

**Comm-Pro Associates
Host Network Access Support**

HNAS

Console Subsystem Operations Guide

V2R4M0

Please see next page for important
information concerning your
Host NAS distribution materials.

This file revised November 8, 2012 9:29 am, includes maintenance thru 2400111.

General Information

Comm-Pro Associates is the designer and developer of the X.25 Host Network Access Support host resident Program Product (Commonly referred to as **Host NAS** or **HNAS**). The Host NAS product provides support for X.25 connectivity over router based networks using IBM's X.25 through TCP/IP (**XTP**) or Cisco's X.25 over TCP/IP (**XOT**) transport protocols. The HNAS implementation was designed to avoid application changes by providing a transparent migration from IBM 3745 NSPI based communication controllers to the HNAS router based solution. The product offering provides a robust suite of non-SNA NPSI type support. Please refer to Chapter 1 (Introduction) for a complete list of products and Applications supported.

Contact Information

Phone: (661) 284-3650

Fax: n/a

E-mail: support@comm-pro.com
sales@comm-pro.com

FTP: ftp.comm-pro4ftp.com
(Userid required, available upon request)

WWW: www.comm-pro.com

Shipping Address: 25852 McBean Parkway #611
Santa Clarita, CA USA 91355-3705

For additional documentation and up-to-date information, please refer to member @README in the Comm-Pro distribution macro library. See our WEB site for the latest information.

Important Notes

1) Please refer to the optional README/@README file included with the HNAS product distribution media (separate file or HNASMAC macro member) for additional product information and documentation not included in this manual. Additional information can also be located on our web site (Please refer to Contact Information section for contact details).

(C) Copyright Comm-Pro Associates 2006

Preface

Comm-Pro Biography

Comm-Pro Associates, Inc. was formed in 1973 to provide software packages designed to enhance the performance of early IBM 3705 communications controllers. IBM sold Comm-Pro's PP04 software package as the PEP Extended Features PRPQ. Comm-Pro is a privately held corporation.

Comm-Pro's X.25 Network Access Support (NAS) provided X.25 access to EP and NCP host applications and provided expanded support over what was provided by NPSI. Over the years Comm-Pro has worked extensively with IBM on special projects and custom environments. This product was introduced in 1976 and continues to be in use today at a limited number of customer sites. That's over 30 years of service.

HNAS, which allows X25 links to communicate with host programs without the need for a 37xx controller, was first implemented for IBM routers employing the XTP (X25 over TCP/IP) protocol in 1998. IBM specifically selected Comm-Pro to develop the software and much of the initial testing was done at IBM Raleigh. HNAS was developed for Cisco routers employing the XOT protocol in 1999. Due to changes in IBM's business strategy the router line was dropped. As a result, HNAS now is primarily used with Cisco routers and German AGIS Bin-Tec routers.

Special Notices

This book is furnished as is. Comm-Pro assumes no responsibility for the use of the functions described in this book in any manner.

The Host NAS licensed program described in this documentation and all license material available for it are provided by Comm-Pro under terms of the Software Use Agreement provided by Comm-Pro or it's Business Partner's.

Trademarks

IBM is a registered trademark of the International Business Machines Corporation.

Cisco is a registered trademark of Cisco Systems, Inc.

Microsoft, Windows, are trademarks or registered trademarks of Microsoft Corporation.

Other company, product, and service names may be trademarks of service marks of others.

X.25 Host NAS is fully year 2000 compliant.

This page left intentionally blank.

Related Publications

Related publications, providing reference material for this product are:

RFCs

- RFC1613 - XOT (X25 Over TCP)

Comm-Pro Associates

- Host NAS Configuration Guide and Reference
- Host NAS Messages and Codes Debugging Guide
- Host NAS Console Subsystem Operations Guide
- Host NAS Console Subsystem Operations Guide & Trace Formats
- Host NAS Master Index (Including Master Revision Index)

Please refer to the Documentation Overview section for additional information on the HNAS documentation organization and edistribution locations.

Cisco Systems

Keywords - XOT (X.25 over TCP/IP, formerly tunneling), X.25 Switching and X.25 LAPB)

- Cisco IOS Configuration Fundamentals, Network Protocols and various modules
- Cisco IOS Wide-Area Networking Configuration Guide - X.25 and LAPB (78-11751-01)
- Cisco IOS Wide-Area Networking Command Reference - X.25 and LAPB (78-011752-01)
- Cisco IOS Software Command Summary
- Cisco IOS Software Error Messages
- Cisco Debug Command Reference (Use with Internetwork Troubleshooting Guide)

Cisco Connection online documentation is available online at the following Web Site link:

www.cisco.com/univercd/home/home.htm

IBM Corporation

Keywords - XTP (X.25 through TCP/IP), X.25 MAS and X.25 LAPB)

- IBM Communication Controller Migration Guide (/redbooks/SG246298.html)
- IBM NCP and NPSI - X.25 Planning and Installation (SC30-3470-nn)
- IBM NCP and NPSI - X.25 Diagnosis, Customization and Tuning (LY30-5610-nn)
- IBM - IP Application Programming Interface Guide (SC31-8788)
(TCP/IP Stack information, including the list of TCP/IP Stack **ERRNO** return codes)
- IBM - Access Integration Services - Software User's Guide (SC30-3988/SC30-3998)
(NWAYS Multiprotocol Access Services - IBM 22nn)

Several IBM documentation manuals relating to **ACF/NCP**, **ACF/SSP**, **ACF/VTAM**, **EP** and **NPSI** are available for viewing or downloading at the following IBM Web Site link:

www.networking.ibm.com/375/public.html

This page left intentionally blank.

Emergency Support Information

Comm-Pro Associates, Inc. HNAS emergency technical support is available by contacting our office, phone attendants are available 24 hours a day, 7 days a week. Our technical support representatives are usually available to provide immediate support during our standard business hours of 07:00 AM to 04:30 PM Monday through Friday. There are times during our **standard** business hours when phone calls will initially be handled by our non-technical phone attendants. In these cases, calls will be handled the same as our non-standard hours support.

During **non-standard** business hours, our phone attendant will gather any appropriate customer information for call back. The attendant will then attempt to locate a technical support representative to assist you. Your phone call will either be directly connected to a technician or receive a call back with-in a reasonable time frame.

We recommend that all customers provide problem descriptions **via E-mail** as well as trace or dump (ABEND) diagnostics via E-mail or ftp so that we can begin work on the problem as soon as possible. It's a good idea to always provide a copy of the CDF (configuration data file) and the product level information (see DNAS display output which is provided at the beginning of all HNAS sysprint output).

You may also obtain emergency support by e-mail notification. Under emergency situations your e-mail transmission should always be followed up with a phone call if you haven't received an e-mail response with-in a reasonable time frame. This is primarily because our e-mail services are primarily only monitored during our standard office hours. Please refer to our contact page for contact numbers and E-mail addresses.

International users should contact their Comm-Pro Business Partners for first level support, if applicable.

General Support Information

General product support is provided to all licensed HNAS users. Responses to customer inquiries are typically provided with-in 24 hours during normal business hours.

As indicated under Emergency Support Information above, we recommend that all customers provide problem reporting (as well as support questions regarding configuration or run time issues) via E-mail.

Questions or problems reported via e-mail outside of our standard business hours will often be responded to on the day of the inquiry if received before 10:00 PM Pacific Time (GMT-8).

FAX / Facsimile - Direct service no longer provided

We no longer provide direct Fax / Facsimile service in our offices. E-mail and FTP are the primary methods supported for electronic document or image delivery.

Should there be a requirement to send a Fax from your organization to Comm-Pro there are a couple of potential options:

- Make arrangements with a fax-to-email service that can accept your fax and route via email to Comm-Pro at support@comm-pro.com.
- Call (during standard business hours) or e-mail a Comm-pro representative to see if a onsite fax session can be temporarily enabled with a temporary phone number, if available.

Note: Our old fax numbers 661/287-1646 and 661/291/2324 were retired and are no longer in service.

HNAS Documentation Overview

The HNAS product documentation manuals (currently 4 primary publications and a master index guide) are provided below with their respective sections listed for ease of information source retrieval and viewing. Supplemental booklet references (as applicable) are also provided in this section.

Documentation manuals for the HNAS products are available in PDF format for individual books (vrm_HNASBook|MsgCodes|Console|ConsTrc|MasterIndex_YYYY-mm-dd.pdf) and collectively in zip archive files (vrm_HNASBooks_YYYY-mm-dd.zip).

These manuals are primarily available on our FTP server (userid required) or can be obtained by contacting a HNAS marketing and support representative for an alternate form of PDF documentation delivery. The PDF files were designed for duplex printing although the content can be printed in simplex (one sided) mode.

All HNAS documentation manuals and books provide the revision date on the bottom left corner of the header page "**This file revised Month, day (dd), year (YYYY) time (hh:mm) am|pm**". As of February 15, 2006, "**includes maintenance thru 2400nnn.**" is also provided in the header page to reflect the maintenance level that the documentation level reflects.

The documentation manuals are downward compatible with older HNAS releases. Every effort is made to identify and label new features or changes at the HNAS vrm level that the change was introduced. As we add APARs fixes and enhancement content, we denote the APAR numbers associated with the new parameters, alert messages and content whenever possible.

HNAS APAR Maintenance Level included in this Documentation:

2400nnn	APAR maintenance level included in this documentation series. Refer to HNAS book cover page 'includes maintenance thru 2400nnn' text.
----------------	--

HNAS Guide and Reference:

-Book File-	240_HNASBook_YYYY-mm-dd.pdf - PDF Format
Prefix	(Prefix) General Information, Contact Information and important Notes. *
Preface	(Preface) Comm-Pro Biography, Special Notices, Trademarks, Related Publications, Emergency Support and General Support. *
DocOView	(Documentation Overview) Descriptive list of HNAS Documentation manuals (books) and Sections. *
Chapter 1	(Introduction) describes the features of the HNAS software.

HNAS Guide and Reference:

Chapter 2	(Installation, Activation and Runtime Guide) describes the procedures used to install the Comm-Pro software from its distribution medium and how to generate and execute an HNAS load module program.
Chapter 3	(Configuration Guide) describes the operational characteristics of Comm-Pro's HNAS software and illustrates how to use configuration definition statements to define HNAS resources.
Chapter 4	(Configuration Reference) describes the configuration definition statements and parameters that are used to define HNAS resources.
Chapter 5	(Migration Reference) describes the configuration operands and run time functions that have changed in this release of HNAS. Note: It is important that you review this section prior to refreshing/upgrading from an older HNAS release.
Chapter 6	(Maintenance and APAR Summaries) provides information on maintenance types, installation and APAR (PTF) maintenance memo formats. Memo's are available on the HNAS maintenance Web site FTP Server or via E-mail subscription.
Appendix A	(X.3 PAD Parameters) describes X.3 PAD parameters.
Appendix B	(Configuration Examples) provides an example HNAS configuration data file and the resulting SYSPRINT log files.
Appendix C	(Router Checklist Overview) currently provides a basic overview for defining XOT and X.25 support in a Cisco router for HNAS connectivity. Also describes some of the Cisco diagnostic show and debug commands.
Appendix D	(Changes & New Features) provides an overview of new features provided in the current release as well as historical data for previous releases. In 220 and earlier releases of HNAS this content was provided in the Preface section.
Glossary	(Glossary of Terms) currently provides a reference list and some brief definitions for terms, abbreviation and acronyms that may be used in the HNAS documentation manuals, ftp or web page content.

HNAS Messages and Codes Debugging Guide:

-Book File-	240_MsgCodes_YYYY-mm-dd.pdf - PDF Format
CnfgMsgs	(Configuration Messages) provides information for HNAS configuration messages (Information, Default, Warning, Error, etc.) that can be encountered during HNAS initialization when processing the Configuration Data File (CDF).

HNAS Messages and Codes Debugging Guide:

AlrtMsgs	(Alert Messages) provides information for HNAS alert messages (Info, Warning, Error and Severe) that can be encountered during HNAS activation (after the CDF scan) and during “run time” operation.
BindfCodes	(BIND Failure User Sense Codes) describes reason for BIND failures.
TcpipErrno	(TCP/IP Error Numbers ERRNO) describes reason for TCPIP Errors.
PvcssCodes	(PVC Setup Status Codes RFC-1613) describes PVC Setup Ending Status.
RstCodes	(X.25 Reset Cause and Diagnostic Codes) describes the X.25 Reset Cause and Diagnostic codes that are present in the HNAS environment.
ClrCodes	(X.25 Clear Cause and Diagnostic Codes) describes the X.25 Clear Cause and Diagnostic codes that are present in the HNAS environment. In 230 Extended Diagnostic reason codes were added to the respective clear code entries to further define the cause of the event.
CisMsgs	(Cisco Messages Relating to HNAS Events) describes common Cisco codes in relationship to HNAS events.
SysAbnd	(System Abend Codes - Messages Relating to HNAS Events)
HaltMsgs	(HNAS HALT/NASHALT Messages Relating to HNAS ABEND Events)
ConsMsgs	(Console Command Error Messages) provides diagnostic error messages for some HNAS console subsystem commands.

HNAS Console Subsystem Operations Guide:

-Book File-	240_Console_YYYY-mm-dd.pdf - PDF Format
Console	(Console Subsystem) This document contains the same Console section content as the primary Console Subsystem Operations Guide but does not contain the Trace Entry Formats section. This section was designed for users who prefer to view or print the guide but don't require use of the estimated 70 pages of Trace Entry Formats.
ConsMsgs	(Console Command Error Messages) provides diagnostic error messages for some HNAS console subsystem commands.

HNAS Console Subsystem Operations Guide & Trace Formats:

-Book File-	240_ConsTrc_YYYY-mm-dd.pdf - PDF Format
-------------	---

HNAS Console Subsystem Operations Guide & Trace Formats:

Console	(Console Subsystem) includes the Console Users Guide that describes the operation of the HNAS console subsystem for local or optional remote consoles.
ConsMsgs	(Console Command Error Messages) provides diagnostic error messages for some HNAS console subsystem commands.
Trace	(Trace Entry Formats) this section provides HNAS trace table entry identifiers, layouts and descriptions of the various trace entries provided by HNAS.

HNAS Master Index - Index Entries for All HNAS Manuals:

-Book File-	240_MasterIndex_YYYY-mm-dd.pdf - PDF Format
Master-Index	<p>(Master Indexes) This document contains the master index. The master index contains the combined book indexes for all of the above referenced HNAS manuals and guides.</p> <p>On 03-17-2004 the Master Revision Index section was removed to avoid confusion that some customers were encountering when searching through the index. This section is now available upon request. Note: The master revision index was designed for documentation change control and doesn't contain content suitable for indexing.</p>

HNASBooks in Pkware ZIP Format - All HNAS Manuals:

-All Books-	240_HNASBooks_YYYY-mm-dd.zip - ZIP archive of PDF books
HNASBooks	This zip file contains a collection of HNAS documentation manuals for single file transfer download operation. File CONSTRC is not included in this set, download separately.

* - Denoted sections available in all documentation manuals.

All HNAS manuals and guides include Prefix sections (General Information, Important Notes), Preface sections (Special Notices, Trademarks, Related Publications), Documentation Overview, Table of Contents and Index sections. See 'Vendor Reference' index entries for additional vendor documentation references.

In 220, The Revision Index was removed from the individual manuals on 07/11/2003 in an effort to eliminate confusion. The Revision Index is still available for viewing in the Master Index manual.

