

Connect:Direct® HP NonStop

Administration Guide

Version 3.5

Connect:Direct HP NonStop Administration Guide
Version 3.5
First Edition

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Preface

The *Connect:Direct HP NonStop Administration Guide* is for programmers and network operations staff who maintain Connect:Direct HP NonStop.

This *Connect:Direct HP NonStop Administration Guide* assumes knowledge of the HP NonStop operating system, its applications, network, and environment. If you are not familiar with the HP NonStop operating system, refer to the HP NonStop library of manuals.

Chapter Overview

The organization of the *Connect:Direct HP NonStop Administration Guide* follows:

- ❖ Chapter 1, *About Connect:Direct HP NonStop*, provides general information about the product and describes how Connect:Direct HP NonStop works.
- ❖ Chapter 2, *Defining and Maintaining Security*, describes security options and provides the information you need to set up Connect:Direct HP NonStop security in your environment.
- ❖ Chapter 3, *Defining and Maintaining the Network Map*, describes the various NETMAP commands you can use to perform tasks related to the network map.
- ❖ Chapter 4, *Retrying File Allocation Failures*, explains how to implement the file allocation retry process in the event of a file allocation error.
- ❖ Chapter 5, *Defining and Maintaining the Type File*, describes the tasks you can perform to maintain the type file, which contains records that define the file attributes for new files.
- ❖ Chapter 6, *Defining Character Translation Tables*, explains how to use the NDMXLATE utility to define character translation tables for use during file transfer operations.
- ❖ Chapter 7, *Optimizing Performance*, describes the different options that you can use to optimize product performance.
- ❖ Chapter 8, *Running Traces*, provides command syntax and parameter descriptions for running traces and controlling automatic establishment of the Connect:Direct HP NonStop server.
- ❖ Chapter 9, *Controlling EMS Logging*, describes how to manage the event messages for the startup and shutdown of Processes.
- ❖ Chapter 10, *Modifying the Message File*, explains how to display, modify, and print messages in Connect:Direct HP NonStop.
- ❖ Chapter 11, *Connect:Direct HP NonStop Spooler Option*, describes the spooler option you can use to transfer spooler jobs automatically from an HP NonStop node to a disk file on an adjacent node.
- ❖ Appendix A, *Common HP NonStop File System Error Codes*, lists errors commonly returned by the HP NonStop file system following either an allocation error or a dynamic system resource problem external to Connect:Direct HP NonStop.

- ❖ Appendix B, *Common Adjacent Node Type External Error Codes*, contains a listing of external errors returned by adjacent nodes due to an allocation failure.
- ❖ Appendix C, *Sample Entries for File Allocation Retry*, provides sample NDMINIT and adjacent node entries for file allocation retry.
- ❖ Appendix D, *Migrating from SNA to TCP/IP*, discusses some issues you need to consider before migrating between SNA and TCP/IP.
- ❖ Appendix E, *Specifying IP Addresses, Host Names, and Ports*, discussed the guidelines to use for both Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6) versions of the Internet Protocol.
- ❖ *Glossary*, defines Connect:Direct HP NonStop terms used in the manual.

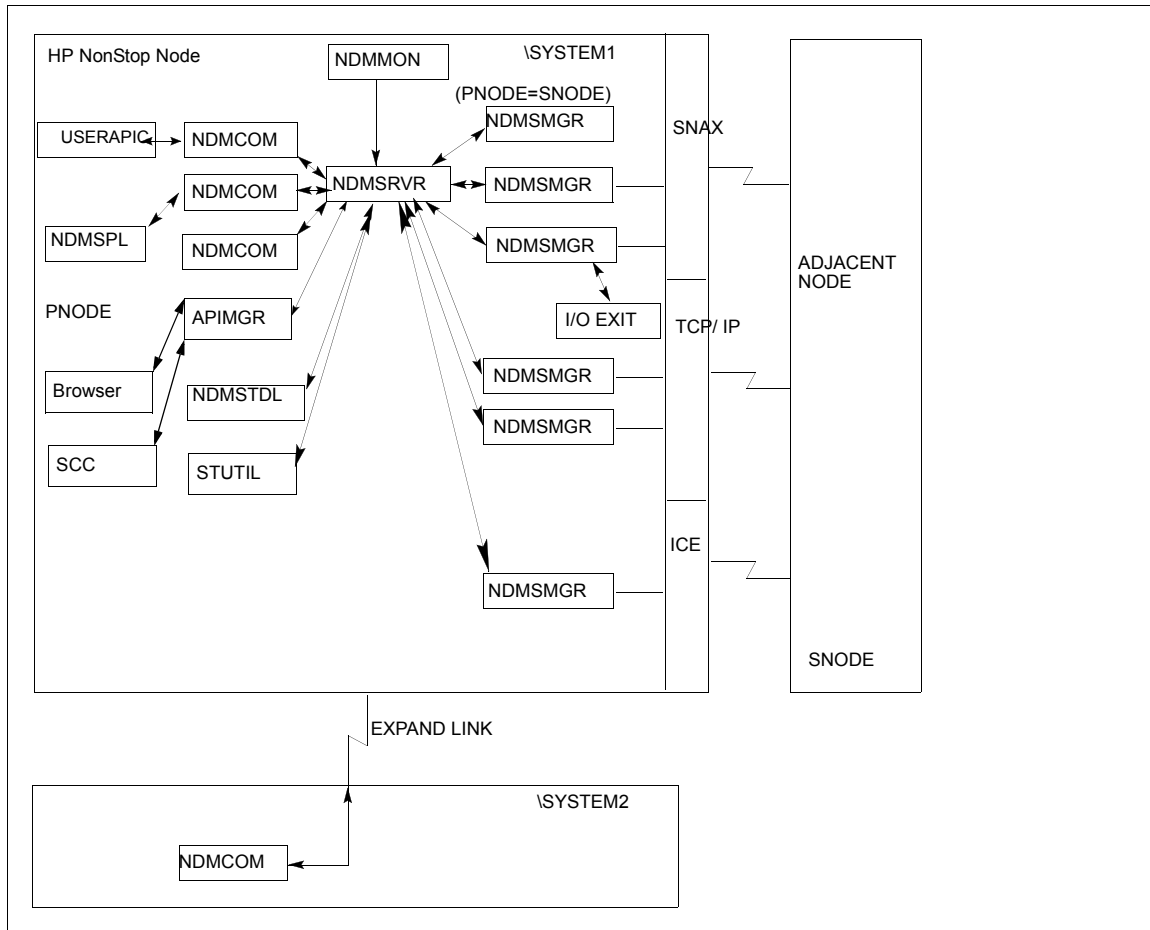
About Connect:Direct HP NonStop

Connect:Direct HP NonStop links technologies and moves all types of information between networked systems and computers. It manages high-performance transfers by providing features such as automation, reliability, efficient use of resources, application integration, and ease of use. Connect:Direct HP NonStop software offers choices in communications protocols, hardware platforms, and operating systems. It provides the flexibility to move information among mainframes, midrange systems, desktop systems, and LAN-based workstations.

Connect:Direct HP NonStop Components

Connect:Direct HP NonStop runs as an application on the Guardian operating system. The product components interact to execute the Process statements and commands submitted through the user interface.

The following figure illustrates the basic components of Connect:Direct HP NonStop: Monitor (NDMMON), Server (NDMSRVR), User Interface (NDMCOM), Session Manager (NDMSMGR), API Manager (APIMGR), I/O Exits (I/O EXIT), Statistics Deletion Program (NDMSTD), Statistics Utility Program (STUTIL), Application Programming Interface (USERAPIC), and Connect:Direct HP NonStop Spooler Option (NDMSPL). Brief descriptions of each component follow the sample network configuration.



Component	Description
Monitor	The monitor (NDMMON) is a nonstop process that creates and monitors the Connect:Direct HP NonStop server (NDMSRVR) process. For NDMMON startup instructions, refer to the <i>Connect:Direct HP NonStop Installation Guide</i> .
Server	The Connect:Direct HP NonStop server (NDMSRVR) process manages: <ul style="list-style-type: none"> - Command requests - Communication with the session manager - Session establishment requests for TCP/IP Note: If the NDMSRVR process ends abnormally or the CPU executing the NDMSRVR process fails, NDMMON creates a new NDMSRVR process with the original NDMSRVR process name and parameters.
User Interface	NDMCOM is the user interface with NDMSRVR. Use NDMCOM, the command-line interface, to issue Connect:Direct HP NonStop commands and to change, configure, and display the Connect:Direct HP NonStop environment.

Component	Description
Session Manager	<p>The Connect:Direct HP NonStop session manager (NDMSMGR) module establishes sessions and transfers data between the local and adjacent nodes. The application can be configured to start session managers at initialization, or you can start them manually using the MODIFY command. If you define dynamic LUs for TCP/IP connectivity, NDMSRVR starts session managers as needed. You cannot issue the MODIFY command to start dynamic session managers.</p> <p>The figure on the previous page shows six session managers, two of which are communicating across SNAX sessions, two across TCP/IP, and one across ICE. One session manager is using the PNODE=SNODE facility.</p>
API Manager	<p>The Connect:Direct HP NonStop API Manager (APIMGR) module provides an interface for browser(s) and Sterling Control Center. To define an API Manager, see the instructions on the INSERT NETMAP AMGR command in the <i>Connect:Direct HP NonStop Administration Guide</i>.</p>
I/O Exits	<p>I/O exit support enables the user-written programs to serve as application interfaces for Connect:Direct HP NonStop data transfers. I/O exits permit manipulation of data formats and database architectures not currently supported by Connect:Direct HP NonStop. For transfers (COPY), Connect:Direct HP NonStop supports direct access only to Enscribe and Spool files. I/O exit support enables user-written programs to access non-supported databases, such as SQL, and manipulate data during a COPY step.</p>
Statistics Deletion Program	<p>The statistics deletion program (NDMSTDL) ensures that sufficient space is available to write statistics records in the statistics files. NDMSTDL deletes records from the Connect:Direct HP NonStop statistics file based on user-specified deletion criteria and maximum percentage of file capacity. For instructions on using NDMSTDL, refer to <i>Optimizing Performance</i> in the <i>Connect:Direct HP NonStop Administration Guide</i>.</p>
Statistics Utility Program	<p>The statistics utility program (STUTIL) analyzes the statistics files to determine how much space is available. Connect:Direct HP NonStop returns this information to the server for determination on when to run NDMSTDL.</p>
Application Program Interface	<p>An Application Program Interface (API) is a user-written application that communicates with NDMCOM. Refer to the <i>Connect:Direct HP NonStop Management Programming Guide</i> for details on creating and using an API. NOTE: The sample program, USERAPIC, is provided as a template for writing a customized programmatic application.</p>
Connect:Direct HP NonStop Spooler Option	<p>The Connect:Direct HP NonStop Spooler option permits an installation to transfer spooler jobs automatically from an HP NonStop node to a file on an adjacent node.</p> <p>For the information you need to install, configure, and run the Connect:Direct HP NonStop Spooler option, refer to <i>Connect:Direct HP NonStop Spooler Option</i> in the <i>Connect:Direct HP NonStop Administration Guide</i>.</p>

Automated Installation and Management System

The Automated Installation and Management System (AIMS) is a full-screen, block-mode interface for installing, configuring, and starting Connect:Direct HP NonStop.

Note: You must have a 6530 terminal or a 6530 emulation program to run AIMS.

AIMS is a menu-driven system that collects information about your node and the nodes you are communicating with and guides you through the installation. Performing the menu options in the displayed numerical order expedites installation. Each user-input screen has a Help feature, which describes the entry fields for the screen. Throughout the AIMS procedure, messages displayed on the bottom line of the screen inform you of the status of the procedure and indicate errors. For more information on AIMS, refer to *Connect:Direct HP NonStop Installation Guide*.

Connect:Direct HP NonStop Concepts

This section introduces certain concepts and definitions important to understanding user operations.

Processes

The Process language provides instructions for transferring files, running programs, submitting jobs on the adjacent node, and altering the sequence of Process step execution. You can include one or more steps in a Process.

A Process consists of a Process definition statement (PROCESS statement) and one or more additional statements. Parameters further qualify Process instructions. For more information, including sample Processes, see the Processes web site at <http://www.sterlingcommerce.com/documentation/processes/processhome.html>.

Transmission Control Queue

The Transmission Control Queue (TCQ) controls Process execution as Connect:Direct HP NonStop operates. Connect:Direct HP NonStop stores submitted Processes in the TCQ which is divided into logical queues.

Connect:Direct HP NonStop places the Process in the appropriate queue based on Process statement parameters that affect scheduling. Examples of such parameters are the HOLD, RETAIN, and STARTT parameters.

Connect:Direct HP NonStop selects Processes in a first-in first-out manner for execution in Process class and priority as sessions are available. You can access the queues and manipulate the Processes through Connect:Direct HP NonStop commands.

Refer to *Queuing Processes* in the *Connect:Direct HP NonStop User Guide and Reference* for a discussion of the following topics:

- ❖ Understanding the Transmission Control Queue
- ❖ Managing Processes in the TCQ
- ❖ Scheduling Connect:Direct HP NonStop Activity

Network Map

The network map file defines the nodes with which Connect:Direct HP NonStop can communicate. The network map includes a local node record and one or more adjacent nodes, logical units (LUs), API managers (AMGRs), and logmode records.

The local node is the logical name for the node on which you installed Connect:Direct HP NonStop. An adjacent node is the node definition for a remote site. LUs provide communication between the HP NonStop

system (local node) and adjacent nodes. Logmode records define the session protocol for an SNA HP NonStop LU, and are only used when the local LU is configured as the primary LU (PLU).

In addition to creating explicit adjacent node records for the individual nodes with which you communicate, you can also define domain node adjacent node records for communications with large networks of Connect:Direct nodes, including Connect:Direct/Plex systems, in a TCP domain. These special-purpose adjacent node records simplify your network map and increase efficiency.

Defining Domain Nodes to Manage Inbound TCP/IP Connections

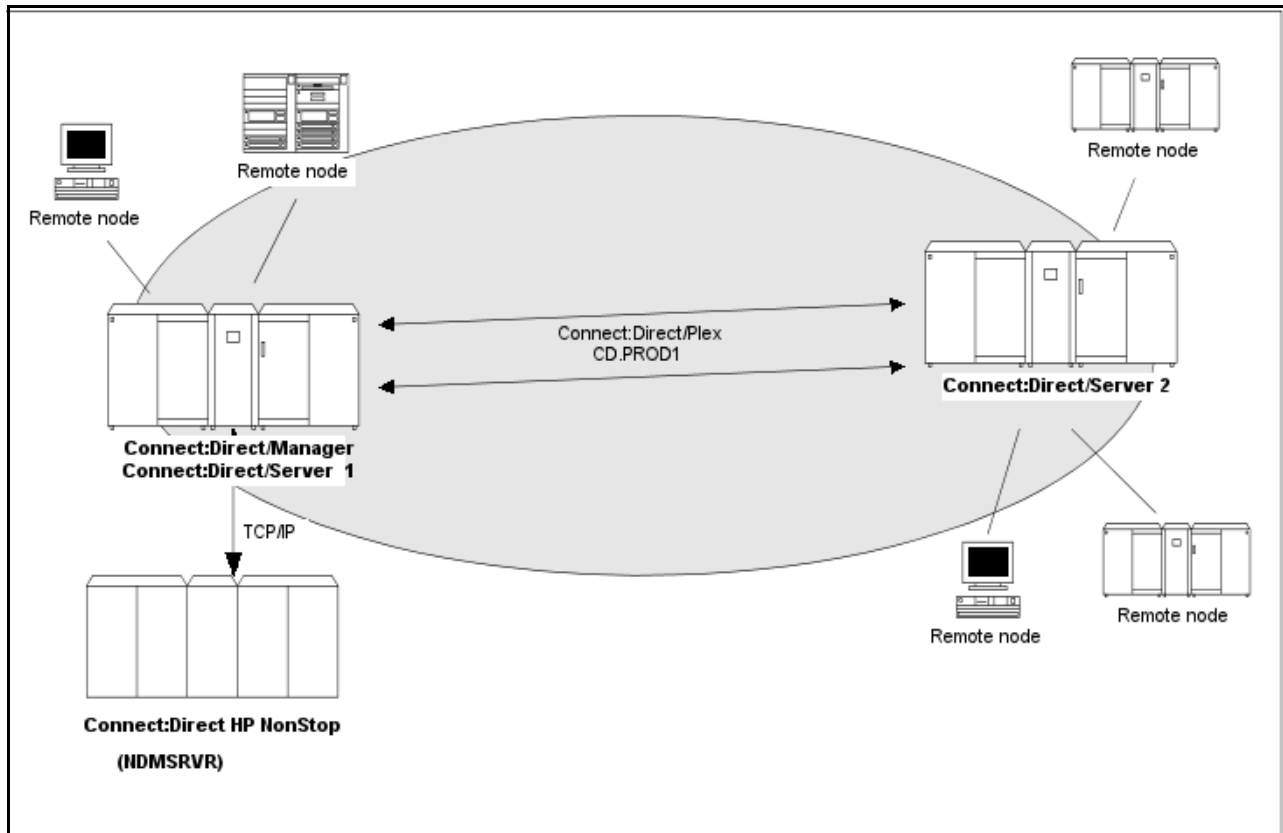
The domain node feature enables you to manage inbound connection requests to the Connect:Direct HP NonStop node from IP addresses that are not explicitly configured in the network map, for example from multiple Connect:Direct/Server processes under the direction of the Connect:Direct/Plex Manager. Using the domain node feature, you can create an adjacent node entry of the type NDM.DOMAIN for any TCP/IP domain containing one or more Connect:Direct nodes and define a range of IP addresses instead of defining an adjacent node record for each remote connection. When the Connect:Direct HP NonStop server receives a connection request, it first attempts to match the originating IP address with a specific adjacent node entry in the network map. If this search fails, the server searches for adjacent nodes of the type NDM.DOMAIN and then uses the IPMASK parameter as a template to identify a node that best fits the mask's pattern. Without a domain node record, each Connect:Direct/Plex Server or remote node must have an adjacent node record in the Connect:Direct HP NonStop network map to initiate connections to the local Connect:Direct HP NonStop node.

The DOMAINSERVER and the NETMAPCHECK initialization parameters are associated with this feature. You must set the DOMAINSERVER global initialization parameter to Yes before you can define a domain node.

You can use the NETMAPCHECK initialization parameter and Connect:Direct Secure+ Option to secure the TCP/IP sessions. See *Connect:Direct Secure+ Option* in this chapter for more information about Connect:Direct Secure+ Option and *Planning the Installation* in the *Connect:Direct HP NonStop Installation Guide* for a discussion about how the security options function in your environment.

Using Session Redirection for Outbound TCP/IP Connections

Connect:Direct HP NonStop supports session redirection for outbound connections to a Connect:Direct/Plex system. As illustrated in the following figure, a Connect:Direct/Plex system is a Connect:Direct for OS/390 (zOS) system consisting of a Connect:Direct/Plex Manager and one or more Connect:Direct/Servers in a TCP/IP environment. Connection requests from the Connect:Direct HP NonStop node to the Connect:Direct/Plex system are routed to the Connect:Direct/Plex Manager, which redirects the connection request to the appropriate, available Connect:Direct/Plex Server process. Redirecting communications sessions across multiple Connect:Direct Server processes simplifies the network map, facilitates load-balancing, and ensures continuous, efficient use of resources.



You can create adjacent node records either through AIMS or with individual network map commands. Use the following table as a guide to the tools and the parameters used to create adjacent node records:

Task	Reference
Planning your network map to use domain nodes and session redirection	<i>Defining Adjacent Node Records for TCP/IP Connections in Planning the Installation in the Connect:Direct HP NonStop Installation Guide</i>
Setting the DOMAINSERVER and NETMAPCHECK initialization parameters	<i>Setting Initialization Parameters in Installing and Configuring Connect:Direct HP NonStop in the Connect:Direct HP NonStop Installation Guide</i>
Assessing your security options	<i>Defining Adjacent Node Records for TCP/IP Connections in Planning the Installation in the Connect:Direct HP NonStop Installation Guide</i>
Creating the worksheets for your adjacent node records in the network map	<i>Preparing to Define the Network Map through AIMS in Planning the Installation in the Connect:Direct HP NonStop Installation Guide</i>
Defining the network map through AIMS	<i>Configuring the Network Map in Installing and Configuring Connect:Direct HP NonStop in the Connect:Direct HP NonStop Installation Guide</i>
Using individual commands, syntax, and parameters to define and maintain the network map	<i>Defining and Maintaining the Network Map in the Connect:Direct HP NonStop Administration Guide</i>

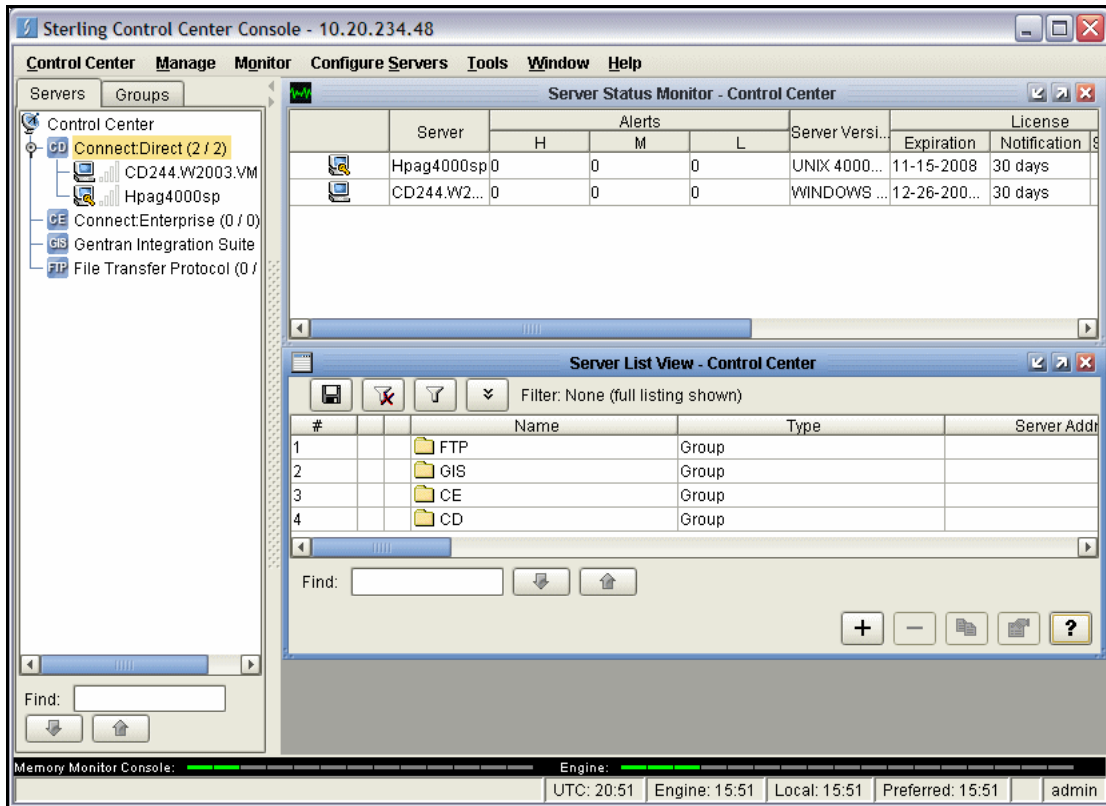
Connect:Direct Secure+ Option

The certificate authentication and multiple cipher suites offered by Connect:Direct Secure+ Option provide the confidence that your organization can use public networks knowing that data is being reliably transferred from a known source and can only be read by the intended recipient. To use Connect:Direct Secure+ Option for communications with remote nodes, you must have node records in the Connect:Direct Secure+ Option parameters file (SPNODES) that duplicate the adjacent node records in the Connect:Direct HP NonStop network map. You can populate the Connect:Direct Secure+ Option parameters file from entries defined in an existing network map using the Sync with NetMap function. For more information about populating the Connect:Direct Secure+ Option parameters file (SPNODES) and configuring nodes for Connect:Direct Secure+ Option, refer to the *Connect:Direct Secure+ Option HP NonStop Implementation Guide*. For information about using Connect:Direct Secure+ Option with domain nodes, see *Planning the Installation* in the *Connect:Direct HP NonStop Installation Guide*.

Sterling Control Center

Sterling Control Center is a centralized management system that provides operations personnel with continuous enterprise-wide business activity monitoring. Control Center lets you monitor these types of servers:

- ❖ Connect:Direct for z/OS
- ❖ Connect:Direct for UNIX
- ❖ Connect:Direct for Windows
- ❖ Connect:Direct HP NonStop
- ❖ Connect:Direct Select
- ❖ Connect:Direct for OS/400 (iSeries)
- ❖ Connect:Enterprise for z/OS
- ❖ Connect:Enterprise for UNIX
- ❖ Gentran Integration Suite (GIS) servers (including GIS clusters)
- ❖ FTP servers that use xferlog format



Sterling Control Center enables you to:

- ❖ Manage Connect:Direct for UNIX, Windows, or z/OS servers. You can manage these types of configuration objects:
 - ◆ Functional authorities
 - ◆ Initialization parameters
 - ◆ Netmap nodes
 - ◆ Netmap modes
 - ◆ Netmap communication paths
 - ◆ Secure+ nodes
 - ◆ Secure+ key certificates
 - ◆ Secure+ trusted certificates
 - ◆ Secure+ cipher suites
 - ◆ User proxies

You can also compare versions of the above configuration objects for a given server, do searches on configuration objects, make templates to simplify the creation of new configuration objects, and do audits of changes to configuration objects. (For more on using Control Center to configure servers, see the *Sterling Control Center Configuration Management Guide*.)

- ❖ Monitor multiple servers
 - ◆ Group individual servers into server groups for a single view of system-wide activity. Group server groups into larger groups, and display a list view of servers and server groups.
 - ◆ View status and statistics on active or completed processing

- ♦ Suspend, release, and handle Connect:Direct Processes on z/OS, Windows, HP NonStop, and UNIX platforms
- ♦ Stop Connect:Direct servers on z/OS, Windows, HP NonStop, OS/400 (iSeries), and UNIX platforms
- ♦ Pause and resume monitoring for a Connect:Direct server
- ❖ Monitor service levels
 - ♦ View information about active and completed Processes across servers within your network
 - ♦ Receive notification of data delivery events that occur or do not occur as scheduled
 - ♦ Define rules based on processing criteria that can generate an alert, send an e-mail notification, generate a Simple Network Management Protocol (SNMP) trap to an Enterprise Systems Manager (ESM), run a system command, or issue a Connect:Direct server command
 - ♦ Monitor for alerts about conditions such as a server failure or a Process that starts late
 - ♦ Create service level criteria (SLCs) that define processing schedules, monitor Processes and file transfers for compliance with the processing schedules, and generate alerts when schedules are not met
- ❖ Analyze key operational metrics through reports to document and analyze processing activity
- ❖ Create customized reports based on criteria you define, and schedule the reports to run and be delivered automatically by e-mail
- ❖ Validate user authenticity for console to engine connections using one or more of four authentication methods, including password validation, host name identification, Windows domain, and TCP/IP address (or three methods in the case of the Web console, which does not support domain authentication)
- ❖ Identify additional Connect:Direct servers (through Node Discovery) that may need to be monitored based on communications with a currently monitored server

Sterling Control Center enhances operational productivity and improves quality of service by:

- ❖ Monitoring and configuring and managing licenses for Connect:Direct servers (for Windows, UNIX, and z/OS) from a central point
- ❖ Ensuring that critical processing windows are met
- ❖ Reducing impact on downstream processing by verifying that expected processing occurs
- ❖ Providing proactive notification for at-risk business processes
- ❖ Consolidating information for throughput analysis, capacity planning, post-processing operational or security audits, and workload analysis
- ❖ Reducing the risk of errors associated with manual system administration, including eliminating individual server logon to view activity and the need to separately configure each server for error and exception notifications

Sterling Control Center is available for purchase as a separate product. Contact your Sterling Commerce representative to learn more about Sterling Control Center.

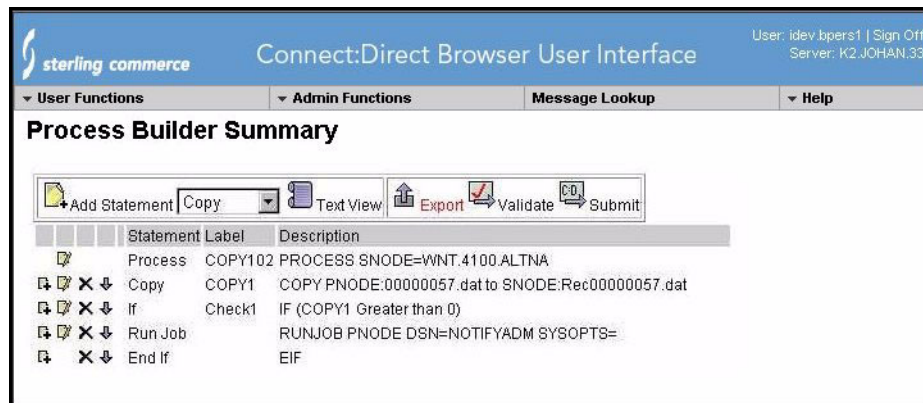
Connect:Direct Browser User Interface

Connect:Direct Browser User Interface allows you to build, submit, and monitor Connect:Direct Processes from an Internet browser, such as Microsoft Internet Explorer.

You can also perform Connect:Direct system administration tasks, such as viewing and changing the network map or initialization parameters, from Connect:Direct Browser. The specific administration tasks that you can perform depend on the Connect:Direct platform that your browser is signed on to and your security level.

Connect:Direct Browser is distributed on CD-ROM with Connect:Direct for z/OS, Connect:Direct for Windows, Connect:Direct for UNIX, and Connect:Direct HP NonStop. It can also be downloaded from the Sterling Commerce Web site. Connect:Direct Browser is installed on a Web server and can be accessed by

administrators and users through a URL. The following example shows the page used to graphically build a Process:



To learn more about Connect:Direct Browser, see the documentation on the Connect:Direct Browser CD-ROM or available online from the Sterling Commerce Documentation Library.

