaddr.city = MYCITY  
&addmdo.empaddr.state = MYSTATE  
&addmdo.empaddr.zip = 99999  
...
```

You can add the data in the variable as a record in the file:

```
FILE PUT MDO=&addmdo. KEY=&addmdo.empcode
```

You can read the record from the file:

```
FILE GET KEY="99" MDO=&getmdo.
```

You can delete the record from the file:

```
FILE DEL KEY="99"
```

When finished, you can close the file:

```
FILE CLOSE ID=EMPFILE
```

Creating NCL Defines For Constants Defined by DDL

Note that you can create NCL defines for constants defined by DDL and include those constants in an NCL procedure. For example:

- 1 Create DDL constants and use the ?NCLCONSTANT command to direct the DDL compiler to generate NCL constant output in an edit file:

```
?NCLCONSTANT $data.myddl.mydefs !  
constant val-1 value 1.  
constant VAL-2 value 2.
```

- 2 View the output in the edit file created by the DDL compiler:

```
%%define VAL_1 1  
%%define VAL_2 2
```

In an NCL procedure, the %%DEFINE compiler directive defines a symbol with a value, enabling you to use the symbol rather than value throughout the NCL procedure.

- 3 Include the edit file in the NCL procedure:

```
%%INCLUDE mydefs
```

In an NCL procedure, the %%INCLUDE compiler directive logically includes the specified file in place of the directive.

For more information on the NCLCONSTANT command, refer to the *Data Definition Language (DDL) Reference Manual*. For more information on compiler directives, refer to the *NonStop NET/MASTER NCL Reference Manual*.

Conclusion

This article has described the basics of creating and using user-defined maps. More information is available in the NonStop NET/MASTER documentation set.

Later articles in this series on file handling in NCL will discuss topics such as using file access facilities to communicate with Guardian 90 processes, and using alternate keys in key-sequenced files.