HNAS Documentation Format

Documentation manuals for the HNAS products are available in PDF book format for individual books (***vrm_book-name_yyyy-mm-dd.pdf***) and collectively in zip archive file format (***vrm_HNASBooks_yyyy-mm-dd.zip***). The PDF files were designed for Adobe Reader viewing and duplex printing although the content can be printed in simplex (one sided) mode. Some documentation content is available in HTML format on our Web site.

HNAS Documentation Locations

HNAS documentation manuals are available for customer download (using registered HNAS FTP server userid/password) at the following FTP Site address:

<ftp://ftp.comm-pro4ftp.com/>

HNAS documentation information is available online at the following Web Site link:

www.comm-pro.com/hostnas/docs/docindx.htm

Alternate forms of documentation delivery (e-mail file attachment or physical media) can be arranged by contacting your HNAS marketing and support representative. For Comm-Pro directly supported customers, we suggest that you send an e-mail request to the following address with the text 'HNAS Documentation Request' in the subject field of the E-mail:

support@comm-pro.com

HNAS Documentation Maintenance

Every effort is made to provide accurate and up-to-date product documentation for our users. Please don't hesitate to contact us with any corrections or recommendations regarding any of our documentation content. We appreciate your input and efforts.

This page left intentionally blank.

Console Table of Contents

Console Subsystem Operations Guide	preface-i
General Information	preface-ii
Important Notes	preface-ii
Preface	preface-iii
Comm-Pro Biography	preface-iii
.....	preface-iii
Special Notices	preface-iii
Trademarks	preface-iii
Related Publications	preface-v
Emergency Support Information	Support-vii
General Support Information	Support-vii
FAX / Facsimile - Direct service no longer provided	Support-viii
HNAS Documentation Overview	DocOverview-1
HNAS APAR Maintenance Level included in this Documentation:	DocOverview-1
HNAS Guide and Reference:	DocOverview-1
HNAS Messages and Codes Debugging Guide:	DocOverview-2
HNAS Console Subsystem Operations Guide:	DocOverview-3
HNAS Console Subsystem Operations Guide & Trace Formats: ..	DocOverview-3
HNAS Master Index - Index Entries for All HNAS Manuals:	DocOverview-4
HNASBooks in Pkware ZIP Format - All HNAS Manuals:	DocOverview-4
HNAS Documentation Format	DocOverview-5
HNAS Documentation Locations	DocOverview-5
HNAS Documentation Maintenance	DocOverview-5
Console Table of Contents	TOC-1
Console Subsystem	
Introduction	CONS-1
Terminology	CONS-3
SYSCONS	CONS-3
Alert and Alarm Messages	CONS-3
LU and SLU	CONS-3
PU and SPU	CONS-3
PLU	CONS-3
Global Actions	CONS-3
Local Actions	CONS-3
Prefix Command Modifiers	CONS-4
Suffix Command Modifiers	CONS-4
Default Suffix Command Modifiers	CONS-4
Parameters, Arguments, Operands	CONS-4
Resource State Indications	CONS-4
Input Rules	CONS-6
Input Case	CONS-6
End Character	CONS-6
Cancel Character	CONS-6
Delete Character	CONS-6

Parentheses ()	CONS-6
Commas ,	CONS-6
Blanks	CONS-6
Omitted Suboperands	CONS-7
Omitted Values	CONS-7
Quotes ‘	CONS-7
Sublist	CONS-7
Input Record Length	CONS-7
Numeric Input	CONS-7
Command Separators	CONS-7
Parameter Separators	CONS-7
Input Parsing	CONS-8
Command Parameters	CONS-8
Duplicated Parameters	CONS-8
Conflicting Parameters	CONS-8
Multiple Parameters	CONS-9
Multiple Commands	CONS-9
Command Lists	CONS-9
Command Modifiers	CONS-10
PCE name as a Suffix Command Modifier	CONS-10
Console PCE name as a Suffix Command Modifier	CONS-11
Command Decode Failures	CONS-12
Output Rules	CONS-13
Console Output Overview	CONS-13
Default Alarm Message Output Destination	CONS-14
Informational Event/Alert Message Exceptions (NAScnnnl)	CONS-14
Default Console Command Output Destination	CONS-14
Default Console Display Command Output	CONS-14
Netview Console Command Output Routing	CONS-15
Netview Alarm Message Output Routing	CONS-15
Local console name in alarm messages - WACONPCE	CONS-17
Remote console name in alarm messages - RCONnnnn	CONS-17
Table Display	CONS-17
Echoing Command Input	CONS-17
Echoing Queued Command Input	CONS-17
Echoing Command Execution Parameters	CONS-18
Blank Column in Tabular Display	CONS-18
Numeric Display	CONS-18
Aborting Output	CONS-18
NEWDEFN Output	CONS-19
Command Description Rules	CONS-20
CAPITAL LETTERS	CONS-20
small italicized letters	CONS-20
brackets []	CONS-20
braces { }	CONS-20
single vertical bar (OR symbol)	CONS-20

double vertical bars (concatenation symbol)	CONS-20
ellipsis ... (3 consecutive dots)	CONS-20
Miscellaneous Rules	CONS-21
Console Command versus Start Parameter	CONS-21
Console Command Parameters versus Command Actions	CONS-21
Console Command Parameter Action Matrix Keys	CONS-21
Console Command Change Control/Version, Release, Modification	CONS-21
How To Index Entries	CONS-22
Command Overview	CONS-23
Display Commands	CONS-23
Control and Modify Commands	CONS-25
Trace Commands	CONS-27
Statistics Commands	CONS-28
Command Modifier Overview	CONS-29
Command Modifier Summary (Alphabetical Order)	CONS-30
Command Modifier Hierarchy Matrix By Command	CONS-31
Command Modifier Hierarchy Matrix By Resource Type	CONS-32
Command Modifier/Control Block Relationship	CONS-33
Process Control Element Identification (ID=) Table	CONS-34
Command and Command Modifier Descriptions	CONS-40
Command Header Description	CONS-40
ALARM Command - Alarm Selection Control (Privileged)	CONS-41
CID= Modifier - Set Terminal Session LUB Identifier	CONS-51
CLDADDR= Modifier - Set Called DTE Address	CONS-52
CLGADDR= Modifier - Set Calling DTE Address	CONS-52
DADDR Command - Display TRCADDR Addresses	CONS-53
D or DMEM Command - Display Memory	CONS-55
DLCL Command - Display LOCAL Configuration	CONS-56
DLP Command - Display HNAS Load Point	CONS-59
DLU Command - Display Logical Unit	CONS-60
DMAP Command - Display Module Map	CONS-70
DMCH Command - Display Multi-Channel Link	CONS-75
DNAS Command - Display HNAS Information	CONS-80
DNWDF Command - Display New Definition CDF (Privileged)	CONS-89
DPARM Command - Display Command Modifiers and Parameters	CONS-100
DPCE Command - Display Process Control Element	CONS-104
DRMT Command - Display REMOTE Configuration	CONS-113
DSTATS Command - Display Statistics	CONS-123
DTRC Command - Display Trace Table	CONS-125
DVC Command - Display Virtual Circuit	CONS-126
ECHOXEQ Command - HNASXEQ Echo Control	CONS-136
END Command - Delimit EXEC Command List	CONS-138
EXEC Command - Execute Command List	CONS-139
F or FIND Command - Find Data in Storage (Privileged)	CONS-146
HELP or ? Command - Display Command Help	CONS-147

ID= Modifier - Set PCE Identifier	CONS-151
IFN= Modifier - Set MCH Interface Number	CONS-152
IPADDR= Modifier - Set DTE IP Address	CONS-153
LNCT= Modifier - Set Remote Console Scroll Line Count	CONS-154
LNМ= Modifier - Set LOCAL Name	CONS-155
LUN= Modifier - Set MCHX (CTCP) Identifier	CONS-156
LUNM= Modifier - Set LU Name	CONS-157
M or MМEM Command - Modify Memory (Privileged)	CONS-158
MLCL Command - Modify LOCAL Configuration (Privileged)	CONS-161
MONITOR Command - Monitor HNAS Utilization (Privileged)	CONS-169
MRMT Command - Modify REMOTE Configuration (Privileged)	CONS-177
PAUSE Command - Pause Console Processing (Sleep)	CONS-204
PFXWTO Command - WTO Prefix Control (Privileged)	CONS-205
PING Command - Ping Remote Router and/or MCH Link (Privileged)	CONS-207
PRNT Command - SYSРRINT Logging Control (Privileged)	CONS-211
Q or QUIT Command - Terminate Operations	CONS-220
RMTCONS Command - Remote Console Control (Privileged)	CONS-223
RNM= Modifier - Set REMOTE Name	CONS-225
SCHEDULE Command - Schedule Commands for Execution	CONS-226
SHOW Command - SYSCONS Display Control (Privileged)	CONS-235
SMSG Command - Send Message to Another Console	CONS-240
SNAP Command - Dump HNAS Memory Areas To SYSРRINT (Privileged)	
CONS-241	
STATS Command - Statistics Collection Control (Privileged)	CONS-243
TRCADDR Command - Specific Resource Trace Control (Privileged)	CONS-247
TRCALL Command - Trace ALL Control (Privileged)	CONS-248
TRCBFR Command - PCE I/O Buffer Trace Control (Privileged)	CONS-251
TRCBFRQ Command - XFBFR Call Trace Control (Privileged)	CONS-256
TRCBST Command - Binary Search Trace Control (Privileged)	CONS-257
TRCCNFG Command - Configuration Call Trace Control (Privileged)	CONS-258
TRCCONS Command - Console Trace Control (Privileged)	CONS-259
TRCDATA Command - PCE I/O Data Trace Control (Privileged)	CONS-262
TRCDBK Command - Data Block Trace Control (Privileged)	CONS-267
TRCDISP Command - PCE Dispatcher Trace Control (Privileged)	CONS-268
TRCIO Command - PCE I/O Trace Control (Privileged)	CONS-273
TRCLU Command - LU Trace Control (Privileged)	CONS-277
TRCLUQ Command - MCH LU Queue Trace Control (Privileged)	CONS-282
TRCMCH Command - MCH Trace Control (Privileged)	CONS-285
TRCMCHX Command - MCH CTCP Trace Control (Privileged)	CONS-293
TRCPCE Command - PCE Trace Control (Privileged)	CONS-297
TRCPRNT Command - SYSРRINT Trace Control (Privileged)	CONS-300
TRCSUBR Command - Subroutine Call Trace Control (Privileged)	CONS-302
TRCTASK Command - Task WAIT/POST Trace Control (Privileged)	CONS-305
TRCTRAP Command - Trace Trap Suspension Control (Privileged)	CONS-306
TRCVC Command - VC Trace Control (Privileged)	CONS-315
TRCVCQ Command - MCH VC Queue Trace Control (Privileged)	CONS-319

TRCWTO Command - XFWTO Call Trace Control (Privileged)	CONS-322
V or VARY Command - Vary Resource State (Privileged)	CONS-323
VCN= Modifier - Set VCB Identifier	CONS-328
WRU Command - Display NASNAME= Operand (Who Are You)	CONS-329
Console Command Error Messages	CONSMGS-1
Console Index	INDEX-1

Console Subsystem

This page left intentionally blank.

Introduction

This chapter describes the operations that may be performed using the Host NAS Console Subsystem.

Note: Before reading the description of each console command, it is highly recommended that you first review the sections entitled **Terminology** on page CONS-3, **Output Rules** on page CONS-13, **Input Rules** on page CONS-20, **Command Description Rules** on page CONS-20 and **Miscellaneous Rules** on page CONS-21.

A console user may be local or remote. A **local console** is either the main z/OS, OS/390 or MVS System Console (**SYSCONS**) operator or a TSO user with operator console privileges. A **remote console** is an ITI (LLC5/Pad) end user session connected over a TCP/IP network via the XOT or XTP protocol.

Local console operators can request functions that remote console operators cannot. For example, local console operators can request HNAS shutdown using the 'Q' (QUIT command). The 'Q' command for remote consoles causes the remote console session to be terminated and an XTP or XOT Clear Request packet to be transmitted.

A local user (system's operator or a *privileged* TSO user) becomes an HNAS console operator as soon as HNAS is started. Local console operators communicate with HNAS via the modify command interface (when the USEMDFY start parameter is in effect) or via the WTOR interface (when the USEWTOR start parameter is in effect). In the latter case, HNAS always has a WTOR outstanding that can be answered by the local user.

Note: The **USEMDFY** start parameter is a default start parameter and need not be specified. If WTOR interface support is required, you must specify the USEWTOR start parameter.

Note: When the **USEMDFY** start parameter is in effect, the WTOR reply is replaced by Modify command input (*/F jobname,command*).

A remote user becomes an HNAS console operator by establishing an LLC0 (PCNE) or LLC5 (PAD) session and selecting the APPLNAME entry whose name is 'CONSOLE'. See Chapter 4 of the HNAS Guide and Reference manual for a description of the SYSL operand of the REMOTE definition statement for examples of how the HNAS 'system select' function operates. Remote console access can be password protected so that the remote user must enter a configured password before console status is attained.

If all console control blocks are in use when a remote user requests console status, the remote call is cleared. Also, if the remote user fails to enter the configured password within 30-seconds or if password verification fails after three (3) attempts, the remote call is cleared.

When successful connection to the Console Subsystem is established (local or remote), the console operator is prompted for a console command (e.g., **ENTER COMMAND:**) using the text supplied by the **CONPRMT** operand on the BUILD definition statement.

Commands identified in this document as *privileged* will only be executed for privileged consoles. The local SYSCONS operator or a TSO user with system console access always has

Console Subsystem

privileged status. A remote console operator can attain *privileged status* only if the **RMT-CONP** start parameter or **RMTCONS PRIV** local console command has been specified and the console *password is entered backwards*. For more information, refer to the description of the **CONPSWD** operand of the BUILD definition statement in Chapter 4 of the HNAS Guide and Reference documentation.

Terminology

SYSCONS

Refers to the local systems console, MCS console or a TSO user with console authorization.

Alert and Alarm Messages

Unless noted otherwise, references to alert or alarm messages are treated identically.

LU and SLU

Unless noted otherwise, references to LU or SLU are treated identically.

PU and SPU

Unless noted otherwise, references to PU or SPU are treated identically. Normally used in discussion of QLLC (LLC3) resources.

PLU

PLU refers to the host application (CICS, IMS, TSO, etc.).

Global Actions

Refers to an action (tracing, statistics collection, etc.) that is system wide affecting **all like** resources with action flags set in the HNAS common workarea (XFNASWA).

For example, TRCBFR ALLON activates I/O buffer tracing for **all** PCEs with trace flags set in the WAOPT1 field in XFNASWA.

Local Actions

Refers to an action (tracing, statistics collection, etc.) that affects **a collection of like** resources with action flags set in the associated resource control blocks.

For example, TRCBFR ON activates I/O buffer tracing for the **specific** PCEs identified by the ID= or RNM= modifier with trace flags set in each identified PCE.

Console Subsystem

Prefix Command Modifiers

Refers to a command modifier entered **by itself** or on the **left side** of a command. A prefix command modifier sets a permanent modifier remembrance which is used for all subsequent commands that require the modifier and remains in effect until a new prefix command modifier value is entered. Multiple prefix command modifiers can be entered on the same input line before (to the left of) the first command. Prefix command modifiers can be overridden by suffix command modifiers (see below) for the duration of a single command only.

Suffix Command Modifiers

Refers to a command modifier entered on the **right side** of a command. A suffix command modifier sets a temporary modifier value which is used for the current command only. Multiple suffix command modifiers can be entered on the same input line after (to the right of) a command but before any command arguments. Suffix command modifiers are not remembered across commands.