Interfacing with Sterling Control Center or Browser User Interface

Connect:Direct HP NonStop can interface with Sterling Control Center and Connect:Direct Browser User Interface. The TCP/IP API enables users of these other Sterling Commerce applications to configure, control, and operate Connect:Direct HP NonStop from any host on a TCP/IP network. To set up a connection between Connect:Direct HP NonStop and Sterling Control Center or Browser User Interface, you need to define two entities in the network map:

- ❖ An adjacent node with the TYPE parameter defined as NDM.API and the IPADDR parameter defined as the address of the external application client from which connection requests may be received.
- ❖ An API manager (AMGR) to handle communications sessions with the external application. The AMGR record is used to define the local TCP process and port number on which a LISTEN is to be posted to accept incoming connection requests.

After you have defined these components, you must identify the AMGRs you want to use to communicate with an adjacent node by using the RELATE NETMAP command. For more information on both the INSERT and RELATE NETMAP commands, refer to *Defining and Maintaining the Network Map* in the *Connect:Direct HP NonStop Administration Guide*. You can also perform these functions using the Automated Installation & Management System (AIMS) to set up the network map. For more information, refer to *Installing and Configuring Connect:Direct HP NonStop* in the *Connect:Direct HP NonStop Installation Guide*.

Commands

You use commands to submit Connect:Direct HP NonStop Processes to the TCQ and to manipulate Processes in the queue by flushing, deleting, or suspending them.

The following command submits the Process called ONESTEP to the TCQ with a HOLD status of Yes:

```
SUBMIT FILE ONESTEP HOLD=YES
```

Other commands allow you to select and display statistics or perform administrative functions, such as maintain network maps, user authorities, and default types.

The command language consists of the following types of commands:

- ❖ User
- ❖ Administrator

- ❖ Environment
- ❖ Message

User and Administrator Commands

Issue user and administrator commands to perform the following tasks:

- ❖ Submit Connect:Direct HP NonStop Processes
- ❖ Monitor and control Process execution
- ❖ Perform administrative functions
- ❖ Examine Connect:Direct HP NonStop node definitions
- ❖ Display and update initialization parameters
- ❖ Stop Connect:Direct HP NonStop

Refer to the *Connect:Direct HP NonStop User Guide and Reference* for command syntax and parameter descriptions for user commands. Command syntax and parameter descriptions for administrator commands are in the *Connect:Direct HP NonStop Administration Guide*.

The following table lists the user and administrator commands and their functions:

Command	Function
CHANGE PROCESS	Modifies a Process in the TCQ.
DELETE PROCESS	Removes a nonexecuting Process from the TCQ.
DELETE NETMAP	Removes a node, LOGMODE, LU, AMGR, or relation entry from the network map.
DELETE SECURITY†	Removes a user record from the security file.
DELETE TYPE†	Removes a type record from the type file.
DELETE USER†	Removes a user record from the authorization file.
DISPLAY LICENSE	Displays current license key.
DISPLAY LOGGING	Displays or prints the settings for EMS and STATS, and the name of the collector process.
DISPLAY PARMS	Displays or prints current settings of the initialization parameters (from the NDMINIT file).
DISPLAY SESSIONS	Displays active and licensed session counts.
FLUSH PROCESS	Removes an executing Process from the TCQ.
INSERT NETMAP†	Adds a local node, an adjacent node, an LU, a LOGMODE, or an AMGR record to the network map.
INSERT NETMAP AMGR†	Adds an API manager, AMGR, to the network map, which enables connections to Sterling Control Center and the Browser User Interface.
INSERT SECURITY†	Adds a security record to the security file for Secure Point of Entry.
INSERT TYPE†	Adds a type record to the type file.
INSERT USER†	Adds a user record to the authorization file.
LASTPNUMBER	Determines the number of the last Process submitted in the current NDMCOM session.
MODIFY†	Starts the trace facility and/or modifies other operational functions.

† Administrative commands

Command	Function
RELATE NETMAP [†]	Assigns specific LUs or AMGRs to an adjacent node record.
SELECT NETMAP	Displays or prints definitions of API Manager, node, LOGMODE, and LU entries in the network map file.
SELECT PROCESS	Displays or prints information about a Process in the TCQ.
SELECT SECURITY	Displays or prints records in the security file.
SELECT STATISTICS	Displays or prints statistics, messages, license information, and /or commands in the statistics log.
SELECT TYPE	Displays or prints type records.
SELECT USER	Displays or prints user records in the authorization file.
STATUS	Displays the status of nodes and LUs, Processes in queues, and TCP listen ports.
STOP ALL [†]	Stops Connect:Direct HP NonStop operation.
SUBMIT	Submits a Process for execution.
SUSPEND PROCESS	Suspends an executing Process.
UPDATE LICENSE	Validates the license key in the LICENSE file and updates the active license.
UPDATE LOGGING [†]	Modifies settings for EMS, STATS, and COLLECTOR.
UPDATE NETMAP [†]	Modifies settings for an API manager, node, LOGMODE, or LU record in the network map.
UPDATE PARM [†]	Alters operating parameters from the NDMINIT file. For more information on this command, see Connect:Direct HP NonStop <i>Installation Guide</i> .
UPDATE SECURITY [†]	Changes a security record in the security file.
UPDATE STATISTICS [†]	Dynamically changes the percentage setting, deletion criteria, and midnight housekeeping flag in the statistics facility (NDMSTDL).
UPDATE TYPE [†]	Changes a type record in the type file.
UPDATE USER [†]	Changes a user record in the authorization file.

[†] Administrative commands

Environment Commands

Use environment commands to change and define the Connect:Direct HP NonStop environment or to facilitate the use of NDMCOM. The following table lists the environment commands and their functions:

Command [†]	Function
!	Reexecutes a previous command line, without modifications.
DISPLAY STATINFO	Displays percentage setting, deletion criteria, midnight flag setting, last execution of NDMSTDL, and file information for the statistics files (STATFILE, STATSRCH, STATSRC0).
EDIT	Invokes the HP NonStop TEDIT editor.
ENVIRONMENT	Displays the current Connect:Direct HP NonStop environment, including defaults.

[†] Refer to the *Controlling the Environment* chapter in the *Connect:Direct HP NonStop User Guide and Reference* for command syntax and parameter descriptions for environment commands.

Command†	Function
EXIT	Exits NDMCOM.
FC	Changes and/or reissues previously typed commands.
HELP	Accesses the interactive Connect:Direct HP NonStop Help facility.
HISTORY	Displays up to the last 100 commands issued.
LIST	Displays the contents of an edit file.
LOGON	Logs on to NDMCOM.
OBEY	Executes a series of HP NonStop and Connect:Direct HP NonStop commands, except FC, contained in an edit file.
OBEYVOLUME	Defines the default volume used for expansion of the obey file name.
OPEN	Opens the NDMSRVR process.
OUT	Changes the default output file.
PRINTER	Defines the print file name.
PROCVOLUME	Defines the default volume used for expansion of the Process file name.
RUN	Executes any user-written or system programs without exiting NDMCOM.
SYMBOL	Builds, deletes, and displays symbolic substitution values for use in Connect:Direct HP NonStop.
TIME	Retrieves the current day, date, and time.
VERSION	Displays or prints the version, release, and maintenance level for the NDMCOM currently running.
VOLUME	Defines the current default volume.

† Refer to the *Controlling the Environment* chapter in the *Connect:Direct HP NonStop User Guide and Reference* for command syntax and parameter descriptions for environment commands.

Message Commands

Use Connect:Direct HP NonStop message commands to insert, delete, display, modify, and print messages. Refer to *Using Connect:Direct HP NonStop* in the *Connect:Direct HP NonStop User Guide and Reference* for syntax and parameter descriptions for displaying and printing messages. Refer to *Modifying the Message File* in the *Connect:Direct HP NonStop Administration Guide* for syntax and parameter descriptions for modifying messages.

Flow of Connect:Direct HP NonStop Operations

The following shows the processing flow for a SUBMIT command.

Note: In this discussion, the Browser User Interface can be substituted wherever you see the command line interface, NDMCOM.

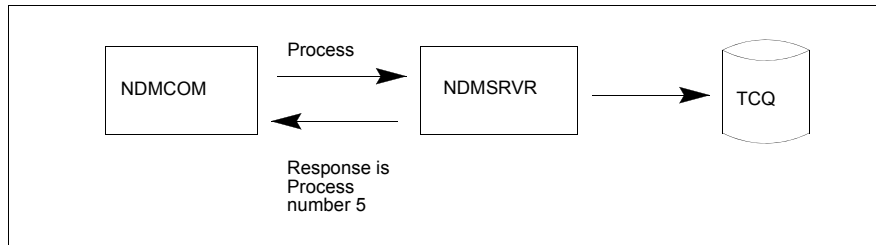
- ❖ The SUBMIT command is issued through NDMCOM.

```
CD.49.>SUBMIT FILE $VOL.SEND.FILE
```

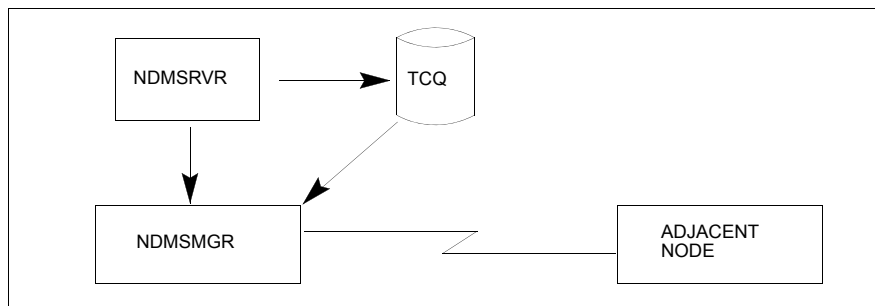
- ❖ The command submits the file, \$VOL.SEND.FILE. The file contains Process statements.

```
SEND    PROCESS  SNODE=MVS.NODE
STEP01  COPY     FROM (DSN=$SYS.TAN.TXT) -
        TO      (DSN=MVS.FILE SNODE)
```

- ❖ The Process is sent to the server. The server then places the Process on the TCQ, responds to NDMCOM with the Process number (PNUMBER), and routes the Process to an available session manager. In the following figure, the server returns a PNUMBER of 5 to NDMCOM.



- ❖ The session manager reads the Process from the TCQ and executes it.



- ❖ While the Process is queued, or during execution, you can display Process status by issuing the SELECT PROCESS command.

```
CD.50.>SELECT PROCESS PNUMBER=5
```

Refer to *Managing Processes* in the *Connect:Direct HP NonStop User Guide and Reference* for sample output from the SELECT PROCESS command.

- ❖ After Process execution, you can display the results of the operation by issuing the SELECT STATISTICS command. Refer to *Viewing System Files* in the *Connect:Direct HP NonStop User Guide and Reference* for sample output from the SELECT STATISTICS command.

```
CD.51.>SELECT STATISTICS PNUMBER=5
```

Defining and Maintaining Security

This chapter describes security options and provides the information you need to set up Connect:Direct HP NonStop security in your environment. You can perform the following tasks:

- ❖ Define functional authority
- ❖ Check security from adjacent nodes
- ❖ Define user IDs
- ❖ Define and maintaining the authorization file
- ❖ Define and maintaining the security file

Defining Functional Authority

The Connect:Direct HP NonStop authorization file (AUTHFILE) contains the default values for user authorization and defines the system features that a user can access. Determine what authority you want to assign to each user and assign the following authority levels to Connect:Direct HP NonStop commands:

Level	Description
A	All authority
G	Group authority
O	Owner authority
N	No authority
Y	Yes

Typing Records in the AUTHFILE

NDM.DEFAULT is a template that defines default user authority values. The template is set up during installation. After inserting the NDM.DEFAULT record in the AUTHFILE, any new user logging on to Connect:Direct HP NonStop inherits the default authority assigned to NDM.DEFAULT and is inserted automatically into the AUTHFILE at logon. The inclusion of the NDM.DEFAULT record in the AUTHFILE

enables users to log on to Connect:Direct HP NonStop without being inserted individually. You have the option of explicitly defining user authorization, even with an NDM.DEFAULT record defined in the AUTHFILE.

Note: If the NDM.DEFAULT record is inserted, the alias.convert functionality, for HP NonStop user IDs, is overridden and nonfunctional.

AIMS creates the obey file NDMINSTL.ONDMUSER during installation. NDMINSTL.ONDMUSER is the default file name unless you changed the name when you set the AIMS environment. Execute ONDMUSER during installation to add the following records to the AUTHFILE:

- ❖ Installer of Connect:Direct HP NonStop, with full authority
- ❖ NDM.DEFAULT record

If you do not want to insert the NDM.DEFAULT record into the AUTHFILE, edit ONDMUSER and delete, or comment out, all references to the NDM.DEFAULT record. Valid comment marks are /* at the beginning of the comment and */ at the end.

Note: Even if you do not want an NDM.DEFAULT record in the AUTHFILE, you must execute ONDMUSER to add the user who installs Connect:Direct HP NonStop to the AUTHFILE.

In addition to using the ONDMUSER obey file, you can add users individually to the AUTHFILE with USER commands. Individual authorization enables you to tailor user privileges specifically to your needs. You execute these commands through NDMCOM, and not AIMS. Refer to *Defining and Maintaining the Authorization File* on page 31 for format and parameter descriptions for the user commands.

Logon Security

Connect:Direct HP NonStop checks logon security automatically when you run NDMCOM or connect using the Connect:Direct Browser User Interface, if the user name or the NDM.DEFAULT record exists in the AUTHFILE. Your AUTHFILE record determines whether you can execute a command.

When you log on to NDMCOM for the first time and type LOGON and a password, the password is encrypted in the AUTHFILE. Future logons do not require a password.

Note: If the HP NonStop password changes, you receive a prompt to repeat the logon procedure.

Caution: If the ALIAS.CONVERT parameter is set to Y for a particular user, all aliases for that user can log on to NDMCOM without being defined separately in the AUTHFILE. The resulting security environment is that of the owning user ID. The presence of the NDM.DEFAULT record disables this functionality.

Changing Ownership of NDMCOM

File ownership and security attributes are based on the owner of the current NDMCOM session. The last user to log on to NDMCOM owns the NDMCOM session. You can override security for accessing files by defining a PNODEID parameter in a Connect:Direct HP NonStop Process or in a Connect:Direct HP NonStop SUBMIT command. Refer to the Connect:Direct Process documentation for syntax and parameter descriptions for Process statements and *Managing Processes* in the *Connect:Direct HP NonStop User Guide and Reference* for syntax and parameter descriptions for the SUBMIT command.

Checking Security from Adjacent Nodes

The following security options are available for Connect:Direct HP NonStop operations that are initiated from an adjacent node:

- ❖ Define a SNODEID parameter on a Process submitted from an adjacent node. Syntax for the SNODEID parameter is:

```
SNODEID=(id [,pswd] [,new-pswd])
```

Define the SNODEID on the SUBMIT command or in the PROCESS statement of a Process.

- ❖ You can set up the security environment to allow Connect:Direct HP NonStop to perform *secure point of entry* or automatic user ID security resolution. Secure point of entry enables an adjacent node to access Connect:Direct HP NonStop without defining a user ID and password in the Process.

If you do not define an SNODEID, Connect:Direct HP NonStop automatically attempts to verify the node name and user ID of the submitter.

The following sections describe how Connect:Direct HP NonStop security operates when you use SNODEIDs or secure point of entry.

Using SNODEIDs

When an SNODEID is in a Process submitted from an adjacent node, the SNODEID must match a user ID and password defined on the HP NonStop system security environment.

Updating User Passwords on HP NonStop Nodes

If a Process submitted from another node includes a new password in the SNODEID parameter, the following steps occur:

Caution: \$ZSMP must be the default Process name for SAFEGUARD. If SAFEGUARD is not running, the operation receives a security error and fails.

1. Connect:Direct HP NonStop verifies that your user ID and current password defined in the SNODEID parameter are valid on the HP NonStop system.
2. Connect:Direct HP NonStop issues an ALTER USER command to SAFEGUARD through the Subsystem Programmatic Interface (SPI) that requests changing your current password to the new password.
3. If SAFEGUARD grants the request, Connect:Direct HP NonStop verifies that your password changed.
4. Connect:Direct HP NonStop records your new password in the AUTHFILE if your authorization record exists.

If any step fails, the Process fails with a security error.

Note: The user ID defined in the SNODEID parameter must be the owner of the SAFEGUARD authorization record.

Secure Point of Entry

If SNODEID is not defined, secure point of entry is attempted. Secure point of entry during Connect:Direct HP NonStop Process execution is based on the node name and user ID of the submitter at the sending node.

Connect:Direct HP NonStop performs the following steps during secure point of entry:

1. When the session is established, the node name and user ID of the Process submitter, as known on the adjacent node, are passed automatically to Connect:Direct HP NonStop.
2. Connect:Direct HP NonStop checks the node name and user ID against the security file (SECFILE). Security records are added to the SECFILE with INSERT SECURITY commands. Refer to *Defining and Maintaining the Security File* on page 39 for format and parameter descriptions for the security commands.
3. If the submitter ID and node name fields correspond to an entry in the SECFILE, the local user name in the SECFILE record (a user ID for the HP NonStop node) is used as a key to read the AUTHFILE. The value of the local userid or alias is case-sensitive, since it is used as a key into the AUTHFILE.
4. If an entry (user record) exists for the local user in the AUTHFILE, the encrypted password from the user record, and the local user name, are passed to Guardian for authentication.
5. If the userid and password are authenticated, the process will execute on the local node under the local user specified in the SECFILE record.

For secure point of entry to succeed, the following conditions must be met:

- ❖ The submitter's node name and userid have a matching entry in the SECFILE
- ❖ The local userid or alias from the SECFILE record is defined in the AUTHFILE
- ❖ The user record in the AUTHFILE contains a valid password
- ❖ The local userid and password are valid on the local HP NonStop system

When you explicitly add a user to the AUTHFILE, that user must log on to NDMCOM at least once before the user ID is used for secure point of entry. The first use of the user ID stores the password in encrypted form in the AUTHFILE, where it is accessed for security purposes.

Note: Passwords are always encrypted during transmission between nodes and are only decrypted when processed by the application.

Defining User IDs

This section provides specific information for defining user IDs for the various protocols and platforms compatible with Connect:Direct HP NonStop.

- ❖ For SNA LU0 and NETEX, the HP NonStop user ID (group, user) is translated to its decimal representation before it is passed to other nodes. If the values for group and user contain fewer than three digits each, the values are padded to the left with zeros (0).
For example, if the decimal representation of the group and user ID at the HP NonStop node is 10,20, the values passed to other nodes are 010.020.
- ❖ For TCP/IP connections, no conversion occurs. The user ID or Safeguard alias is passed in its name form, for example, (GROUP.USER) or (aliasname).

Note: For more information on converting SNA user IDs to TCP/IP user IDs, see Appendix D, *Migrating from SNA to TCP/IP*.

User Types

Two types of user may be defined:

- ❖ Guardian ID—a Guardian ID is defined as GROUP.USER. It can be up to eight characters long, include alphanumeric characters and it must start with an alpha character. Defining a Guardian ID requires that you define all of the authority available to a user including the activities a user can perform.
- ❖ Alias ID—an alias is defined in Safeguard and is owned by a Guardian ID. You can manage users logging on to Connect:Direct HP NonStop with an alias in either of the following ways:
 - ◆ Define the alias explicitly. An alias may be added to the USER file with its own security attributes. When a user logs on to NDMCOM using the alias, NDMCOM will retain the alias as the identity of the owner of the session.
 - ◆ Use ALIAS.CONVERT. Instead of defining aliases individually, the owning Guardian ID can be defined in the USER file with the flag ALIAS.CONVERT = Y. When an alias of the Guardian ID runs NDMCOM, the session ownership will reflect the Guardian ID and inherit the security attributes of that ID. This allows the local security administrator to assign individual aliases to Connect:Direct HP NonStop users, while eliminating the need to define each and every alias within Connect:Direct HP NonStop.

Note: If an NDM.DEFAULT record is defined in the USER file, the ALIAS.CONVERT flag is ignored.

Defining and Maintaining the Authorization File

USER commands or the Connect:Direct Browser User Interface enable you to add, delete, and update user records in the AUTHFILE.

Adding User Records

Use the INSERT USER command to add user records to the AUTHFILE.

Following is the INSERT USER command format:

INSert USER	USERID=group.user alias NDM.DEFAULT ,DEFAULT.AUTHORITY=A G O N ,PROCESS=(CHange A G O N ,DELeTe A G O N ,FLUSH A G O N ,SELeCt A G O N ,SUSpend A G O N) ,USER=(DELeTe A G N ,INSert A G N ,SELeCt A G N ,UPDate A G N) ,NETMAP=(DELeTe Y N ,INSert Y N ,RELeTe Y N ,SELeCt Y N ,UPDate Y N) ,SECURITY=(DELeTe Y N ,INSert Y N ,SELeCt Y N ,UPDate Y N) ,TYPE=(DELeTe Y N ,INSert Y N ,SELeCt Y N ,UPDate Y N) ,ALIAS.CONVERT=Y N ,MODIFY=Y N ,STATISTICS=A O N ,STOP.ALL=Y N ,SUBMIT=Y N ,UPDATE.STATistics=Y N ,UPDATE.LOGging=Y N ,NAME=user name ,PHone=phone number ,PROCVOLume=\$vol.subvol \$vol subvol ,OBEYVOLume=\$vol.subvol \$vol subvol ,VOLUME=\$vol.subvol \$vol subvol
-------------	--

Required Parameter

The INSERT USER command has the following required parameter:

Parameter	Description
USERID=group.user alias NDM.DEFAULT	Specifies the user record to be inserted in the AUTHFILE. group.user—specifies the group name or number and user ID or number of the user. alias—specifies the safeguard alias ID of the user. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic. NDM.DEFAULT—specifies a record containing a standard set of privileges for users not explicitly defined to the AUTHFILE.

Optional Parameters

Following are the optional parameters for the INSERT USER command listed in alphabetical order.

Optional Parameters	Description
ALIAS.CONVERT	Specifies whether any alias of this user ID can log on without being defined in the AUTHFILE. Valid values = Y or N.
DEFAULT.AUTHORITY	<p>Defines user authority without having to specify values for each command. Specifying values for individual commands overrides this parameter.</p> <p>Valid authority levels are A, G, O, N.</p> <p>A—Indicates all authority.</p> <p>G—Indicates group authority.</p> <p>O—Indicates owner authority.</p> <p>N—Indicates no authority.</p> <p>The following conditions apply:</p> <p>If the parameter is set to A, fields that accept only Y (yes) or N (no) values are set to Y.</p> <p>If the parameter is set to G, O, or N, then fields that accept only Y (yes) or N (no) values are set to N.</p> <p>Note: The authority defined by this parameter applies to all operations.</p>
MODIFY	Enables you to request session manager and server traces or modify certain operational functions. Valid values are Y and N.
NAME	Identifies the name of a particular user. Enclose in single quotation marks (' ') to permit parsing of blanks.
NETMAP	Specifies commands that allow you to define and maintain node records authorized for use with Connect:Direct HP NonStop. Valid values are Y and N. Includes DELETE NETMAP, INSERT NETMAP, RELATE NETMAP, SELECT NETMAP, and UPDATE NETMAP.
OBEYVOLUME	Indicates the default volume for the OBEY files invoked using NDMCOM.
PHone	Identifies the phone number a particular user. Enclose in single quotation marks (' ') to permit parsing of blanks.
PROCCess	<p>Specifies commands that allow you to control the activities of Processes. Valid values are A, G, O, and N.</p> <p>A—Indicates all authority.</p> <p>G—Indicates group authority.</p> <p>O—Indicates owner authority.</p> <p>N—Indicates no authority.</p> <p>Includes: CHANGE PROCESS, DELETE PROCESS, FLUSH PROCESS, SELECT PROCESS, and SUSPEND PROCESS.</p>
PROCVOLUME	Indicates the default volume for Connect:Direct HP NonStop Process file names submitted in NDMCOM.
SECURITY	Specifies commands that allow you to define and maintain security records in the SECFILE for submitters of Processes at remote nodes. Valid values are Y and N. Includes DELETE SECURITY, INSERT SECURITY, SELECT SECURITY, and UPDATE SECURITY.

Optional Parameters	Description
STATISTICS	Displays or prints statistics from the statistics log. Valid values are A, O, and N. A—Indicates all authority. O—Indicates owner authority. N—Indicates no authority. Setting STATISTICS=O enables you to view statistics for outbound jobs submitted on the local node. If you do not use this setting, you see only inbound transactions where the REMOTE user ID is mapped to the local user ID. Note: G (group authority) is not supported by this parameter because the SELECT STATISTICS command does not support multiple site specifications.
STOP.ALL	Stops Connect:Direct HP NonStop operation. Valid values are Y and N.
SUBMIT	Enables you to submit Processes. Valid values are Y and N.
TYPE	Specifies commands that allow you to define and maintain type records. Type records define file attributes for new files. Valid values are Y and N. Includes DELETE TYPE, INSERT TYPE, SELECT TYPE, and UPDATE TYPE.
UPDATE.LOGging	Specifies whether you have the authority to update settings for event logging (EMS, STATS, and COLLECTOR). Valid values are Y and N.
UPDATE.STATistics	Specifies whether you have the authority to update settings for statistics (CRITERIA, MIDNITE, and PERCENT). Valid values are Y and N.
USER	Specifies commands that allow you to define and maintain local user records in the AUTHFILE. Valid values are A, G, and N. A—Indicates all authority. G—Indicates group authority. N—Indicates no authority. Includes DELETE USER, INSERT USER, SELECT USER, and UPDATE USER.
VOLUME	Indicates the default volume for resolving file names or RUN TASK program names that are not fully qualified when the Connect:Direct HP NonStop Process is running under the current user ID.

Example

The following command inserts the user named CD.OPR into the AUTHFILE:

```
INSERT USER      USERID=CD.OPR&
                  DEFAULT.AUTHORITY=G&
                  MODIFY=Y&
                  STATISTICS=A&
                  STOP.ALL=Y&
                  VOLUME=$SYSTEM.CD&
                  PROCVOLUME=$SYSTEM.CDPROC&
                  OBEYVOLUME=$SYSTEM.CDOBEY
```

You can then perform the following tasks:

- ❖ Select, delete, flush, suspend, and change submitted Processes
- ❖ Request traces
- ❖ Select statistics for all files
- ❖ Issue the STOP ALL command
- ❖ Issue process, user, network map, type, submit, and security commands for the group

Deleting User Records from the User Authorization File

Use the DELETE USER command to remove user records from the AUTHFILE.

Format

Following is the DELETE USER command format:

```
DELEte USER          USERID=group.user|alias|NDM.DEFAULT|(list)
```

Required Parameter

The DELETE USER command has the following required parameter:

Parameter	Description
USERID= group.user alias NDM.DEFAULT (list)	<p>Specifies the user record to be deleted from the AUTHFILE.</p> <p>alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic.</p> <p>group.user—specifies the group name or number and user ID or number of the user.</p> <p>NDM.DEFAULT—specifies a record containing a standard set of privileges for users not explicitly defined to the AUTHFILE.</p> <p>list—Specifies a list of users. Enclose the list in parentheses, and separate each value with a space or comma (.).</p> <p>Note: Guardian user IDs are not case-sensitive; however, aliases must be entered exactly as defined in the AUTHFILE.</p>

Optional Parameters

The DELETE USER command has no optional parameters.

Examples

The following command deletes a single user record:

```
DELETE USER USERID=DALLAS.JONES
```

The following command deletes multiple user records:

```
DELETE USER USERID=(DALLAS.JONES, CHICAGO.LOOP)
```

UPDATE USER Command

Use the UPDATE USER command to modify user records in the AUTHFILE.

Format

Following is the UPDATE USER command format:

UPDate USER	USERID=group.user alias NDM.DEFAULT ,DEFAULT.AUTHORITY=A G O N ,PROCESS=(CHange A G O N ,DELeTe A G O N ,FLUSH A G O N ,SELeCt A G O N ,SUSpend A G O N) ,USER=(DELeTe A G N ,INSert A G N ,SELeCt A G N ,UPDate A G N) ,NETMAP=(DELeTe Y N ,INSert Y N ,RELate Y N ,SELeCt Y N ,UPDate Y N) ,SECURITY=(DELeTe Y N ,INSert Y N ,SELeCt Y N ,UPDate Y N) ,TYPE=(DELeTe Y N ,INSert Y N ,SELeCt Y N ,UPDate Y N) ,ALIAS.CONVERT=Y N ,MODIFY=Y N ,STATISTICS=A O N ,STOP.ALL=Y N ,SUBMIT=Y N ,UPDATE.STATistics=Y N ,UPDATE.LOGging=Y N ,NAME=user name ,PHone=phone number ,PROCVOLume=\$vol.subvol \$vol subvol ,OBEYVOLume=\$vol.subvol \$vol subvol ,VOLUME=\$vol.subvol \$vol subvol
-------------	--

Required Parameter

The UPDATE USER command has the following required parameter:

Parameter	Description
USERID=group.user alias NDM.DEFAULT	Specifies the user record to be updated in the AUTHFILE. group.user—specifies the group name or number and user ID or number of the user. alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic. NDM.DEFAULT—Specifies a record containing a standard set of privileges for users not explicitly defined to the AUTHFILE. Note: Guardian userids are not case-sensitive; however, aliases must be entered exactly as defined in the AUTHFILE.

Optional Parameters

Following are the optional parameters for the UPDATE USER command listed in alphabetical order.

Optional Parameters	Description
ALIAS.CONVERT=Y N	Specifies whether any alias of this user ID can log on without being defined in the AUTHFILE.
DEFAULT.AUTHORITY	<p>Defines user authority without having to specify values for each command; however, specifying values for individual commands overrides this parameter. Valid levels are A, G, O, or N.</p> <p>A—Indicates all authority. G—Indicates group authority. O—Indicates owner authority. N—Indicates no authority.</p> <p>The following conditions apply: If the parameter is set to A, fields that accept only Y (yes) or N (no) values are set to Y. If the parameter is set to G, O, or N, then fields that accept only Y (yes) or N (no) values are set to N.</p> <p>Note: The authority defined by this parameter applies to all operations.</p>
MODIFY	Enables the user to start session managers, application managers, and server traces, or modify other operational functions. Valid values are Y and N.
NAME	Identifies the name of a particular user. Enclose in single quotation marks (' ') to permit parsing of blanks.
NETMAP	Includes DELETE NETMAP, INSERT NETMAP, RELATE NETMAP, SELECT NETMAP, and UPDATE NETMAP. NETMAP commands allows the user to define and maintain node records authorized for use with Connect:Direct HP NonStop. Valid values are Y and N.
OBEYVOLUME	Indicates the default volume for the files invoked using NDMCOM.
PHone	Identifies the phone number of the user (not used by Connect:Direct; for documentation only). Enclose in single quotation marks (' ') to permit parsing of blanks.
PROCESS	<p>Specifies commands that allows the user to control the activities of Processes. Valid values are A, G, O, and N.</p> <p>A—Indicates all authority. G—Indicates group authority. O—Indicates owner authority. N—Indicates no authority.</p> <p>Includes: CHANGE PROCESS, DELETE PROCESS, FLUSH PROCESS, SELECT PROCESS, and SUSPEND PROCESS.</p>
PROCVOLUME	Indicates the default volume for Connect:Direct HP NonStop Process file names submitted in NDMCOM or the Browser for this user.
SECURITY	<p>Includes DELETE SECURITY, INSERT SECURITY, SELECT SECURITY, and UPDATE SECURITY.</p> <p>SECURITY commands allows the user to define and maintain security records in the SECFILE for submitters of Processes at remote nodes. Valid values are Y and N.</p>
STATISTICS	<p>Displays or prints statistics from the statistics log. Valid values are A, O, and N.</p> <p>A—Indicates all authority. O—Indicates owner authority. N—Indicates no authority.</p> <p>G (group authority) is not supported by this parameter because the SELECT STATISTICS command does not support multiple site specifications.</p>
STOP.ALL	Stops Connect:Direct HP NonStop operation. Valid values are Y and N.

Optional Parameters	Description
SUBMIT	Enables the user to submit Processes. Valid values are Y and N.
TYPE	Includes DELETE TYPE, INSERT TYPE, SELECT TYPE, and UPDATE TYPE. TYPE commands allows the user to define and maintain type records. Type records define file attributes for new files. Valid values are Y and N.
UPDATE.LOGging	Specifies whether the user has the authority to update settings for event logging (EMS, STATS, and COLLECTOR). Valid values are Y and N.
UPDATE.STATistics	Specifies whether the user has the authority to update settings for statistics (CRITERIA, MIDNITE, and PERCENT). Valid values are Y and N.
USER	Specifies which commands a user can enter to view or modify user records in the AUTHFILE, and which subset of user records can be viewed or modified by the user. Valid values are A, G, and N. A—Indicates all authority. G—Indicates group authority. N—Indicates no authority. Includes DELETE USER, INSERT USER, SELECT USER, and UPDATE USER.
VOLUME	Indicates the default volume for resolving file names or RUN TASK program names that are not fully qualified when the Connect:Direct HP NonStop Process is running under this user ID.

Example

The following command updates the authorization record for the user named CD.OPR in the AUTHFILE:

```
UPDATE USER      USERID=CD.OPR&
                  PROCVOL=$CD.PROCVOL &
                  PHONE='computer room (ext 265)'
```

This command updates the authorization record to reflect a new default volume for Processes and a new phone number for the user.

Defining and Maintaining the Security File

NDMCOM SECURITY commands or the Connect:Direct Browser User Interface enable you to add, delete, and update user security in the SECFILE.

This section describes the following tasks you can perform with SECURITY commands:

- ❖ Define user security records with the INSERT SECURITY command
- ❖ Delete user security records with the DELETE SECURITY command
- ❖ Modify user security records with the UPDATE SECURITY command

You can examine SECFILE records by issuing the SELECT SECURITY command. Refer to the *Viewing System Files* chapter in the Connect:Direct HP NonStop *User Guide and Reference* for the format and parameter descriptions for the SELECT SECURITY command.

Security file entries are used to enable the Secure Point of Entry feature in Connect:Direct HP NonStop. Each entry maps the combination of an adjacent node name and submitter ID to a local user ID (proxy ID), which must be defined in the local USER file. This permits users on an adjacent node to submit Processes to Connect:Direct HP NonStop without having to specify a Guardian user ID and password in their Process scripts.

INSERT SECURITY Command

Use the INSERT SECURITY command to insert a record in the SECFILE.

Format

Following is the INSERT SECURITY command format:

```
INSert SEcurity          SNODE.USER=(snode,user)
                        LOCAL.USER=group.user|alias
```

Required Parameters

The required parameters for the INSERT SECURITY command are:

Required Parameters	Description
SNODE.USER=(snode,user;alias)	Specifies the node name and user ID at the secondary node for the security record you are adding to the SECFILE. Separate the data with a comma (,), and enclose the grouping in parentheses. This entry is case sensitive. snode—Specifies the name of the adjacent node and is a maximum of 16 characters. user—Specifies the user ID at the adjacent node and is a maximum of 17 characters. alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic.

Required Parameters	Description
LOCAL.USER= group.user alias	Specifies the user ID at the local node. This entry is case sensitive. group.user—Specifies the group and user ID at the local node. Use the standard HP NonStop format. alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic.

Optional Parameters

The INSERT SECURITY command has no optional parameters.

Examples

The following command inserts several user records in the security file. BOSTON is the adjacent node name, SMITH is the user ID at the adjacent node, and OPR.JOHN is the user ID at the local node.

```
INSERT SECURITY SNODE.USER=(BOSTON,SMITH) LOCAL.USER=OPR.JOHN
```

DELETE SECURITY Command

Use the DELETE SECURITY command to remove user records from the SECFILE.

Format

Following is the DELETE SECURITY command format:

```
DELeTe SECurity          SNODE.USER=(snode,user|alias)
```

Required Parameter

The DELETE SECURITY command has the following required parameter:

Required Parameter	Description
SNODE.USER= (snode,user alias)	Specifies the node name and user ID at the secondary node for the security record you are deleting from the SECFILE. Separate the data with a comma (,) and enclose the grouping in parentheses. This entry is case sensitive. snode—Specifies the 1–16 character name of the adjacent node. user—Specifies the 1–17 character user ID at the adjacent node. alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic.

Optional Parameters

The DELETE SECURITY command has no optional parameters.

Examples

The following command deletes user records from the security file. BOSTON is the adjacent node name, and SMITH is the user ID at the adjacent node.

```
DELETE SECURITY SNODE.USER=(BOSTON,SMITH)
```

UPDATE SECURITY Command

Use the UPDATE SECURITY command to modify a security record in the security file. You can only modify the local user ID.

Format

Following is the UPDATE SECURITY command format:

```
Update SEcurity      SNODE.USER=(snode,user|alias)
                    LOCAL.USER=group.user
```

Required Parameters

The required parameters for the UPDATE SECURITY command are:

Required Parameters	Description
SNODE.USER= (snode,user alias)	Specifies the node name and user ID at the secondary node for the security record you are updating in the SECFILE. Separate the data with a comma (,) and enclose the grouping in parentheses. This entry is case sensitive. snode—Specifies the 1–16 character name of the adjacent node. user—Specifies the 1–17 character user ID at the adjacent node. alias—Specifies the user records to be selected in the AUTHFILE. You can type 1–17 alphanumeric characters including underscores, hyphens, and periods. The first character <i>must</i> be alphabetic.
LOCAL.USER= group.user	Specifies the modified user ID for the local node. Input the user ID for the security record you are updating. This entry is case sensitive. group.user—Specifies the modified group name and user name at the local node in standard HP NonStop format.

Optional Parameters

The UPDATE SECURITY command has no optional parameters.

Examples

The following command updates the local user ID of a security record for a user ID of SMITH at an adjacent node named BOSTON.

```
UPDATE SECURITY SNODE.USER=(BOSTON,SMITH) LOCAL.USER=HPNONSTOP.SAM
```

Defining and Maintaining the Network Map

The network map file defines the nodes with which Connect:Direct HP NonStop can communicate. The network map includes a local node record and one or more adjacent node, LOGMODE, logical unit (LU), and AMGR (API manager) records. Use NETMAP commands to define and maintain the network map.

This chapter describes the following tasks you can perform with the NDMCOM NETMAP commands or the Connect:Direct Browser User Interface:

- ❖ Defining the network map
- ❖ Associating an adjacent node with an LU or AMGR
- ❖ Deleting network map records
- ❖ Modifying network map records

If you want to view attributes of records in the network map, issue the SELECT NETMAP command. Refer to *Viewing System Files* in the *Connect:Direct HP NonStop User Guide and Reference* for the format and parameter descriptions for the SELECT NETMAP command.

Defining the Network Map

The INSERT NETMAP commands enable you to insert adjacent nodes, local nodes, LOGMODEs, logical units (LUs), and API managers (AMGRs) in your network map.

Adding an Adjacent Node to the Network Map

Use the INSERT NETMAP ADJACENT.NODE command to add an adjacent node to the network map. The adjacent node is the name of the Connect:Direct system with which Connect:Direct HP NonStop communicates.

Format

Following is the INSERT NETMAP ADJACENT.NODE command format:

INSert NETmap	ADJacent.node=node name TYPE=PNODESNODE PS NDM.NonStop NDM.VMS NDM.NT NDM.400 NDM.zOS NDM.VM NDM.VSE NDM.UNIX NDM.API NDM.DOMAIN ALLOC.RETRY.ADJ=msg APPLID=applid MAXRETRY=n NDM400.LIB=lib.name NETEX.HOSTID=netex.hostid PARSESS=n IPADDR=n.n.n.n x:x:x:x:x:x:x hostname (list) PORTNUM=n DYNAMIC.DNS=Resolve IP address for every connect attempt IPMASK=nnn.nnn.nnn.nnn xxxx:xxxx:xxxx:xxxx VOLUME=<vol-name> "/<dir-name>/ ..." SECURE=Secure+ Option node ID TCPNAME=TCP process name (list) DESCRIPTION="node description" PLEXCLASS=Plexclass for NDM.zOS * CRC=ON OFF
---------------	---

Required Parameters

Following are the required parameters for the INSERT NETMAP ADJACENT.NODE:

Required Parameters	Description
ADJACENT.NODE=node name	Specifies the 1–16 character name of the adjacent node with which Connect:Direct HP NonStop communicates.
TYPE=PNODESNODE PS NDM.NonStop NDM.VMS NDM.NT NDM.400 NDM.zOS NDM.VM NDM.VSE NDM.UNIX NDM.DOMAIN NDM.API	Identifies the type of adjacent node. The value for TYPE corresponds to the platform of the adjacent node, with the exception of PNODESNODE or PS, which indicates that the specified node is both the PNODE and SNODE. This type of adjacent node enables you to send data to another file on your node or EXPAND network. Note: For Windows adjacent nodes use TYPE=NDM.NT. Note: For more information on setting up a domain node (TYPE=NDM.DOMAIN), see <i>Considerations for Defining Special-Purpose Adjacent Node Records</i> in Chapter 2, <i>Planning the Installation</i> , in <i>Connect:Direct HP NonStop Installation Guide</i> .

Optional Parameters

Following are the optional parameters for the INSERT NETMAP ADJACENT.NODE command:

Optional Parameters	Description
ALLOC.RETRY.ADJ=(msg msg... msg)	Specifies a list of the Connect:Direct error messages that are retried as an allocation error, when originated by the adjacent node. The errors are reported on the adjacent node.

Optional Parameters	Description
APPLID=applid	Specifies the 1–8 character IBM VTAM application identifier (APPLID) application ID (APPLID) associated with the adjacent node specified in this command. This parameter is required for SNA LU0 connectivity.
MAXRETRY=n	Specifies the number of times to attempt to connect with the adjacent node. The valid range of values for this field is 1–99. The default number of retries is 7. The MAXRETRY parameter for the LU overrides the MAXRETRY parameter on the adjacent node record.
NDM400.LIB=lib.name	Specifies a 1–10 alphanumeric character identifier for the library name for Connect:Direct on an iSeries node.
NETEX.HOSTID=netex.hostid	Specifies the NETEX host name for the remote system. This value must correspond to the actual host name by which the MVS NETEX system is known.
PARSESS=n	<p>Specifies the default class for Processes submitted to run on the specified adjacent node. This value must be less than or equal to the number of LUs related to the adjacent nodes.</p> <p>Note: The PARSESS parameter does not control which LU executes a session initiated by the other node—it affects only PNODE sessions.</p> <p>Each LU has an assigned default class value that enables a Process to execute on an LU having a matching class value or on LUs with higher class values. Class numbers are assigned in the order in which LUs appear in the network map.</p> <p>Defining a value in the CLASS parameter of the PROCESS or SUBMIT statement overrides any default class specified in this parameter. If you specify a class value of 1, a Process runs on the first available LU.</p> <p>The total number of available classes is the number of LUs related to this adjacent node entry.</p>
IPADDR=ip.address hostname (list)	<p>Identifies the host name or IP address of the computer running Connect:Direct, in the format of hostname or nnn.nnn.nnn.nnn (IPv4) or x:x:x:x:x:x:x (IPv6). A list of multiple host names or addresses (maximum of 3) can be specified in parentheses (fd00::20a0:209:6bff:fe65:9a73 i5ip6.csg.stercomm.com). This parameter is valid only for TCP/IP connectivity.</p> <p>Warning: The “temporary addresses” feature of IPv6 is not supported by Connect:Direct HP NonStop. If the outgoing address of the PNODE randomly changes, the SNODE may fail the connection because the PNODE’s IP would never match the IP configured in the SNODE’s netmap. See RFC 3041 for more information on temporary addresses.</p> <p>For more information on specifying IP addresses and host names, see <i>Appendix E, Specifying IP Addresses, Host Names, and Ports</i>.</p>
PORTNUM=n	Identifies the communications port (1–65535) that is used to establish a connection with this adjacent node. This parameter is valid only for TCP/IP connectivity.
DYNAMIC.DNS=Resolve IP address for every connect attempt	Specifies that DNS resolution will be used on the symbolic address of this adjacent node when the IP address of an inbound connection request cannot be matched to an existing IP address in the netmap.
IPMASK=nnn.nnn.nnn.nnn	<p>Identifies the IP mask for an adjacent domain node and must be entered as nnn.nnn.nnn.nnn, where 0<=nnn<=255 for IPv4 addresses or xxxx:xxxx:xxxx, where 0<=xxxx<=ffff for IPv6 addresses.</p> <p>Note: The IPMASK parameter can only be used if you specified TYPE=NDM.DOMAIN.</p>

Optional Parameters	Description
VOLUME=<vol-name> "/<dir-name>/ ..."	Specifies the default destination volume (directory) for incoming data for the adjacent node using the format, Volume.subvolume for Enscribe files or /<dir-name>/<dir-name>.... for OSS files. This parameter allows the Connect:Direct administrator to specify default destination volumes for those Connect:Direct sessions of other platforms and operating systems where no destination volume was provided in the COPY statements. Note: This parameter overrides the Volume parameter on the User record. VOLUME must be entered using the correct syntax of Guardian or OSS file naming conventions or a syntax error will occur.
SECURE=Secure+ Option node ID	Specifies a remote node entry in the SPNODES file that defines the Connect:Direct Secure+ Option configuration for sessions to the adjacent node. The SPNODES file can include "generic" entries used to define the Connect:Direct Secure+ Option configuration for multiple adjacent nodes. Use the SECURE parameter to point to a generic entry.
TCPNAME=TCP process name (list)	Specifies, in order of preference, the local TCP process through which outbound connections are to be initiated. If a connection request fails, the next entry in the list is tried, until all are exhausted.
DESCRIPTION="node description"	Provides a brief description of this adjacent node (for documentation purposes only; not used by Connect:Direct HP NonStop).
PLEXCLASS=Plexclass for NDM.zOS *	Specifies the class representing a type of server in the Connect:Direct/Plex system to which you want to connect. Note: The default value is indicated by the asterisk (*), which specifies all classes. If the asterisk is not a valid character in the Connect:Direct/Plex system, the Processes are rejected and placed in the Hold queue. You can use the UPDATE NETMAP command to supply a valid value for the PLEXCLASS parameter.
CRC=ON OFF	Indicates whether Cyclic Redundancy Checking (CRC) is enabled for this node.

Example

The commands in this example insert the following adjacent nodes in the network map:

- ❖ MVS1, which is configured for a TCP/IP connection
- ❖ iSeries and Windows which are configured for SNA connections

INSERT NETMAP	ADJACENT.NODE=MVS1	-
	IPADDR=205.42.63.217	-
	PORTNUM=1364	-
	TYPE=NDM.MVS	-
	APPLID=MVSID	-
	PARSESS=2	
INSERT NETMAP	ADJACENT.NODE=iSeries	-
	TYPE=NDM.400	-
	NDM400.LIB=NDMLIB	-
	PARSESS=2	
INSERT NETMAP	ADJACENT.NODE=Windows	-
	TYPE=NDM.NT	-
	MAXRETRY=3	

Refer to the *Connect:Direct HP NonStop User Guide and Reference* for TCP/IP examples.

Adding a Local Node Record to the Network Map

Use the INSERT NETMAP LOCAL.NODE command to identify the local node in the network map.

Note: If you want to change the name of the local node, you must delete the node and add a new local node record.

Format

Following is the INSERT NETMAP LOCAL.NODE command format:

```
INSert NETmap          LOCAL.NODE=node name
```

Required Parameter

Following is the required parameter for the INSERT NETMAP LOCAL.NODE command:

Required Parameter	Description
LOCAL.NODE=node name	Specifies the 1–16 character name of the local node.

Optional Parameters

The INSERT NETMAP LOCAL.NODE command has no optional parameters.

Example

The following command inserts a local node named HPNONSTOP.NODE into the network map:

```
INSERT NETMAP LOCAL.NODE=HPNONSTOP.NODE
```

Defining the Session Protocol for a HP NonStop LU

Use the INSERT NETMAP LOGMODE command to define the session protocol for an HP NonStop LU that functions as type SNA.P with an i5OS system or another HP NonStop system.

Note: In most cases, use the default LOGMODE entries. The RUSIZE, PSNDPAC, SSNDPAC, and SRCVPAC parameters can be safely modified. Most of the other parameters have specific values that are necessary and dependent on the protocol in use.

Format

Following is the INSERT NETMAP LOGMODE command format:

INSert NETmap	LOGMODE=logmode-name RUSIZE=n PSNDPAC=n SSNDPAC=n SRCVPAC=n PSERVIC=n TYPE=n FMPROF=n TS PROF=n PRIPROT=n SECPROT=n COMPROT=n
---------------	---

Required Parameter

The INSERT NETMAP LOGMODE command has the following required parameter:

Required Parameter	Description
LOGMODE=logmode-name	Specifies the 1–8 alphanumeric character name of the LOGMODE record.

Optional Parameters

Optional parameters for the INSERT NETMAP LOGMODE command are:

Optional Parameters	Description
RUSIZE=n	Specifies the transmission buffer size or the maximum length of data (request units) in bytes that Connect:Direct can transmit between the primary and secondary LUs in a session. The default, in hexadecimal, is 8686. Assign RU sizing on the host node through the RUSIZE entry in the LOGMODE table. Refer to the <i>Connect:Direct HP NonStop Installation Guide</i> for acceptable values for the RUSIZE parameter.
PSNDPAC=n	Specifies the primary send pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
SSNDPAC=n	Specifies the secondary send pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
SRCVPAC=n	Specifies the secondary receive pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
PSERVIC=n	Represents the LU presentation services profile and usage field for this logon mode. The default value, in hexadecimal, is 000000000000000000000000. Note: This parameter must not be modified.
TYPE=n	Represents the type of NLD to be sent. Valid values are 1 for nonnegotiable (for LU0).
FMPROF=n	Specifies the function management profile.

Optional Parameters	Description
TSPROF=n	Specifies the transmission services profile.
PRIPROT=n	Represents the primary protocol.
SECPROT=n	Represents the secondary protocol.
COMPROT=n	Represents the common protocol.

Example

The following command inserts a LOGMODE named LOGiSeries:

```
INSERT NETMAP LOGMODE=LOGiSeries PSNDPAC=07 SSNDPAC=07
```

Inserting an LU Record in the Network Map

Use the INSERT NETMAP LU command to define the SNAX, NETEX, or TCP/IP LUs for communication between the HP NonStop system (local node) and adjacent nodes.

Note: For LU types SNA.P or SNA.S, ensure that the LU is defined to a line through SCF or ICE before you insert it in the network map.

Format

Following is the INSERT NETMAP LU command format:

```
INSert NETmap          LU=lu-name
                        CPU=cpu | (list)
                        HIGHPIN=ON | OFF
                        LOGMODE=logmode-name
                        MAXRETRY=n
                        TCPNAME=TCP process name | (list) | DELETE
                        TIMEOUT=n
                        TYPE=SNA.P | SNA.S | NETEX | TCP.D | TCP.S | PS
                        PRI=nnn
                        TERM=Home terminal name
                        USE=PNODE | SNODE | ANY
```

Required Parameter

The INSERT NETMAP LU command has the following required parameter:

Required Parameter	Description
LU=lu-name	Specifies the 1–25 character name of the LU to be inserted into the network map. You must fully qualify the LU name. Inserts one LU with each INSERT NETMAP LU command. When TYPE=NETEX, TCP.D, or TCP.S, the LU name is arbitrary.

Optional Parameters

Following are the optional parameters for the INSERT NETMAP LU command:

Optional Parameters	Description
CPU=cpu (list)	Identifies the HP NonStop central processing unit (CPU) where processing for the LU is initiated. If this parameter is not specified, the LU (session manager) will be started in the same CPU in which the Connect:Direct HP NonStop server process is running. cpu—Specifies the HP NonStop CPU where processing for the LU is initiated. Values range from 0–15 and are dependent on your HP NonStop system. list—inserts multiple CPU numbers. Enclose the list in parentheses, and separate each value with a space or comma (,). When this LU is resumed, the server will attempt to start the session manager process in a CPU determined by the list order, beginning with the first entry in the list.
HIGHPIN=ON OFF	Specifies whether the session manager runs as a high-PIN Process. The default for high-PIN Processing is ON.
LOGMODE=logmode-name	Specifies the 1–8 character LOGMODE entry associated with an LU. Specify a VTAM LOGMODE for HP NonStop LUs defined as SNA secondary. Specify a Connect:Direct HP NonStop LOGMODE for HP NonStop LUs defined as SNA primary. Note: The LOGMODE parameter is not valid when the TYPE parameter is equal to TCP.D, TCP.S, NETEX, or PS.
MAXRETRY=n	Specifies the number of times to attempt connection to a session with the defined LU. The valid range of values for this field is 0–99. If you do not specify the MAXRETRY parameter and no Process is waiting execution in the TCQ, then Connect:Direct makes three attempts to start a session manager for this LU. If an error occurs during Process execution and you did not specify MAXRETRY, the number of attempts defaults to the value for MAXRETRY in the adjacent node record. If the value of MAXRETRY is 0, Connect:Direct retries indefinitely. Note: The MAXRETRY parameter for the LU overrides the MAXRETRY parameter on the adjacent node record.
TCPNAME=TCP process name (list)	Specifies, in order of preference, the local TCP process through which outbound connections are to be initiated. If a connection request fails, the next entry in the list is tried, until all are exhausted.
TIMEOUT=n	Specifies the time Connect:Direct waits for an I/O to complete. Connect:Direct generates an error when a communications session does not complete in the specified time frame. Values for this parameter range from 1 to 30 minutes; the default is 3 minutes. Note: The TIMEOUT value automatically increases to 30 minutes during file open processing. This increase provides additional time for tape mounts.
TYPE= SNA.P SNA.S NETEX TCP.D TCP.S PS	Identifies the communications protocol for the LU. Valid values for this parameter are as follows: SNA.P—Defines the LU as a primary LU (PLU). SNA.S—Defines the LU as a secondary LU (SLU). Note: All SNA-type LUs require the LOGMODE parameter. NETEX—Defines the LU for transmissions using a NETEX interface. TCP.D—identifies the LU as a dynamic LU using TCP/IP for connectivity. Dynamic LUs are started by Connect:Direct as needed and automatically stopped upon Process completion. TCP.S—Identifies the LU as a static LU using TCP/IP for connectivity. LU shuts down and restarts automatically following a Secure+ session. PS— Defines the LU for transmissions in an EXPAND network using a single Connect:Direct product. PS is an abbreviation for PNODESNODE.

Optional Parameters	Description
PRI=nnn	Defines the priority of the LU in the CPU in which it runs. Can facilitate load balancing. Values range from 1–199. If not entered, the LU defaults to the server Process priority, minus one.
TERM=Home terminal name	Specifies the home terminal file to assign to the session manager. Use this parameter if you are using the Virtual Hometerminal System for Connect:Direct and you need more than 512 simultaneous sessions. If no TERM value is specified, the system will assign the home terminal of the server to the session manager.
USE=PNODE SNODE <u>ANY</u>	Specifies whether this LU is reserved for PNODE sessions, SNODE sessions or both types of sessions. The default is both types of sessions. If you reserve at least one LU for SNODE sessions only, this will guarantee that session managers will always be available for incoming traffic regardless of how many PNODE sessions are submitted on the local system. If you reserve at least one LU for PNODE sessions, this will guarantee that session managers will be available for locally submitted processes regardless of how many SNODE sessions come in to the local system. This parameter is only meaningful for LUs of type TCP.S or TCP.D. For all other types of LUs, it is set to the value ANY. Warning: TCP/IP outbound session requests should only use the TCP/IP stacks and related LUs defined in the netmap for that adjacent node. TCP/IP stacks defined in the TCPLISTENx entries in the NDMINIT file should only be used to listen for incoming connection requests. If you use TCPLISTENx stacks for outbound connections, it will be impossible to restrict certain adjacent nodes to certain communication paths.

Examples

The following commands insert secondary LUs named \$\$SNA1.#LU1 and NETEX1 into the network map:

```
INSERT NETMAP LU=$SNA1.#LU1 LOGMODE=LOGMODE1 CPU=(1,2)
INSERT NETMAP LU=NETEX1 TYPE=NETEX
```

The following command inserts the primary LU named \$\$SNAP1.#LU1 in the network map. Because this is a primary LU, LOGMODE is a required parameter. High-PIN processing is selected.

```
INSERT NETMAP LU=$SNA1.#LU1 LOGMODE=LOGPC TYPE=SNA.P HIGHPIN=ON
```

The following command inserts an LU named \$TCP1.#LU1 into the network map:

```
INSERT NETMAP LU=$TCP.#LU1 TYPE=TCP.D HIGHPIN=ON
```

Inserting an API Manager Record in the Network Map

Use the INSERT NETMAP AMGR command to create API manager records, which allow Connect:Direct HP NonStop to communicate with Sterling applications (for more information, see *Interfacing with Sterling Control Center or Browser User Interface* on page 22). These records specify the TCP process and LISTEN port on which to accept connection requests from Sterling Control Center or Browser User Interface. You will need to create one or more AMGR records for each application to which you want to connect Connect:Direct HP NonStop.

Format

Following is the INSERT NETMAP AMGR command format:

INSert NETmap	AMGR=API manager name CPU=cpu (list) HIGHPIN= <u>ON</u> OFF MAXRETRY=n PORTNUM=TCP/IP port number PRI=priority (1-199) PS=n TERM=Home terminal name TCPNAME=TCP process name TIMEOUT=n
---------------	---

Required Parameter

The INSERT NETMAP AMGR command has the following required parameters:

Required Parameter	Description
AMGR=API manager	Specifies the 1–25 character name of the API manager to be inserted into the network map. Inserts one API manager record with each INSERT NETMAP AMGR command.
PORTNUM=n	Identifies the communications port (1—65535) that is monitored for connection requests.
TCPNAME=TCP process name	Specifies the name of the local TCP/IP process on which to post a LISTEN for this adjacent node.

Optional Parameters

Following are the optional parameters for the INSERT NETMAP AMGR command:

Optional Parameters	Description
CPU=cpu (list)	Identifies the HP NonStop central processing unit (CPU) where processing for the API manager is initiated. If this parameter is not specified, the API Manager process will be started in the same CPU in which the Connect:Direct HP NonStop server process is running. cpu—Specifies the HP NonStop CPU where processing for the API manager is initiated. Values range from 0–15 and are dependent on your HP NonStop system. list—inserts multiple CPU numbers. Enclose the list in parentheses, and separate each value with a space or comma (,).
HIGHPIN= <u>ON</u> OFF	Specifies whether the session manager runs as a high-PIN Process. The default for high-PIN Processing is ON.

Optional Parameters	Description
MAXRETRY=n	Specifies the number of times to attempt connection to a session with the defined API manager. The valid range of values for this field is 0–99. If you do not specify the MAXRETRY parameter and no Process is waiting execution in the TCQ, then Connect:Direct makes three attempts to start a session manager for this API manager. If an error occurs during Process execution and you did not specify MAXRETRY, the number of attempts defaults to the value for MAXRETRY in the adjacent node record. If the value of MAXRETRY is 0, Connect:Direct retries indefinitely. Note: The MAXRETRY parameter for the API Manager overrides the MAXRETRY parameter on the adjacent node record.
PRI=nnn	Defines the priority of the API manager in the CPU in which it runs. Can facilitate load balancing. Values range from 1–199. If not entered, the API manager defaults to the server Process priority, minus one.
PS=n	Specifies the number of parallel sessions this API manager can run. The Sterling Control Center needs at least 3 sessions, the Connect:Direct Browser User Interface needs at least 1.
TERM=Home terminal name	Specifies the home terminal file to assign to the API manager. Use this parameter if you are using the Virtual Hometerminal System for Connect:Direct and you need more than 512 simultaneous sessions. If no TERM value is specified, the system will assign the home terminal of the server to the API manager.
TIMEOUT=n	Specifies the time Connect:Direct waits for an I/O to complete. Connect:Direct generates an error when a communications session does not complete in the specified time frame. Values for this parameter range from 1 to 30 minutes; the default is 3 minutes.

Examples

The following command inserts an API manager named ccenter into the network map:

```
INS NET AMGR CCENTER CPU 1 PRI 180 TCPNAME $ZTCO PORT 2004 PS 3 TIMEOUT 30
```

Associating an Adjacent Node with an LU or API Manager

You must identify the LUs and AMGRs you want to use to communicate with an adjacent node. You can associate an adjacent node with more than one LU or API Manager. Multiple adjacent nodes can share a single LU or API manager. Connect:Direct ignores any duplicates.