Default Suffix Command Modifiers

When a temporary suffix (**right side**) command modifier is not entered, it's value is set to the corresponding permanent prefix (**left side**) command modifier. All commands that require modifiers echo the temporary values only.

Parameters, Arguments, Operands

Refers to a command variable. These terms are used interchangeably throughout this document.

Resource State Indications

Refers to the state a resource is in. These terms **active**, **ACT**, **online**, **ONLN** are used interchangeably throughout this document as are **inactive**, **INACT**, **IDLE**, **offline**, **OFLN**.

General notes on Terminology:

- 1) When a console command can control both a *global* and *local* action, the ALLON and ALLOFF follower is used to manipulate the *global* action while the ON and OFF follower is used to manipulate the *local* action.
- 2) For those console commands that can toggle the value established by a start parameter (*global* action), the ALLON|ALLOFF follower is used instead of the ON|OFF follower if the same command can manipulate both *global* and *local* actions. For example, the TRCLU

ALLON and TRCLU ALLOFF console commands turn on and off, respectively, the value set by the TRCLU start parameter.

Console Subsystem

Input Rules

Input Case

The Console Subsystem will recognize and process characters in upper or lower case. The case of alphabetic input is not significant.

End Character

Normal input is terminated by a carriage return character (remote console) or the ENTER key (local console).

Cancel Character

The BREAK key (remote console only) may be used to terminate output or cancel the current line of input.

Delete Character

A backspace character (CTL-H on a remote console) will delete the preceding input character (if any).

Parentheses ()

are used to enclose a sequence of values that may be coded in one operand.

Commas ,

are used to separate a sequence of values that may be coded in a single operand. For example:

```
RNM=rmtname MRMT OPTIONS=(PFXDCEADDR,REPDCEADDR)
```

Blanks

are used to separate a sequence of operands if a command accepts multiple operands. For example:

```
RNM=rmtname DRMT OPTIONS SVC0 SVC5
```

Omitted Suboperands

in a list form operand are identified by two (2) consecutive commas (,,).

Omitted Values

in a multi-value suboperand are identified by two (2) consecutive slashes (//).

Quotes “ ”

are used to enclose a character string if that string can be confused with a keyword value for an operand or if the character string contains blank (space) characters.

Sublist

operands are those that can have a sequence of values each of which is separated by a comma and all of which are enclosed in parentheses. For example, PADPARAM=(*pn1*,*pv1*,...,*pn_i*,*pv_i*).

Input Record Length

The maximum size of an input line is 128 bytes. Backspace characters and the text they delete do not count in this limit. The HNAS console input parser does not allow a command to span input lines. All data for a command must be entered on the same line as the command.

Numeric Input

Most numeric input is in hexadecimal unless noted otherwise.

Command Separators

Commands must be separated from their parameters and other commands by at least one space character.

Parameter Separators

Parameters should be separated from other parameters for the same command by one or more space characters.

Console Subsystem

Examples: PRNT CONS ON
TRCMCH DBK OFF

Input Parsing

The console processor parses input **left to right**.

Command Parameters

Command parameters like FMT2 are entered on the **right side** of a command (e.g., DPCE FMT2) and are in effect for the given command only.

Duplicated Parameters

If the same parameter is entered more than once for a command, an error message will be issued in response to operator input.

Example:

If you enter: TRCPCE ALLON ALLON

The following error message will issued because ALLON is entered more than once.

```
NASC512E PARAMETERS DUPLICATED, TRCPCE COMMAND ABORTED
```

Conflicting Parameters

If a command modifier is in conflict with a command parameter or if one parameter is in conflict with another, an error message will be issued in response to operator input.

Examples:

If you enter: DLU RNM=*spuname* TYPE=GATE

The following error message will be issued because GATE SLUs cannot be configured on an SPU. SPUs support QLLC SLUs only.

```
NASC311E RNM=spuname TYPE=SPU INVALID, DLU COMMAND ABORTED
```

If you enter: DLU RNM=*mchname* TYPE=QLLC

The following error message will issued because QLLC SLUs cannot be configured on an MCH. MCHs support PCNE, GATE and PAD SLUs only.

```
NASC311E RNM=mchname TYPE=MCH INVALID, DLU COMMAND ABORTED
```

If you enter: **TRCPCE ALLON ALLOFF**

The following error message will issued because ALLON and ALLOFF are mutually exclusive.

```
NASC511E PARAMETERS CONFLICT, TRCPCE COMMAND ABORTED
```

Multiple Parameters

Most console commands will accept multiple parameters (arguments) on the same command invocation. The parameters are collected and then acted upon.

For example, TRCLU *mchname* ON DBK MAXDATA is valid invocation of the TRCLU command. The ON, DBK and MAXDATA parameters are decoded and remembered. The order in which they are specified is arbitrary. However, the order in which they are processed is not. For commands like TRCLU, once their parameters are collected, the parameters are then processed in a given order as a function of the command. For these commands, their parameter processing order is listed in a 'Parameter Processing Matrix' as part of the command description.

Multiple Commands

The console processor will accept multiple commands in a line of input. However, the console processor will stop parsing the command string when a display command is encountered.

For example, if a console operator entered the command 'TRCVC ALLON TRCLU ALLON ID=3 DPCE TRCDISP ON', the console processor would execute the TRCVC ALLON command first, the TRCLU ALLON command second, the ID=3 modifier third and the DPCE command last. The TRCDISP ON command is not executed because the DPCE command generates display output which causes the console parser to terminate its processing.

Command Lists

Command lists provide another way to stack multiple commands for execution. Unlike the 'Multiple Commands' processing described above, command lists allow consecutive display commands to be scheduled for execution.

The **EXEC *ddname*** command allows you to specify a DDNAME that exists in the HNAS start job that points a file containing a list of console commands. The DDNAMEs that you provide in the HNAS start job are arbitrary: For example:

```
//CMDLIST1 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST1),DISP=SHR  
//CMDLIST2 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST2),DISP=SHR
```

Console Subsystem

:

The **EXEC** (*command1,command2,command3,...*) command can also be entered on a single line without having to invoke a **ddname**. Prior to the introduction of the EXEC command, only multiple non-display type commands could be entered and processed on a single line. Using the EXEC command, multiple display commands can be scheduled. For example, if EXEC (DNAS,DPARM) were entered, the DNAS and DPARM commands would be executed consecutively.

Command Modifiers

Command modifiers like ID= that are entered by themselves or on the **left side** of a command (e.g., ID=1-3 DPCE) become **permanent** and are remembered across commands. They remain in effect until they are changed. These modifiers are termed **prefix** modifiers.

Command modifiers that entered on the **right side** of a command (e.g., DPCE ID=4-5) are **temporary** and override the permanent command modifiers of the same name for the duration of the given command only. These modifiers are termed **suffix** modifiers.

Note: Prefix (**left side**) command modifiers become the current command modifiers for a command if suffix (**right side**) command modifiers are not entered. This can have unintended effects if you do not remember the value for a permanent command modifier that is used by a command. For this reason, you may wish to avoid using left side modifiers and always enter the modifiers that are required by a command on the right side.

Note: Permanent command modifiers can be displayed using the DPARM console command.

PCE name as a Suffix Command Modifier

For commands that operate on PCEs, you may specify a PCE name (*pcename*) or a static PCE alias (*pcestatic* = LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL) as a suffix (**right side**) command modifier. For example, TRCDISP LCLCONS will start dispatcher tracing for the local console (SYSCONS).

pcename or *pcestatic* are now accepted as the first argument for the **DPCE**, **STATS**, **TRCBFR**, **TRCDATA**, **TRCDISP**, **TRCIO** and **TRCPCE** commands. LCLCONS, NASUTIL, PING, TIMER, XOTUTIL, XTPUTIL are the aliases, respectively, for the local console PCE (WACONPCE), the HNAS utility PCE (WANASPCE), the PING PCE (WAPNGPCE), the timer PCE (WATMRPCE), the XOT utility PCE (XOTUTIL) and the XTP utility PCE (XTPUTIL). *pcename* is the PCE name for a target PCE. PCE names can be displayed using the DPCE ID= RNM= command.

Notes: 1) *pcestatic* = LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL

Alternate names for the *pcestatic* argument are as follows:

WACONPCE = LCLCONS
WANASPCE = NASUTIL
WAPNGPCE = PING
WATMRPCE = TIMER
XOTUTIL = XOTUTIL
XTPUTIL = XTPUTIL

- 2) When the *pcestatic* argument is specified, it directs command processing to named static PCE.
- 3) When the *pce name* argument is specified, it directs command processing to the named PCE.
- 4) When *pcestatic* and *pce name* are omitted, the command operates off of the RNM= or ID= modifier. When the RNM= modifier is used, command processing is directed at the named REMOTE. When the ID= modifier is used, command processing is directed at the identified PCEs.
- 5) PCE names can be provided by issuing the DPCE ID= RNM= command.

Note: *pce name* and *pcestatic* argument support was introduced into 240 with Enhancement APAR 2400075.

Console PCE name as a Suffix Command Modifier

For commands that operate on console PCEs, you may specify a remote console PCE name (***rconname***) or the static console PCE alias (**LCLCONS**) as a suffix (**right side**) command modifier. For example, EXEC LCLCONS *ddname* when entered from a remote console will force the command list identified by *ddname* to be executed for the local console (SYSCONS).

rconname or **LCLCONS** are now accepted as the first argument for the **ALARM**, **EXEC**, **SCHEDULE**, **SMSG** and **TRCCONS** commands. LCLCONS is the alias for the local console PCE (WACONPCE). *rconname* is the PCE name for a target remote console. Console PCE names can be displayed using the DPCE ID= RNM= TYPE=CONS command.

- Notes:**
- 1) When the LCLCONS argument is specified, it directs command processing to the local console. When LCLCONS and *rconname* are omitted for the local console, LCLCONS is assumed.
 - 2) When the *rconname* argument is specified, it directs command processing to the named remote console. When LCLCONS and *rconname* are omitted for a remote console, *rconname* is forced to the name of the remote console.
 - 3) Console names can be provided by issuing the DPCE ID= RNM= TYPE=CONS command. For the ALARM, EXEC, SCHEDULE or SMSG commands, only consoles that are in the active state can be targeted by the *rconname* parameter (the TRCCONS command is excepted).

Console Subsystem

- 4) The LCLCONS and *rconname* arguments are valid for privilege consoles only when specified for the EXEC or SCHEDULE command. These commands are normally non-privileged while the ALARM command and all trace commands are privileged.
- 5) When a command is executed, the normal console command echo prefix is HNASCMD->. This prefix is changed when the command is the result of an EXEC command, SCHEDULE command, comes from another console or is the result of a TRAP. In these cases, the HNASCMD-> echo prefix is replaced with EXEC CMD->, SCHDCMD->, PRXYCMD-> or TRAPCMD->, respectively, so that these commands can be identified in the SYSPRINT log file.

Note: *rconname* and LCLCONS argument support was introduced into 240 with Enhancement APAR 2400075.

Command Decode Failures

Input that cannot be decoded as a command will generate the following error message:

```
NASC003E DECODE FAILURE FOR badcmd... , RE-ENTER
```

This can occur if the console command *badcmd* contains a spelling or syntax error. This can also occur if a non-printable character was inadvertently entered. When a decode failure occurs, additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Note: Many commands accept a resource name following the command. For example, DRMT *rmtname* SVC0. If *rmtname* is spelled incorrectly or if it is not defined in CDF on a REMOTE definition statement, the command may be rejected for the lack of a valid RNM= or ID= modifier which will cause the *rmtname* to be processed as the *badcmd*. This is because commands that are rejected for a missing or erroneous LUNM=, LNM= RNM=, or ID= modifier return control to the console input parser which will continue processing the current input record from the end of the rejected command. In the example above, this would be after DRMT which means that *rmtname* would be processed as if it were a new command resulting in the NASC003E message above.

Output Rules

Console Output Overview

Console output for unsolicited events (such as program operational status, alerts, traces and monitor entries) and for local or remote console solicited command output (display command output for non event or alert messages) are routed to SYSCONS (operator console), SYSPRINT (SYSOUT=* or DSN=) or the remote console session device.

SYSCONS - Console messages are written to SYSCONS based upon the SHOWCONS, SHOWON|OFF and SHOWERR start parameter options as well as the ALRMFLTR= filtering option. These options/parameters are described below:

SHOWCONS parameter or SHOW CONS ON command	controls the routing of all <u>solicited</u> (console command display output) to SYSCONS.
SHOWON OFF parameter or SHOW ON OFF command	permits the routing of all <u>unsolicited</u> event alert informational or error messages to SYSCONS.
SHOWERR parameter or SHOW ERR command	permits the routing of all <u>unsolicited</u> event alert error messages to SYSCONS except for special Informational Event/Alert Message Exceptions (NASnnnnl), see section below.
-	-
ALRMFLTR=	Allow (route to SYSCONS and SYSPRINT), Suppress (route to SYSPRINT only) or Purge (delete from SYSCONS or SYSPRINT) option controls the message disposition.

SYSPRINT - All solicited or unsolicited console messages are written to SYSPRINT although Informational NASnnnnl message can be filtered when the following options/parameters are employed:

PRNTON OFF parameter or PRNT ON OFF command	This command is used to start (ON) or stop (OFF) all SYSPRINT message logging (NAScnnns) and console display output logging. PRNT OFF should only be used when alarm message and console display output is written to SYSCONS. If PRNT OFF and SHOW OFF are in effect, HNAS cannot report errors or console display output. It can, however, accept commands like PRNT ON.
PRNT <i>type</i> parameter or PRNT <i>type</i> ON OFF command <i>type</i> = LU, QLLC, TCP, VC, VTAM, XOT and XTP.	The PRNT parameters control the routing of Informational messages (NAScnnnl) to SYSPRINT based upon the message category type (i.e. NAS2nnnl, NAS3nnnl, etc.). Some special NAScnnnl Informational Event/Alert Message are routed to SYSPRINT regardless of the PRNT setting (see Informational Event/Alert Message Exception section below for additional information).
-	-
ALRMFLTR=	Same rules as described in the SYSCONS table above.

Console Subsystem

Default Alarm Message Output Destination

Starting with the V2R2M0 release of HNAS, informational alarm message output is *not* routed to SYSCONS unless the SHOWON option is in effect. Only error alarm messages will be written to SYSCONS because the SHOWERR option is set by default. However, alarm messages are always written to the SYSPRINT log file regardless of the SHOW setting if the PRNT option is in effect. To allow all alarm messages be written to both SYSPRINT and SYSCONS, specify SHOWON as an HNAS start parameter or issue the SHOW ON console command. For additional information, please refer to the description of the HNAS start parameters in Chapter 2 of the HNAS Guide and Reference manual and the SHOW and PRNT console commands in this document.

The alarm filter parameter ALRMFLTR=(PURGE|SUPPRESS|ALLOW) also affects alarm output activity and routing. Please refer to the description of the alarm filter parameter ALRMFLTR= under Chapter 4 section BUILD of the HNAS Guide and Reference manual.

Informational Event/Alert Message Exceptions (NAScnnl)

Some HNAS (NAScnnl) Informational event and alert messages are forced to SYSCONS and SYSPRINT regardless of the SHOWERR (SYSCONS) or PRNTtype (SYSPRINT) message filtering mode.

This is because some Informational messages report successful completion of operational tasks or events and are considered to be important informational messages for displaying on the system operator console (SYSCONS).

A complete list of these special messages can be found in the **Informational Alert Message Considerations** section, Alert Messages Chapter of the HNAS Messages and Codes Guide.