You can only relate adjacent nodes to LUs of appropriate type. For example, if you insert an adjacent node in the network map with a TYPE of PNODESNODE, you cannot relate it to an LU with a TYPE of SNA.S.

The following table shows valid relationships between LUs and adjacent nodes:

Adjacent Node Type	LU Type (Protocol)			
	SNA.S	SNA.P	PNODE-SNODE	TCP.D/TCP.S.
NDM.zOS	YES	YES (SNAX)	NO	YES

Adjacent Node Type	LU Type		(Protocol)	
	SNA.S	SNA.P	PNODE-SNODE	TCP.D/TCP.S.
NDM.VM	YES	YES (SNAX)	NO	YES
NDM.VSE	YES	YES (SNAX)	NO	YES
NDM.VMS	NO	NO	NO	YES
NDM.NonStop	YES	YES	NO	YES
NDM.400	NO	YES	NO	YES
PS	NO	NO	YES	NO
NDM.UNIX	NO	NO	NO	YES
NDM.NT	NO	NO	NO	YES
NDM.DOMAIN	NO	NO	NO	YES

RELATE NETMAP Command

Use the RELATE NETMAP command to assign LUs or AMGRs to specific adjacent nodes. Issue this command after INSERT NETMAP commands to complete the network map.

Note: The RELATE NETMAP command always requires two parameters – the adjacent node and either the LU or AMGR involved in the relationship.

Format

Following is the RELATE NETMAP command format:

```
RELate NETmap      ADJacent.node=node name|(list)
                   LU=lu-name|(list)
                   AMGR=API Manager name
```

Required Parameters

The required parameters for the RELATE NETMAP command are:

Required Parameters	Description
ADJACENT.NODE=node name (list)	Specifies the name of the adjacent node that you are associating with corresponding LUs or AMGRs. node name—Specifies a 1–16 character name of the adjacent node. list—Specifies multiple adjacent nodes. Enclose the list in parentheses, and separate each value with a space or comma (,).
LU=lu-name (list)	Specifies the name of the LU that you are associating with corresponding adjacent nodes. lu-name—Specifies a 1–25 character name of the LU. list—Specifies multiple LUs. Enclose the list in parentheses, and separate each value with a space or comma (,).

Required Parameters	Description
AMGR=name (list)	<p>Specifies the name of the API Manager that you are associating with corresponding adjacent nodes.</p> <p>name—Specifies a 1–25 character name of the AMGR.</p> <p>list—Specifies multiple AMGRs. Enclose the list in parentheses, and separate each value with a space or comma (,).</p> <p>Note: AMGR entries may only be related to node entries of type NDM.API.</p>

Optional Parameters

The RELATE NETMAP command has no optional parameters.

Examples

The following commands assign adjacent nodes to LUs:

```
RELATE NETMAP ADJACENT.NODE=OS3901 LU=$SNA.#LU1
RELATE NETMAP ADJACENT.NODE=VMS.NODE LU=$TCP.#LU2
```

The following command sets up a relationship between the adjacent node called ccapi and the API manager named ccenter:

```
RELATE NETMAP ADJACENT.NODE=ccapi AMGR=center
```

Deleting Network Map Records

Use DELETE NETMAP commands to delete adjacent nodes, the local node, LOGMODEs, logical units (LUs), and API managers (AMGRs) from the network map.

Deleting an Adjacent Node

Use the DELETE NETMAP ADJACENT.NODE command to remove an adjacent node from the network map. If you want to delete the adjacent node and any relationships between the adjacent node and any LUs or AMGRs, issue this command without the optional LU parameter to delete. If you want to delete just the relationship between the adjacent node and the LUs or AMGRs, issue the DELETE NETMAP ADJACENT.NODE command and include the LUs or AMGRs you no longer wish to have related to the adjacent node. (You cannot include both LUs and AMGRs in the same command.)

Format

Following is the DELETE NETMAP ADJACENT.NODE command format:

```
DELEte NETmap      ADJacent.node=node name
                   LU=lu-name|(list)|*
                   AMGR=name|(list)
```

Required Parameter

The DELETE NETMAP ADJACENT.NODE command has the following required parameter:

Required Parameter	Description
ADJACENT.NODE=node name	Specifies a 1–16 character name of the adjacent node you are deleting from the network map or whose relationship to a LU or AMGR you want to delete.

Optional Parameters

Following are the optional parameters for the DELETE NETMAP ADJACENT.NODE command.

Note: You can include only one of the following parameters—not both—in the same command.

Optional Parameters	Description
LU=lu-name (list) *	Deletes <i>only</i> the relationship between the LU and the adjacent node. The LU is specified by a 1–25 character name. list—Specifies multiple LUs. Enclose the list in parentheses, and separate each value with a space or comma (.). *—Identifies the generic specifier that deletes all relationships between the specified adjacent node and its related LUs.
AMGR=name (list)	Deletes <i>only</i> the relationship between the AMGR and the adjacent node. The AMGR is specified by a 1–25 character name. list—Specifies multiple AMGRs. Enclose the list in parentheses, and separate each value with a space or comma (.). *—Identifies the generic specifier that deletes all relationships between the specified adjacent node and its related AMGRs.

Example

The following command deletes the adjacent node named VMS.NODE and any relationship between the adjacent node and any LU:

```
DELETE NETMAP ADJACENT.NODE=VMS.NODE
```

Deleting the Local Node from the Network Map

Use the DELETE NETMAP LOCAL.NODE command to delete the local node from the network map. The local node is the name of your node in the network map. To change the name of the local node, you must delete the current local node and insert a new local node.

Note: You must include a local node record in the network map.

Format

Following is the DELETE NETMAP LOCAL.NODE command format:

```
DELEte NETmap          LOCAL.NODE=node name
```

Required Parameter

The DELETE NETMAP LOCAL.NODE command has the following required parameter:

Required Parameter	Description
LOCAL.NODE=node name	Specifies a 1–16 character name of the local node you are deleting from the network map.

Optional Parameters

The DELETE NETMAP LOCAL.NODE command has no optional parameters.

Example

The following command deletes a local node named HPNONSTOP.NODE:

```
DELETE NETMAP LOCAL.NODE=HPNONSTOP.NODE
```

Deleting a Log Mode from the Network Map

Use the DELETE NETMAP LOGMODE command to delete a LOGMODE from the network map.

Format

Following is the DELETE NETMAP LOGMODE command format:

```
DELEte NETmap          LOGMODE=logmode-name
```

Required Parameter

The DELETE NETMAP LOGMODE command has the following required parameter:

Required Parameter	Description
LOGMODE=logmode-name	Specifies the 1–8 character LOGMODE name you are deleting from the network map.

Optional Parameters

The DELETE NETMAP LOGMODE command has no optional parameters.

Example

The following command deletes the LOGiSeries LOGMODE:

```
DELETE NETMAP LOGMODE=LOGiSeries
```

Deleting an LU from the Network Map

Use the DELETE NETMAP LU command to delete an LU from the network map. The LU is the Connect:Direct HP NonStop LU that establishes a session with an adjacent node.

Issue this command without the optional ADJACENT.NODE parameter to delete the LU and any relationships between this LU and its adjacent nodes.

Note: Do not delete an LU while transmission is occurring.

Format

Following is the DELETE NETMAP LU command format:

```
DELEte NETmap          LU=lu-name
                        ADJacent.node=node name|(list)|*
```

Required Parameter

The DELETE NETMAP LU command has the following required parameter:

Required Parameter	Description
LU=lu-name	Specifies the 1–25 character name of the LU you are deleting from the network map.

Optional Parameter

The DELETE NETMAP LU command has the following optional parameter:

Required Parameter	Description
ADJACENT.NODE=node name (list)*	Deletes <i>only</i> the relationship between the LU and the adjacent node. The node name ranges from 1 to 16 characters. list—Specifies multiple adjacent nodes. Enclose the list in parentheses, and separate each value with a space or comma (.). *—Identifies the generic specifier that deletes all relationships between the specified adjacent node and its related LUs.

Example

The following command deletes the LU, \$\$SNA1.#LU1, and any relationship between the LU and its related adjacent node:

```
DELETE NETMAP LU=$$SNA1.#LU1
```

Deleting an API Manager from the Network Map

Use the DELETE NETMAP AMGR command to delete an API manager from the network map. The API manager is the Connect:Direct HP NonStop API manager that establishes a session with either Sterling Control Center or the Browser.

Issue this command without the optional ADJACENT.NODE parameter to delete the API manager and any relationships between the LU and adjacent nodes. Issue this command with the optional ADJACENT.NODE parameter to only delete the relationship between the API manager and its adjacent nodes.

Note: Do not delete an API manager during Sterling Control Center or Connect:Direct Browser User Interface sessions.

Format

Following is the DELETE NETMAP AMGR command format:

```
DELEte NETmap           AMGR=name
                        ADJacent.node=node name|(list)|*
```

Required Parameter

The DELETE NETMAP AMGR command has the following required parameter:

Required Parameter	Description
AMGR=name	Specifies the 1–25 character name of the API manager you are deleting from the network map.

Optional Parameter

The DELETE NETMAP AMGR command has the following optional parameter:

Required Parameter	Description
ADJACENT.NODE=node name (list)*	Deletes <i>only</i> the relationship between the AMGR and the adjacent node. The node name ranges from 1 to 16 characters. list—Specifies multiple adjacent nodes. Enclose the list in parentheses, and separate each value with a space or comma (,). *—Identifies the generic specifier that deletes all relationships between the specified adjacent node and its related AMGRs.

Example

The following command deletes only the relationship between the adjacent node CCAPI and API manager CCENTER.

```
DEL NET ADJ CCAPI AMGR CCENTER
```

Modifying Network Map Records

Use the UPDATE NETMAP command to modify attributes of the adjacent nodes, LOGMODEs, logical units (LUs), and API managers (AMGRs) in the network map.

Modifying the Adjacent Node Record

Use the UPDATE NETMAP ADJACENT.NODE command to update specified parameters of the adjacent node record.

Format

Following is the UPDATE NETMAP ADJACENT.NODE command format:

```
UPDate NETmap          ADJacent.node=node name
                        ALLOC.RETRY.ADJ=msg|msgid|deleteid
                        APPLID=applid
                        MAXRETRY=n
                        NDM400.LIB=lib.name
                        NETEX.HOSTID=netex.hostid
                        PARSESS=n
                        IPADDR=n.n.n.n|x:x:x:x:x:x|hostname| (list)
                        PORTNUM=n
                        DYNAMIC.DNS=Resolve IP address for every connect attempt
                        STATIC.DNS=Do not resolve IP address for every connect attempt
                        TCPNAME=tcp process name | (list) | DELETE
                        IPMASK=nnn.nnn.nnn.nnn|x:x:x:x:x:x
                        VOLUME=<vol-name>| "/<dir-name>/ ..."
                        SECURE=Secure+ Option node ID
                        DESCRIPTION="node description"
                        PLEXCLASS=Plexclass for NDM.zOS | *
                        CRC=ON|OFF
```

Required Parameter

The UPDATE NETMAP ADJACENT.NODE command has the following required parameter:

Required Parameter	Description
ADJACENT.NODE=node name	Specifies the 1–16 character name of the adjacent node you are modifying in the network map.

Optional Parameters

Optional parameters for the UPDATE NETMAP ADJACENT.NODE command are:

Optional Parameters	Description
ALLOC.RETRY.ADJ=(msg msg... msg)	<p>Specifies a list of the external Connect:Direct error message IDs that are retried, when originated by that adjacent node. The parameter may be deleted by specifying DELETEID as the error number.</p> <p>DELETEID—Deletes message ID from adjacent node definition, when specified as a message ID in the parameter during a UPD NET ADJ command.</p>
APPLID=applid	<p>Specifies the 1–8 character IBM VTAM application identifier (APPLID) or NETEX application ID (APPLID) associated with the adjacent node specified in this command.</p> <p>The NETEX applid is the logical application name that is offered by the OS/390 NETEX system and connected to by the HP NonStop NETEX system when a connect request is received.</p>
MAXRETRY=n	<p>Specifies the number of times to attempt connection to a session with the adjacent node. The valid range of values for this field is 1–99. The default number of retries is 7. The MAXRETRY parameter for the LU overrides the MAXRETRY parameter on the adjacent node record.</p>
NDM400.LIB=lib.name	<p>Specifies a 1–10 alphanumeric character identifier for the library name for Connect:Direct on an iSeries node.</p>
NETEX.HOSTID=netex.hostid	<p>Specifies the NETEX host name for the remote system. This value must correspond to the actual host name by which the MVS NETEX system is known.</p>
PARSESS=n	<p>Specifies the default class for Processes submitted to run on the specified adjacent node. The range of values for this parameter is 1–255.</p> <p>Note: The PARSESS parameter does not control which LU executes a session initiated by the other node. It affects only PNODE sessions.</p> <p>Each LU has an assigned default class value that enables a Process to execute on an LU having a matching class value or on LUs with higher class values. Class numbers are assigned in the order in which the LUs appear in the network map. A value in the CLASS parameter in the PROCESS or SUBMIT statement of a Process overrides any default class specified in this parameter. If you specify a class value of 1, a Process runs on the first available LU.</p>

Optional Parameters	Description
IPADDR=ip.address hostname (list)	<p>Identifies the symbolic host name or numerical IP address of the station running Connect:Direct. Express the value for this parameter in the format of hostname or nnn.nnn.nnn.nnn (IPv4) or x:x:x:x:x:x (IPv6). A list of multiple host names or addresses (maximum of 3) can be specified in parentheses, as shown in the following example: (fd00::20a0:209:6bff:fe65:9a73 i5ipv6.csg.stercomm.com). This parameter is valid only for TCP/IP connectivity.</p> <p>Warning: The “temporary addresses” feature of IPv6 is not supported by Connect:Direct HP NonStop. If the outgoing address of the PNODE randomly changes, the SNODE may fail the connection because the PNODE’s IP would never match the IP configured in the SNODE’s netmap. See RFC 3041 for more information on temporary addresses.</p> <p>For more information on specifying IP addresses and host names, see <i>Appendix E, Specifying IP Addresses, Host Names, and Ports</i>.</p>
PORTNUM=n	<p>Identifies the communications port (1–65535) that is used to establish a connection with this node. This parameter is valid only for TCP/IP connectivity.</p>
DYNAMIC.DNS=Resolve IP address for every connect attempt	<p>Specifies that symbolic address resolution will be used for this adjacent node when the IP address of an inbound connection attempt cannot be matched to an existing IP address in the netmap.</p>
STATIC.DNS=Do not resolve IP address for every connect attempt	<p>Specifies that symbolic address resolution will only be used when the system starts and when an adjacent node is used in an outbound request.</p>
TCPNAME=tcp process name (list) DELETE	<p>Specifies, in order of preference, the local TCP process through which outbound connections are to be initiated. If a connection request fails, the next entry in the list is tried, until all are exhausted. Specify DELETE to delete this entry.</p>
IPMASK=nnn.nnn.nnn.nnn	<p>Identifies the IP mask for an adjacent domain node and must be entered as nnn.nnn.nnn.nnn, where 0<=nnn<=255 for IPv4 or X:X:X:X:X:X, where 0<=x<=ffff for IPv6.</p> <p>Note: The IPMASK parameter can only be used if you specified TYPE=NDM.DOMAIN.</p>
VOLUME=<vol-name> “/<dir-name>/ ...”	<p>Specifies the default destination volume (directory) for incoming data for the adjacent node using the format, Volume.subvolume. This parameter allows the Connect:Direct administrator to specify default destination volumes of Connect:Direct sessions for Guardian volumes or the /<dir>/.../ stc for OSS directories and other platforms and operating systems where no destination volume was provided in the COPY statements.</p> <p>Note: This parameter overrides the Volume parameter on the User record. VOLUME must be entered using the correct syntax of Guardian or OSS file naming conventions or a syntax error will occur.</p>
SECURE=Secure+ Option node ID	<p>Specifies a remote node entry in the SPNODES file that defines the Connect:Direct Secure+ Option configuration for sessions to the adjacent node. The SPNODES file can include “generic” entries used to define the Connect:Direct Secure+ Option configuration for multiple adjacent nodes. Use the SECURE parameter to point to a generic entry.</p>
DESCRIPTION=“node description”	<p>Provides a brief description of this adjacent node.</p>
PLEXCLASS=Plexclass for NDM.zOS *	<p>Specifies the class representing a type of server in the Connect:Direct/Plex system to which you want to connect.</p>

Optional Parameters	Description
CRC=ON OFF	Indicates whether Cyclic Redundancy Checking (CRC) is enabled for this node.

Example

The following command changes the number of times the node will attempt to connect to a session with the adjacent node MVS.B to 10:

```
UPDATE NETMAP ADJACENT.NODE=MVS.B MAXRETRY=10
```

UPDATE NETMAP LOGMODE Command

Use the UPDATE NETMAP LOGMODE command to modify the session protocol for a HP NonStop LU.

Format

Following is the UPDATE NETMAP LOGMODE command format:

UPDate NETmap	LOGMODE=logmode-name
	RUSIZE=n
	PSNDPAC=n
	SSNDPAC=n
	SRCVPAC=n
	PSEVIC=n
	TYPE=n
	EMPROF=n
	TSPROF=n
	PRIPROT=n
	SECPROT=n
	COMPROT=n

Required Parameter

The UPDATE NETMAP LOGMODE command has the following required parameter:

Required Parameter	Description
LOGMODE=logmode-name	Specifies the 1–8 alphanumeric character name of the LOGMODE record.

Optional Parameters

The optional parameters for the UPDATE NETMAP LOGMODE command are:

Optional Parameters	Description
RUSIZE=n	Specifies the transmission buffer size or the maximum length of data (request units) in bytes that Connect:Direct can transmit between the primary and secondary LUs in a session. The default, in hexadecimal, is 8686. Assign RU sizing on the host node through the RUSIZE entry in the LOGMODE table. Refer to <i>Connect:Direct HP NonStop Installation Guide</i> for acceptable values for the RUSIZE parameter.
PSNDPAC=n	Specifies the primary send pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
SSNDPAC=n	Specifies the secondary send pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
SRCVPAC=n	Specifies the secondary receive pacing count. Define any hexadecimal number in the range of 0 through 3F. The default value is 00.
PSERVIC	Represents the LU presentation services profile and usage field for this logon mode. The default value, in hexadecimal, is 000000000000000000000000.
TYPE=n	Represents the type of NLD to be sent. The valid value is 1 for nonnegotiable (LU0).
FMPROF=n	Specifies the function management profile.
TSPROF=n	Specifies the transmission services profile.
PRIPROT=n	Represents the primary protocol.
SECPROT=n	Represents the secondary protocol.
COMPROT=n	Represents the common protocol.

Example

The following command changes the primary and secondary send pacing counts for the LOGAS400 LOGMODE:

```
UPDATE NETMAP LOGMODE=LOGAS400 PSNDPAC=10 SSNDPAC=10
```


UPDATE NETMAP LU Command

Use the UPDATE NETMAP LU command to modify the attributes of an LU.

If the session associated with the LU is currently running, the updated value only takes effect after you restart the session manager associated with the LU. Issue the following command to quiesce the LU and stop the session manager:

```
MODIFY LU lu-name SESSions Q
```

Issue the following command to resume the LU and session manager:

```
MODIFY LU lu-name SESSions R
```

Format

Following is the UPDATE NETMAP LU command format:

```
UPDate NETmap          LU=lu-name
                        CPU=cpu| (list)
                        HIGHPIN=ON|OFF
                        LOGMODE=logmode-name
                        MAXRETRY=n
                        PRI=priority (1-199, 0=DELETE field)
                        TCPNAME=TCP process name| (list)|DELETE
                        TIMEOUT=n
                        TYPE=SNA.P|SNA.S|PS|NETEX|TCP.D|TCP.S|PNODESNODE
                        TERM=Home terminal name
                        USE=PNODE|SNODE|ANY
```

Required Parameter

The UPDATE NETMAP LU command has one required parameter.

Required Parameter	Description
LU=lu-name	Specifies the 1–25 character name of the LU you are updating in the network map. You must fully qualify the LU name. When TYPE=NETEX, TCP.D, or TCP.S, the LU name is arbitrary.

Optional Parameters

The optional parameters for the UPDATE NETMAP LU command are:

Optional Parameters	Description
CPU=cpu (list)	<p>Identifies the HP NonStop central processing unit (CPU) where processing for this LU is initiated. If you do not specify this parameter, the LU (session manager) will be started in the same CPU in which the Connect:Direct HP NonStop server process is running.</p> <p>cpu—Specifies the HP NonStop CPU where processing for this LU is initiated. Values range from 0–15 and are dependent on your HP NonStop system.</p> <p>list—Enables you to update multiple CPU numbers. Enclose the list in parentheses, and separate each value with a space or comma (.).</p>
HIGHPIN=ON OFF	Specifies whether the NDMSMGR processes use low- or high-PIN creation.
LOGMODE=logmode-name	<p>Specifies the 1–8 character LOGMODE entry associated with an LU. Specify a VTAM LOGMODE for HP NonStop LUs defined as SNA secondary. Specify a Connect:Direct HP NonStop LOGMODE for LUs defined as SNA primary. The LOGMODE parameter is not valid when the TYPE parameter is equal to TCP.D, TCP.S, NETEX, or PS.</p>
MAXRETRY=n	<p>Specifies the number of times to attempt connection to a session with the defined LU. The valid range of values for this field is 0–99.</p> <p>If you do not specify the MAXRETRY parameter and no Process is waiting execution in the TCQ, three attempts to start a session manager for this LU are made.</p> <p>Note: If an error occurs during Process execution and you did not specify MAXRETRY, the number of attempts defaults to the value for MAXRETRY in the adjacent node record.</p> <p>If the value of MAXRETRY is 0, Connect:Direct retries indefinitely. The MAXRETRY parameter for the LU overrides the MAXRETRY parameter on the adjacent node record.</p>
PRI=nnn	<p>Defines the priority of the Session Manager (LU) in the CPU in which it runs. Can facilitate load balancing. Values range from 1–199. If not entered, the Session Manager (LU) defaults to the server Process priority, minus one. Specify 0 to delete the previous priority.</p>
TCPNAME=TCP process name (list) DELETE	<p>Specifies, in order of preference, the local TCP process through which outbound connections are to be initiated. If a connection request fails, the next entry in the list is tried, until all are exhausted.</p> <p>Specify DELETE to delete this parameter.</p>
TIMEOUT=n	<p>Specifies the time to wait for an I/O to complete. An error is generated when a communications session is not complete in the specified time frame. Values for this parameter range from 1–30 minutes; the default is 3 minutes.</p> <p>Note: The TIMEOUT value automatically increases to 30 minutes during file open processing. This increase provides additional time for tape mounts.</p>

Optional Parameters	Description
TYPE=SNA.P SNA.S PS PNODESNODE NETEX TCP.D TCP.S	Identifies the communications protocol for the LU. Valid values for this parameter are as follows: SNA.P —Defines the LU as a primary LU (PLU). SNA.S —Defines the LU as a secondary LU (SLU). Note: All LUs of type SNA.P require a logmode parameter. PS —Defines the LU for transmissions in an EXPAND network using a single Connect:Direct product. PS is an abbreviation for PNODESNODE. NETEX —Defines the LU for transmissions using a NETEX interface. TCP.D —Identifies the LU as a dynamic LU using TCP/IP for connectivity. Dynamic LUs are started by Connect:Direct as needed and automatically stopped upon Process completion. TCP.S —Identifies the LU as a static LU using TCP/IP for connectivity. Static LUs are user-controlled and are quiesced and resumed with the MODIFY command.
TERM=Home terminal name	Specifies the home terminal file to assign to the session manager. Use this parameter if you are using the Virtual Hometerminal System for Connect:Direct and you need more than 512 simultaneous sessions. If no TERM value is specified, the system will assign the home terminal of the server to the session manager.
USE=PNODE SNODE <u>ANY</u>	Specifies whether this LU is reserved for PNODE sessions, SNODE sessions or both types of sessions. If you reserve at least one LU for SNODE sessions only, this will guarantee that session managers will always be available for incoming traffic regardless of how many PNODE sessions are submitted on the local system. If you reserve at least one LU for PNODE sessions, this will guarantee that session managers will be available for locally submitted processes regardless of how many SNODE sessions come in to the local system. This parameter is only meaningful for LUs of type TCP.S or TCP.D. For all other types of LUs, it is set to the value ANY. Note: TCP/IP outbound session requests should only use the TCP/IP stacks and related LUs defined in the netmap for that adjacent node and/or the LU(s). TCP/IP stacks defined in the TCPLISTENx entries in the NDMINIT file should only be used to listen for incoming connection requests. If you use TCPLISTENx stacks for outbound connections, it will be impossible to restrict certain adjacent nodes to certain communication paths.

Example

The following command updates \$\$SNA1.#LU1 with CPUs 2 and 3 and designates low-PIN operation:

```
UPDATE NETMAP LU=$$SNA1.#LU1 CPU=(2,3) HIGHPIN=OFF
```

UPDATE NETMAP AMGR Command

Use the UPDATE NETMAP AMGR command to modify the attributes of an API manager (AMGR).

Format

Following is the UPDATE NETMAP AMGR command format:

UPDate NETmap	AMGR=api manager TCPNAME=TCP process name PORTNUM=TCP/IP port number CPU=cpu (list) HIGHPIN=ON OFF MAXRETRY=n PRI=priority (1-199, 0=DELETE field) PS=n TERM=Home terminal name TIMEOUT=n
---------------	---

Required Parameters

The UPDATE NETMAP AMGR command has the following required parameters.

Required Parameter	Description
AMGR=API manager name	Specifies the 1–25 character name of the AMGR you are updating in the network map.
TCPNAME=TCP process name	Specifies the name of the local TCP/IP process on which to post a LISTEN for this API manager.
PORTNUM=n	Identifies the communications port (1—65535) that is monitored for connection requests.

Optional Parameters

The optional parameters for the UPDATE NETMAP AMGR command are:

Optional Parameters	Description
CPU=cpu (list)	Identifies the HP NonStop central processing unit (CPU) where processing for this AMGR is initiated. If you do not specify this parameter, the AMGR (API manager) will be started in the same CPU in which the Connect:Direct HP NonStopserver process is running. cpu—Specifies the HP NonStop CPU where processing for this AMGR is initiated. Values range from 0–15 and are dependent on your HP NonStop system. list—Enables you to update multiple CPU numbers. Enclose the list in parentheses, and separate each value with a space or comma (,).
HIGHPIN=ON OFF	Specifies whether the NDMSMGR processes use low- or high-PIN creation.

Optional Parameters	Description
MAXRETRY=n	<p>Specifies the number of times to attempt connection to a session with the defined AMGR. The valid range of values for this field is 0–99. If you do not specify the MAXRETRY parameter and no Process is waiting execution in the TCQ, three attempts to start a session manager for this AMGR are made.</p> <p>Note: If an error occurs during Process execution and you did not specify MAXRETRY, the number of attempts defaults to the value for MAXRETRY in the adjacent node record.</p> <p>If the value of MAXRETRY is 0, Connect:Direct retries indefinitely. The MAXRETRY parameter for the AMGR overrides the MAXRETRY parameter on the adjacent node record.</p>
PRI=nnn	<p>Defines the priority of the API manager in the CPU in which it runs. Can facilitate load balancing. Values range from 1–199. If no value is defined, the API manager defaults to the server Process priority, minus one. Specify 0 to delete the previous priority.</p>
PS=n	<p>Defines the maximum number of parallel sessions for this AMGR. Valid values are 2–127.</p>
TERM=Home terminal name	<p>Specifies the home terminal file to assign to the API manager. Use this parameter if you are using the Virtual Hometerminal System for Connect:Direct and you need more than 512 simultaneous sessions. If no TERM value is specified, the system will assign the home terminal of the server to the API manager</p>
TIMEOUT=n	<p>Specifies the time Connect:Direct waits for an I/O to complete. Connect:Direct generates an error when a communications session does not complete in the specified time frame. Values for this parameter range from 1 to 30 minutes; the default is 3 minutes.</p>

Example

The following command updates the port number that is monitored for connection requests with the API manager, CCENTER, to 2005:

```
UPDATE NETMAP AMGR CCENTER PORT 2005
```

Retrying File Allocation Failures

Connect:Direct HP NonStop provides a method for retrying a copy operation in a PNODE Process in the event of a file allocation error. With this feature, you can define the following:

- ❖ The error conditions that trigger a retry
- ❖ The number of times a step is retried
- ❖ The interval at which the retries occur

This chapter describes how to implement the file allocation retry process.

Establishing Error Conditions

You receive allocation failure errors in the following manner:

- ❖ On the local HP NonStop node, an HP NonStop file system error occurs
- ❖ On the adjacent node, an external Connect:Direct error number is generated

Local (PNODE) Errors

Connect:Direct retries a Process that fails when specific errors are received on the local HP NonStop node. Define the errors on which to perform a retry attempt, using the ALLOC-RETRY-LOC parameter in the NDMINIT file. Refer to the *Connect:Direct HP NonStop Installation Guide* for additional information about the initialization parameters.

Remote (SNODE) Errors

Connect:Direct retries a Process when specific errors are received from the remote node. Define the errors on which to perform a retry attempt, in the adjacent node record of the network map. Refer to Chapter 3, *Defining and Maintaining the Network Map*, for additional information.

Note: In an adjacent node record, any error that can be returned by the adjacent node during COPY step initiation can be added to the list of errors that can be retried.

Implementing Allocation Retry

Complete the following steps to implement the allocation retry feature:

1. Define how long to wait between retry attempts for allocation retries by adding the ALLOC-RETRY-INT parameter to the NDMINIT file.
2. Define the number of allocation retry attempts by adding the ALLOC-RETRY-MAX parameter to the NDMINIT file.
3. Define the local HP NonStop file system errors for which a step is retried by adding the ALLOC-RETRY-LOC parameter to the NDMINIT file.

Note: Refer to Appendix A, *Common HP NonStop File System Error Codes*, for a list of suggested HP NonStop file system errors.

4. Define the error numbers on which to retry, and maximum retry counts for adjacent nodes. For each adjacent node where you want to enable allocation retries, type the following command to update the adjacent node record with the appropriate Connect:Direct external error numbers that indicate allocation errors on that platform:

```
CD.1.>UPD NET ADJ snode ALLOC-RETRY-ADJ=(msgid msgid msgid)
```

Refer to Appendix B, *Common Adjacent Node Type External Error Codes*, for a partial list of suggested file system errors.

NDMINIT Parameters for Allocation Retry

Following are definitions for the allocation retry parameters:

Parameter	Description
ALLOC-RETRY-LOC nn nn...nn	Defines a list of HP NonStop file systems errors (<i>nn</i>) to retry following an allocation failure on a local HP NonStop file. If the entry is not included in the NDMINIT file, allocation failures originating on the local node are not retried. The entries are delimited by any non numeric characters. Valid range values are 2–9999, inclusive. Excluded values are 0, which represents a successful operation, and 1, which indicates an end-of-file.
ALLOC-RETRY-INT hh:mm:ss	Specifies the interval that a process waits in the TIMER queue after encountering an allocation error, regardless whether the error occurs on the local or remote node. The default is 00:05:00 (five minutes).
ALLOC-RETRY-MAX nn	Specifies the maximum number of times to retry a step following an allocation failure. Value values are 0–99, where 0 indicates to retry the Process indefinitely. The default is 3.

Examples

Following is an example of ALLOC-RETRY-LOC:

```
ALLOC-RETRY-LOC 10 11 12 40 45      (NDMINIT file entry)
>PARAM ALLOC-RETRY-LOC "11 12 40 45" (TACL parameter)
```

Note: Error 10 (file already exists) is included, but has no effect because the “TO” DSN disposition code determines if the destination file must exist previously.

Note: Error 11 (file not found) is included and retried, but it applies only to the “FROM” DSN, and only when the source file is on the local HP NonStop node or accessible via EXPAND.

Following is an example of ALLOC-RETRY-INT:

```
ALLOC-RETRY-INT 00:10:00      (a ten minute interval)
```

Following is an example of ALLOC-RETRY-MAX:

```
ALLOC-RETRY-MAX 2              (two retries)
```

Network Map Parameter for Allocation Retry

Following is the allocation retry parameter defined in the Adjacent Node record:

Parameter	Description
ALLOC.RETRY.ADJ= (msgid msgid ... msgid)	Specifies a list of external Connect:Direct error messages to retry, if originated by that adjacent node. The error message ID, SCPA000I (normal COPY termination), is excluded because it indicates a successful COPY termination. If this entry is omitted, no errors originating from that adjacent node are retried. msgid is an eight character external alphanumeric Connect:Direct message ID. Note: This parameter can be added as part of the INS NET ADJ or UPD NET ADJ commands.

Examples

Following is an example of ALLOC.RETRY.ADJ:

```
CD.5.>UPD NET ADJ snode ALLOC.RETRY.ADJ=(SDE0210I SDEDSNRI)
```

Updating the Network Map

To add ALLOC.RETRY.ADJ to the network map, use the INS NET ADJ command; to modify it, use the UPD NET ADJ command.

Delete this parameter from the adjacent node record by specifying the keyword DELETEID as the message ID in the UPD command. Following is an example of deleting the ALLOC.RETRY.ADJ parameter:

```
CD.5.>UPD NET ADJ snode ALLOC.RETRY.ADJ=DELETEID
```

Defining and Maintaining the Type File

The TYPE FILE contains records that define the file attributes for new files. These attributes are used when you specify a particular typekey as part of a COPY statement in a Process. Type records are useful when you are not familiar with file allocation parameters at other nodes. This chapter describes the following operations:

- ❖ Override file attributes
- ❖ Inserting a record in the type file
- ❖ Changing a record in the type file

Overriding File Attributes

You can override a specific parameter of a type record that is similar to your requirements. If you specify file attributes in conjunction with the TYPE parameter on the COPY statement, the parameters defined in the COPY statement take precedence over parameters in the associated type record.

Inserting a Record in the Type File

Use the INSERT TYPE command to insert a record in the type file. Following is the INSERT TYPE command format:

```

INSert TYPE          TYPEKEY=type.name
                    , [NO]ALTCREATE
                    , ALTFILE=(key.file.number, file.name)
                    , ALTKEY=(key.specifier
                      , FILE key.file.number
                      , KEYLEN key.length
                      , KEYOFF key.offset
                      , NULL null.value)
                    , [NO]UNIQUE
                    , [NO]UPDATE
                    , [NO]AUDITCOMPRESS
                    , [NO]BUFFERED
                    , BUFFERSIZE=unstructured.buffer.size
                    , MAXEXTENTS=maximum.extents
                    , [NO]REFRESH
                    , [NO]SERIALWRITES
                    , [NO]VERIFIEDWRITES
                    , [NO]COMPRESS
                    , [NO]DCOMPRESS
                    , [NO]ICOMPRESS
                    , KEYLEN=key.length
                    , KEYOFF=key.offset
                    , ODDUNSTR
                    , PART=(sec.partition.num, system.name.$volume.name, pri.ext.size,
                      sec.ext.size, partial.key.value)
                    , [NO]PARTONLY
                    , RECLen=record.length
                    , BLOCK=data.block.length
                    , IBLOCK=index.block.length
                    , XLATE=OFF|ON|Yes|No|table-name
                    , FAST.LOAD=Y|N
                    , FAST.LOAD.SORTED=Y|N
                    , FAST.LOAD.CPU=cpunumber
                    , FAST.LOAD.PRI=priority
                    , SHARED
                    , [NO]AUDIT
                    , CODE=file.code
                    , EXT=(extent.size) | (pri.ext.size, sec.ext.size)
                    , LIKE=file.name
                    , LIKETYPE=type.key
                    , TYPE=file.type
                    , FORMAT 0|1|2

```

Changing a Record in the Type File

Use the UPDATE TYPE command to change a record in the type file. Following is the UPDATE TYPE command format:

```

UPDate TYPE          TYPEKEY=type.name
, [NO]ALTCREATE
, ALTFILE=(key.file.number,file.name)
, ALTKEY=(key.specifier
, FILE key.file.number
, KEYLEN key.length
, KEYOFF key.offset
, NULL null.value)
, [NO]UNIQUE
, [NO]UPDATE
, [NO]AUDITCOMPRESS
, [NO]BUFFERED
, BUFFERSIZE=unstructured.buffer.size
, MAXEXTENTS=maximum.extents
, [NO]REFRESH
, [NO]SERIALWRITES
, [NO]VERIFIEDWRITES
, [NO]COMPRESS
, [NO]DCOMPRESS
, [NO]ICOMPRESS
, KEYLEN=key.length
, KEYOFF=key.offset
, ODDUNSTR
, PART=(sec.partition.num,system.name.$volume.name,pri.ext.size,
sec.ext.size,partial.key.value)
, [NO]PARTONLY
, RECLen=record.length
, BLOCK=data.block.length
, IBLOCK=index.block.length
, XLATE=OFF|ON|Yes|No|table-name
, FAST.LOAD=Y|N
, FAST.LOAD.SORTED=Y|N
, FAST.LOAD.CPU=cpunumber|SPACE
, FAST.LOAD.PRI=priority
, SHARED
, [NO]AUDIT
, CODE=file.code
, EXT=(extent.size)|(pri.ext.size,sec.ext.size)
, LIKE=file.name
, LIKETYPE=type.key
, TYPE=file.type
, FORMAT 0|1|2

```

INSERT TYPE and UPDATE TYPE Parameters

INSERT TYPE and UPDATE TYPE use the same parameters. The following sections describe the required and optional parameters.

Required Parameter

The INSERT TYPE and UPDATE TYPE command have the following required parameter:

Required Parameter	Description
TYPEKEY=type.name	Specifies the 1–8 alphanumeric character typekey of the records you are adding. The first character must be alphabetic.

Optional Parameters

Optional parameters for the INSERT TYPE and UPDATE TYPE commands are grouped as follows:

- ❖ *Structured File Parameters* on page 78
- ❖ *Key-Sequenced File Parameters* on page 79
- ❖ *Alternate-Key File Parameters* on page 79
- ❖ *Partitioned File Parameters* on page 80
- ❖ *Odd Unstructured File Parameter* on page 80
- ❖ *File Parameters Specific to Connect:Direct* on page 80
- ❖ *Additional File Parameters* on page 82

Note: If you precede any parameters for the INSERT TYPE command with NO, do not type spaces between NO and the parameter.

Structured File Parameters

The structured file parameters define the block length and record length. Following are the structure file parameters for the INSERT TYPE and UPDATE TYPE commands:

Structured File Parameters	Description
BLOCK=data.block.length	Specifies the data block length. Values range from 1 to 4096 inclusive. The default is 4096.
BLOCK=index.block.length	Specifies the index block length. Values range from 1 to 4096 inclusive. The default is 4096.
RECLen=record.length	Specifies the length of the records. The default is 80. For relative and entry-sequenced files, values range from 1 to 4072. For key-sequenced files, values range from 1 to 4062. Note: RECLen is not valid when the destination file is unstructured. Note: If you are using the HP NonStop BIG FILE format, the maximum record length can be reduced by approximately 32–40 bytes. This restriction is effective starting with NSK Release D46+.

Key-Sequenced File Parameters

Key-sequenced parameters define the compression options for the keys, the key length, and offset values. Following are the key-sequenced parameters for the INSERT TYPE and UPDATE TYPE commands:

Key-sequenced File Parameters	Description
[NO]COMPRESS	Specifies whether keys are compressed in both index and data blocks. In data blocks, the key offset must be 0, and the maximum record size is reduced by 1 byte. The default is NOCOMPRESS.
[NO]DCOMPRESS	Specifies whether keys are compressed in data blocks. The key offset must be 0, and the maximum record size is reduced by 1 byte. The default is NODCOMPRESS.
[NO]ICOMPRESS	Specifies whether keys are compressed in index blocks. The default is NOICOMPRESS.
KEYLEN=key.length	Specifies the primary-key length. Values range from 1–255, inclusive. You must specify KEYLEN to create key-sequenced files.
KEYOFF=key.offset	Specifies the primary-key offset. Values range from 0–2034, inclusive. The default is 0.

Alternate-Key File Parameters

The Alternate-Key File parameters for the INSERT TYPE and UPDATE TYPE commands determine if alternate-key files are created and the attributes of the key files. Following are the alternate-key file parameters:

Alternate-Key File Parameters	Description
[NO]ALTCREATE	Specifies whether automatic alternate-key files are created. The default is ALTCREATE.
ALTFILE=(key.file.number,file.name)	Specifies the file number and name of an alternate-key file. key.file.number—An integer from 0–255. The default is 0. file.name—The name of the alternate-key file for the key-file-number.
ALTKEY=(key.specifier, FILE key.file.number, KEYLEN key.length, KEYOFF key.offset, NULL null.value, [NO]UNIQUE,[NO]UPDATE)	Specifies an alternate key. key-specifier is a two-byte value that uniquely identifies the alternate-key field. FILE—Specifies the key file number, where key.file.number is from 0–255, inclusive. The default is 0. KEYLEN—Specifies the length of the key. This parameter is required to create a key-sequenced file. KEYOFF—Specifies the offset for the key. The default is 0. NULL—Specifies the null value set for the key. Valid entries are an ASCII character in quotation marks or an integer ranging from 0–255. [NO]UNIQUE—Specifies whether the key is unique. The default is NOUNIQUE. [NO]UPDATE—Specifies whether automatic updating is set for the alternate-key file. The default is UPDATE.

Partitioned File Parameters

The partitioned file parameters define partition specifications for partitioned files. Following are the partitioned file parameters for the INSERT TYPE and UPDATE TYPE commands:

Partitioned File Parameters	Description
PART=(sec.partition.num\ system.name.\$volume pri.ext.size sec.ext.size partial.key.value)	Specifies secondary partition specifications for partitioned files. sec.partition.num—Specifies a 1–15 character integer that designates the secondary partition. \system.name.\$volume—Specifies the names of the system and volume to contain the partition. pri.ext.size—Specifies the primary extent size. sec.ext.size—Specifies the secondary extent size. partial.key.value—Specifies the lowest key value that can reside in the partition. This value is only for key-sequenced files. Valid entries include the following: <ul style="list-style-type: none"> • A string of characters enclosed in double quotation marks • A list of single characters, each enclosed in double quotation marks and separated by a comma. • Integers representing byte values, from 0–255, and each separated by a comma.
[NO]PARTONLY	Specifies whether subsequent file creations create all partitions of a partitioned file or only a single partition. The default is NOPARTONLY.

Odd Unstructured File Parameter

The odd unstructured file parameter defines how to round odd byte counts. Following is the INSERT TYPE and UPDATE TYPE commands:

Odd Unstructured File Parameter	Description
ODDUNSTR	Specifies no upward rounding if an odd byte count occurs.

File Parameters Specific to Connect:Direct

The file parameters, specific to Connect:Direct, define whether block i/o is performed, fast load facility, and whether the translation table is used. Following are the file parameters for the INSERT TYPE and UPDATE TYPE commands:

Parameters	Description
FAST.LOAD=Y	Invokes the FASTLOAD facility. FASTLOAD is a function that can reduce disk I/O overhead and is valid when the HP NonStop node is the destination. With FASTLOAD, Connect:Direct passes data through SPI to FUP to load into a destination data file. The feature is particularly useful for key-sequenced files, although FASTLOAD is also supported for entry-sequenced and relative record files. Because edit files are unstructured, they cannot be loaded using the FASTLOAD feature.

Parameters	Description
FAST.LOAD.PRI=priority	Sets FASTLOAD on and specifies the priority to run FUP. Valid values for priority range from 1 to 199. The default priority is the priority of NDMSMGR. Set this priority higher than that for NDMSMGR.
FAST.LOAD.CPU=cpunumber or FAST.LOAD.CPU=cpunumber SPACE	Sets FASTLOAD on and specifies the CPU to use to run FUP. cpunumber—Can range from 0–15. The default CPU is the CPU of NDMSMGR. SPACE—Deletes a hard-coded value, which causes the FUP process to run in the same CPU as the NDMSMGR. This is only valid for the UPDATE TYPE command.
FAST.LOAD.SORTED=Y	Sets FASTLOAD on and indicates to FUP that the data is sorted. This option, valid only for key-sequenced files, bypasses invocation of FASTSORT by FUP. The default is NO; that is, the data is not assumed to be sorted and FASTSORT is called.
SHARED	Specifies whether to assign shared access to the file.
XLATE=OFF ON YES NO table-name	<p>Specifies whether the file being transferred is converted from ASCII to EBCDIC or from EBCDIC to ASCII.</p> <p>If you specify XLATE ON or XLATE YES or you are copying a spooler file or an edit file (unstructured file, code 101), Connect:Direct checks the XLFILE for a table named DEFAULT. If the DEFAULT table is not in XLFILE, the internal English language ASCII/EBCDIC translation table is used.</p> <p>If you are transferring a binary file, set XLATE-NO.</p> <p>Refer to Chapter 6, <i>Defining Character Translation Tables</i>, for details on invoking the translation table utility and defining alternative translation tables.</p> <p>Note: Do not specify XLATE when you are copying a spooler file or an edit file (unstructured file, code 101). Connect:Direct automatically translates these files.</p> <p>ON YES—Converts text from ASCII to EBCDIC or EBCDIC to ASCII, depending on the copy direction.</p> <p>OFF NO—Prevents text conversion during file transfer.</p> <p>table-name—A 1–8 character name of a user-defined translation table.</p>

Additional File Parameters

Following are additional file parameters for the INSERT TYPE and UPDATE TYPE commands:

Additional File Parameters	Description
[NO]AUDIT	Specifies whether the Transaction Monitoring Facility (TMF) audits the file. The default is NOAUDIT.
[NO]AUDITCOMPRESS	Specifies whether auditing mode generates entire before and after messages or compresses before and after messages. The default is NOAUDITCOMPRESS.
[NO]BUFFERED	Specifies the mode of handling write requests. To buffer write requests into the disk-process cache, specify BUFFERED. The default for audited files is BUFFERED. The default for nonaudited files is NOBUFFERED.
BUFFERSIZE= unstructured.buffersize	Specifies the size in bytes of the internal buffer used when accessing an unstructured file. Values range from 1–4096, inclusive. The default is 4096.
MAXEXTENTS= maximum.extents	Specifies the maximum number of extents for the file. Values range from 16–n, where n is the maximum value determined by the amount of free space remaining in the file label. The default is 16, and the maximum value allowed is 978. For partitioned files, this value is always 16.
[NO]SERIALWRITES	Specifies whether serial or parallel mirror writes occur at file open. The default is NOSERIALWRITES, which results in parallel mirror writes at file open.
[NO]VERIFIEDWRITES	Specifies whether disk writes are verified. The default is NOVERIFIEDWRITES.
CODE=file.code	Specifies the file code. Values range from 0–65,535, inclusive. The default is 0.
EXT=(extent.size) (pri.ext.size,sec.ext.size)	Specifies the size of the extents. extent.size—Specifies the extent size. The default is 1 page (2048 bytes). pri.ext.size,sec.ext.size—Specifies the sizes of the primary and secondary extents. The default is 1,1 pages.
LIKE=file.name	Sets file attributes to correspond to the specified file name. Note: This parameter correctly picks up key attributes but ignores partitions and alternate keys.
LIKETYPE=type.key	Sets file attributes to correspond to the specified type record.
[NO]REFRESH	Specifies whether the file label is copied to disk each time the file control block is marked as <i>dirty</i> (changed). The default is NOREFRESH.
TYPE=file.type	Specifies the file type. Values include: <ul style="list-style-type: none"> • U or 0—Unstructured file • R or 1—Relative file • E or 2—Entry-sequenced file • K or 3—Key-sequenced file
FORMAT	Specifies the file format to create when the file is created. Values include: <ul style="list-style-type: none"> • 0—The system determines the format • 1—Create a Format 1 file • 2—Create a Format 2 file

Examples

The following sample command inserts a record into the type file:

```
INSERT TYPE TYPEKEY=EDITFILE, TYPE U, CODE 101, EXT (2,2)
```

The following sample command updates a record in the type file:

```
UPDATE TYPE TYPEKEY=EDITFILE, TYPE U, CODE 101, EXT (2,2)
```

Removing a Record from the Type File

Use the DELETE TYPE command to remove a record from the type file. Following is the DELETE TYPE command format:

```
DELEte TYPE          TYPEKEY=typekey-name | (list)
```

Required Parameter

Following is the DELETE TYPE command required parameter:

Required Parameter	Description
TYPEKEY =typekey-name (list)	Specifies the typekey of the record you are deleting. typekey-name—Specifies a 1–8 alphanumeric character string, with the first character alphabetic. list—Specifies multiple typekeys. Enclose the list in parentheses, and separate each value with a space or comma (.).

Examples

The following sample command deletes a single record in the type file:

```
DELETE TYPE TYPEKEY=MYALLOC
```

The following sample command deletes multiple records in the type file:

```
DELETE TYPE TYPEKEY=(NEWALLOC, RPLALLOC, SPCALLOC)
```

Defining Character Translation Tables

A utility called NDMXLATE permits you to define optional character translation tables and place them in the Connect:Direct HP NonStop translation table file for use during file transfer operations.

This chapter describes the utility and the following tasks you can perform:

- ❖ Defining alternative translation tables
- ❖ Manually invoking NDMXLATE
- ❖ Using translation during file transfer operations

Distribution Files

The NDMXLATE utility consists of the following files:

- ❖ NDMOBJ.NDMXLATE is the object file name of the translation table utility. Use AIMS to run the NDMXLATE program or run it manually.
- ❖ NDMINSTL.NDMXLIN is the text file containing the commands and data used by the NDMXLATE utility to create translation tables in XLFILE. A sample table named DEFAULT is provided in NDMXLIN.

You can modify this file as required by your environment. If DEFAULT is not loaded into XLFILE, Connect:Direct uses a standard ASCII/EBCDIC table, as illustrated in the following table:

```

Standard EBCDIC to ASCII Conversion Table
/* 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F*/
/*00*/ 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
/*VAL NUL SOH STX ETX SEL HT RNL DEL GE SPS RPT VT FF CR SO SI*/
/*10*/ 10 11 12 13 9D 85 08 87 18 19 92 8F 1C 1D 1E 1F
/*VAL DLE DC1 DC2 DC3 RES NL BS POC CAN EM UBS CUL IFS IGS IRS ITB*/
/*20*/ 80 81 82 83 84 0A 17 1B 88 89 8A 8B 8C 05 06 07
/*VAL DS SOS FS WUS BYP LF ETB ESC SA SFE SM CSP MFA ENQ ACK BEL*/
/*30*/ 90 91 16 93 94 95 96 04 98 99 9A 9B 14 15 9E 1A
/*VAL SYN IR PP TRN NBS EOT SBS IT RFF CU3 DC4 NAK SUB*/
/*40*/ 20 A0 A1 A2 A3 A4 A5 A6 A7 A8 5B 2E 3C 28 2B 7C
/*VAL SP RSP AA AB AC AD AE AF B0 B1 21 24 2A 29 3B 5E
/*50*/ 26 A9 AA AB AC AD AE AF B0 B1 21 24 2A 29 3B 5E
/*VAL & BA BB BC BD BE BF C0 C1 C2 60 3A 23 40 27 3D 22
/*60*/ 2D 2F B2 B3 B4 B5 B6 B7 B8 B9 7C 2C 25 5F 3E 3F
/*VAL - / | , % > ? */
/*70*/ BA BB BC BD BE BF C0 C1 C2 60 3A 23 40 27 3D 22
/*VAL : # @ C6 C7 C8 C9
/*80*/ C3 61 62 63 64 65 66 67 68 69 C4 C5 C6 C7 C8 C9
/*VAL a b c d e f g h i
/*90*/ CA 6A 6B 6C 6D 6E 6F 70 71 72 CB CC CD CE CF A4
/*VAL j k l m n o p q r
/*A0*/ D1 7E 73 74 75 76 77 78 79 7A D2 D3 D4 5B D6 D7
/*VAL *4* s t u v w x y z *1*
/*B0*/ D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 5D E6 E7
/*VAL *2*
/*C0*/ 7B 41 42 43 44 45 46 47 48 49 E8 E9 EA EB EC ED
/*VAL { A B C D E F G H I SHY
/*D0*/ 7D 4A 4B 4C 4D 4E 4F 50 51 52 EE EF F0 F1 F2 F3
/*VAL } J K L M N O P Q R
/*E0*/ 5C 9F 53 54 55 56 57 58 59 5A F4 F5 F6 F7 F8 F9
/*VAL \ NSP S T U V W X Y Z
/*F0*/ 30 31 32 33 34 35 36 37 38 39 FA FB FC FD FE FF
/*VAL 0 1 2 3 4 5 6 7 8 9 EO*/
/* *1* = left bracket
/* *2* = right bracket
/* *3* = cap or logical not sign
/* *4* = tilde
/* *5* = solid vertical bar
/* *6* = broken vertical bar
/*
Standard ASCII to EBCDIC Conversion Table
/* 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F*/
/*00*/ 00 01 02 03 37 2D 2E 2F 16 05 25 0B 0C 0D 0E 0F
/*VAL NUL SOH STX ETX EOT ENQ ACK BEL BS HT LF VT FF CR SO SI*/
/*10*/ 10 11 12 13 3C 3D 32 26 18 19 3F 27 1C 1D 1E 1F
/*VAL DLE DC1 DC2 DC3 DC4 NAK SYN ETB CAN EM SUB ESC FS GS RS US*/
/*20*/ 40 5A 7F 7B 5B 6C 50 7D 4D 5D 5C 4E 6B 60 4B 61
/*VAL SP ! " # $ % & ' ( ) * + , - . / */
/*30*/ F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 7A 5E 4C 7E 6E 6F
/*VAL 0 1 2 3 4 5 6 7 8 9 : ; < = > ? */
/*40*/ 7C C1 C2 C3 C4 C5 C6 C7 C8 C9 D1 D2 D3 D4 D5 D6
/*VAL @ A B C D E F G H I H K L M N O */
/*50*/ D7 D8 D9 E2 E3 E4 E5 E6 E7 E8 E9 AD E0 BD 5F 6D
/*VAL P Q R S T U V W X Y Z *1* \ *2* *3*
/*60*/ 79 81 82 83 84 85 86 87 88 89 91 92 93 94 95 96
/*VAL \ a b c d e f g h i j k l m n o */
/*70*/ 97 98 99 A2 A3 A4 A5 A6 A7 A8 A9 C0 4F D0 A1 07
/*VAL p q r s t u v w x y z { *5* } *4* DEL*/
/*80*/ 20 21 22 23 24 15 06 17 28 29 2A 2B 2C 09 0A 1B
/*VAL
/*90*/ 30 31 1A 33 34 35 36 08 38 39 3A 3B 04 14 3E E1
/*VAL
/*A0*/ 41 42 43 44 9F 46 47 48 49 51 52 53 54 55 56 57
/*VAL
/*B0*/ 58 59 62 63 64 65 66 67 68 69 70 71 72 73 74 75
/*VAL
/*C0*/ 76 77 78 80 8A 8B 8C 8D 8E 8F 90 9A 9B 9C 9D 9E
/*VAL
/*D0*/ 9F A0 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 E7
/*VAL
/*E0*/ B8 B9 BA BB BC BD BE BF CA CB CC CD CE CF DA DB
/*VAL
/*F0*/ DC DD DE DF EA EB EC ED EE EF FA FB FC FD FE FF
/*VAL
/* *1* = left bracket
/* *2* = right bracket
/* *3* = cap or logical not sign
/* *4* = tilde
/* *5* = solid vertical bar
/* *6* = broken vertical bar

```

- ❖ The NDMXLATE out file, which Connect:Direct HP NonStop creates during invocation of NDMOBJ.NDMXLATE, contains output generated by the NDMXLATE utility. If you invoke NDMXLATE through AIMS, the default output file name is \$\$.#NDMAIMS.XLT. If you leave the AIMS entry field blank, Connect:Direct HP NonStop routes the output to your terminal. If you manually invoke NDMXLATE with the obey file, OBEYXLAT, the default output file name is \$\$.#XLATE.
- ❖ The NDMFILES.XLFILE file is a key-sequenced file that contains alternative translation tables. The file is automatically created during AIMS installation by running NDMFUPIN (Option 1.5).

Defining Alternative Translation Tables

Edit NDMINSTL.NDMXLIN to create or replace translation tables. Each table consists of a lower and upper half. The upper half of the table translates ASCII to another character set, typically EBCDIC or some variation of it. The lower half of the table translates from EBCDIC back to ASCII. The SET RADIX command enables you to specify the radix of the offset value and the table input values themselves.

When defining translation tables, use the following utility commands:

Command	Description
DEFINE tablename /qualifiers	<p>Defines a translation table. Tablename is a 1–8 character label that identifies the translation table.</p> <p>Valid qualifiers are:</p> <ul style="list-style-type: none"> • MODEL=tablename—specifies an existing translation table to use as a starting point. The model table is stored as the <i>defined</i> table. • REPLACE—replaces the translation table defined by tablename, with a table of the same name.
FILLER=n LOC	<p>Specifies a value to initialize the translation table with before filling it in. Locations in the table that are not assigned a specific value contain this value. Valid values are as follows:</p> <p>n—A value in the radix specified by the SET RADIX command.</p> <p>LOC—(the default) Each location in the table has as its value its displacement in the table. For example, displacement x'40' has a value of x'40'. Both the lower half and upper half of the table contain the values x'00' through x'FF'.</p>
NOLOG_INPUT LOG_INPUT	Specifies whether to display each line of input.
OFFSET=n	<p>Identifies the starting position at which to insert characters. The default is 0. To define the upper half of the table (EBCDIC-to-ASCII translation), use OFFSET=0.</p> <p>To define the lower half of the table (ASCII-to-EBCDIC translation), use OFFSET=256 for RADIX DECIMAL, OFFSET=100 for RADIX HEX, or OFFSET=200 for RADIX OCTAL.</p> <p>n—Can range from decimal 0–511 or Hex 00-1FF. The value for OFFSET must be in the same numbering system as defined by SET RADIX.</p>
SET RADIX= DECIMAL HEX OCTAL	Specifies the numbering system for data input. HEX is the default.
! *	Comments are included in the input. Type either of these characters, the comma or the asterisk, in column one to create a comment.