Default Console Command Output Destination

Starting with the V2R2M0 release of HNAS, console command output is *not* routed to SYSCONS unless the SHOWCONS option is in effect. However, console command output is always written to the SYSPRINT log file regardless of the SHOW setting if the PRNT option is in effect. To allow console command output to be written to both SYSPRINT and SYSCONS, specify SHOWCONS as an HNAS start parameter or issue the SHOW CONS ON console command. For additional information, please refer to the HNAS start parameter descriptions in Chapter 2 of the HNAS Guide and Reference manual and SHOW and PRNT console command descriptions in this document.

Default Console Display Command Output

HNAS display console commands '**DMAP APAR**' and '**DNAS**' are now executed during HNAS activation regardless of the CONCMDQ= settings to ensure that support information is always available in the SYSPRINT output. APAR 2300192 was implemented to ensure that the DNAS command always executes and to disable the DMAP APAR output.

Netview Console Command Output Routing

HNAS console command output is solicited (uses synchronous WTOs) and as such is considered to be a response to a request. Console command output WTOs are routed to the requesting console using the CONSID=, CONSNAME= and/or CART= WTO operands. The requesting console can be the systems console (SYSCONS), a TSO user with console authority or a Netview console. The CONSID=, CONSNAME= or CART= values come from the request itself so the response is always guaranteed to get back to the requesting console. This routing is automatic because standard operating system interfaces are used. No additional system configuration is required, however, the HNAS SHOWCONS parameter must be in effect. This parameter can be specified as an EXEC start parameter (PARM='...,SHOWCONS,...') or via the SHOW CONS ON console command.

Netview Alarm Message Output Routing

HNAS alarm messages are unsolicited (use asynchronous WTOs) and thus require some system configuration changes to get them routed to Netview. All HNAS alarm messages start with the 3 character 'NAS' identifier (for example, NAS2021W). There are a few ways to route unsolicited WTOs to Netview:

- 1) Issue the Netview ASSIGN command as follows:

```
ASSIGN MSG=NAS*,PRI=OPER1
ASSIGN MSG=NAS*,COPY=OPER1
```

Any message that starts with 'NAS' should be routed to OPER1 if OPER1 is defined as a Netview console in the DSIOFP member of the NETVIEW.DSIPARM library and is an active console.

- 2) Add the following clause to the Netview automation table.

```
IF MSGID= 'NAS' . THEN
BEGIN;
ALWAYS
DISPLAY(Y) NETLOG(Y) SYSLOG(N)
END;
```

This change will route alarm messages to the Netview NETLOG but withhold them from the system log (SYSLOG). However, if SYSLOG is defined as a system HARDCOPY device, alarm messages will be routed to it before they can be filtered by the Netview automation table. To ensure that alarm messages only go to NETLOG, you will need to provide HNAS with a WTO routing code that is not subject to HARDCOPY routing. This is accomplished by specifying **OPTIONS=WTOROUTCDE(ALRM)=value** (we recommend *value*=11 => programmer information) on the BUILD definition statement and coding the following in the **CONSOLxx** member in the SYS1.PARMLIB library for the

Console Subsystem

SYSLOG HARDCOPY console:

ROUTCODE(1-10,12-128)

This will route all WTOs except ROUTCODE=11 to the HARDCOPY console but will require a system IPL to activate. To accomplish the same thing immediately, the following system command can be used:

```
VARY SYSLOG,HARDCPY,DROUT=(11)
```

This drops ROUTCDE=11 from the HARDCOPY ROUTCODE list but will only last until the system is re-IPLed. So the permanent change to CONSOLxx is required.

Note: All HNAS WTOs use a default routing code of 8 (teleprocessing control). This routing code along with 1,2,3,4,7,10 and 42 cannot be dropped from the HARDCOPY ROUTCODE= list. For this reason we recommend specifying a WTOROUTCDE= value that is unused and not one of those listed above.

- 3) To route error alarm messages, the HNAS SHOWERR parameter must be in effect. This parameter can be specified as an EXEC start parameter (PARM='...,SHOWERR,...') or via the SHOW ERR console command. Note that SHOWERR is a default HNAS start parameter so that technically it does not have to be specified in the PARM= operand.

Note: There are some exceptions for **'I' messages** that can be found in the HNAS Messages and Codes Guide Alert Messages sections 'Informational Alert Message Considerations'. It currently indicates that the messages: NAS0001I, NAS0910I, NAS3798I and NAS3799I will be sent to SYSCONS (and by extension NETVIEW) even though SHOWERR is in effect. These are considered important informational messages that must be shown to the systems operator. For additional information and a complete list of these special message exceptions please refer to the **Informational Alert Message Considerations** section, Alert Messages Chapter of the HNAS Messages and Codes Guide.

- 4) To route all alarm messages (error and informational alarms), the HNAS SHOWON parameter must be in effect. This parameter can be specified as an EXEC start parameter (PARM='...,SHOWON,...') or via the SHOW ON console command.
- 5) The HNAS PFXWTO parameter can be used to prefix all HNAS alarm messages with either the BUILD NASNAME= operand value (specify PFXWTO with no follower) or with any text string (specify PFXWTO followed by a *text* string). For example, specify EXEC PARM='...,PFXWTO *text*,... or issue the PFXWTO *text* console command. If the PFXWTO parameter is used, the MSG= operand for the ASSIGN command or the MSGID= operand for the IF/THEN clause above will have to be changed to specify the WTO prefix text (either the NASNAME= operand value or *text*).

Local console name in alarm messages - WACONPCE

WACONPCE is the name of the local console PCE. If a command is entered that changes the state of a HNAS component from the SYSCONS or by a TSO user with console authority, WACONPCE will appear in an alarm message so the operations personnel can determine who issued the command. For example, if **TRCALL SUSP** was entered from the SYSCONS, the following message is displayed:

```
NAS0050A TRACING SUSPENDED BY WACONPCE
```

Remote console name in alarm messages - RCONnnnn

RCONnnnn is the name of a remote console PCE (nnnn= 0001 to the CONLMT= value). If a command is entered that changes the state of a HNAS component from a remote console, RCONnnnn will appear in an alarm message so the operations personnel can determine who issued the command. For example, if **TRCALL RSME** was entered from the first allocated remote console, the following message is displayed:

```
NAS0060W TRACING RESUMED BY RCON0001
```

Table Display

Many display commands produce tabular output in row/column format. For some of these commands, the type of data that is displayed can be modified using command parameters. The following commands produce tabular output: DLU, DMCH, DPCE, DSTATS and DVC.

Echoing Command Input

When a console operator enters a command, HNAS echoes the command back to console (preceded by the text **HNASCMD->**) so that it is recorded in the log for the console session. For example, if CONPRMT=HNAS240-> and the console operator enters TRCMCH ALLON, the following will be written to the log:

```
HNAS240-> TRCMCH ALLON          <- operator's input after prompt
HNASCMD-> TRCMCH ALLON          <- input echoed back by HNAS
```

Echoing Queued Command Input

The **HNASCMD->** command prefix can now be replaced with EXEC CMD->, SCHDCMD->, PRXY-CMD-> or TRAPCMD-> depending on how the command was scheduled for execution.

```
EXEC CMD-> => command came from the CONCMDQ= operand or EXEC command.
SCHDCMD-> => command came from the SCHEDULE= operand or SCHEDULE command.
PRXYCMD-> => command came from another console.
TRAPCMD-> => command came from a trapped event.
```

Console Subsystem

This change requires the use of bits 0 and 1 in the command string length byte for all queued commands which restricts each queued command string length to 63-bytes.

Note: HNASCMD-> overlay support was introduced into 240 with Enhancement APAR 2400075.

Echoing Command Execution Parameters

HNAS will echo back to the console operator (preceded by the text HNASXEQ->) the command modifiers and parameters (default and specified) to show the operator what values are being used to execute the command. This also provides an audit log entry for the console session. For example, if the console operator enters TRCMCH MCH1 ON LCL ICR OCR, the following will be written to the log:

```
HNAS240-> TRCMCH MCH1 ON LCL ICR OCR          <- operator's input after prompt
HNASCMD-> TRCMCH MCH1 ON LCL ICR OCR          <- input echoed back by HNAS
HNASXEQ-> TRCMCH RNM=MCH1 ON LCL ICR ON OCR ON <- command as processed
```

Blank Column in Tabular Display

When a column field in a display table is not applicable to a component, the field will display as blank. For example, if DLU SHOWNAME=RTR is specified and no router connection is active for an SLU, the RTRNAME/ADDRESS column in the DLU display will be blank for the SLU. Another example, if DVC SHOWLUST is specified and no SLU connection is active for the VC, the LUST column in the DVC display will be blank for the VC.

Numeric Display

Most numeric output for all display commands is in **hexadecimal** unless noted otherwise. Please keep this in mind when comparing HNAS console display and trace output with network or Cisco router debug event logs which are typically in decimal. For example: HNAS PVC LCN's are represented in hexadecimal while Cisco router PVC LCN's show or debug displays are represented in decimal).

Aborting Output

Any form of input can be used to terminate output. For example, a null input line or BREAK from a remote console will result in stopping output and forcing the input prompting message (e.g., **ENTER COMMAND:**) using the text supplied by the **CONPRMT** operand on the BUILD definition statement. When input aborts a running console command, the following message is issued:

```
NASC005W command COMMAND ABORTED DUE TO OPERATOR INPUT
```


If the aborted command happens to be an element of a command list that is being executed, the following additional message will be issued:

```
NASC006W cmdlist COMMAND LIST INTERRUPTED
```

NEWDEFN Output

A new definition (NEWDEFN) CDF can be created from the original CDF with changes incorporated using the MLCL and/or MRMT command. The **NEWDEFN DD** statement points at the new CDF image (it should not point at the original CDF unless you want to replace it). If no changes are made using MLCL and/or MRMT, the new CDF will be identical to the original except for comments immediately preceding each definition statement. For example:

```
          1          2          3          4          5          6          7
12345678901234567890123456789012345678901234567890123456789012345678901
*BUILD=nasname                                     ;NWDF
*LOCAL=lclname                                     ;NWDF
*REMOTE=rmtname                                    ;NWDF
```

If changes are made using MLCL and/or MRMT, the changed or added statements will have the **;NWDF** eyecatcher starting in record column 67. HNAS attempts to preserve as much of the existing comment as possible (starting with the first semicolon ;) when a record is modified.

Note: The NEWDEFN file is maintained in memory until HNAS is stopped at which time it is then written to disk. You can display the updated NEWDEFN file in memory by issuing the DNWDF command which is described on page CONS-89.

Note: NEWDEFN support is provided only when the **GENNWDF** start parameter is specified and the NEWDEFN DD statement is included in the HNAS start JOB.

Console Subsystem

Command Description Rules

CAPITAL LETTERS

represent values that you enter as given, without change.

small italicized letters

represent parameters for which you must supply a value.

brackets []

enclose operands or symbols that are either optional or conditional.

An optional parameter is one that you can code or omit, without regard to the coding of other operands.

A conditional parameter is one that you can code or omit, depending how you code or omit other operands for the same command.

braces { }

indicate that you must choose a value from a list of values enclosed within the braces.

single vertical bar | (OR symbol)

indicates that you must choose a value from the values on either side of the OR symbol.

double vertical bars || (concatenation symbol)

indicate that data separated by the concatenation symbol will be appended to one another.

ellipsis ... (3 consecutive dots)

indicates that you can code the preceding item more than once. For example, PADPARM=(*pn1,pv1,...,pni,pvi*).

Miscellaneous Rules

Console Command versus Start Parameter

Many console commands provide the same functions as HNAS start parameters. For a cross reference list of start parameters and their console command equivalents, please see Table 3 in Chapter 2.

Console Command Parameters versus Command Actions

Most console commands perform actions as a function of the command parameters provided but the actions can be restricted based on the type of resource being acted upon. An **action matrix** is provided for a number of these commands that show the command parameter, command action and the resource type for which it applies. For examples, see the DLCL, DRMT, MLCL, MRMT and SHOW commands.

Console Command Parameter Action Matrix Keys

blank	indicates that the command parameter is valid for the resource type
I	indicates that the command parameter is invalid for the resource type
N	indicates that the command parameter is ignored for the resource type
S	indicates that the command action is suppressed

Console Command Change Control/Version, Release, Modification

CC/VRM heading entry values are used to denote **Change Control** activity for the HNAS **Version, Release and Modification** level where the changes were introduced. The CC/VRM value identifiers are typically assigned for changes affecting operand's, parameter's or feature's under the following circumstances: A **blank or (N)** CC value denotes that the enhancement was introduced in the initial release of the denoted VRM distribution level. A value of **(A) Added, (C) Changed, (D) Deleted** or **(R) Retired** denotes change control activity after the initial release.

For CR/VRM headings that are listed against operands with multiple suboperands, please refer to the specific operand table in Chapter 4 of the HNAS Guide and Reference (for the BUILD, LOCAL or REMOTE definition statement) where the parameter is described. This will allow you to identify CC/VRM changes at the suboperand level.

Console Subsystem

How To Index Entries

Please refer to the index at the end of this document for references to sections which provide examples of 'how to' use console commands to effect dynamic changes or display HNAS information.

Command Overview

This section of the Console Subsystem Operations Guide provides an overview of the Display, Modify, Trace and Statistics Commands that are recognized by the HNAS Console Subsystem

Note: Privileged commands listed in this section are underlined.

Display Commands

Display Commands	Description	cc/vrm
<u>ALARM</u>	Display alarm information	C/220
D or DMEM	Display memory	
DADDR	Display TRCADDR address parameters	
DLCL	Display LOCAL configuration	N/220
DLP	Display HNAS load point	
DLU	Display Logical Unit	C/220 C/240
DMAP	Display HNAS module map	C/220
DMCH	Display Multi CHannel Link	C/240
DNAS	Display HNAS information	C/220 C/230 C/240
DNWDF	Display NEWDEFN CDF	A/230
DPARAM	Display command modifiers	C/220
DPCE	Display Process Control Element (PCE)	C/220 C/240
DRMT	Display REMOTE configuration	C/220 C/230
DSTATS	Display PCE statistics	
DTRC	Display trace table	
DVC	Display Virtual Circuit	C/220
<u>F or FIND</u>	Find data in memory	
? or HELP	Display command HELP	C/211 C/230

Console Subsystem

Display Commands	Description	cc/vrm
<u>MON</u>	Display HNAS utilization or REMOTE Keep Alive processing	C/210 C/230
<u>PRNT</u>	Display active SYSPRINT log (DDNAME=?) or PRTSWLST= list (PRTSWLST=?)	C/240
<u>TRCTRAP</u>	Display trace trap information	A/230
WRU	Display NASNAME	N/230

Control and Modify Commands

Control and Modify Commands	Description	cc/vrm
<u>ALARM</u>	Alarm control	C/220
ECHOXEQ	HNASXEQ echo data control	A/240
END	Effective NOP. Normally used to delimit an EXEC command list	A/240
EXEC	Execute a list of commands	N/240
<u>M or MMEM</u>	Modify memory	C/240
<u>MLCL</u>	Modify LOCAL configuration	N/220 C/240
<u>MON</u>	Monitor HNAS utilization or REMOTE Keep Alive processing	C/210 C/230
<u>MRMT</u>	Modify REMOTE configuration	C/220 C/230 C/240
PAUSE	Provide forced delay	N/240
<u>PFXWTO</u>	WTO prefix control	C/230
<u>PING</u>	Ping remote router	N/230 C/240
<u>PRNT</u>	SYSPRINT control	C/220
Q or QUIT	Terminate operations	C/220 C/240
<u>RMTCONS</u>	Remote console control	
SCHEDULE	Schedule commands for execution at specific times	A/240
<u>SHOW</u>	Console display control	C/220
SMSG	Send message to other console	
<u>SNAP</u>	Dump HNAS memory areas to SYSPRINT	A/240
<u>STATS</u>	PCE statistics control	
<u>TRCPRNT</u>	Trace SYSPRINT control	C/220
<u>TRCTRAP</u>	Trace trap control	A/220 C/240