Following is a sample table definition for a table named DEFAULT. The actual data follows the DEFINE command and is a series of numbers in the specified radix separated by blanks.

```

!   This file contains the commands and data for the NDMXLATE
!   utility to create the DEFAULT translation table in XLFILE.
!
define default /replace
set radix=hex
!
!   Define the ASCII-to-EBCDIC part of the table.
offset=0
00 01 02 0304 05 06 0708 05 15 0B0C 0D 0E 0F
10 11 12 133C 15 16 1718 19 1A 1B1C 1D 1E 1F
40 5A 7F 7B5B 6C 50 7D4D 5D 5C 4E6B 60 4B 61
F0 F1 F2 F3F4 F5 F6 F7F8 F9 7A 5E4C 7E 6E 6F
7C C1 C2 C3C4 C5 C6 C7C8 C9 D1 D2D3 D4 D5 D6
D7 D8 D9 E2E3 E4 E5 E6E7 E8 E9 ADE0 BD 5F 6D
79 81 82 8384 85 86 8788 89 91 9293 94 95 96
97 98 99 A2A3 A4 A5 A6A7 A8 A9 C06A D0 A1 7F
80 81 82 8384 85 86 8788 89 8A 8B8C 8D 8E 8F
90 91 92 9394 95 96 9798 99 9A 9B9C 9D 9E 9F
A0 A1 A2 A3A4 A5 A6 A7A8 A9 AA ABAC AD AE AF
B0 B1 B2 B3B4 B5 B6 B7B8 B9 BA BBBC BD BE BF
C0 C1 C2 C3C4 C5 C6 C7C8 C9 CA CBCC CD CE CF
D0 D1 D2 D3D4 D5 D6 D7D8 D9 DA DBDC DD DE DF
E0 E1 E2 E3E4 E5 E6 E7E8 E9 EA EBEC ED EE EF
F0 F1 F2 F3F4 F5 F6 F7F8 F9 FA FBFC FD FE FF
!
!   Define the EBCDIC-to-ASCII part of the table.
offset=100
00 01 02 0304 09 06 0708 09 0A 0B0C 0D 0E 0F
10 11 12 1314 0A 16 1718 19 1A 1B1C 1D 1E 1F
20 21 22 2324 25 26 2728 29 2A 2B2C 2D 2E 2F
30 31 32 3334 35 36 3738 39 3A 3B14 3D 3E 3F
40 41 42 4344 45 46 4748 49 5B 2E3C 28 2B 5D
26 51 52 5354 55 56 5758 59 21 242A 29 3B 5E
2D 2F 62 6364 65 66 6768 69 7C 2C25 5F 3E 3F
70 71 72 7374 75 76 7778 60 3A 2340 27 3D 22
80 61 62 6364 65 66 6768 69 8A 8B8C 8D 8E 8F
90 6A 6B 6C6D 6E 6F 7071 72 9A 9B9C 9D 9E 9F
A0 7E 73 7475 76 77 7879 7A AA ABAC 5B AE AF
B0 B1 B2 B3B4 B5 B6 B7B8 B9 BA BBBC 5D BE BF
7B 41 42 4344 45 46 4748 49 CA CBCC CD CE CF
7D 4A 4B 4C4D 4E 4F 5051 52 DA DBDC DD DE DF
5C E1 53 5455 56 57 5859 5A EA EBEC ED EE EF
30 31 32 3334 35 36 3738 39 FA FBFC FD FE FF
!
!   Example:
!   Define a table which translates ASCII lowercase to
!   EBCDIC uppercase.
Define upper /model=default /replace
offset=61
C1 C2 C3 C4C5 C6 C7 C8C9 D1 D2 D3D4 D5 D6 D7
D8 D9 E2 E3E4 E5 E6 E7E8 E9

```

Manually Invoking NDMXLATE

An obey file, OBEYXLAT, is provided to invoke the NDMXLATE utility manually. Edit NDMINSTL.OBEYXLAT to modify any file names. Then issue the following command to run the obey file:

```
TACL> OBEY NDMINSTL.OBEYXLAT
```

Contents of the obey file follow, where NDMINSTL.NDMXLIN (XLATE table source) is the text file to load, \$\$.#XLATE is the log file, and NDMFILES.XLFILE is the key-sequenced file to contain the data.

```
RUN NDMOBJ.NDMXLATE /IN NDMINSTL.NDMXLIN, OUT $$.#XLATE  
/NDMFILES.XLFILE
```

Using Translation During File Transfer Operations

If XLATE=ON or XLATE=YES is specified in the Process or the file being copied is a spooler file or an edit file (unstructured file, code 101), Connect:Direct HP NonStop checks the XLFILE for a table named DEFAULT. If DEFAULT is not in XLFILE, then Connect:Direct HP NonStop uses a table similar to the ASCII/EBCDIC table in *Distribution Files* on page 85.

To specify a customized table for data translation, include the following SYSOPTS subparameter in the COPY statement of a Process:

```
SYSOPTS=SET XLATE tablename
```

Tablename is the name of the table to be used. The named table must be loaded in the XLFILE using the NDMXLATE utility.

Optimizing Performance

This chapter discusses the following options that you can modify to optimize product performance:

- ❖ Reducing disk I/O overhead with the FASTLOAD function
- ❖ Increasing partitioned load throughput using the FASTLOAD PARTOF feature
- ❖ Using generic IPC processing
- ❖ Tuning for greater file capacity levels in the statistics facility

Note: To limit the amount of trace information written to the spooler or disk file and to minimize the performance impact of troubleshooting on production data transfers, see Chapter 8, *Running Traces*, for information on the NDMTRACE program.

Note: To start transferring a file while it is still being created, use the SYSOPTS parameter, SET OPENFILEXMT=YES, in the FROM clause in your COPY statement.

Reducing Disk I/O Overhead with the FASTLOAD Function

Connect:Direct supports a FASTLOAD function that can reduce disk I/O overhead and is used when the HP NonStop node is the destination. With FASTLOAD, Connect:Direct passes data through SPI to FUP to load into a destination data file. The feature is useful for key-sequenced files, although FASTLOAD is also supported for entry-sequenced and relative record files. Because edit files are unstructured, they cannot be loaded using the FASTLOAD feature.

Note: When you load a KSDS file, the file may have an EOF that is 4096 bytes larger than the original file; however, both files contain the same data. The difference is inherent in the operation of FUP.

FASTLOAD is specified as a SYSOPTS subparameter on the COPY TO clause of the Connect:Direct HP NonStop COPY statement or with a TYPE command.

The following table describes the valid options for FASTLOAD:

Valid Option	Description
SET FAST.LOAD Y	Indicates that the FASTLOAD facility be used.
SET FAST.LOAD.PRI priority	Sets FASTLOAD on and specifies the priority to run FUP. Valid values for priority range from 1 to 199. The default priority is the priority of NDMSMGR. Set this priority higher than that for NDMSMGR.
SET FAST.LOAD.CPU cpu number	Sets FASTLOAD on and specifies the CPU to use to run FUP. Valid values for the CPU number range from 0 to 15. The default CPU is the CPU of NDMSMGR.
SET FAST.LOAD.SORTED Y	Sets FASTLOAD on and indicates to FUP that the data is sorted. This option, which is valid only for key-sequenced files, bypasses invocation of FASTSORT by FUP. The default is NO; that is, the data is not assumed to be sorted and FASTSORT is called.
SET FAST.LOAD.PARTOF volume	Sets FASTLOAD on and indicates to FUP that a load operation is to be performed on a single partition in a partitioned file. The volume specifies the volume of the primary partition, whereas the TO DSN parameter in the COPY statement specifies the partition to be loaded whether primary or secondary. This parameter is valid ONLY for key-sequenced, partitioned files. Attempting to load records containing key values outside the key range defined for the target partition, can result in unpredictable errors. Note: Specify multiple SET command parameters by preceding each parameter with SET. Enclose each SET command in double quotation marks.

Following is a sample Process that sets FASTLOAD on and runs FUP on CPU number 5:

PROC1	PROCESS	SNODE=BOSTON.MVS	-
		SNODEID=(IBMUSER,PSWRD)	
STEP01	COPY FROM	(DSN=IBM.SOURCE.FILE SNODE	-
		DISP=SHR)	-
	TO	(FILE=\$VOL.SUBVOL.DESTFILE PNODE	-
		SYSOPTS=("SET FAST.LOAD.CPU 5")	-
		DISP=RPL)	

Following is a sample Process that sets FASTLOAD on, specifies that data is sorted, and specifies that FUP and FASTSORT run at priority 155:

PROC1	PROCESS	SNODE=BOSTON.MVS	-
		SNODEID=(IBMUSER,PSWRD)	
STEP01	COPYFROM	(DSN=IBM.SOURCE.FILE SNODE	-
		DISP=SHR)	-
	TO	(FILE=\$VOL.SUBVOL.DESTFILE PNODE	-
		SYSOPTS=("SET FAST.LOAD.SORTED Y	-
		FAST.LOAD.PRI 155")	-
		DISP=RPL)	

Alternate Keys

Improving I/O performance for files with alternate keys must be managed differently. If FASTLOAD is activated, Connect:Direct only updates alternate keys when you add a RUN TASK statement to the Process that runs the FUP LOADALTFILE utility. This statement instructs FUP to update the alternate keys for any alternate key files.

A sample Process that includes the RUN TASK statement follows:

```

RCV  PROCESS      SNODE=BOSTON.MVS                -
                                SNODEID=(IBMUSER,PSWRD)
COPY01 COPY FROM  (DSN=IBM.SOURCE.FILE SNODE        -
                                DISP=SHR)           -
                                TO (FILE=$VOL.SUBVOL.ESDS PNODE-
                                SYSOPTS=("SET FAST.LOAD.CPU 5")-
                                DISP=OLD)
                                IF ( COPY01 EQ 0 ) THEN
                                RUN TASK  PGM=FUP SYSOPTS=(, 'LOADALTFILE-
                                <KEY FILE NUMBER>, $VOL.SUBVOL.ESDS')
EIF

```

Refer to the *Connect:Direct HP NonStop User Guide and Reference* for syntax and parameter description for commands. For more information on syntax and parameter descriptions for Process statements, see the Processes web site at <http://www.sterlingcommerce.com/documentation/processes/processhome.html>.

Partitioned Load Throughput

When using partitioned HP NonStop data sets, you can transfer presorted partitions in parallel by using the PARTOF feature of FUP FASTLOAD. This feature enables you to sort on the alternate platform where the data is generated. This improves throughput for many applications, including data-intensive applications, such as data warehousing.

Observe the following guidelines when using the PARTOF feature:

- ❖ The PARTOF option is ONLY valid with key-sequenced partitioned files. This is an HP NonStop file system restriction.
- ❖ The TO DSN parameter must specify the partition being loaded, whether primary or secondary.
- ❖ FASTLOAD.PARTOF parameter in SYSOPTS must specify the VOLUME of the primary partition.
- ❖ Partitioned files can span multiple HP NonStop nodes. In the event this occurs, either the TO DSN or the PARTOF volume may need to be a system-qualified name.
- ❖ If FASTLOAD.SORTED = Y, the input data MUST be sorted or an error results. No error is given, but the data may be in error.
- ❖ All records written to a partition MUST have key values that fall within the range of keys allocated to that partition. If any key value falls outside that range, the step statistics do not reflect the correct number of records written, and the step may fail with a FASTLOAD error.

PARTOF Example Process

Following is a sample Process using the PARTOF option:

```

PARTOF PROCESS  SNODE HPNONSTOP.NODE
* FUP LOAD of a partition, sort invoked
STEP01  COPY FROM (PNODE DSN=$DSMSCM.CDDATA.FILEIN      DISP=SHR)  -
          TO      (SNODE DSN=$SYSTEM.CDDATA.PARTFILE    DISP=RPL)  -
          SYSOPTS=( "SET FAST.LOAD Y"                  -
                    "SET FAST.LOAD.PARTOF $DSMSCM" ) )
* FUP LOAD of a partition, sort suppressed
STEP02  COPY FROM (PNODE DSN=$DSMSCM.CDDATA.FILEIN      DISP=SHR)  -
          TO      (SNODE DSN=$SYSTEM.CDDATA.PARTFILE    DISP=RPL)  -
          SYSOPTS=( "SET FAST.LOAD.SORTED Y"           -
                    "SET FAST.LOAD.PARTOF $DSMSCM" ) )

```

Using Generic IPC Processing

Connect:Direct HP NonStop supports a generic Inter-Processor Communications (IPC) mechanism for enhanced flexibility when communicating with user-defined Processes. You can write all data received by Connect:Direct to an alternate Process rather than directly to disk, spool, or tape. Connect:Direct can operate with any HP NonStop Process on an IPC level, but the receiving Process must be started before Connect:Direct attempts to perform an open operation.

Note: See Chapter 4, *Interface for User-Written Programs*, in *Connect:Direct HP NonStop Management Programming Guide*, for complete information on how to implement generic IPC Processing.

Increasing File Capacity Levels in the Statistics Facility

Execution of a Process generates multiple statistics records. The statistics deletion program (NDMSTDLD) is a utility designed to ensure that space is always available to write those records to the statistics files (STATFILE, STATSrch, and STATSRC0).

Operating in the background, NDMSTDLD deletes statistics records from STATFILE and STATSrch without interrupting Connect:Direct processing. STATFILE contains the actual statistics records, whereas STATSrch contains the keys for searching and displaying statistics information from the STATFILE. STATSRC0 contains the alternate keys for STATSrch. The HP NonStop file and record management system, ENSCRIBE, deletes records from STATSRC0 when NDMSTDLD deletes files from STATSrch.

Criteria for deleting statistics records are the settings of the following initialization parameters:

Parameter	Description
STATCRITERIA	Specifies the deletion criteria for records maintained in the statistics file. Statistics older than the specified criteria are automatically deleted. Acceptable values are nD, nH, and nM, where nD equals 1–31 days, nH equals 1–23 hours, and nM equals 1–59 minutes. The default is 8 days.

Parameter	Description
STATPERCENT	Defines the maximum allowable percentage the statistics files utilize before running NDMSTDL. The default is 85%. If you are running a busy Connect:Direct application, set this value to a lower percentage to avoid a file full condition.
STATMIDNITE	Responsible for midnight housekeeping. Every midnight NDMSTDL deletes all statistics records older than the deletion criteria specified. The default is ON.

The server automatically runs NDMSTDL when the statistics file size exceeds the percentage setting in the initialization parameters file (STATPERCENT). Criteria for deletion is determined by the age of the records.

You can issue TACL PARAM commands or the UPDATE STATISTICS command to override settings in the initialization parameters file. Refer to *Using TACL Parameters for Manual Operation* on page 97 for an example of issuing TACL PARAM commands. Refer to the *Overriding Initialization Parameters with the UPDATE STATISTICS Command* on page 98 for the format and parameter descriptions for the UPDATE STATISTICS command.

Modes of Operation

NDMSTDL can operate in two modes. One mode deletes only old records. The other mode is automatic, based on the statistics file utilization level you specify, with Connect:Direct deleting both old records and enough additional records to lower the statistics file utilization to a level you specify.

Note: Old statistics records are those older than the value of STATCRITERIA. You specify the statistics file utilization level through STATPERCENT in the initialization parameters file.

- ❖ To delete statistics based on how old it is, do one of the following:
 - ♦ Set STATMIDNITE to ON. When NDMSTDL runs for midnight housekeeping, NDMSTDL deletes any statistics records older than the value of STATCRITERIA.
 - ♦ Run NDMSTDL manually to delete any statistics records older than the value of STATCRITERIA.
- ❖ Connect:Direct automatically runs the statistics deletion utility when the statistics file utilization level you specify in STATPERCENT is exceeded.

When NDMSTDL is run in this mode, old records (based on STATCRITERIA) are deleted first. If no records in the file are older than the value of STATCRITERIA, NDMSTDL deletes enough of the oldest records in the file to reduce the utilization level to approximately the value of STATPERCENT less 10%. For example, if STATPERCENT is 85, NDMSTDL attempts to lower the utilization level to approximately 75%.

Recommended Settings

Monitor the file size, number, and complexity of Processes to determine appropriate settings for STATPERCENT and STATCRITERIA. If you are performing many complex Connect:Direct transactions daily, set the maximum allowable percentage at 70 and the deletion criteria at 3.

Examples

The following two examples assume that a site has specified these values in the initialization parameters:

- ❖ STATPERCENT=75
- ❖ STATCRITERIA=10d
- ❖ STATMIDNITE=ON

Example 1-Day 1, NDMSTDL Attempts to Delete Old Records

Assume the oldest records in STATFILE are eight days old. When NDMSTDL is run at midnight for daily housekeeping, it detects no records older than that specified in STATCRITERIA, or 10 days old. Therefore, NDMSTDL does not delete any records. The NDMSTDL process cycle completes, having had no effect on the contents of STATFILE.

Example 2-Day 2, NDMSTDL Deletes Records to Reduce Statistics File Utilization

Assume that during the next day's normal processing the level of utilization of STATFILE reaches 75%, which is the value of STATPERCENT. Because the STATPERCENT value is reached, Connect:Direct automatically runs NDMSTDL to recover space in the files. The oldest records in the file are now nine days old. NDMSTDL still finds no records older than STATCRITERIA. NDMSTDL then deletes enough of the oldest records in the file to lower the level of utilization to approximately 65%. This percentage is the value of STATPERCENT minus 10%.

Operating NDMSTDL Manually

Manually running NDMSTDL overrides the STATPERCENT and STATCRITERIA initialization parameters. Two methods to operate NDMSTDL manually are available: using positional parameters or TACL PARAM commands. Only one additional positional parameter can be supplied through TACL. The REPEAT parameter controls whether NDMSTDL uses STATPERCENT or STATCRITERIA to determine how many records to delete. If REPEAT is set to NO, then NDMSTDL only deletes records older than STATCRITERIA. If REPEAT is set to YES, then NDMSTDL deletes enough records to lower file utilization to STATPERCENT minus 10%.

Using Positional Parameters for Manual Operation

Issue the following command from TACL to manually execute NDMSTDL. Substitute your site-specific file names for *ndmstdl*, *statfile*, and *statsrch*. You must fully qualify file names. For *statcriteria*, substitute deletion criteria. For *statpercent*, substitute the maximum allowable percentage.

```
TACL> PARAM REPEAT YES
TACL> RUN ndmstdl statfile statsrch statcriteria statpercent
```

Following is a description of the TACL parameters:

Parameter	Description
REPEAT	Determines how many records to delete. If you specify YES, use STATPERCENT to determine the records to delete. If you specify NO or ABSENT, use STATCRITERIA only.
ndmstdl	Specifies the fully qualified name of the NDMSTDL object.
statfile	Specifies the fully qualified name of the Connect:Direct STATFILE.

Parameter	Description
statsrch	Specifies the fully qualified name of the Connect:Direct STATSRCH file.
statcriteria	Specifies valid deletion criteria, defined as follows: <1-31>D (1-31 days) <1-23>H (1-23 hours) <1-59>M (1-59 minutes)
statpercent	Specifies a valid percentage between 50 and 95.

The following sample RUN command starts NDMSTD L manually and deletes all records 15 days and older:

```
TACL> RUN NDMOBJ.NDMSTD L NDMFILES.STATFILE NDMFILES.STATSRCH 15D 85
```

Using TACL Parameters for Manual Operation

Issue the following command from TACL to manually execute NDMSTD L using TACL parameters:

```
TACL> PARAM REPEAT YES
TACL> PARAM STATFILE statfile
TACL> PARAM STATSRCH statsrch
TACL> PARAM STATCRITERIA statcriteria
TACL> PARAM STATPERCENT statpercent
TACL> RUN ndmstdl
```

Parameter	Description
REPEAT	Determines how many records to delete. If you specify YES, use STATPERCENT to determine the records to delete. If you specify NO or ABSENT, use STATCRITERIA only.
statfile	Specifies the fully qualified name of the Connect:Direct STATFILE.
statsrch	Specifies the fully qualified name of the Connect:Direct STATSRCH file.
statcriteria	Specifies valid deletion criteria are defined as follows: <1-31>D (1-31 days) <1-23>H (1-23 hours) <1-59>M (1-59 minutes)
statpercent	Specifies a valid percentage between 50 and 95.
ndmstdl	Specifies the fully qualified name of the NDMSTD L object.

Help Information for Manual Operation

Issue the following command to display Help information for manual operation of NDMSTD L:

```
TACL>RUN NDMSTD L ?
```

Overriding Initialization Parameters with the UPDATE STATISTICS Command

Use the UPDATE STATISTICS command to change the percentage setting, deletion criteria, and midnight housekeeping flag *dynamically* in the statistics facility through NDMCOM. This command overrides settings in the initialization parameters file. If you recycle the server, the settings are defined in the initialization parameters file.

Format

Following is the format for the UPDATE STATISTICS command:

UPDate STATistics	CRITERIA=nD nH nM MIDNITE=ON OFF PERCENT=n
-------------------	--

Required Parameters

The UPDATE STATISTICS command has no required parameters.

Optional Parameters

Optional parameters for the UPDATE STATISTICS command are:

Optional Parameter	Description
CRITERIA=nD nH nM	Specifies the age of the records that are deleted from the statistics files. The value for D is any number between 1–31 days. The range of hours for H is 1–23. M indicates 1–59 minutes. The default is 8D (8 days).
MIDNITE=ON OFF	Specifies whether NDMSTD L automatically deletes files every midnight. If MIDNITE=ON, every midnight NDMSTD L deletes all statistics records older than the deletion criteria specified. The default is ON.
PERCENT=n	Specifies the maximum allowable percentage the statistics files (STATFILE and STATS RCH) can be utilized before NDMSTD L is created. Acceptable values for <i>n</i> are any numbers between 50 and 95. The default is 85.

Examples

The following command changes the deletion criteria used by NDMSTD L to five days and the maximum percentage of file capacity to 73:

```
UPDATE STATISTICS CRITERIA=5D PERCENT=73
```

The following command turns off the midnight *housekeeping* flag:

```
UPDATE STATISTICS MIDNITE=OFF
```

Displaying Information on STATFILE, STATSRCH, and STATSRC0

Use the DISPLAY STATINFO command to monitor the following:

- ❖ File size
- ❖ Number of extents allocated and available
- ❖ Percentage of the file used
- ❖ Settings for STATCRITERIA, STATPERCENT, and STATMIDNITE
- ❖ Last time and date that NDMSTDL executed

The optional parameters for the DISPLAY STATINFO command allow you to determine the form in which Connect:Direct presents the output. Refer to the *Viewing System Information* chapter in the *Connect:Direct HP NonStop User Guide and Reference*, for the format and parameter descriptions for the command.

Additional Performance Considerations

If NDMSTDL runs frequently, you can increase the size of statistics files to decrease the need to delete records from the statistics file. You can modify STATFILE, STATSRCH, and STATSRC0.

Note: After the NDMSTDL program runs, the statistics from the DISPLAY STATINFO command may not show a change in the Percentage Used or End of File fields because the statistics files are key-sequenced files.

If you are installing, edit the NDMFUPIN file to increase the size of the files; however, if you are modifying the current size, use the FUP utility and issue the ALTER command. The file name is the one you assigned when you set the AIMS environment in Option E.

```
FUP ALTER file ,MAXEXTENTS n
```

Note: After you increase the size of the statistics file, you can increase the size of the STATSRC0 file manually, because this file usually fills before the other statistics files.

For faster logging, move the three statistics files to disks that use different disk controllers. Provide fully-qualified file names in the NDMINIT file.

Better performance is also accomplished by properly balancing session manager processes over multiple CPUs. Specify the desired CPUs as part of the INSERT NETMAP command when you define LU parameters in the network map.

Values for Efficient Use of Space

Ideally, the relative sizes of the three statistics database files ensure that the percentage utilization of each file is about the same to provide the most efficient use of the total space allocated to the three files.

For example, assume that a site has the value of STATPERCENT set at 75%, and when the utilization level of the STATSRCH file reaches 75%, the utilization level of the STATFILE and STATSRC0 files is usually only about 50% and 30%, respectively. In this case, the site can either decrease the sizes of STATFILE and STATSRC0 or can increase the size of STATSRCH. Ideally, when STATSRCH reaches 75%, the other two files are also near 75% full as measured by Connect:Direct.

In general, the relative amounts of space used in the three files vary according to the usage patterns at a given site and are somewhat unpredictable. The listed guidelines are used as a starting point. To achieve the best use of the allocated space, use the `DISPLAY STATINFO` command to monitor the utilization levels periodically, and adjust the file sizes based on the levels recorded over a period of time.

Note also that Connect:Direct HP NonStop calculates the utilization percentage using a technique that takes into account that some allocated file blocks may be free. For this reason, the Connect:Direct percentages normally do not match those in the `FUP INFO <filename>,DETAIL` command. Base your file sizing only on the Connect:Direct percentages.

Use the following file sizes for `STATFILE`, `STATSRCH`, and `STATSRC0`:

```
STATFILE EXT (100,100) MAXEXTENTS 50
STATSRCH EXT (120,120) MAXEXTENTS 100
STATSRC0 EXT (150,150) MAXEXTENTS 100
```

Running Traces

This chapter provides command syntax and parameter descriptions for running traces and controlling automatic establishment of the Connect:Direct HP NonStop server.

Running Traces

Perform problem isolation and diagnostics by running traces. Connect:Direct HP NonStop has three diagnostic trace functions:

- ❖ Tracing server functions
- ❖ Tracing the activities of the Session Managers
- ❖ Tracing Session Manager requests to NETEX
- ❖ Tracing the activities of the API managers
- ❖ Tracing the activities of the NDMCOM program
- ❖ Tracing the activities of the spooler manager (NDMSPL)

You can start traces in one of three ways:

- ❖ Issue a PARAM command from the TACL command line
- ❖ Set bits in the initialization parameters
- ❖ Issue the MODIFY command

The keyword that identifies the type of trace depends on the method you choose to start the trace.

- ❖ Specify SRVRTRACE to start a server trace from the initialization parameters file or the TACL command line. Specify SERVER to start a server trace using the MODIFY command.
- ❖ Specify SMTRACE to start a session manager trace from the initialization parameters file or the TACL command line. Specify TRACE to start a session manager trace using the MODIFY command.
- ❖ Specify param NDMCOMTRACE on the TACL command line to start the NDMCOM tracing facility.
- ❖ Specify param NDMSPLTRACE on the TACL command line to start the NDMSPL tracing facility.

You can enable various bits to record the activities of different functions.

Trace Bits and Options

Trace bits define the functions you are tracing. Trace options further define the bits and are used only when tracing the activities of the session manager.

When specifying multiple trace bits, use a colon (:) to separate each bit. Multiple trace options (for session manager traces) are not separated, for example, T:D:F:L:B\IS.

Trace Bits	Description
M	Turns on a trace of server processes as they are initialized.
I	Traces the messages between the server and the NDMCOM and session manager processes.
L	Traces the status of the LUs during startup.
Q	Traces the status of the TCQ during startup.
S	Traces SNA operations.
T	Traces TCP/IP connection requests.
OFF	Turns off the trace.

Tracing Session Manager and API Manager Requests

The following table lists the valid trace bits and options for tracing the activity of a Session Manager or API Manager. If individual B\ options are not specified, all of the tracing options from the sublist (S, C, F, X, I, L, T, M) are performed.

Valid Trace Bits for the Session Manager	Description
T	Enables the function traces. This parameter is required when you enable a session manager trace.
D	Enables trace print statements. This parameter is required when you enable a session manager trace.
F	Prints the source code file name on each trace output line.
L	Prints the source code line number on each trace output line.
B\	Specifies a sublist of tracing options for the session manager in the format of B\ <options>. <ul=""> S—Enables a detailed trace of session manager operations, including source code function names, IF/THEN/ELSE decisions, open files, trace bit settings, and other key information. C—Traces copy steps in Processes. No output is produced for this step if a COPY statement is not executed. F—Traces the contents of any files copied between nodes. No output is produced when files are not copied. X—Traces transmissions between the session manager and the host node. No output is produced unless an attempt is made to establish a session with a host. I—Traces the source code function steps for communication between processes and interprocess messages. L—Traces the source code function steps for transmissions. T—Traces TCP/IP transmissions between the session manager and adjacent node. M—Traces RUNTASK startup information. </options>.>
O\	Changes the default output file (<i>stderr</i>). For example, O\\$.#OUT changes the trace output to a spooler queue file named \$.#OUT. T:D:F:L:O\\$.#NEW.TRACEFILE redirects the trace output to a spooler file.

Valid Trace Bits for the Session Manager	Description
1\	Specifies that only listed functions are traced. For example, 1\main\func1\func2\func7 restricts the function traces to those routines.
U\	Enables the following application-specific runtime options: <ul style="list-style-type: none"> • M—enables memory overrun/underrun checking. • D—turns on a call to the HP NonStop DEBUG process. This is only useful when source code is available.
OFF	Turns off the trace.

Running a Trace from TACL

You can turn on a SRVTRACE, NTXTRACE, NDMCOMTRACE, NDMSPLTRACE, NDMAPITRACE, and SMTRACE by issuing the TACL PARAM command.

If, for example, you typed the following command, you would record the startup of the server and show the status of the LUs:

```
TACL> PARAM SRVTRACE M:L
```

After you issue the PARAM command, bring up the server with the RUN NDMMON command. Execute the RUN NDMMON command from the same terminal where you issued the PARAM command. Trace data is written to the output file specified in the RUN NDMMON command.

Trace parameters are in effect until the trace bits are cleared by issuing the following commands:

```
CD.74.>MOD SERVER OFF
Wednesday - November 19, 2008 - 11:03:50.770
  SAPI203I: (RC=0, FDBK="0")
MODify command successfully completed.
CD.75.>
```

This example turns all server tracing off and continues Connect:Direct.

```
CD.75.>STOP ALL I
  SAPI208I: (RC=0, FDBK="0")
STOP ALL command successfully completed.
CD.76.>EXIT
  SAPI220I: (RC=0, FDBK="0")
EXIT command successfully completed.
$DEV JS35 404> CLEAR PARAM SRVTRACE
$DEV JS35 405>
```

These commands stops Connect:Direct and clears the parameter.

Specifying a Trace in the Initialization Parameters File

You can also set trace bits by modifying values for SMTRACE, NTXTRACE, NDMAPITRACE, NDMCOMTRACE, NDMSPLTRACE, or SRVTRACE in the initialization parameters file. For a list of all initialization parameters, refer to the *Connect:Direct HP NonStop Installation Guide*. When specified as startup

parameters, the trace bits remain in effect each time you initialize Connect:Direct HP NonStop. To turn off the trace, edit the initialization parameters file and delete the specified trace bits. Trace data is generated until the disk or spooler system runs out of space.

Note: NDMINSTL.NDMINIT is the default file name of the initialization parameters file unless you changed the name during installation.

Generating a Trace

Use the MODIFY command to modify certain operational functions or generate a trace of internal program events during execution. A trace remains in effect until you turn it off with another MODIFY command or issue the STOP ALL I command to stop session manager processes.

Connect:Direct HP NonStop has five diagnostic trace functions:

- ❖ SERVER, which traces the server functions.
- ❖ TRACE, which traces the activities of the session managers or API managers.
- ❖ NTXTRACE, which traces session manager requests to NETEX.
- ❖ NDMCOMTRACE, which traces NDCOM activity.
- ❖ NDMSPLTRACE, which traces NDMSPL activity

Enable various trace bits to record the activities of different functions. If you specify multiple trace bits, separate each bit with a colon (:). Do not separate multiple trace options, for example, T:D:F:L:B\M\S. If you omit both the LU and NODE parameters, specified operations are performed for *all* nodes and LUs.

Format

Following is the MODIFY command format:

```

MODIFY          LU=name
                AMGR=name
                Node=name
                SERVER=M|I|L|Q|S|T|OFF
                SESSIONS=Quiesce|Resume|Force
                TRACE=T|D|F|L|B\


---



```

Required Parameters

You must choose one and only of the following required parameters.

Parameter	Description
LU=name	Specifies the logical unit name.
AMGR=name	Specifies the API manager name.

Parameter	Description
NODE=name	Specifies all LUs and AMGRs related to the indicated node.
SERVER=M I L Q S T OFF	Specifies trace bits for the server trace. See <i>Tracing Session Manager and API Manager Requests</i> on page 102 for a description of the trace bits.

Optional Parameters

Following are optional parameters for the MODIFY command:

Parameter	Description
SESSIONS=Quiesce Resume Force	Controls the startup and shutdown of NDMSMGR processes (LUs). <ul style="list-style-type: none"> Quiesce—causes the specified LU to shut down after it finishes executing any current Connect:Direct HP NonStop Process. Any remaining Processes stays in the WAIT queue. The LU remains unavailable until a Resume command is issued. Resume—starts the specified LU, making the LU available to run Connect:Direct HP NonStop Processes in the WAIT queue. Force—stops the specified LU immediately, forcing a saveabend of the session manager process. Any Connect:Direct HP NonStop Process executed at the time the command is issued goes to the WAIT queue. The LU remains unavailable until a Resume command is issued.
TRACE=T D F L B\ <options> O 1 U\ <options> OFF	Specifies trace bits for a session manager using SNAX or TCP/IP. You can indicate a specific node, LU, or AMGR for the trace. See <i>Tracing Session Manager and API Manager Requests</i> on page 102 for a description of the trace bits. Valid B\ options are S C F X I L B R T H, and valid U\ options are M D.
TRACEFILE=file name	Specifies the file or process to which the server, session manager, or API manager trace data is directed. The defaults are the session manager or API manager output file names specified in the NDMINIT initialization parameters file.
NTXTRACE=(trace chars) Q QUIESCE R RESUME	Specifies the type of trace for session manager requests to NETEX. <ul style="list-style-type: none"> trace chars—cxxxxx Q or QUIESCE—causes the NETEX session to shut down after it finishes executing any current Connect:Direct HP NonStop Process. Any remaining Processes stays in the WAIT queue. The NETEX session remains unavailable until a RESUME command is issued. Resume—starts another NETEX session, making the NETEX session available to run Connect:Direct HP NonStop Processes in the WAIT queue.

Examples

The following examples display functions you can perform with the MODIFY command.

Controlling the Session Manager

The following command modifies Connect:Direct HP NonStop operations by requesting that a session manager restarts from a quiesce state for the LU, \$LU1.#LU01:

```
MODIFY LU=$LU1.#LU01 SESSION=R
```

Running Server Traces

Unlike a server trace started from the initialization parameters file or the TACL command line, a trace being run using the MODIFY command is started by specifying SERVER, not SRVTRACE. To turn on a server trace, issue the MODIFY SERVER command, followed by trace bits. After Processes are issued, information is written to the trace location as defined in the NDMINIT startup file. To turn off a server trace, issue the MODIFY SERVER OFF command.

To turn on a trace of messages between NDMSRVR and the session manager Processes, issue the following command:

```
CD> MOD Server T:D:F:L:B\SCXLITN:O\tracefile
```

To turn off the server trace, issue the following command:

```
CD> MOD SERVER OFF
```

Running Session Manager Traces

Session manager traces may be turned on for individual LUs, nodes, or for all sessions.

The trace bits are turned on by issuing the MODIFY command and specifying an LU name if a single LU is to be traced.

To turn on the transmission trace in \$L1.#L01, issue the following command:

```
CD> MODIFY LU $L1.#L01 TRACE T:D:F:L:B\SCXIT
```

To turn off the trace, issue the following command:

```
CD> MODIFY LU $L1.#L01 TRACE OFF
```

Note: Unlike a session manager trace started from the initialization parameters file or the TACL command line, the trace being run using the MODIFY command is started and stopped by specifying TRACE, not SMTRACE.

You do not need to specify the LUs to trace all LUs. To turn off the trace for all LUs, type MODIFY TRACE OFF.

Complete the following steps to reset the trace for the node, turn on a trace, turn off the trace, and set the node back to its original state:

- ❖ To reset the trace for an individual, type the following command:

```
MOD NODE=nodename SES=Q
```

- ❖ To turn on the trace and submit it for processing, type the following command:

```
MOD LU luname TRACE T:D:F:L:B\SCXILTM SES R
```

- ❖ To turn the trace off and shut down the LU, type the following command:

```
MOD LU=LUNAME TRACE=OFF SES=Q
```

- ❖ To return the adjacent node to its original state, type the following command:

```
MOD NODE=NODENAME SES=R
```

Running a Wrapping Trace Program

Use the NDMTRACE program to limit the amount of trace information written to the spooler or disk file and to minimize the performance impact of troubleshooting on production data transfers.

You can collect tracing information from the server, NDMCOM, session manager(s), API manager(s), or all of these. Tracing data is collected in a user-configurable circular memory buffer (or buffers) that will only preserve a limited amount of data. Tracing data is not written to disk until tracing is terminated. Session start data can be preserved and written to the output file.

Start NDMTRACE using the standard NonStop syntax to start a program, specifying CPU, PRI, and OUT. The program should run as a named process. Run NDMTRACE without options or with the “?” option to produce a syntax help panel.

Caution: Any errors in the trace program or options will be reported to the stderr file. If this file is not available, the NDMTRACE program and all programs tracing to it will hang until this file becomes available. Using the NOWAIT option with the NDMTRACE program can cause the system to hang indefinitely and is not recommended.

Format

Following is the NDMTRACE command format:

```
RUN NDMTRACE/name <pname>,out <file>/[[NO]SAVEINIT] [[NO]TIME] [[NO]NAME] &
                                     [[NO]MERGE] [SIZE nnnn] [TRIGGER "<string>"]
```

Required Parameters

The NDMTRACE command has the following required parameter:

Required Parameter	Description
name	Valid NonStop process name. This name will be used as the trace file in the “mod trace” command (example \$TRACE).

Optional Parameters

Following are optional parameters for the NDMTRACE command:

Parameter	Description
out <file>	Valid NonStop filename or spooler destination for the trace data. The default output is the home terminal.
<u>SAVEINIT</u> NOSAVEINIT	Always write session initialization information to the <out> file before using the circular buffer. When the MERGE option is in effect, NOSAVEINIT is selected. The default is SAVEINIT.
<u>TIME</u> NOTIME	Provides date and time information on every line of the trace data. The default is TIME.
<u>NAME</u> NONAME	Lists the name of the process being traced on every line of the trace data. The default is NAME.
MERGE <u>NOMERGE</u>	Merges trace data from different processes (example server and session manager) in the same buffer. Specifying this option sets the NOSAVEINIT option. The default is NOMERGE.
SIZE nnnnn	Buffersize for circular trace buffer(s). The default is 65536.
TRIGGER	Quoted string of comma/space separated fields to be compared with the data in the trace records. When data in the trace record matches any of the fields, NDMTRACE stops and output is created in the <out> file.

Example

The following example displays how to run the NDMTRACE program, start a session manager to be traced, and stop the session manager after the session is complete, to create a spooler file which contains the trace data.

To start the the NDMTRACE program, type the following command from any user terminal. The Process name is \$TRACE which is used as the trace file in the modify command. The spooler file is \$s.#trace.

```
run ndmtrace/name $TRACE,$out $s.#trace,cpu 5,pri 170/NOTIME
```

To start the session manager, type the following command from NDMCOM:

```
mod lu tcp01 trace T:D:F:L:O\ $TRACE ses r
```

To terminate the session manager and create the spooler file, type the following command from NDMCOM

To create the spooler file, and either stop tracing (mod trace off) or terminate the session manager, type the following command from NDMCOM:

```
mod lu tcp01 ses q
```

Controlling EMS Logging

Connect:Direct HP NonStop generates event messages for the startup and shutdown of Processes, such as the server and session managers. Each type of statistics record is a different event to Event Management Service (EMS).

Note: Connect:Direct HP NonStop implementation of DSM/EMS event reporting is discussed in the *Connect:Direct HP NonStop Management Programming Guide*.

Disposition of Event Messages

Disposition of event messages is determined by the settings of the following initialization parameters:

Parameter	Description
EMS	Logs to EMS when set to ON.
STATS	Logs events to the statistics file when set to ON.
COLLECTOR	Logs events to the collector specified in this parameter.

Changing the Disposition of Event Messages

Issue the DISPLAY LOGGING command to view the settings for EMS and STATS and the name of the collector process. Refer to the *Viewing System Information* chapter in the *Connect:Direct HP NonStop User Guide and Reference* for the format and parameter descriptions for the command.

You can change the settings of an initialization parameter during a session. This chapter provides you with the information you need to issue the UPDATE LOGGING command.

Changing the EMS, STATS, and Collector Process Settings

Use the UPDATE LOGGING command to change the settings for EMS and STATS and the name of the collector process. These settings control the disposition of event messages.

Connect:Direct HP NonStop requires that you set either EMS or STATS to ON. If you set both parameters to OFF, Connect:Direct HP NonStop forces STATS ON.

If you set EMS ON, all records written to the statistics file are also written to EMS.

Note: If you specify the collector parameter and EMS logging is on (or you are issuing the UPDATE LOGGING command to activate it), Connect:Direct HP NonStop closes and opens the collector file. This automatically resets the connection between Connect:Direct HP NonStop and the collector.

Format

Following is the UPDATE LOGGING command format:

```
UPDate LOGging           EMS=ON|OFF
                          STATS=ON|OFF
                          COLLECTOR=collector-processor-name
```

Required Parameters

The UPDATE LOGGING command has no required parameters.

Optional Parameters

Following are the optional parameters for the UPDATE LOGGING command:

Parameter	Description
EMS=ON OFF	Controls whether events are logged to EMS. Valid settings are OFF and ON. The default is OFF.
STATS=ON OFF	Controls whether events are logged to the statistics file. Valid settings are OFF and ON. The default is ON.
COLLECTOR=collector-processor-name	Specifies the collector you want to designate for event-message generation. You can designate a primary collector for the system (\$0) or an alternate collector. The default collector is \$0.

Example

The following command changes the disposition of the logging file so that Connect:Direct HP NonStop generates event records and sends them to the EMS collector, \$CD:

```
UPDATE LOGGING EMS=ON STATS=OFF COLLECTOR=$CD
```

Modifying the Message File

Connect:Direct HP NonStop has an online message program that enables you to display, modify, and print messages. Look in MESSAGE in the NDMSAMP subvolume to view a sample message.

Note: Type CTRL Y to exit the message program.

This chapter discusses syntax for modifying messages. For syntax and parameter descriptions for displaying and printing message text, refer to *Using Connect:Direct HP NonStop* in the *Connect:Direct HP NonStop User Guide and Reference*.

You can encounter the following reserved keyword when modifying messages:

Keyword	Description
SYMBOL	Indicates the message contains symbolics.

Modify messages by deleting the current message and replacing it with a new message. The following commands copy a message into a disk file:

```
TACL>RUN NDMMMSG /OUT msgrec/ msgfile-name
? GET msgid|*
```

Following is a description of the modify messages parameters:

Parameter	Description
RUN NDMMMSG	Runs the message program.
OUT msgrec	Identifies the file to edit.
msgfile-name	Contains all Connect:Direct HP NonStop messages.
GET	Copies a message into a disk file. You can edit the copied message and use it to replace the original message. Type the command at the ? prompt.
msgid	Specifies the message ID for a particular message.
asterisk (*)	Specifies all messages in the message file.

Modify the message text and use the following command to add new text to the message file:

```
TACL>RUN NDMMSG /IN msgrec/ msgfile-name
```

Note: If you are modifying the message text for a specific message ID, replace the message using the same message ID.

Following is a description of the modify messages parameters:

Command	Description
RUN NDMMSG	Runs the message program.
IN msgrec	Identifies the file to edit.
msgfile-name	Specifies the message file.

Connect:Direct HP NonStop Spooler Option

The Connect:Direct HP NonStop spooler option permits Connect:Direct HP NonStop to transfer spooler jobs automatically from an HP NonStop node to a disk file on an adjacent node.

This chapter describes the following:

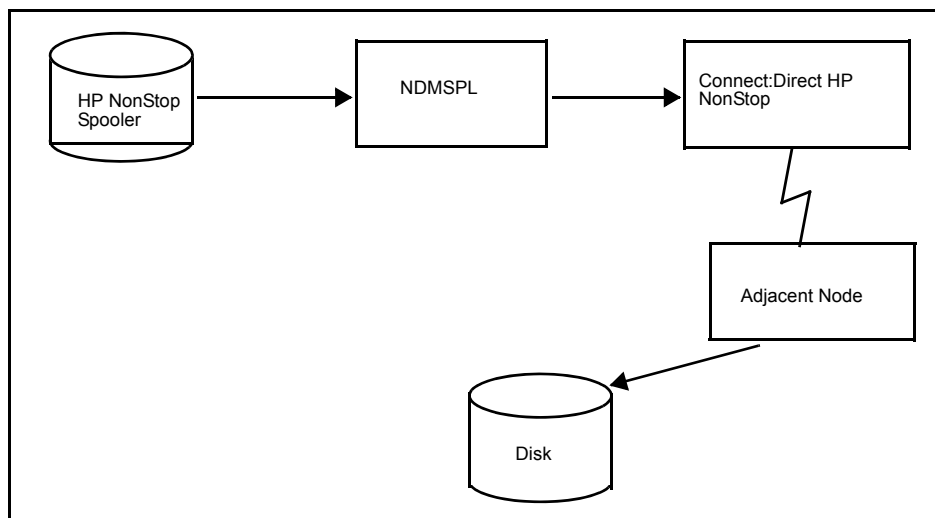
- ❖ Understanding the Connect:Direct HP NonStop spooler option
- ❖ Configuring the Connect:Direct HP NonStop spooler environment:
 - ◆ Customizing ONDMSPL
 - ◆ Customizing SPLPARAM
 - ◆ Customizing SPLDEFPP
 - ◆ Customizing SPLSUPUP
 - ◆ Customizing the spooler template processes
- ❖ Configuring multiple NDMSPL print processes
- ❖ Defining print locations to SPOOLCOM
- ❖ Starting the Connect:Direct HP NonStop spooler option
- ❖ Stopping the Connect:Direct HP NonStop spooler option

Understanding the Connect:Direct HP NonStop Spooler Option

Connect:Direct HP NonStop spooler option provides the following benefits:

- ❖ Operates in unattended mode—After the Connect:Direct HP NonStop spooler option is started, it monitors the HP NonStop spooler for jobs to transfer. When a job is ready for transmission, Connect:Direct HP NonStop automatically sends the spooler files to a predefined adjacent node. No manual intervention is required.
- ❖ Incorporates the features of Connect:Direct HP NonStop file transfer—Connect:Direct HP NonStop provides the security, speed, and flexibility offered by Connect:Direct HP NonStop. The Connect:Direct HP NonStop spooler option also enables you to track your spool file transfers using standard Connect:Direct HP NonStop commands.
- ❖ Supports multiple Connect:Direct HP NonStop destinations—Transfer spooler files to multiple destinations in parallel, which provides for efficient handling of large workloads.
- ❖ Incorporates the HP NonStop location name, date, time stamp, and spooler job number into the adjacent node destination file name—You can easily identify the source of the destination file.

- ❖ Deletes HP NonStop spooler files upon successful transfer, unless the spooler file holdafter flag is set prior to the transfer—Connect:Direct HP NonStop waits for a return code, indicating the successful transfer of the file to its destination, and then deletes the HP NonStop spooler file as required. Again, manual intervention is eliminated.
- ❖ Uses system-qualified Supervisor and Collector names in a COPY step, allowing access to spool jobs in remote spoolers. The NDMSPL print process may be configured to submit jobs across an Expand link to a remote Connect:Direct HP NonStop server, by specifying the server process name with a system qualifier in the SPLPARAM file.
- ❖ Transmits multiple copies of the spooler job within the same file—You can specify the number of copies with the COPIES parameter, which you can control through PERUSE, SPOOLCOM, or a user application.
- ❖ Integrates the DSM environment—You can incorporate the Connect:Direct HP NonStop spooler option in your predefined, automated DSM environment for Connect:Direct HP NonStop.



Overview

HP NonStop installations connected to an adjacent platform often require consolidating printing and storing print jobs on a remote system. The Connect:Direct HP NonStop spooler option offers HP NonStop sites a solution to this requirement.

Connect:Direct HP NonStop spooler option (NDMSPL) is a print process, which automatically transfers data from the HP NonStop spooler to a disk file on an adjacent node. Your HP NonStop spooler must be configured to relate a particular spooler report location with the NDMSPL process. You define spooler report locations to NDMSPL by specifying the spooler location name with LOCn parameters. You can assign up to 512 locations.

The Connect:Direct HP NonStop spooler option identifies the SNODE to use from the corresponding SNODEn parameter. In addition, you can specify the Connect:Direct HP NonStop Process (PROCn) to use with a particular LOCn, or you can use the default Process defined by the DEFPROC parameter.

The LOCn, PROCn, and SNODEn parameters can be entered in the SPLPARAM file as TACL parameters, or they can be entered via an IN file specified when NDMSPL is executed. If you use an IN file, you can define up to 512 location names. Configuration activities are described in *Configuring the Connect:Direct HP NonStop Spooler Environment* on page 116. Starting and stopping instructions are in *Starting the Connect:Direct HP NonStop Spooler Option* on page 125 and *Stopping the Connect:Direct HP NonStop Spooler Option* on page 126.

Distribution files are in the NDMSPL subvolume. Refer to *Distribution Subvolumes and Files* in Chapter 1 of the *Connect:Direct HP NonStop Installation Guide* for a description of each file.

Flow of Operation

The HP NonStop spooler supervisor automatically notifies NDMSPL when a spooler job is ready for processing. The HP NonStop spooler supervisor then changes the state to PRINT. NDMSPL sets the holdafter flag on the job and changes the state to HOLD.

NDMSPL then submits a Connect:Direct HP NonStop Process to transfer the spooler file to the SNODE associated with the Process.

After transferring the job successfully, the spooler automatically deletes the job unless the holdafter flag was set when the job was established in the spooler. Jobs not successfully transferred remain in the spooler in a HOLD state with the holdafter flag set; they are not deleted.

Example

The following example of a PERUSE display shows that job 3415 was written to the spooler by an application. The job is destined for location #DAILY REPORT. The holdafter flag was set by the user application. The holdafter flag (*A*) specifies that job number 3415 remains in the spooler after the transfer operation.

JOB	BATCH	STATE	PAGES	COPIES	PRI	HOLD	LOCATION	REPORT
3415		READY	7	1	4	A	#DAILY REPORT	DAILY REPORT

Tracking Activity

File transfer activity from the Connect:Direct HP NonStop Spooler option is logged and tracked through the TCQ and statistics facilities.

Connect:Direct HP NonStop logs messages to the output location defined by the ERRFILE initialization parameter. If Connect:Direct HP NonStop is operating in a DSM environment, NDMSPL uses HP NonStop EMS to log its messages to the primary collector (\$0) specified by the EMSCOLL initialization parameter.

Security Consideration

Run the Connect:Direct HP NonStop Spooler option under the SUPER.SUPER ID to prevent security problems within the HP NonStop spooler. Although you can start the Spooler option as any user, the spooler supervisor notifies NDMSPL when a job location name is associated with the NDMSPL print process. If a job does not have the appropriate security, then NDMSPL fails with a SPOOLERCOMMAND error %14014 (security violation).

Note: Before starting NDMSPL, define the SUPER.SUPER ID, or the ID of the user who starts NDMSPL, as a valid Connect:Direct HP NonStop user with the authority to submit a Process. A DEFAULT.AUTHORITY of A is acceptable. Refer to Chapter 2, *Defining and Maintaining Security* to define user authority.

The spooler option creates and uses an NDMCOM process through which it submits print jobs.

Note: Any changes to the SUPER.SUPER user or other user profile, such as changing the password, do not take effect in the spooler option unless the NDMCOM process associated with the spooler option is stopped and restarted.

Configuring the Connect:Direct HP NonStop Spooler Environment

Configure the environment for the Connect:Direct HP NonStop Spooler option by performing the following tasks:

- ❖ Customize ONDMSPL
- ❖ Customize SPLPARAM
- ❖ Customize SPLDEFPP
- ❖ Customize SPLSUPUP
- ❖ Customize spooler template processes
- ❖ Run NDMFLT4 (optional)

A description of these tasks follows.

Customize ONDMSPL

Customize the startup obey file, ONDMSPL, which performs the following functions:

- ❖ Resets the PRINT/DEV location of the spooler supervisor
- ❖ Starts the obey file (SPLPARAM) that defines the parameters for the Connect:Direct HP NonStop Spooler option
- ❖ Starts the Connect:Direct HP NonStop Spooler option program (NDMSPL)

If desired, change the NDMSPL process name and add any additional run options, such as CPU and PRI, as they apply to the operating environment. The NDMSPL process name must match the process name of the spooler print process defined in SPLDEFPP and SPLSUPUP.

Following is the ONDMSPL, as supplied on the distribution media:

```
obey ndmspl.splparam
run ndmspl.ndmspl /name $bspl,term $ZHOME,nowait/
spoolcom /in ndmspl.splsupup/
```

WARNING: It is *extremely important* that you either issue the RUN command from a permanently available device, *or* that you include a TERM parameter specifying a permanently available device. Failure to do either of these options can result in unpredictable failures of the NDMSPL process, if the default hometerm is a temporary or virtual device.

Customize SPLPARAM

Customize the obey file, SPLPARAM, to set the initialization parameters required by the NDMSPL process.

Note: If you are running multiple instances of the NDMSPL print process, each instance must be started with a unique value specified for NCOMPNAME. The NDMCOM process created by each NDMSPL print process cannot be shared with another print process.

The obey file performs the following functions:

- ❖ Stops the NDMCOM process previously started by the Connect:Direct HP NonStop Spooler option
- ❖ Clears all parameters previously set on your terminal
- ❖ Sets all the parameters required by the Connect:Direct HP NonStop Spooler option

Change the volumes, subvolumes, process names, SNODE names, and spooler locations as they apply to your operating environment.

Note: Capitalize all spooler location names associated with the LOCn parameters.

Following are the initialization parameters for the NDMSPL option:

Parameter Name	Value	Description
COMHIPIN	ON OFF	Specifies whether to run the NDMCOM process with the HIGHPIN option on or off.
EMSCOLL	\$0	An optional parameter that identifies the EMS collector name. If this parameter is not specified, then error messages for the Connect:Direct HP NonStop Spooler option are sent to the location for the ERRFILE parameter. If used, define this parameter first.
ERRFILE	\$s.#ndmspl.output	Output location where error messages from the Connect:Direct HP NonStop Spooler option are routed if you do not specify the EMSCOLL parameter or if EMS encounters an error. The output name is a spooler location, terminal, console device (such as \$0), or an entry-sequenced file. If you are using a disk file, that file must exist before you start NDMSPL.
DEFPROC	ndmspl.spl2mvs	A required parameter that identifies the location of the file (SPL2MVS) containing the default Connect:Direct HP NonStop Process to be submitted. This Process is submitted if no PROCn is associated with a given LOCn. You must modify this Process and specify a valid high-level qualifier for the destination file name. SPL2MVS is one of the files in the NDMSPL subvolume on the distribution media. You can change the value for DEFPROC and assign a different Process as the default.
MSGFILE	ndmfiles.msgfile	A required parameter that identifies the location of the message file (MSGFILE) on your system.
NCOMPNAME	\$scom	An optional parameter that identifies the name of the NDMCOM process created and used by NDMSPL. The value defaults to \$SCOM. Each NDMSPL Process must have a unique NCOMPNAME.
NDMCOM	ndmobj.ndmcom	A required parameter that identifies the location of the NDMCOM object file on your system.
NDMSRVR	\$ndms	An optional parameter that identifies the Connect:Direct HP NonStop server (NDMSRVR) process name running on your system. The value defaults to \$NDMS.
LOCn†	#Group.dest	A required parameter that identifies the name of a spooler report location you want to transfer to the adjacent node. Specify the destination portion of the spooler location name in order to extract specific reports. This name must be capitalized.

Parameter Name	Value	Description
SNODEN†	snodename	A required parameter that identifies the adjacent node name where the contents of LOCn are to be transferred.
SRVHIPIN	ON OFF	This parameter tells NDMSPL whether the NDMSRVR process is running with the high-pin option on or off.
PROCN†	ndmspl.spl2yyyy	An optional parameter that identifies the appropriate Connect:Direct HP NonStop template Process that transfers an associated spooler job (LOCn). If you do not specify this parameter, the Process associated with the DEFPROC parameter transfers the spooler job. Valid values for yyyy are VMS, VSE, 400, UNIX, TAN, OR NT.

Note: The HP NonStop TACL environment limits the number of bytes of parameter information that can be defined for a Process. To define large numbers of locations for NDMSPL, use an IN file.

Customize SPLDEFPP

Customize the SPOOLCOM input command file, SPLDEFPP, to define the Connect:Direct HP NonStop Spooler option program (NDMSPL) to the HP NonStop spooler supervisor as follows:

1. Define a print process to the spooler supervisor. The print process name must match the process name assigned to NDMSPL on the RUN command in ONDMSPL.
2. Define a device and associate it with the print process defined in step 1.

Note: Only one device name must be associated with a given Connect:Direct print process. Using more than one device name will cause the print process to hang unpredictably.

3. Define the spooler locations that you want the Connect:Direct HP NonStop Spooler option to transfer. Associate these locations with the device defined in step 1. The spooler locations must match the LOCn parameter locations in the SPLPARAM file.

SPLDEFPP, as supplied on the distribution media, follows. LOC entries are only examples; modify the entries appropriately for your environment.

```
print $bspl, cpu 0, backup 1, pri 147
dev $ndm, process $bspl
loc #report.print1, dev $ndm
loc #report.print2, dev $ndm
loc #ibm.report, dev $ndm
loc #daily.job, dev $ndm
```

Customize SPLSUPUP

Customize the spooler supervisor startup file, SPLSUPUP, which performs the following functions:

- ❖ Starts the spooler print process, or restarts the spooler print process in the event of an error
- ❖ Starts the spooler device process, or restarts the spooler device process in the event of an error
- ❖ Shows the status of the spooler print process
- ❖ Shows the status of the spooler device process

SPLSUPUP, as supplied on the distribution media, follows:

```
print $bspl, start
dev $ndm, start
print $bspl
dev $ndm
```

The print process name (\$bspl) must match the process name specified in the RUN command in ONDMSPL. Refer to SPLDEFPP for the name of the device process associated with the print process.

Customize Spooler Template Processes

Customize the appropriate template Process submitted for the Connect:Direct HP NonStop Spooler option program (NDMSPL). These special Processes are defined to transfer spooler jobs from the HP NonStop spooler to a disk file on an adjacent node.

The Processes use Connect:Direct HP NonStop symbolics to build the destination file name. The format of the destination name for each template Process is as follows:

- ❖ SPL2MVS=xxxxxx.group.dest.yymmdd.hhmmss.Jnnnnn
- ❖ SPL2VMS=xxxxxx:[group.dest]yymmdd.hhmmss
- ❖ SPL2VSE=xxxxxx.group.dest.yymmdd.hhmmss.Jnnnnn
- ❖ SPL2400=group/dest(hhmmss)
- ❖ SPL2UNIX=/xxxxxx/group/dest/hhmmss.DAT
- ❖ SPL2TAN=filename
- ❖ SPL2NT=c:\group\dest\hhmmss.DAT

Following is a description of the variables:

Variable	Description
xxxxxx	The high-level qualifier defined in the Process. The qualifier must be predefined on the adjacent node.
group	Specifies the high-level qualifier of the spooler job location name. The associated spooler job location name must be predefined on the OpenVMS and OS/400 nodes.
dest	Specifies the low-level qualifier of the spooler job location name. The associated spooler job location name must be predefined on the OpenVMS and OS/400 nodes.
yymmdd	Specifies the year, month, and day.
hhmmss	Specifies the time in hours, minutes, and seconds.
nnnnn	Specifies the spooler job number.
c:	Specifies the disk drive name.

Following are the template Processes:

- ❖ SPL2MVS copies a spooler job from HP NonStop to a disk file on an OS/390 node. Unless you modify the default value for the DEFPROC initialization parameter, SPL2MVS is the default.

- ❖ Connect:Direct HP NonStop Process that is used if you do not associate a PROCn with a LOCn. The Connect:Direct HP NonStop SPL2MVS Process, as supplied on the distribution media, follows:

```

SPL2MVS  PROCESS          PACCT=' CD/SPOOLER'          -
                                         SNODE=&SNODE
                                         SYMBOL &TODSN=&GROUP..&DEST..&YYMMDD..&HHMMSS..J || &JNUM
STEP1    COPY FROM      (DSN=&DSN
                                         SYSOPTS= ("SET XLATE ON"
                                         "SET SPOOLER=&SPOOLSUP,
                                         SPOOLNUM=&JNUM")
                                         DISP=&FDISP
                                         PNODE)
                                         TO      (DSN=xxxxxx.&TODSN
                                         DCB= (DSORG=PS, RECFM=FB, LRECL=133,
                                         BLKSIZE=133)
                                         SPACE= (133, (10,10))
                                         DISP= (RPL)
                                         SNODE)

```

Replace the xxxxxx in the TO DSN parameter with the desired high-level qualifier.

- ❖ SPL2VMS copies a spooler job from HP NonStop to an OpenVMS node. The Connect:Direct HP NonStop SPL2VMS Process, as supplied on the distribution media, follows:

```

SPL2VMS  PROCESS          PACCT=' CD/SPOOLER'          -
                                         SNODE=&SNODE
                                         SYMBOL &TODSN=xxxxxx:[&GROUP..&DEST || &YYMMDD..&HHMMSS
STEP1    COPY FROM      (DSN=&DSN
                                         SYSOPTS= ("SET XLATE ON"
                                         "SET SPOOLER=&SPOOLSUP,
                                         SPOOLNUM=&JNUM")
                                         DISP=&FDISP
                                         PNODE)
                                         TO      (DSN=&TODSN
                                         DCB= (DSORG=PS, RECFM=F, LRECL=133,
                                         BLKSIZE=133)
                                         DISP= (RPL)
                                         SNODE)

```

Replace the xxxxxx value with the desired volume name in the &TODSN symbolic statement.