Console Subsystem

Control and Modify Commands	Description	cc/vrm
<u>V or VARY</u>	Vary resource state	C/220 C/240

Trace Commands

Trace Commands	Description	cc/vrm
<u>TRCADDR</u>	Resource trace control	
<u>TRCALL</u>	All trace control	C/230 C/240
<u>TRCBFR</u>	PCE buffer trace control	C/230 C/240
<u>TRCBFRQ</u>	Buffer request trace control	
<u>TRCBST</u>	Binary search trace control	N/220
<u>TRCCNFG</u>	Configuration trace control	N/230
<u>TRCCONS</u>	Console event trace control	A/230
<u>TRCDATA</u>	PCE data trace control	C/230 C/240
<u>TRCDBK</u>	LU/VC data block trace control	N/230
<u>TRCDISP</u>	PCE dispatcher trace control	C/230 C/240
<u>TRCIO</u>	PCE input/output trace control	C/230 C/240
<u>TRCLU</u>	LU trace control	C/220
<u>TRCLUQ</u>	LU allocation queue trace control	C/240
<u>TRCMCH</u>	MCH trace control	C/240
<u>TRCMCHX</u>	MCHX trace control	C/220 C/240
<u>TRCPCE</u>	PCE trace control	A/230
<u>TRCPRNT</u>	SYSPRINT trace control	C/220
<u>TRCSUBR</u>	Subroutine trace control	C/240
<u>TRCTASK</u>	Task WAIT/POST trace control	C/210
<u>TRCTRAP</u>	Trace trap control	A/230
<u>TRCVC</u>	VC trace control	C/220
<u>TRCVCQ</u>	VC allocation queue trace control	C/240
<u>TRCWTO</u>	WTO request trace control	

Console Subsystem

Statistics Commands

Statistics Commands	Description	cc/vrm
DSTATS	Display PCE statistics	
<u>MON</u>	Display HNAS utilization	C/210 C/230
<u>STATS</u>	PCE statistics control	C/240

Command Modifier Overview

This section of the Console Subsystem Operations Guide provides an overview of the Command Modifiers that are recognized by the HNAS Console Subsystem

Console command modifiers provide command arguments that can be permanently set (like a REMOTE name via the RNM= modifier) when they are entered by themselves (stand alone) or on the left side of a command. The permanent modifiers are copied into a temporary workarea prior to execution of each command. Commands only use temporary modifiers. Temporary modifiers can be overridden if a modifier is entered on the right side of a command. For example:

RNM=MCH1	<- Set permanent REMOTE name remembrance
DRMT	<- Display configuration information for MCH1
DRMT RNM=MCH2	<- Display configuration information for MCH2
DLU	<- Display all LUs on MCH1

The temporary modifiers can be reset (set to their null values) if the **BPM** parameter is specified immediately after a command (right side modifier only). This can be used to change the way the command is executed. For example:

RNM=MCH1	<- Set permanent REMOTE name remembrance
DRMT	<- Display configuration information for MCH1
DRMT BPM	<- Displays the names of all REMOTEs when RNM= is not set

Note: The BPM parameter was introduced with enhancement APAR 2400014.

Note: When a REMOTE name, LOCAL name or SLU name is specified as a right side modifier, the modifier keyword (RNM=, LNM= or LUNM=, respectively) is not required to precede the name. This is because the modifier keyword is implied by the type of resource that is named. For example: RNM=MCH2 is implied when DRMT MCH2 is entered. In other words, DRMT MCH2 and DRMT RNM=MCH2 are treated identically.

Note: An error message will be generated if the wrong type of resource is identified for a given modifier. For example, if LUNM=MCH1 is specified and MCH1 is actually a REMOTE name, the following error message is generated:

NASC410E LUNM=MCH1 INVALID, REQUIRED

Note: An error message will be generated if a command requires a resource and the resource has not been named by a command modifier. For example, if RNM=MCH1 is specified as a permanent (stand alone or left side modifier) and MRMT BPM MBITCHN=YES is specified, the following error message is generated:

NASC300E RNM= OMITTED, REQUIRED

This error occurs because the BPM parameter resets the RNM=MCH1 modifier that was copied to the temporary workarea.

Console Subsystem

Command Modifier Summary (Alphabetical Order)

Command Modifiers	Description	cc/vrm
BPM	Resets all temporary modifiers for the duration of the current command only (must be the first parameter specified after the command)	A/240
CID=	Sets LUB identifier(s) for DLU, <u>TRCLU</u>	
CLDADDR=	Sets <i>Called</i> DTE address for <u>TRCADDR</u> , <u>PING</u>	
CLGADDR=	Sets <i>Calling</i> DTE address for <u>TRCADDR</u> , <u>PING</u>	
ID=	Sets PCE identifier(s) for DLU, DMCH, DPCE, DSTATS, DVC, <u>MON</u> , SMSG, <u>STATS</u> , <u>TRCBFR</u> , <u>TRCCONS</u> , <u>TRCDATA</u> , <u>TRCDISP</u> , <u>TRCIO</u> , <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCPCE</u> , <u>TRCVC</u> , <u>TRVCQ</u> , <u>VARY</u>	
IFN=	Sets MCH identifier(s) for DLU, DMCH, DVC, <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCVC</u> , <u>TRVCQ</u> Note: IFN= is used for XTP only.	
IPADDR=	Sets IP address for <u>TRCADDR</u> , <u>PING</u>	
LNCT=	Sets remote console (RMTCONS) scroll line count	
LNМ=	Sets LOCAL name for DLCL, <u>DNWDF</u> , <u>MLCL</u> , <u>VARY</u>	N/220
LUN=	Sets MCHX (CTCP SLU) identifier(s) for DMCH, <u>TRCLUQ</u> , <u>TRCMCHX</u>	
LUNM=	Sets LU name for DLU, <u>TRCLU</u> , <u>TRCMCHX</u> , <u>VARY</u>	N/220
RNM= or RNAME=	Sets REMOTE name for DLU, DMCH, <u>DNWDF</u> , DPCE, DRMT, DSTATS, DVC, <u>MON</u> , <u>MRMT</u> , <u>PING</u> , <u>STATS</u> , <u>TRCBFR</u> , <u>TRCDATA</u> , <u>TRCDISP</u> , <u>TRCIO</u> , <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCPCE</u> , <u>TRCVC</u> , <u>TRVCQ</u> , <u>VARY</u>	C/220
VCN=	Sets VCB identifier(s) for DVC, <u>TRCVC</u>	

Command Modifier Hierarchy Matrix By Command

Precedence Rank	Command Modifiers	Command Usage
1	LUNM=	Overrides RNM=, CID=, LUN=, IFN= and ID= for DLU, <u>TRCLU</u> , <u>TRCMCHX</u> , <u>VARY LU</u>
2	RNM= or RNAME=	Overrides IFN= and ID= for DLU, DMCH, DPCE, DRMT, DSTATS, DVC, <u>MRMT</u> , <u>PING</u> , <u>STATS</u> , <u>TRCBFR</u> , <u>TRCDATA</u> , <u>TRCDISP</u> , <u>TRCIO</u> , <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCPCE</u> , <u>TRCVC</u> , <u>TRCVQC</u> , <u>VARY RMT</u>
2	LNМ=	Overrides ID= for <u>VARY LCL</u>
3	IFN=	Used only when RNM= is not set for DLU, DMCH, DVC, <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCVC</u> , <u>TRCVQC</u> Note: IFN= is used for XTP only.
3	LUN=	Used only when LUNM= is not set for <u>TRCMCHX</u>
3	CID=	Used only when LUNM= is not set for DLU, <u>TRCLU</u>
3	VCN=	Used always regardless of RNM= or ID= setting for DVC, <u>TRCVC</u>
4	ID=	Used only when RNM= is not set for DLU, DMCH, DPCE, DSTATS, DVC, <u>MON</u> , <u>SMSG</u> , <u>STATS</u> , <u>TRCBFR</u> , <u>TRCCONS</u> , <u>TRCDATA</u> , <u>TRCDISP</u> , <u>TRCIO</u> , <u>TRCLU</u> , <u>TRCLUQ</u> , <u>TRCMCH</u> , <u>TRCMCHX</u> , <u>TRCPCE</u> , <u>TRCVC</u> , <u>TRCVQC</u> , <u>VARY RMT</u> or when LNM= is not set for <u>VARY LCL</u>

Note: The CLDADDR=, CLGADDR=, IPADDR= and LNCT= modifiers are independent from those listed in the above table.

Console Subsystem

Command Modifier Hierarchy Matrix By Resource Type

Precedence Rank	All but LOCAL resources	For LOCAL Resources
1	LUNM=	
2	RNM= or RNAME=	LNМ=
3	IFN=, LUN=, CID=, VCN=	
4	ID=	ID=

Command Modifier/Control Block Relationship

The following sections describes the command modifiers as they relate to HNAS resource control blocks. To access a HNAS resource for display, modification and trace processing, you must use a command modifier that represents the resource's control block.

Process Control Element Identification (ID=)

Process Control Elements (PCEs) are the control blocks that are used to manage HNAS sub-tasks and represent both LOCAL and REMOTE resources that require WAIT/POST event processing. Commands relating to HNAS PCEs use the **ID=*minid-maxid*** modifier to identify specific PCEs. The ID= value you enter remains in effect until a new value is entered or until your console session is terminated.

Note: The ID= modifier is used by the DLU, DMCH, DPCE, DSTATS, DVC, MON, SMSG, STATS, TRCBFR, TRCCONS, TRCDATA, TRCDISP, TRCIO, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVCQ and VARY commands.

If ID= (null) is specified, the command operates on all PCEs unless noted otherwise.

If ID=0 is specified (ID=0-0 is not permitted), the command also operates on all PCEs unless noted otherwise. For most commands, ID= (null) and ID=0 are treated identically. The exceptions are for the TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVCQ, VARY and MON TAP commands. Please refer to description of these commands for further details.

If an ID= value is specified as a range (e.g., ID=1-3), the command operates on the selected PCEs.

If an ID= value is specified as a single element (e.g., ID=1) or as a range where the extents are the same (e.g., ID=1-1), the command operates on the selected single PCE.

If an invalid ID= value is specified, the balance of the command line is ignored.

If an ID= value is specified, it must be entered as a hexadecimal number.

ID=*minid*[-*maxid*] extent values can range from 1 to *n* where *n* is the last configured PCE. To see the value of *n*, issue the DPARM command and look under the VALID VALUES column for the ID= modifier.

A PCE is the control block used to manage HNAS subtasks. The following table lists the HNAS PCEs and the internal ID numbers assigned to them. For the ID values in the table below:

<i>xtpl</i> =#XTP_LOCAL_resources,	<i>xtp</i> r=#XTP_REMOTE_resources
<i>xotl</i> =#XOT_LOCAL_resources,	<i>xotr</i> =#XOT_REMOTE_resources (sum of XOT VCLMT= values)
<i>mchr</i> =#MCH_REMOTE_resources,	<i>spur</i> =#SPU_REMOTE_resources
<i>dflr</i> =#DFL_REMOTE_resources,	<i>dfs</i> r=#DFS_REMOTE_resources

Console Subsystem

Process Control Element Identification (ID=) Table

Type	ID=
HNAS TIMER	1
HNAS LOCAL CONSOLE	2
HNAS NETVIEW	3 (reserved)
HNAS PING	4
HNAS UTILITY	5
XTP UTILITY	6 if $xtp > 0$
XTP LOCAL TCP	7 if $xot = 0$ or 8 if $xot > 0$ for xtp PCEs
XTP REMOTE TCP	$7 + xtp$ if $xot = 0$ or $8 + xtp + xot$ if $xot > 0$ for xtp PCEs
XOT UTILITY	6 if $xtp = 0$ or 7 if $xtp > 0$
XOT LOCAL TCP	7 if $xtp = 0$ or $8 + xtp$ if $xtp > 0$ for xot PCEs
XOT REMOTE TCP	$7 + xot$ if $xtp = 0$ or $8 + xtp + xpr + xot$ if $xtp > 0$ for $xotr$ PCEs
MCH REMOTE	$7 + xot + xotr$ if $xtp = 0$ or $8 + xtp + xpr + xot + xotr$ if $xtp > 0$ for $mchr$ PCEs
SPU REMOTE	$7 + xot + xotr + mchr$ if $xtp = 0$ or $8 + xtp + xpr + xot + xotr + mchr$ if $xtp > 0$ for $spur$ PCEs
DFL REMOTE	$7 + xot + xotr + mchr + spur$ if $xtp = 0$ or $8 + xtp + xpr + xot + xotr + mchr + spur$ if $xtp > 0$ for $dflr$ PCEs
DFS REMOTE	$7 + xot + xotr + mchr + spur + dflr$ if $xtp = 0$ or $8 + xtp + xpr + xot + xotr + mchr + spur + dflr$ if $xtp > 0$ for dfs PCEs
REMOTE CONSOLE	$7 + xot + xotr + mchr + spur + dflr + dfs$ if $xtp = 0$ or $8 + xtp + xpr + xot + xotr + mchr + spur + dflr + dfs$ if $xtp > 0$ for CONLMT PCEs

Note: The **DPCE BPM** command may be used to display all PCE identifiers, names and state information.

XTP Multi-channel Link Block Identification (IFN=)

XTP Multi-channel Link Blocks (MCHs) are the control blocks that are used to manage physical XTP MCH activity. Commands relating to HNAS XTP MCHs use the **ID=*minid-maxid*** modifier to identify specific PCEs and the **IFN=*minifn-maxifn*** modifier to identify specific MCHs. The ID= and IFN= values you enter remain in effect until new values are entered or until your console session is terminated.

Note: The IFN= modifier is used by the DLU, DMCH, DVC, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCVC and TRCVCQ commands.

If ID= (null) or ID=0 is specified, the command operates on all PCEs unless noted otherwise.

If IFN= (null) is specified, the command operates on all MCHs unless noted otherwise.

If IFN=0 is specified (IFN=0-0 is not permitted), the command also operates on all MCHs unless noted otherwise. For all commands, IFN= (null) and IFN=0 are treated identically.

If an IFN= value is specified as a range (e.g., IFN=2-17), the command operates on the selected MCHs.

If an IFN= value is specified as a single element (e.g., IFN=2) or as a range where the extents are the same (e.g., IFN=2-2), the command operates on the selected single MCH.

If an invalid IFN= value is specified, the balance of the command line is ignored.

If an IFN= value is specified, it must be entered as a decimal number.

IFN=*minifn*[-*maxifn*] values can range from 1 to 255.

Example: To view the status of the MCH interface 1 on the first TYPE=XTP REMOTE router, enter '**ID=6 IFN=1 DMCH**'.

Note: The IFN= modifier is used only when the ID= modifier identifies a TYPE=XTP REMOTE definition statement. HNAS generates a simulated NPSI Multi-channel Link Block (MCH) for each TYPE=XTP REMOTE definition statement. HNAS also generates an MCH for each TYPE=MCH REMOTE definition statement. The latter, however, is referenced directly by the ID= modifier (the IFN= value does not apply).

The MCH is the control block used to manage HNAS Multi-channel Link activity. The IFN= value is the interface number that identifies a physical X.25 link on a remote XTP router.