- ❖ SPL2VSE copies a spooler job from HP NonStop to a disk file on a VSE node. The Connect:Direct HP NonStop SPL2VSE Process, as supplied on the distribution media, follows:

```

SPL2VSE  PROCESS      PACCT='CD/SPOOLER'      -
                SNODE=&SNODE
                SYMBOL &TODSN=&GROUP..&DEST..&YYMMDD..&HHMMSS..J || &JNUM
STEP1    COPY    FROM  (DSN=&DSN
                SYSOPTS=("SET XLATE ON"
                "SET SPOOLER=&SPOOLSUP,
                SPOOLNUM=&JNUM")
                DISP=&FDISP
                PNODE)
                TO      (DSN=xxxxxxx.&TODSN
                DCB=(DSORG=PS,RECFM=FB,LRECL=133,
                BLKSIZE=133)
                VOL=(SER=USER1)
                UNIT=?
                SPACE=(?,(?,?))
                DISP=(RPL)
                SNODE)

```

Replace the *xxxxxx* in the DSN parameter with the desired high-level qualifier. Replace the ? in the VOL, UNIT, and SPACE parameters with values appropriate for the VSE environment.

- ❖ SPL2400 copies a spooler job from HP NonStop to an OS/400 node. The Connect:Direct HP NonStop SPL2400 Process, as supplied on the distribution media, follows:

```

SPL2400  PROCESS      PACCT='CD/SPOOLER'      -
                SNODE=&SNODE
STEP1    COPY    FROM  (DSN=&DSN
                SYSOPTS=("SET XLATE ON"
                "SET SPOOLER=&SPOOLSUP,
                SPOOLNUM=&JNUM")
                DISP=&FDISP
                PNODE)
                TO      (DSN=&GROUP/&DEST (&HHMMSS)
                SYSOPTS="TYPE (MBR) "
                DISP=(RPL)
                SNODE)

```

- ❖ SPL2UNIX copies a spooler job from HP NonStop to a UNIX node. The Connect:Direct HP NonStop SPL2UNIX Process, as supplied on the distribution media, follows:

```

SPL2UNIX PROCESS      PACCT='NDM/SPOOLER'      -
                      SNODE=&SNODE
                      SYMBOL &TODSN = &GROUP || / || &DEST || / || &HHMMSS..DAT
STEP1  COPY  FROM      (DSN=&DSN      -
                      SYSOPTS= ("SET XLATE OFF"      -
                                "SET SPOOLER=&SPOOLSUP,      -
                                SPOOLNUM=&JNUM")      -
                      DISP=&FDISP      -
                      PNODE)      -
                      COMPRESS      -
                      TO      (DSN=xxxxxx/ || &TODSN      -
                      DISP= (RPL)      -
                      SNODE)      -

```

Replace the xxxxxx in the DSN parameter with the desired high-level qualifier.

- ❖ SPL2TAN copies spooler jobs from one HP NonStop system to the spooler on another HP NonStop system. The Connect:Direct HP NonStop SPL2TAN Process, as supplied on the distribution media, follows:

```

SPL2TAN PROCESS      PACCT='NDM/SPOOLER'      -
                      SNODE=&SNODE
STEP1  COPY  FROM      (DSN=&DSN      -
                      SYSOPTS= ("SET SPOOLER=&SPOOLSUP,      -
                                SPOOLNUM=&JNUM")      -
                      DISP=&FDISP      -
                      PNODE)      -
                      TO      (FILE=&DSN      -
                      DISP= (RPL)      -
                      SNODE)      -

```

- ❖ SPL2NT transfers spooler jobs from the HP NonStop spooler to a Windows node. The Connect:Direct HP NonStop SPL2NT Process, as supplied on the distribution media, follows:

```

SPL2NT  PROCESS      PACCT='NDM/SPOOLER'      -
                      SNODE=&SNODE
                      SYMBOL &TODSN = &GROUP || \ || &DEST || \ || &HHMMSS..DAT
STEP1  COPY  FROM      (DSN=&DSN      -
                      SYSOPTS= ("SET XLATE OFF"      -
                                "SET SPOOLER=&SPOOLSUP,      -
                                SPOOLNUM=&JNUM")      -
                      DISP=&FDISP      -
                      PNODE)      -
                      COMPRESS      -
                      TO      (DSN=C:\ || &TODSN      -
                      DISP= (RPL)      -
                      SNODE)      -

```

Configuring Multiple NDMSPL Print Processes

The spooler option (NDMSPL) can support multiple locations in parallel. In most environments, the 512 spooler locations available with the use of the IN file are sufficient, but if a greater number of locations is required, you can use multiple NDMSPL processes.

To support multiple destinations, configure NDMSPL once for each location that is to be defined. The names spooler location, device, and Print process names must be unique for each definition, and a unique NDMCOM Process must be started for each. For example, to define print processes \$SPL1 and \$SPL2:

- ❖ Duplicate the SPLPARAM file and make a copy for each Print process. The processes may share EMS COLL, DEFPROC, MSGFILE, NCOMPNAME, NDMCOM, and NDMSRVR parameters. The Processes must have unique ERRFILE parameters and separate LOCn parameters. The destination and process names can be shared.
- ❖ Duplicate the NDMSPL IN file and make a separate copy for each print Process. Each copy should have a separate list of locations; the destination nodes and Process names used may be the same.
- ❖ Modify the SPLDEFPP, SPLSUPUP, and ONDMSPL files to identify both Processes and all of their unique locations and devices. They can also be started individually from separate copies of these files.

Accepting an IN File

The NDMSPL print process accepts an IN file which defines up to 512 location parameters. This file bypasses the restriction of having only TACL parameters available for parameter input.

- ❖ The IN file is only for location entries. All other parameters must be defined using TACL PARAMs.
- ❖ The IN file is optional, but if specified, must be a code 101 Edit file.
- ❖ Locations specified as TACL PARAMs will work as before, with or without the IN file.
- ❖ A combined maximum of 512 spool locations may be defined in the TACL PARAMs and the IN file.
- ❖ The IN file location entries have no column restrictions, but must each be entered on a single line, be blank-separated, and must be ordered as follows:

```
#group.dest adj.node.name process
```

For example:

```
#report.mvs ADJ.NODE.MVS $BATCH.NDMSPL.SPL2MVS
```

- ❖ Lines beginning with any character other than '#' are treated as comment lines and are ignored
- ❖ Entries may be in upper or lower case
- ❖ The length of '#group' must be less than 9 characters. The length of 'dest' must be less than 9 characters
- ❖ The length of ADJ NODE name must be less than 17 characters
- ❖ The Process name is resolved and the file presence is verified

To use the IN file, modify the RUN command for NDMSPL as follows:

```
>run $volume.ndmspl.ndmspl/IN filename, name $xxxx, nowait/
```

where filename is the name of the file containing the location parameters.

SPLDEFPP and SPLSUPUP Examples

Following are samples of SPLDEFPP and SPLSUPUP:

```

print $$SPL2, cpu 1, backup 0, pri 147
dev $ndm1, process $spl1
dev $ndm2, process $spl2
loc #report.print1, dev $ndm1
.
.
loc #report.printnn, dev $ndm1
loc #acct.print1, dev $ndm2
.
.
loc #acct.printnn, dev $ndm2
print $$SPL1, cpu 0, backup 1, pri 147
print $$SPL2, cpu 1, backup 0, pri 147
dev $ndm1, process $spl1
dev $ndm2, process $spl2
loc #report.print1, dev $ndm1
.
.

loc #report.printnn, dev $ndm1
loc #acct.print1, dev $ndm2
.
.
loc #acct.printnn, dev $ndm2
Sample SPLSUPUP
print $spl1, start
print $spl2, start
dev $ndm1, start
dev $ndm2, start
print $spl1
print $spl2
dev $ndm1
dev $ndm2
print $$SPL2, cpu 1, backup 0, pri 147
dev $ndm1, process $spl1
dev $ndm2, process $spl2
loc #report.print1, dev $ndm1
.
.
loc #report.printnn, dev $ndm1
loc #acct.print1, dev $ndm2
.
.
loc #acct.printnn, dev $ndm2
print $$SPL1, cpu 0, backup 1, pri 147
print $$SPL2, cpu 1, backup 0, pri 147
dev $ndm1, process $spl1
dev $ndm2, process $spl2
loc #report.print1, dev $ndm1
.
.
loc #report.printnn, dev $ndm1
loc #acct.print1, dev $ndm2
.
.

```

Continued

```
loc #acct.printnn, dev $ndm2
Sample SPLSUPUP
print $spl1, start
print $spl2, start
dev $ndm1, start
dev $ndm2, start
print $spl1
print $spl2
dev $ndm1
dev $ndm2
```

ONDMSPL Example

Following is an ONDMSPL example:

```
run ndmspl.ndmspl/name $spl1,nowait/
obey ndmspl.splparam2
run ndmspl.ndmspl/name $spl2,nowait/
```

Defining Print Locations to SPOOLCOM

When you add a spooler print location to the SPLPARAM file, you must add the same location to the SPLDEFPP file and define the location to the spooler supervisor through SPOOLCOM.

Issue the following commands to define the Connect:Direct HP NonStop Spooler option and its associated spooler print locations to the HP NonStop spooler supervisor:

```
TACL> LOGON 255,255
TACL> VOLUME $vol.NDMSPL
TACL> SPOOLCOM /IN SPLDEFPP/
```

Starting the Connect:Direct HP NonStop Spooler Option

Customize ONDMSPL and SPLSUPUP by modifying parameters as applicable to your environment.

Note: Before starting NDMSPL, you must define the SUPER.SUPER ID, or the ID of the user who starts NDMSPL, as a valid Connect:Direct HP NonStop user with the authority to submit a Process. A DEFAULT.AUTHORITY of *A* is acceptable. Refer to Chapter 2, *Defining and Maintaining Security* to define user authority.

The spooler option creates and uses an NDMCOM process through which it submits print jobs.

Note: Any changes to the SUPER.SUPER user or other user profile, such as changing the password, does not take effect in the spooler option unless the NDMCOM process associated with the spooler option is stopped and restarted.

If Connect:Direct HP NonStop is operating in a DSM environment, create a nonresident template file using the Connect:Direct HP NonStop template object before starting NDMSPL. For instructions on creating a nonresident template file, refer to the *DSM Template Services Manual*.

Issue the following commands to run the obey file ONDMSPL that starts the Connect:Direct HP NonStop Spooler option program (NDMSPL):

```
TACL> LOGON 255,255
TACL> VOLUME $vol.NDMSPL
TACL> OBEY ONDMSPL
```

Stopping the Connect:Direct HP NonStop Spooler Option

Issue the following commands to stop the Connect:Direct HP NonStop Spooler option program (NDMSPL) and its NDMCOM process:

```
TACL> STOP $bspl
TACL> STOP $scom
```

Parameter	Description
\$bspl	Specifies the name of the process as typed in the RUN NDMSPL run-options in the ONDMSPL obey file.
\$scom	Specifies the name of the NDMCOM process created by NDMSPL and is the value of the NCOMPNAME parameter defined in SPLPARAM.

Stopping NDMSPL generates an error %005311, indicating that the print process stopped. Both the spooler PRINT and DEV entities report errors. To restart NDMSPL, remove spooler jobs associated with that location and run the obey file ONDMSPL.

Note: Stopping NDMSPL and the associated NDMCOM process does not remove any entries from the spooler environment. To completely remove NDMSPL and its components, use SPOOLCOM to delete the LOC, DEV, and PRINT entries that were defined in SPLDEFPP.

Appendix A

Common HP NonStop File System Error Codes

The following table lists errors commonly returned by the HP NonStop file system following either an allocation error or a dynamic system resource problem external to Connect:Direct HP NonStop:

Error Code	Description
11	File not in directory.
12	File is in use by another application.
30	Message system is unable to obtain memory.
31	Unable to obtain file system buffer space.
32	Unable to obtain storage pool space.
33	I/O process unable to obtain sufficient buffer space.
34	Unable to obtain a file system control block.
36	Unable to lock physical memory; insufficient memory available.
40	The operation timed out.
43†	Unable to obtain disk space for file extent.
45†	Disk file is full; no more available extents.

† Exercise caution when using the error codes that indicate a failure to allocate sufficient space after a COPY has started. Connect:Direct HP NonStop cannot automatically increase the number or size of the extents defined for an existing file. Unless manual intervention occurs on the node that is experiencing the problem, retrying a file-full failure usually fails again.

Common Adjacent Node Type External Error Codes

Following is a partial list of external errors returned by adjacent nodes due to an allocation failure. These errors are platform- and release-dependent. If you identify other errors for which allocation retry is appropriate, add them to the list of errors for that node.

If an adjacent node error occurs after a COPY is in progress (for example, the data transfer has started), examine the *Msgid* field in the STEPEND panel to obtain the specific error causing the failure. When the COPY is prematurely terminated by the adjacent node, the error logged is normally an SCOP014I error, or *negative response received*.

Platform	Error Code	Description
HP NonStop	SDE0210I	File is in use.
	SEQT130I	No more available extents. [†]
OS/390	SDE0210I	File is in use.
	SDEDSNRI	File is in use.
	SVSJ013I	No more available extents in file. [†]
VM	SDMK105E	File is in use.
	SVSJ018I	Disk is full. [†]
VSE	SDEDNSRI	File is in use.
iSeries	AFLH017I	File is in use.
UNIX	n/a	Two Processes can write simultaneously to the same dataset.
Windows	LCPR010I	File is in use.
VMS	VFLH804I	File is in use.

[†] Exercise caution when using the error codes that indicate a failure to allocate sufficient space after a COPY has started. Connect:Direct HP NonStop cannot automatically increase the number or size of the extents defined for an existing file. Unless manual intervention occurs on the adjacent node that is experiencing the problem, retrying a file-full failure usually fails again. Verify the applicability of such a retry with the support personnel responsible for the adjacent node prior to including such an error in the list of errors that can be retried for that node.

Sample Entries for File Allocation Retry

This appendix contains sample NDMINIT and adjacent node entries for file allocation retry.

NDMINIT File Entries

Following is a sample NDMINIT file entry:

```
*****
* AIMS,      Date : 02.06.2004.  Time : 13:37:41.200
* NDM Initialization file
*****
* NDMKEY
NDMKEY 'CPU \UNNAMED.0 PID 8090 SEQ 19160001 RLX 5438209 GBL 8213 -
PN(765432107898) SNA 82343 BR 43821 TCP 04382 TEER 06500'
*
* Allocation Retry Parameters
ALLOC.RETRY.LOC   12 40
ALLOC.RETRY.INT  00:10:00
*
```

Adjacent Node Entry

Following is a sample adjacent node entry:

```
=====
                          S E L E C T   N E T W O R K   M A P
=====
Adjacent Node => QA.MVS.V30200
Node Type    => NDM.MVS
Maxretry     => 7
Alloc Retry
  Errors     => (SDEDSNRI SDE0210I)
  Max        => 2
Applid       => M1CDD718
Def Ses Class => 1
IPaddr       => 199.1.4.2
Portnum      => 7220
LU List      => \K2.$IBM2.#L0E          \K2.$IBM2.#L0F
              \K2.$IBM2.#L10          \K2.TCP01
              \K2.TCP02
-----
CD.4.>
```

Migrating from SNA to TCP/IP

Before migrating between SNA and TCP/IP, you need to consider the following issues.

Security

The record formats used for sessions under SNA LU0 limit user IDs and passwords to eight characters, all upper case, and cannot include an embedded comma. Therefore, when the HP NonStop user ID is sent to another node under SNA, it is sent as the numeric equivalent of the GROUP.USER form, with a dot between the two parts of the ID. For example, if the user id is SUPER.USER, and that user's group and user ID number are 255, 100, (255.100) is sent.

However, TCP/IP does allow for variable length user IDs and mixed case, so the submitting user name passed to the snode is either the name form of the user ID or the safeguard alias, whichever applies. If the user is SUPER.USER, that is what is sent. If it is lowercase aliasforsuper, that is sent.

These different record formats have implications for security in both directions. Processes submitted on another node for an SNA session may only specify a maximum of 8 characters (for example, CD.USER) or the user number (for example, 255.100) as a SNODE ID for HP NonStop. In addition, only IDs with uppercase passwords may be used. If the session is TCP/IP, however, any user ID or Safeguard alias up to 17 characters may be used, and the password may be upper or lower case.

When Processes are submitted on HP NonStop and use secure point of entry on the snode (instead of a snode ID), the administrator on the other end must enter the user into their security authorization file in the correct form – either name or number. If both session types may be used, then two records may be required – one with the numeric GROUP.USER and the other with the user name.

Specifying IP Addresses, Host Names, and Ports

Connect:Direct for HP NonStop accepts both Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6) versions of the Internet Protocol as well as host names. You can enter IP addresses/host names and ports in several ways, depending on the field you are specifying:

- ❖ Address or host name only
- ❖ Port number only
- ❖ Multiple addresses/host names

When specifying IP addresses/host names and ports for Connect:Direct for HP NonStop, use the following guidelines.

IP Addresses

Connect:Direct for HP NonStop accepts both IPv4 and IPv6 addresses. Wherever an IP address is specified in Connect:Direct for HP NonStop, you can use either IPv4 or an IPv6 addresses.

IPv4 Addresses

IPv4 supports 2^{32} addresses written as 4 groups of dot-separated 3 decimal numbers (0 through 9), for example, 10.23.107.5.

IPv6 Addresses

IPv6 supports 2^{128} addresses written as 8 groups of colon-separated 4 hexadecimal digits, for example, 1001:0dc8:0:0:0:ff10:143e:57ab. The following guidelines apply to IPv6 addresses:

WARNING: A section of the IPv6 specification has defined “temporary addresses,” which are a security feature of IPv6. It describes the automatic generation of temporary IPv6 addresses by the operating system, which are used only for outbound connections. These addresses have a short life span and are replaced by other temporary outbound addresses. This feature is not supported by Connect:Direct HP NonStop. If the outgoing address of the PNODE randomly changes, the SNODE may fail the connection because the PNODE’s IP would never match the IP configured in the SNODE’s netmap. See RFC 3041 for more information on temporary addresses.

- ❖ If a four-digit group contains zeros (0000), the zeros may be omitted and replaced with two colons (::), for example:

```
2001:0db8:85a3:0000:1319:8a2e:0370:1337
can be shortened as
2001:0db8:85a3::1319:8a2e:0370:1337
```

- ❖ Any number of successive 0000 groups may be replaced with two colons (::), but only one set of double colons (::) can be used in an address, for example:

```
001:0db8:0000:0000:0000:0000:1319:58ab
Can be shortened as:
2001:0db8:0000:0000::1319:58ab
```

- ❖ Leading zeros in a four-zero group can be left out (0000 can be shortened to 0), for example:

```
2001:0db8:0000:0000:0000:0000:1319:58ab
Can be shortened as:
2001:0db8:0:0:0:0:1319:58ab
```

- ❖ You can write a sequence of 4 bytes that occur at the end of an IPv6 address in decimal format using dots as separators, for example:

```
::ffff:102:304
Can be written as:
::ffff:1.2.3.4
```

This notation is useful for compatibility addresses.

Host Names

When you specify a host name, rather than an IP address, Connect:Direct for HP NonStop gets the IP address from the operating system. The first IP address returned by the operating system is used regardless of whether it is in IPv4 or IPv6 format.

A host name (net, host, gateway, or domain name) is a text string of up to 24 characters comprised of the alphabet (A–Z), digits (0–9), minus sign (-), and period (.), for example, msdallas-dt.

The following guidelines also apply:

- ❖ No blank or space characters or special characters, with the exception of the _ (underscore) are permitted as part of the name.
- ❖ Periods are allowed only when they are used to delimit components of domain-style names.
- ❖ Host names are not case sensitive.
- ❖ The first character must be a letter, and the last character must be a letter or digit.
- ❖ Single-character names or nicknames are not allowed.

Port Numbers

A port number must be in the range of 0 through 65535. Port numbers lower than 1024 are reserved and should not be used.

Multiple Addresses and Host Names

You can specify up to three IPv4 and IPv6 addresses and host names by enclosing them in parentheses using the (list) option, as shown in the following example:

```
INSERT NETMAP IPADDR=(fd00::20a0:209:6bff:fe65:9a73 i5ipv6.csg.stercomm.com)
```

Multiple addresses/host names are limited to 1024 characters. A maximum of three host names can be specified in parentheses, separated by a space or a comma.

A

Adjacent Node

An adjacent node is an entry in the Network Map that defines a Connect:Direct HP NonStop node with which the local Connect:Direct HP NonStop node can communicate. The adjacent node is also called a remote node.

AIMS

The automated installation and management system (AIMS) is a menu-driven system that guides you through the installation procedure for Connect:Direct HP NonStop.

Application Programming Interface (API)

The Application Programming Interface (API) is a Connect:Direct HP NonStop component that accepts commands and places them in an executable format.

API Manager

An API manager is a network map entity, that handles communications sessions between Connect:Direct HP NonStop and external applications on a TCP/IP network. After the API manager has been set up, users of these other Sterling Commerce products can configure, control, and operate Connect:Direct HP NonStop from any host on a TCP/IP network.

AUTHFILE

The authorization file contains records of user attribute defaults. Each record defines the features of Connect:Direct HP NonStop that you can access.

B

Background Mode

The background mode enables you to execute NDMCOM using a disk file containing Connect:Direct HP NonStop commands as input. All Connect:Direct HP NonStop commands, except the FC command, are used in this mode.

C

CB Function

The CB (Control Block) function is a group of statements that performs a specific task and often returns a value to the statement that calls it.

C-string Control Block

The C-string control block (CB) is the data format that returns output generated by Connect:Direct HP NonStop Processes and commands to the API. A C-string control block consists of two or more fields.

C-string Control Structure

The C-string control structure groups one or more related C-string control blocks.

Checkpoint Restart

The checkpoint restart feature eliminates the need to retransmit an entire file in the event of a transmission failure. If a copy procedure is interrupted, Connect:Direct HP NonStop restarts that copy at the last checkpoint.

Command Line Interface

The command line interface is a Connect:Direct HP NonStop interface that enables you to submit Connect:Direct HP NonStop Processes and commands from your native command line environment.

Commands

Connect:Direct HP NonStop commands initiate and monitor activity within the Connect:Direct HP NonStop system.

Connect:Direct HP NonStop Commands

Connect:Direct HP NonStop commands use a command structure common to the rest of the Connect:Direct family of products. The commands are issued three ways: in interactive mode directly from the command line, in background mode by issuing the Connect:Direct HP NonStop OBEY command, or through an API.

Connect:Direct HP NonStop Spooler Option

The Connect:Direct HP NonStop spooler option is a Connect:Direct HP NonStop application that permits an installation to transfer output spooler jobs automatically from a Connect:Direct HP NonStop node to a disk file on an adjacent node.

Connect:Direct/Plex

Connect:Direct/Plex is a Connect:Direct OS/390 (zOS) system consisting of a Connect:Direct/Manager and one or more Connect:Direct/Servers in a TCP/IP environment. Connect:Direct HP NonStop can establish sessions with Connect:Direct/Plex.

Cyclic Redundancy Checking (CRC)

CRC is a method used to validate data integrity during data transfers between Connect:Direct nodes across a TCP/IP network. CRC can be controlled using any of the following options:

- ❖ A global initialization parameter
- ❖ An adjacent node definition
- ❖ A Process statement parameter
- ❖ A SUBMIT command parameter

D

Domain Server

Connect:Direct HP NonStop can be configured to handle inbound connection requests from a TCP domain, that is, a range of IP addresses, using the ADJ NODE record type NDM.DOMAIN. This allows the application to recognize connection requests from IP addresses that are not explicitly configured in the network map, as long as they fall within one of the defined domains.

Downstream Connection

See Receiving Connection.

Dynamic LUs

Connect:Direct HP NonStop starts dynamic LUs as needed and automatically stops them upon Process completion. Dynamic LUs are options when using TCP/IP.

E

EMS Filters

The EMS filters provide a programmatic method for selecting events for processing.

Environment Commands

These commands enable you to perform various Connect:Direct HP NonStop functions, such as displaying environment values and invoking TEDIT. Some environment commands allow you to set specific environment parameter values in NDMCOM. These values remain in effect only for the duration of the current session, unless they are changed by you or another user logs on to the same NDMCOM.

ERR Control Block

The ERR control block is the first control block of an error control structure (ERRCS). The beginning and ending fields are: CB ! ERR ! and CBEND ! ERR !. The two other required fields in the ERR control block are: *N* (number) field and *T* (top message) field. *N* specifies the number of messages in the ERRCS; *T* specifies the number of the most important message.

Error Control Structure (ERRCS)

The error control structure (ERRCS) is a particular C-string control structure designed to identify the messages occurring when executing Connect:Direct HP NonStop Processes and commands.

Event Management Service (EMS)

Event management performs event-collection, logging, and distribution in the distributed systems management (DSM) environment.

F

FASTLOAD

This Connect:Direct HP NonStop function can reduce disk I/O overhead. It is used when the Connect:Direct HP NonStop node is the destination. With FASTLOAD, Connect:Direct HP NonStop passes data through SPI to FUP to load into a destination data file. The feature is particularly useful for key-sequenced files, but it is also supported for entry-sequenced and relative record files.

Field

A field is two null-terminated strings—key and data. Two or more fields make up a C-string control block.

I

I/O Exit Support

This support provides exit points for user-written programs to serve as application interfaces for data transfers.

Interactive Mode

This mode enables you to issue commands through NDMCOM and receive an immediate response.

L

Local Node

The local node is the Connect:Direct HP NonStop server.

M

Message Commands

The message commands allow you to display, add, delete, modify, and print Connect:Direct HP NonStop messages from the command interpreter (TACL).

Message Control Blocks

Message control blocks are part of an ERRCS. These blocks are sequenced as they occur. The fields in a message control block are CB ! En !, FDBK ! fb !, RC ! rc !, MSGID ! msgid !, and OK ! od ! (optional keyword ! optional data !).

N

NDMCOM

NDMCOM is the Connect:Direct HP NonStop user interface.

NDMMON

The monitor Process (NDMMON) ensures nonstop operation of Connect:Direct HP NonStop.

NDMSTDL

The statistics deletion program (NDMSTDL) ensures sufficient space is available to write statistics records in the statistics files. It deletes records from STATFILE and STASTRCH based on user-specified deletion criteria and maximum percentage of file capacity.

NETEX Option

NETEX is a connection option for Connect:Direct OS/390.

Network Map

The network map (netmap) is a file that identifies all valid Connect:Direct nodes in the network. One network map is associated with each Connect:Direct HP NonStop local node. The netmap has one entry for each of the other Connect:Direct nodes to which the local Connect:Direct HP NonStop node communicates. The netmap entries also contain the rules or protocol that the nodes adhere to when communicating.

Node

A node is any site in a network from which information distribution is initiated.

P

Primary Node

The primary node (PNODE) is the Connect:Direct HP NonStop node on which the Process is submitted. The primary node is also referred to as the controlling node or initiating node, but is not necessarily interpreted as the sending node, because PNODE can be the receiver. In every Process, one PNODE and one SNODE are specified. The submitter of a Process is always the PNODE.

PNODE=SNODE Transmission

This transmission enables you to create a Process to send data to another file on your node. In this type of transmission, your node is both the PNODE and the SNODE.

Primary Logical Unit

The primary logical unit (PLU) is the logical unit that controls an LU to LU session. The PLU formats and sends an NLD request that begins a session.

Process (Source File)

A Process is a series of statements that initiate Connect:Direct activity, such as copying files, running jobs, and so on.

Process Statements

Process statements are instructions for transferring files, running operating system jobs, executing programs, or submitting other Connect:Direct HP NonStop Processes. You use Process statements to build a Connect:Direct HP NonStop Process.

R

Receiving Connection

The receiving connection is a connection between Connect:Direct HP NonStop and other nodes (AS/400—TCP only) where the Connect:Direct HP NonStop node supports the primary functions of the data link and the HP NonStop LU functions as a primary LU (PLU).

Remote Node

A remote node is an entry in the network map that defines a Connect:Direct node with which the local Connect:Direct HP NonStop node can communicate. The remote node is also called an adjacent node.

Retry Interval

The retry interval is the interval at which retries are performed as a part of the checkpoint-restart feature.

S

SECFILE

The security file (SECFILE) relates the node name and user ID assigned to an incoming Connect:Direct HP NonStop operation to a HP NonStop user ID.

Secondary Logical Unit

The secondary logical unit (SLU) is the logical unit that functions under the control of a PLU. The SLU accepts the incoming NLD request from the PLU.

Secondary Node

The secondary node (SNODE) is the Connect:Direct HP NonStop node that interacts with the primary node (PNODE) during Process execution. SNODE is also referred to as the participating (non controlling) or partner node. Every Process has one PNODE and one SNODE.

Secure Point of Entry

The secure point of entry enables Processes from other nodes to be written without the use of passwords.

Sending Connection

The sending connection is between HP NonStop and the IBM 370 nodes (OS/390, VM, VSE) where the IBM node supports the primary functions of the data link and the IBM LU functions as a primary LU (PLU).

Server

The server (NDMSRVR) is responsible for processing command requests, communicating with the session manager when work is placed in the transmission control queue, and accepting session establishment requests from remote nodes.

Session Manager

The session manager (NDMSMGR) is responsible for establishing communication sessions, performing standard session management functions, and executing Processes.

SNA (Systems Network Architecture)

A network architecture designed to provide compatibility among a wide variety of hardware and software products that enable you to build complex networks. It defines protocols, standards, and message formats to which different hardware and software products must conform.

SNA Primary

SNA primary defines the LU as a primary LU (PLU).

SNA Secondary

SNA secondary defines the LU as a secondary LU (SLU).

SNAX Passthrough

SNAX passthrough is a function of the SNAX line access software that permits interaction between a host application program and an SNA device connected to a HP NonStop system. The Connect:Direct HP NonStop system, which is not a Connect:Direct HP NonStop node, appears to the host as a cluster controller.

SNODE

The secondary node (SNODE) is the node participating in Process execution initiated by another node (the PNODE).

Statistics File

The statistics file holds Connect:Direct HP NonStop statistics records that document the history of a Process.

Statistics Facility

The Connect:Direct HP NonStop statistics facility records Connect:Direct HP NonStop activities.

Static LUs

Static LUs are user-controlled and are quiesced and resumed with the MODIFY command. Static LUs are options when using TCP/IP.

T

Transmission Control Queue

The Transmission Control Queue (TCQ) holds information about Connect:Direct HP NonStop Processes that are currently executing or scheduled to execute in the future.

TCP/IP Option

TCP/IP is a connectivity option for Connect:Direct OS/390, UNIX, OpenVMS, VSE, i5OS, Stratus VOS, and Windows, and HP NonStop nodes.

Type File

The type file contains records that define file attributes for new files.

U

Upstream Connection

See Sending Connection.

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