MCH Control Session Logical Unit Block Identification (LUN=)

Multi-channel Link Extension Blocks (MCHXs) are the control blocks that are used to manage MCH CTCP Control Session SLU activity. Commands relating to HNAS MCH Control Session Logical Unit Blocks (Control LUBs) or MCH Extension Blocks (MCHXs) as they are also called, use the **ID=*minid-maxid*** modifier to identify specific PCEs, the **IFN=*minifn-maxifn*** modifier to identify specific MCHs (XTP only) and the **LUN=*minlun-maxlun*** modifier to iden-

Console Subsystem

tify specific MCHXs. The ID=, IFN= and LUN= values you enter remain in effect until new values are entered or until your console session is terminated.

Note: The LUN= modifier is used by the DMCH, TRCLUQ and TRCMCHX commands.

If ID= (null) or ID=0 is specified, the command operates on all PCEs unless noted otherwise.

If IFN= (null) or IFN=0 is specified, the command operates on all MCHs unless noted otherwise.

If LUN= (null) is specified, the command operates on all MCHXs unless noted otherwise.

If LUN=0 is specified (LUN=0-0 is not permitted), the command also operates on all MCHXs unless noted otherwise. For all commands, LUN= (null) and LUN=0 are treated identically.

If a LUN= value is specified as a range (e.g., LUN=1-3), the command operates on the selected MCHXs.

If a LUN= value is specified as a single element (e.g., LUN=1) or as a range where the extents are the same (e.g., LUN=1-1), the command operates on the selected single MCHX.

If an invalid LUN= value is specified, the balance of the command line is ignored.

If a LUN= value is specified, it must be entered as a decimal number.

LUN=*minlun*[-*maxlun*] values can range from 1 to 28.

Example: To view the status of the first CTCP SLU for MCH interface 1 on the first TYPE=XTP REMOTE MCH, enter 'ID=6 IFN=1 LUN=1 DMCH'.

Note: HNAS generates an MCH Extension Block (MCHX) for each SLU name in the LUNAME= operand list for a TYPE=XTP|MCH REMOTE definition statement. The MCHX is the control block used to manage HNAS CTCP control logical unit sessions. The LUN= value identifies a specific CTCP SLU listed in the LUNAME operand for an MCH (1 through 28).

MCH Terminal Session Logical Unit Block Identification (CID=)

Logical Unit Blocks (LUBs) are the control blocks that are used to manage SLU activity. Commands relating to HNAS MCH Terminal Session LUBs (Terminal LUBs) use the **ID=*minid-maxid*** modifier to identify specific PCEs, the **IFN=*minifn-maxifn*** modifier to identify specific MCHs (XTP only) and the **CID=*mincid-maxcid*** modifier to identify specific LUBs. The ID=, IFN= and CID= values you enter remain in effect until new values are entered or until your console session is terminated.

Note: The CID= modifier is used by the DLU and TRCLU commands.

If ID= (null) or ID=0 is specified, the command operates on all PCEs unless noted otherwise.

If IFN= (null) or IFN=0 is specified, the command operates on all MCHs unless noted otherwise.

If CID= (null) is specified, the command operates on all LUBs unless noted otherwise.

If CID=0 is specified (CID=0-0 is not permitted), the command also operates on all LUBs unless noted otherwise. For all commands, CID= (null) and CID=0 are treated identically.

If a CID= value is specified as a range (e.g., CID=3-10), the command operates on the selected LUBs.

If a CID= value is specified as a single element (e.g., CID=3) or as a range where the extents are the same (e.g., CID=3-3), the command operates on the selected single LUB.

If an invalid CID= value is specified, the balance of the command line is ignored.

If a CID= value is specified, it must be entered as a hexadecimal number.

CID=*mincid*[-*maxcid*] values can range from 1 to FFFFFFFE.

Example: To view the status of the first 10 data logical units for MCH interface 1 on the first TYPE=XTP REMOTE router, enter 'ID=6 IFN=1 CID=1-10 DLU'.

Note: HNAS generates an Logical Unit Block (LUB) for every SLU that can be supported across all router connections. A LUB is the control block used to manage HNAS terminal logical unit sessions. The CID= value is a number assigned by VTAM as logical units activate.

MCH Virtual Circuit Block Identification (VCN=)

Virtual Circuit Blocks (VCBs) are the control blocks that are used to manage VC activity. Commands relating to HNAS MCH VCBs use the **ID=*minid-maxid*** modifier to identify specific PCEs, the **IFN=*minifn-maxifn*** modifier to identify specific MCHs (XTP only) and the **VCN=*minvcn-maxvcn*** modifier to identify specific VCBs. The ID=, IFN= and VCN= values you enter remain in effect until new values are entered or until your console session is terminated.

Note: The VCN= modifier is used by the DVC and TRCVC commands.

If ID= (null) or ID=0 is specified, the command operates on all PCEs unless noted otherwise.

If IFN= (null) or IFN=0 is specified, the command operates on all MCHs unless noted otherwise.

If VCN= (null) is specified, the command operates on all VCBs unless noted otherwise.

If VCN=0 is specified (VCN=0-0 is not permitted), the command also operates on all VCBs unless noted otherwise. For all commands, VCN= (null) and VCN=0 are treated identically.

Console Subsystem

If a VCN= value is specified as a range (e.g., VCN=3-10), the command operates on the selected VCBs.

If a VCN= value is specified as a single element (e.g., VCN=3) or as a range where the extents are the same (e.g., VCN=3-3), the command operates on the selected single VCB.

If an invalid VCN= value is specified, the balance of the command line is ignored.

If a VCN= value is specified, it must be entered as a decimal number.

VCN=*minvcn*[-*maxvcn*] values can range from 1 to 4095.

Example: To view the status of the first 10 virtual circuits for MCH interface 1 on the first TYPE=XTP REMOTE router, enter 'ID=6 IFN=1 VCN=1-10 DVC'.

Note: HNAS generates an Virtual Circuit Block (VCB) for every virtual circuit that can be supported across all router connections. The VCB is the control block used to manage HNAS virtual circuit sessions. The VCN= value is an internal number assigned sequentially by HNAS as virtual circuits activate.

Logical Unit Name (LUNM=)

(new for V2R2M0)

You can target a specific logical unit resource and override the current settings for ID=, IFN= and CID= or LUN= by specifying the LU name in the LUNM= modifier. LUNM= can reference any LU that is defined in the CDF. The LUNM= value you enter remains in effect until a new value is entered or until your console session is terminated. If the LUNM= modifier is entered with no value, the remembered LU name is reset.

Note: The LU resource named by the LUNM= modifier is used by the DLU, TRCLU, TRCM-CHX and VARY LU commands.

Local Name (LNM=)

(new for V2R2M0)

You can target a specific local resource and override the current settings for ID= by specifying the LOCAL name in the LNM= modifier. LNM= can reference any LOCAL definition statement defined in the CDF. The LNM= value you enter remains in effect until a new value is entered or until your console session is terminated. If the LNM= modifier is entered with no value, the remembered LOCAL name is reset.

Note: The LOCAL resource named by the LNM= modifier is used by the DLCL, DNWDF, MLCL and VARY LCL commands.

Remote Name (RNM= or RNAME=)

(changed for V2R2M0)

You can target a specific remote resource and override the current settings for ID= and IFN= by specifying the REMOTE name in the RNM= modifier. RNM= can reference any REMOTE definition statement in the CDF. The RNM= value you enter remains in effect until a new value is entered or until your console session is terminated. If the RNM= modifier is entered with no value, the remembered REMOTE name is reset.

Note: The REMOTE resource named by the RNM= modifier is used by the DLU, DMCH, DNWDF, DPCE, DRMT, DSTATS, DVC, MON, MRMT, PING, STATS, TRCBFR, TRCDATA, TRCDISP, TRCIO, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVCQ and VARY RMT commands.

Console Commands

Command and Command Modifier Descriptions

Command Header Description

Prefix Modifiers	Command	Suffix Modifiers followed by Command Parameters	CC	VRM
[<i>modifiers</i>]	<i>command</i>	[<i>modifiers</i>] [<i>parameters</i>]		<i>vrn</i>

Prefix Modifiers represent modifiers global to all related commands. Prefix modifiers remain in effect for the duration of the console session or until changed by the console operator.

Command represents the specific command required to achieve the desired results.

Suffix Modifiers override prefix modifiers for the duration of the current command only.

CC denotes the Change Control activity for the HNAS VRM level where changes were introduced or modified. The *cc/vrm* value identifiers are typically assigned for changes affecting commands, modifiers, formats or operational characteristics under the following circumstances: A blank or (N) CC value denotes that the enhancement was introduced in the initial release of the denoted *vrn* distribution level. A value of (A) Added, (C) Changed, (D) Deleted or (R) Retired denotes change control activity for an active *vrn* release.

VRM refers to the HNAS Version, Release, Modification level for the change control implementation type.

General notes on Command Headers:

- 1) Multiple commands can be entered on the same input line and are processed left to right. If a command list includes a display command, processing will stop after the display command completes. For example, TRCLU ON DLU TRCVC ON will cause the TRCLU and DLU commands to be executed but not the TRCVC command because DLU is a display command which terminates input parsing.
- 2) A prefix modifier can be entered **by itself** or on the **left side** of a command. Multiple prefix command modifiers can be entered on the same input line before (to the left of) the first command (or when no command is given). For example, ID=*id* CID=*cid* TRCLU ON.
- 3) A suffix modifier can only be entered on the **right side** of a command. Multiple suffix command modifiers can be entered on the same input line after (to the right of) a command but must be entered before any command arguments (parameters). For example, TRCLU ID=*id* CID=*cid* ON. If a suffix modifier follows a command argument (like ON in this example), it will be treated as a prefix modifier after the current command completes. The only exception to this rule is when the current command is a display command in which case, input parsing stops after the display command completes thus preventing the suffix (turned prefix) modifier from being processed.

ALARM Command - Alarm Selection Control (Privileged)

(changed for V2R1M0)
 (changed for V2R2M0)
 (changed for V2R3M0)
 (changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	ALARM	[{LCLCONS rconname}]	A	240
		[{{START STRT ON} {STOP OFF}}] [SHOW]	N A	210 230
		[FILTER={? * (A S P , id1 (A S P FC FU) , : idn (A S P FC FU))}]	C A A A	220 230 240 240
		[LIMITS={? * (interval ilmt, dlmt, almt, wlmt, elmt. slmt, mlmt) }]	N A	220 230
		[LOG={? CLEAR RESET}]	N	220
		[MSGTXT={? SHORT LONG}]	A	240
		[PULSE={? * (hh:mm:ss, hh:mm:ss, seconds)]	A	240

This command is used to activate (**START|STRT|ON**) or deactivate (**STOP|OFF**) alarm monitor mode for a remote console session. For local or remote consoles, this command is also used to display (**SHOW**) all alarm parameters that are currently active, set, reset or display the alarms being monitored (**FILTER=(id1,...,idn)**, **FILTER=*** or **FILTER=?**), set, reset or display the alarm limits for all alarms (**LIMITS=(interval,ilmt,...,mlmt)**, **LIMITS=*** or **LIMITS=?**), clear, reset or display all entries in the alarm logging table (**LOG=CLEAR**, **LOG=RESET** or **LOG=?**), toggle or display the value for the BUILD OPTIONS=ALRMSGTXT= parameter (**MSGTXT=SHORT**, **MSGTXT=LONG** or **MSGTXT=?**) and/or set, reset or display HNAS

Console Commands

pulse (heartbeat) parameters (**PULSE=(starttime, endtime, frequency)**, **PULSE=*** or **PULSE=?**).

- When the **LCLCONS** or **rconname** argument is provided, it directs ALARM processing to the identified console. This allows one console to alter ALARM processing for another console. For example, ALARM RCON0031 STOP will terminate alarm mode for the remote console named RCON0031 regardless of which console actually entered the command. For more information on LCLCONS|rconname processing, please refer to section entitled 'Console PCE name as a Suffix Command Modifier' on page CONS-11.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

ALARM Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
START STRT ON	STOP OFF	LCLCONS rconname	1
STOP OFF	START STRT ON	LCLCONS rconname	2
FILTER=*	none	LCLCONS rconname	3
FILTER=list	none	LCLCONS rconname	4
LIMITS=*	none	LCLCONS rconname	5
LIMITS=list	none	LCLCONS rconname	6
MSGTXT=SHORT	MSGTXT=LONG	system wide	7
MSGTXT=LONG	MSGTXT=SHORT	system wide	8
LOG=RESET	LOG=CLEAR	system wide	9
LOG=CLEAR	LOG=RESET	system wide	10
PULSE=*	none	system wide	11
PULSE=list	none	system wide	12
SHOW or FILTER=?	none	LCLCONS rconname	13
SHOW or LIMITS=?	none	LCLCONS rconname	14
SHOW or MSGTXT=?	none	system wide	15
SHOW or LOG=?	none	system wide	16
SHOW or PULSE=?	none	system wide	17

Alarm Monitoring Commands

- Enter **ALARM START** to enable alarm monitoring for the issuing remote console

- Enter **ALARM STOP** to disable alarm monitoring for the issuing remote console.
- Enter **ALARM SHOW** to display the alarm parameters that are currently in effect (treated the same as LOG=?, LIMITS=? and FILTER=?).

Alarm Filtering Commands

- Enter **ALARM FILTER=(A|S|P,*id1*(A|S|P|FC|FU),...,*idn*(A|S|P|FC|FU))** to set alarm IDs and actions.

The first FILTER suboperand specifies the default action to be taken when an alarm is issued.

A (Allow) specifies that any alarm that *is not identified* in the filter list *is to be* displayed.

S (Suppress) specifies that any alarm that *is not identified* in the filter list *is not to be* displayed.

P (Purge) specifies that any alarm that *is not identified* in the filter list *is not to be* displayed or written to SYSPRINT.

If no value is specified for the first FILTER suboperand (FILTER=(*id1*,...)), A is assumed. For more information on HNAS alarm filtering support, please refer to the description of the ALRMFLTR= operand on the BUILD definition statement which is described in Chapter 4 of the HNAS Guide and Reference manual.

Alarm filter identifiers *id1*...,*idn*... are given in the form '**NASxxxxs**' where '**NAS**' is the HNAS message identifier, '**xxxx**' is the message number and '**s**' is the severity code. You may enter up to 16 different alarm filter values. Wildcards (*) are accepted.

The filters you enter remain in effect until changed or until the console session terminates. For more information on HNAS alarm messages, please refer to sections Configuration Messages and Alert Messages in the HNAS Messages and Codes book.

You may also suffix an alarm filter identifier with **(A)**, **(S)**, **(P)**, **(FC)** or **(FU)** to override the default action. Note that the **A|S|P|FC|FU** suffix must be enclosed in parenthesis.

Note: The *first* FILTER= operand entry is the default action and will be used if a match or no match is found with the *idi* values in the list. To override the default action, you must specify an override value in parentheses after each *idi* value. If no override action is given, the default action is used.

For example, specifying ALARM FILTER=(P,NAS3799I) is the same as specifying ALARM FILTER=(P,NAS3799I(P)).

(A) (Allow) specifies that the filtered alarm message is to be allowed to go to SYSCONS (subject to the current SHOW state) regardless of the default action.

(S) (Suppress) specifies that the filtered alarm message is to be suppressed from SYSCONS regardless of the default action.

Console Commands

(P) (Purge) specifies that the filtered alarm message is to be purged from SYSCONS and SYSPRINT regardless of the default action.

(FC) (Force Conditionally) specifies that the filtered alarm message is to be sent to SYSCONS subject to the current SHOW state.

For example, if ALRMFLTR=(...,NAS2020I(FC),...) is specified, the NAS2020I alarm messages will be sent to SYSCONS except when SHOWOFF is effect.

(FU) (Force Unconditionally) specifies that the filtered alarm message is to be sent to SYSCONS regardless of the current SHOW state.

For example, if ALRMFLTR=(...,NAS0299I(FU),...) is specified, the NAS0299I alarm messages will be sent to SYSCONS even when SHOWOFF is in effect.

Note: (FC) and (FU) message ID suffix support was introduced into 240 via APAR 2400021.

To purge all but the NAS3799I message, specify ALARM FILTER=(P,NAS3799I(A)) or ALARM FILTER=(P,NAS3799I(S)). The (A) causes the NAS3799I message to be written to both SYSCONS and SYSPRINT. The (S) restricts the message to SYSPRINT only. All other messages will be purged from SYSCONS and SYSPRINT because the *first* FILTER operand (default disposition) was P (PURGE). We recommend using A (ALLOW) as the default disposition and specify (P) or (S) as appropriate for the *idi* values in the list. If P is specified as the default disposition, important error messages could be lost.

Note: The show error console command function **SHOW ERR** (start parameter **SHOWERR**) currently affects the processing of alarm message filtering because the SHOW processing is executed before alarm filter processing. This means that when SHOWERR is in effect (enabled), informational alarms will only be filtered by the first ALRMFLTR= operand (the default disposition). In this case informational alarms will not be written to SYSCONS but will be written to SYSPRINT. To purge information alarms from both SYSCONS and SYSPRINT when SHOWERR is active, specify FILTER=(P,NAS*(A)). Another way to do this is to specify **SHOW ON** (start parameter **SHOWON**) and FILTER=(A,NAS****I(P)). SHOWON makes informational alarms subject to full alarm filtering not just the default disposition.

Note: The initial implementation of the HNAS ALARM console command processor replaced existing FILTER= values instead of appending values to the ALRMFLTR= array. This restriction forced users to reenter existing alarm list entries (previously specified on the BUILD ALRMFLTR=) so that they could add new message identifiers (*idi*) via the console.

The HNAS ALARM console command processor has been modified to append FILTER= values to the existing ALRMFLTR= array rather than resetting the array first. This eliminates the need to enter an entire list of alarm identifiers in order to add just one entry to the end of the list. For example, if ALRMFLTR=(ALLOW,NAS2***I(P)) was specified on the BUILD definition statement in the CDF and if ALARM FILTER=(NAS3701W(P)) is then issued as a console command, the ALARM FILTER=? command would produce the following display:

```
ALRMFLTR=ALLOW
      NAS2***I (P)
```

NAS3701W(P)

- Enter **ALARM FILTER=*** to force the alarm filter array to be cleared. The array count is set to zero, all alarm filter IDs are set to null values and the default disposition is set to ALLOW.

If you wish to clear the ALRMFLTR= array before entering new values, enter ALARM FILTER=* to clear the entries followed by ALARM FILTER=(A|S|P,*idlist*) for the new filter entries.

- Enter **ALARM FILTER=?** to display the alarm filter parameters that are currently in effect. The following is example of the information produced by the ALARM FILTER=? command.

```
ALRMFLTR=SUPPRESS
  NAS3**** (S)
  NAS***** (A)
```

Note: For the alarm filter list above, messages that start with 'NAS3' will not be displayed even though NAS***** (A) is also specified. This is because HNAS processes the alarm filter list left to right (from the first to the last entry) and NAS3**** (S) appears before NAS***** (A) in the list.

Note: Informational monitor TAP messages of the form **NASxxxxM** and informational trace messages of the form **NASxxxxT** cannot be filtered using the ALRMFLTR= operand. NASxxxxM messages can be suppressed via the MON TAP ALLOFF command while NASxxxxT messages can be suppressed via the TRCPRNT OFF command. Monitor TAP information processing differs from trace information processing in that the former does not also log data in the internal trace table. When MON TAP ALLOFF is in effect, no trace data is logged unless TRCPCE is active for the TAP PCE. Conversely, when TRCPRNT OFF is in effect, trace data is still logged in the internal trace table because TRCLU ALLON, TRCVC ALLON, TRCMCH ALLON and TRCMCHX ALLON are set by default at HNAS startup time.

Note: You may enter **ALRMFLTR=** or **FILTER=** as an ALARM command operand. These keywords are treated the same and their list values are processed identically.

Alarm Limiting Commands

(new for V2R2M0)

Alarm messages that are allowed are subject to a second level of filtering based on their severity in a 30-second interval. In other words, HNAS will only allow a certain number of messages to be displayed every 30-seconds. This was done to prevent the WTO buffer pool from becoming depleted. The following list provides the **default limits** for allowed alarms as a function of their severity.

- 20 - maximum number of **I**nformational messages allowed during interval.
- 10 - maximum number of **D**efault messages allowed during interval.
- 20 - maximum number of user **A**ction messages allowed during interval.
- 25 - maximum number of **W**arning messages allowed during interval.
- 30 - maximum number of **E**rror messages allowed during interval.
- 30 - maximum number of **S**evere error messages allowed during interval.
- 10 - maximum number of all **M**iscellaneous messages allowed during interval.

Console Commands

The default alarm limits and the display interval can be modified using the LIMITS= operand of the ALARM command (see below).

- Enter **ALARM LIMITS=(interval,ilmt,dlmt,almt,wlmt,elmt,slmt,mlmt)** to set alarm limits.

The first LIMITS= suboperand specifies the time *interval* in seconds in which the limits will be counted. The balance of the LIMITS= parameter is used to specify the maximum counts for each message severity code. The values are positional and each may be specified as a decimal number between 0 and 255. A value of zero is treated as no limit. To leave a limit at its current value, you may bypass it in the list by using 2 consecutive commas (,,).

For example, entering ALARM LIMITS=(60,75,20,40,50,60,60,20) will change the count interval and limit values as follows:

60 - count interval.
75 - maximum number of **I**nformational messages allowed during interval.
20 - maximum number of **D**efault messages allowed during interval.
40 - maximum number of user **A**ction messages allowed during interval.
50 - maximum number of **W**arning messages allowed during interval.
60 - maximum number of **E**rror messages allowed during interval.
60 - maximum number of **S**evere error messages allowed during interval.
20 - maximum number of all **M**iscellaneous messages allowed during interval.

When the count for a particular message severity code reaches its limit value, subsequent messages of the same severity will not be displayed during the current interval. When the interval expires, the counts are reset so that alarms may again be displayed during the next interval. Note that the LIMITS= parameter of the ALARM command can be used to set all ALARMLMTS= operand values except the log count (*lcnt*). The *lcnt* value remains fixed for the active configuration. For more information on HNAS alarm limiting support, please refer to the description of the ALRMLMTS= operand on the BUILD definition statement which is described in Chapter 4 of the HNAS Guide and Reference manual.

- Enter **ALARM LIMITS=*** to force the alarm limits array to be cleared. All defaults are reset (zero set as all limits which means no limit enforced).
- Enter **ALARM LIMITS=?** to display the alarm limit parameters that are currently in effect. The following is example of the information produced by the ALARM LIMITS=? command.

```
ALRMLMTS=30 (TIMER)
          20 (INFO)
          10 (DEFAULT)
          20 (ACTION)
          25 (WARNING)
          30 (ERROR)
          30 (SEVERE)
          10 (MISC)
```

Note: You may enter ALRMLMTS= or LIMITS= as an ALARM command operand. These keywords are treated the same and their list values are processed identically.

Alarm Logging Commands

(new for V2R2M0)

- Enter **ALARM LOG=CLEAR** to remove all entries from the alarm logging table.
- Enter **ALARM LOG=RESET** to reset all the counters for all existing entries in the alarm logging table.

Note: The HNAS alarm logging table is allocated based on the *lcnt* suboperand of the **ALRMLMTS=** operand on the BUILD definition statement. If an *lcnt* value is specified, alarms are logged unconditionally even if they are not displayed because of filtering or limiting. Entries in the alarm logging table are sorted by alarm ID. For example, NAS2401W appears before NAS7703W in the table. In addition to the alarm ID, each entry in the alarm logging table contains a count indicating the number of times the alarm message was issued as well as a timestamp indicating the last time the alarm was issued.

- Enter **ALARM LOG=?** to display the alarm logging table. The following is example of the information produced by the ALARM LOG=? command.

ALARM_ID	TOTAL_CT	LOG_DATE	LOG_TIME	(0013/0256)
NAS0001I	00000001	2006/03/02	11:22:12	
NAS1700I	00000001	2006/03/02	11:22:09	
NAS1709I	00000003	2006/03/02	11:22:09	
NAS1730I	00000007	2006/03/02	11:22:09	
NAS2010I	00000001	2006/03/02	11:22:11	
NAS2020I	00000001	2006/03/02	11:22:11	
NAS2030I	00000001	2006/03/02	11:22:10	
NAS2050I	00000001	2006/03/02	11:22:11	
NAS2200I	00000001	2006/03/02	11:22:11	
NAS2230I	00000001	2006/03/02	11:22:11	
NAS2240I	00000001	2006/03/02	11:22:11	
NAS3701W	00000002	2006/03/02	11:22:16	
NAS3798I	00000002	2006/03/02	11:22:16	

Note: The counts in parentheses (**0013/0256**) on the header line above represent the current number of entries in the alarm logging table and the maximum number entries (*lcnt* from ALRMLMTS= operand) that the table can accommodate. The table is ordered by Alarm ID so that the **ALARM_ID** column shows alarms in collating sequence. The **TOTAL_CT** column represents the total number of times that the given alarm was issued since HNAS was loaded or the alarm logging table was reset. The **LOG_DATE** and **LOG_TIME** columns represent the most recent occurrence for the given alarm.

Note: The **ALARM LOG=?** command is executed automatically when HNAS is SHUTDOWN using the Q (QUIT) command. This is done unconditionally for any QUIT command follower. If QE *ddname* is entered, the ALARM LOG=? command is executed before the command list identified by *ddname*.

Console Commands

Note: You may enter **ALRMLOG=** or **LOG=** as an ALARM command operand. These keywords are treated the same and their values are processed identically.

Note: Specific alarm messages that are flushed when **NAS0111W** nnnn ALARM LOST events occur are not included in any of the **ALARM LOG** bucket counts although occurrences of the NAS0111W messages are.

Alarm Format Control Commands

(added for V2RM0)

- Enter **ALARM MSGTXT=SHORT** to force alarm messages to be displayed on a single line (short format mode). This sets the BUILD OPTIONS=ALRMSGTXT= operand value to SHORT.
- Enter **ALARM MSGTXT=LONG** to force alarm messages to be displayed on a multiple lines (long format mode). This sets the BUILD OPTIONS=ALRMSGTXT= operand value to LONG.

ALARM MSGTXT={SHORT|LONG} allows you to select the short or long format for alarm messages. Heretofore, only long format alarm messages were provided which can produce multiple lines of output for each alarm. Short format alarm messages consolidate information on a single line. This option applies to all alarm messages including informational alarms.

For example, when ALARM MSGTXT=LONG is in effect, the NAS2200I message is displayed as follows:

```
NAS2200I SERVER=010.117.056.171(01998) SOCKID=0000 PCEID=0009 NAME=LXOT
NAS2200I SOCKET ASSIGNED BY SERVER, SOCCNT=00001 SOCLMT=02000
```

When ALARM MSGTXT=SHORT is in effect, this same message is displayed as follows:

```
NAS2200I SERVER=010.117.056.171(01998) NAME=LXOT SOCKET ASSIGNED BY SERVER, ...
... SOCCNT=00001 SOCLMT=02000
```

For additional information on short and long alarm message processing, please refer to the description of the BUILD OPTIONS=ALRMSGTXT= operand in Chapter 4 of the HNAS Guide and Reference manual.

- Enter **ALARM MSGTXT=?** to display the current value for the BUILD OPTION=ALRMSGTXT= operand.

Note: You may enter **ALRMSGTXT=** or **MSGTXT=** as an ALARM command operand. These keywords are treated the same and their list values are processed identically.

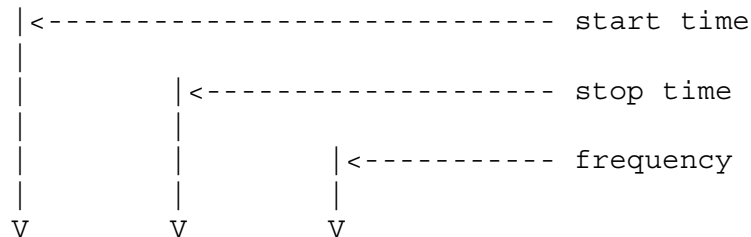
Note: ALARM MSGTXT={?|SHORT|LONG} command support was introduced into 240 as Enhancement APAR 2400068.

Console Commands

Alarm Heartbeat Commands

(apar/added for V2R4M0)

- Enter **ALARM PULSE=(hh:mm:ss, hh:mm:ss, seconds)** to update the alarm PULSE parameters. The syntax meaning is as follows:



ALARM PULSE=(hh:mm:ss, hh:mm:ss, seconds)

Note: Prior to updating the PULSE= operand values that are currently in effect, the values are copied into a temporary workarea. This allows you to modify one or all PULSE= suboperands before the values are returned to the permanent save area. For example if you only want to change the PULSE frequency, enter ALARM PULSE=(,newseconds). The start and end times will remain the same.

HNAS will issue the following message at the frequency given by the *seconds* value within the interval specified by the start and stop times:

```
NAS0299I HNAS PULSE TAKEN AT hh:mm:ss.uu ON yyyy/mm/dd
```

If the stop time is less than the start time, the interval wraps through midnight. If the start time and end time are equal, pulsing will be continuous.

The purpose of the message is to provide an indication that HNAS is being dispatched on a regular basis. The SYSPRINT log will contain the NAS0299I message. The message can also be sent to SYSCONS if ALRMFLTR=(...,NAS0299I(FU),...) is also specified on the BUILD definition statement or if the ALARM FILTER=(...,NAS0299I(FU),...) console command is issued.

- Enter **ALARM PULSE=*** to force the alarm PULSE parameters to be cleared. HNAS heartbeat processing is disabled.

If you wish to clear the PULSE= parameters before entering new values, enter ALARM PULSE=* to clear the entries followed by ALARM PULSE=(hh:mm:ss, hh:mm:ss, seconds) for the new PULSE parameters.

- Enter **ALARM PULSE=?** to display the alarm PULSE parameters that are currently in effect.

Note: PULSE= operand support was introduced into 240 via APAR 2400021.

CID= Modifier - Set Terminal Session LUB Identifier

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
CID= <i>mincid</i> [- <i>maxcid</i>] CID=?	<i>command</i>	[CID= <i>mincid</i> [- <i>maxcid</i>]]	C	240

This modifier is used to select specific terminal LU(s) for the commands that follow. HNAS allocates a LUB for each REMOTE terminal LU connection. The **CID=** value serves as an identifier for HNAS terminal LU resources. For more information on LU identifiers, refer to page CONS-36 of this document.

Note: The CID= modifier is used by the DLU and TRCLU commands.

- If CID= (null) is specified, the command operates on all LUBs unless noted otherwise.
- If CID=0 is specified (CID=0-0 is not permitted), the command also operates on all LUBs unless noted otherwise. For all commands, CID= (null) and CID=0 are treated identically.
- If a CID= value is specified as a range (e.g., CID=3-10), the command operates on the selected LUBs.
- If a CID= value is specified as a single element (e.g., CID=3) or as a range where the extents are the same (e.g., CID=3-3), the command operates on the selected single LUB.
- If an invalid CID= value is specified, the balance of the command line is ignored.
- If a CID= value is specified, it must be entered as a hexadecimal number.

CID=*mincid*[-*maxcid*] values can range from 1 to FFFFFFFE.

- Enter **CID=?** to display the permanent CID= value.

Console Commands

CLDADDR= Modifier - Set Called DTE Address

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
CLDADDR= <i>ddd</i> . . . <i>ddd</i> CLDADDR=?	<i>command</i>	[CLDADDR= <i>ddd</i> . . . <i>ddd</i>]	N C	114 240

This modifier is used to select a specific **called** DTE address for the TRCADDR and PING commands. The TRCADDR command is used to start or stop tracing for a specific **local** DTE regardless of virtual circuit or TCP socket that it uses for host access.

- You may enter up to 15 decimal digits for the **ddd...ddd** value.
- If a null CLDADDR= value is entered, the remembered CLDADDR= modifier is reset.
- Enter **CLDADDR=?** to display the permanent CLDADDR= value.

CLGADDR= Modifier - Set Calling DTE Address

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
CLGADDR= <i>ddd</i> . . . <i>ddd</i> CLGADDR=?	<i>command</i>	[CLGADDR= <i>ddd</i> . . . <i>ddd</i>]	N C	114 240

This modifier is used to select a specific **calling** DTE address for the TRCADDR command. The TRCADDR command is used to start or stop tracing for a specific **remote** DTE regardless of virtual circuit or TCP socket that it uses for host access.

- You may enter up to 15 decimal digits for the **ddd...ddd** value.
- If a null CLGADDR= value is entered, the remembered CLGADDR= parameter is reset.
- Enter **CLGADDR=?** to display the permanent CLGADDR= value.

DADDR Command - Display TRCADDR Addresses

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DADDR	[<u>ALL</u>]	N	114
		[CLDADDR [=]]		
		[CLGADDR [=]]		
		[IPADDR [=]]		

This command will display the contents of the TRCADDR address table. The TRCADDR address table is used to restrict HNAS event tracing to specific resources independent of the physical path over which they are connected. The TRCADDR address table can contain up to 16 **called** DTE addresses and/or 16 **calling** DTE addresses and/or 16 **TCP sockets**. Entries are added or removed from the TRCADDR address table using the **TRCADDR** command. For more information, please refer to page CONS-247 of this document.

If no resource address list is specified, **ALL** is assumed. Note that entering **DADDR** or **DADDR ALL** is equivalent to entering **DADDR CLDADDR= CLGADDR= IPADDR=**.

To summarize, you may enter a DADDR parameter that requests a specific action to be performed as follows:

DADDR Action Matrix

PARAMETER	ACTION
ALL or omitted	Display all addresses in table.
CLDADDR=	Display all <i>called</i> DTE addresses in table.
CLGADDR=	Display all <i>calling</i> DTE addresses in table.
IPADDR=	Display all TCP sockets (IPADDR/PORT) in table.

The following is an example of the heading and information produced by the **DADDR** command.

```

REMOTE RESOURCE
|
|
|
|
|<- Address Value

TYPE
|
|<- Address Type
      CLDADDR | CLGADDR | IPADDR
  
```

Console Commands

The following display is produced when DADDR is entered as the last command of following command sequence:

```
CLGADDR=12345678901234 TRCADDR ADD
CLDADDR=1024999 TRCADDR ADD
IPADDR=1.2.3.4(1096) TRCADDR ADD
DADDR
```

<u>REMOTE RESOURCE</u>	<u>TYPE</u>
12345678901234	CLGADDR
1024999	CLDADDR
001.002.003.004(01096)	IPADDR

D or DMEM Command - Display Memory

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	D [MEM]	<i>address</i> [+ <i>offset</i>] [<i>{length 80}</i>]		

This command will display HNAS storage areas.

You may enter an absolute **address** or a relative address as an offset from an established base (**+ offset**). A new base is set when the **address** and **+ offset** parameters are entered together. For example, 'D 6500 + 20 40' will display from address 6520 for 40 hexadecimal bytes and set the address base to 6500. The address base is initially set to the NASMAIN load point.

You may enter a display **length** (number of hexadecimal bytes) between 1 and FFF0 (65520).

If a **length** value is not provided, a default length of **80** hexadecimal bytes is used.

The following display is produced when D 20000 90 is entered.

```

ADDRESS OFFSET-0 OFFSET-4 OFFSET-8 OFFSET-C EBCDIC TEXT DATA
00020000 47F0F02C 0026D5C1 E2D4C1C9 D540E5F2 00...NASMAIN V2
00020010 D9F2D4F0 4040E5D4 40404040 4040F1F1 R2M0 VM 11
00020020 61F1F761 F0F20000 0000145C 90ECD00C /17/02.....* }.
00020030 18AF182D 189158C0 AB284130 06C05030 . ...j { . ..{&.
00020040 C0081803 4510A048 0A0A5010 C00C4163 {... . ..&.{.
00020050 10005060 C01018D1 18011813 1B441B55 ..&-{..J..... .
00020060 0E041832 184D4150 00185040 30085030 .....( &..& ..&.
00020070 40041834 41404048 4650A06A 430C0092 ... & ] ..k
00020080 41F0000F 140F0700 4D10A0AE 001E8000 0.....(. .. .

```

Note: If the DMEM command references a memory address that HNAS is not authorized to display (the address is invalid for the machine configuration), the following error message will be displayed:

```
NASC611W DISPLAY MEMORY ADDRESSING EXCEPTION, CONSOLE COMMAND ABORTED
```

Console Commands

DLCL Command - Display LOCAL Configuration

(new for V2R2M0)
 (changed for V2R3M0)
 (changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[LNM=lcname]	DLCL	[lcname]	C	230
		[<u>ALL</u>]	N	220
		[INIT [=]]	N	230
		[IPADDR [=]]		
		[OPTIONS [=]]		
		[PORT [=]]		
		[RTEIN [=]]	C	240
		[RTEOUT [=]]		
		[SOCLMT [=]]		
		[TYPE [=]]		

This command will display the operands that were specified in the CDF or modified later via the MLCL command for the LOCAL definition statement identified by the **LNM=** modifier. If no **LNM=** value is set, the list of all LOCAL definition statements is displayed.

To summarize, you may enter a list of LOCAL definition statement operands that you want to display as follows:

DLCL Action Matrix

PARAMETER	ACTION	X T P	X O T
ALL or omitted	Display value for all LOCAL operands.		
INIT=	Display value for INIT= operand.		
IPADDR=	Display value for IPADDR= operand.		
OPTIONS=	Display value for OPTIONS= operand.		
PORT=	Display value for PORT= operand.		
RTEIN=	Display value for RTEIN= operand.	I	
RTEOUT=	Display value for RTEOUT= operand.	I	
SOCLMT=	Display value for SOCLMT= operand.		

PARAMETER	ACTION	X T P	X O T
TYPE=	Display value for TYPE= operand.		

Legend: For LOCAL *type* column: I=> Invalid, blank=> supported (see Console Command Parameter Action Matrix Keys description on page CONS-21 for additional information).

If no operand list is specified, **ALL** is assumed. Note that entering **DLCL [ALL]** is equivalent to entering **DLCL IPADDR= OPTIONS= ... TYPE=**.

Certain keywords may specify a REMOTE name (e.g., RTEOUT=*rmtname*), in which case only the list entry that corresponds to the named REMOTES will be displayed (see example below).

For keywords on a TYPE=XOT LOCAL definition statement, NONE will be displayed when NONE was coded for the operand in the CDF (e.g., RTEOUT=NONE). If the operand was omitted in the CDF, a null value will be displayed (e.g., RTEOUT=).

The following is an example of the heading and information produced by the DLCL command.

```

LCLNAME  OPERAND  TYPE
|          |          |
|          |          |<- LOCAL type
|          |          |
|          |<- Operand/Value or
|          |    LOCAL address
|          |
|<- LOCAL name
  
```

The following display is produced when DLCL LNM= is entered (no LOCAL name given).

```

LCLNAME  OPERAND  TYPE
LXTP      00075CC4  XTP
LXOT      00075D10  XOT
  
```

The following display is produced when DLCL [LNM=] LXOT is entered.

```

LCLNAME  OPERAND  TYPE
LXOT      00075D10  XOT
          INIT=ACTIVE
          DELAYTIME=5
          RETRYLMT=0
          IPADDR=010.117.056.221
          OPTIONS=
  
```

Console Commands

```
PORT=01998
RTEIN=MCH1/2036T
      MCH1/9999T
      MCH1/661T
RTEOUT=R2CNOT1/1036T
      R2CNOT2/10369999T/NYC USER #1
SOCLMT=01000
TYPE=XOT
```

The following display is produced when LNM=LXOT DLCL IPADDR= RTEOUT= is entered.

```
LCLNAME  OPERAND  TYPE
LXOT      00075D10 XOT
          IPADDR=010.117.056.221
          RTEOUT=R2CNOT1/1036T
          R2CNOT2/10369999T/NYC USER #1
```

The following display is produced when LNM=LXOT DLCL RTEOUT=R2CNOT2 is entered.

```
LCLNAME  OPERAND  TYPE
LXOT      00075D10 XOT
          RTEOUT=R2CNOT2/10369999T/NYC USER #1
```


DLP Command - Display HNAS Load Point

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DLP			

This command will display the HNAS load point in the HNAS address space.

The following display is produced when **DLP** is entered.

NAS LOADPOINT=00007000

Console Commands

DLU Command - Display Logical Unit

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific LU,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[LUNM= <i>sluname</i>]	DLU	[<i>sluname</i>]	C	230
		[{ <u>SHOWNAME</u> [{=RTR =MCH =SPU}] SHOWADDR}]	N C	230 230
		[{ <u>SHOWBNDAPPL</u> SHOWUNBAPPL}]	A	230
		[{ <u>SHOWSESSINIT</u> SHOWCID}]	A	240
		[{ <u>FMT1</u> <u>FMT2</u> }]		

or for a collection of LUs on a specific MCH or SPU

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM={ <i>mchname</i> <i>spuname</i> }]	DLU	[{ <i>mchname</i> <i>spuname</i> }]	C	230
[CID= <i>mincid</i> [- <i>maxcid</i>]]		[{ <u>SHOWNAME</u> [{=RTR =MCH =SPU}] SHOWADDR}]	N C	230 230
		[{ <u>SHOWBNDAPPL</u> SHOWUNBAPPL}]	A	230
		[{ <u>SHOWSESSINIT</u> SHOWCID}]	N	240
		[{ <u>FMT1</u> <u>FMT2</u> }]		
		[{CONNECTED NONIDLE}]	N	240
		[STATE=BOUND CONNECTED CLSDST IDLE NONIDLE OFFLINE OPNDST PLUBIND PLUUNBIND REQSESS SLUUNBIND]	N N N N	220 240 240 240
		[TRACE={OFF ON}]	N	230

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[TYPE={GCTL LLC4} GDAT IDLE {PAD LLC5} {PCNE LLC0} {QLLC LLC3}]	N	220

or for a collection of LUs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID=mini <i>d</i> [-max <i>d</i>]]	DLU	{ <u>SHOWNAME</u> [{=RTR =MCH =SPU}] SHOWADDR}	N C	230 230
[IFN=mini <i>fn</i> [-max <i>fn</i>]]		[{ <u>SHOWBNDAPPL</u> SHOWUNBAPPL}]	A	230
[CID=mini <i>cid</i> [-max <i>cid</i>]]		[{ <u>SHOWSESSINIT</u> SHOWCID}]	N	240
		[{ <u>FMT1</u> FMT2}]		
		[{CONNECTED NONIDLE}]	N	240
		[ALLID]		
		[ALLIFN]		
		[ALLCID]		
		[PROT={XOT XTP}]		
		[STATE=BOUND CONNECTED CLSDST IDLE NONIDLE OFFLINE OPNDST PLUBIND PLUUNBIND REQSESS SLUUNBIND]	N N N N	220 240 240 240
		[TRACE={OFF ON}]	N	230
		[TYPE={GCTL LLC4} GDAT IDLE {PAD LLC5} {PCNE LLC0} {QLLC LLC3}]	N	220

Console Commands

This command will display HNAS SLU state information. If only the HEADER line is displayed after the command is entered it indicates that nothing matched the display criteria as requested by the command parameters entered or those currently in effect.

- When **LUNM=*sluname*** is specified, it overrides the **ID=**, **IFN=**, **CID=** and **RNM=** values restricting DLU processing to the named SLU only.
- When **RNM={*mchname|spuname*}** is specified, it overrides the **ID=** and **IFN=** values restricting DLU processing to the named MCH or SPU for the specified **CID=** values. DLU processing is for the SLUs on the named MCH only.
- When **CID=*mincid*[-*maxcid*]** is specified, DLU processing is restricted to the selected SLUs on the selected MCHs. If **CID=0** is specified, DLU processing is for all SLUs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), DLU processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, DLU processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, DLU processing is restricted to the selected PCEs. If **ID=0** is specified, DLU processing is for all PCEs
- The **SHOWNAME** or **SHOWNAME=RTR** operand (the default) requests that the name of the TYPE=XOT|XTP REMOTE definition statement associated with the SLU is to be displayed in the RTRNAME/ADDRESS column. This REMOTE identifies the router that is supporting the SLU/VC connection. If the SLU does not have an active VC connection, no name is displayed.
- The **SHOWNAME=MCH** operand requests that the name of the TYPE=MCH|XTP REMOTE definition statement associated with the SLU is to be displayed in the MCHNAME/ADDRESS column. This REMOTE identifies the logical MCH that is supporting the SLU/VC connection. If the SLU does not have an active VC connection, no name is displayed.
- The **SHOWNAME=SPU** operand requests that the name of the TYPE=SPU REMOTE definition statement associated with the SLU is to be displayed in the SPUNAME/ADDRESS column. This REMOTE identifies the SPU that is supporting the SLU connection. If the SLU is not defined in the LUNAME= operand on a TYPE=SPU REMOTE definition statement, no name is displayed.
- The **SHOWADDR** operand requests that the memory address of the SLU control block (LUB) is to be displayed in the xxxNAME/ADDRESS column.
- The **SHOWBNDAPPL** operand (the default) requests that the name of the PLU currently in session with the SLU is to be displayed in the PLUNAME column. If the SLU is not bound, no name is displayed.
- The **SHOWUNBAPPL** operand requests that the name of the PLU currently or previously in session with the SLU is to be displayed in the PLUNAME column. This name is displayed even if the SLU is no longer bound. If the SLU has never been bound, no name is displayed.

- The **SHOWSESSINIT** operand (the default) requests that the direction of the session initiation is to be displayed in the SESSINIT/CID column. If the SLU session was established via an inbound or outbound call, INBOUND or OUTBOUND is displayed. If the SLU is not connected, blanks are displayed.
- The **SHOWCID** operand requests that the VTAM connection identifier is to be displayed in the SESSINIT/CID column.
- The **FMT1** and **FMT2** operands (for format 1 and 2) control the type of information that is displayed. Currently, **FMT1=SHOWNAME+SHOWBNDAPPL+SHOWSESSINIT** (the default) and **FMT2=SHOWADDR+SHOWUNBAPPL+SHOWCID**.

Note: The SHOWxxxx and FMTx operands are processed in the order specified. The last value you specify is the winner. For example, if you enter SHOWADDR FMT1, SHOWNAME will override SHOWADDR because FMT1 includes SHOWNAME.

- The **CONNECTED** operand requests that only those SLUs that have an active VC connection are to be displayed. **VCACT** is an alternate name for CONNECTED. CONNECTED or VCACT forces ID=IFN=CID=0 and RNM=LUNM= null so that all defined SLUs are tested for an active VC connection.
- The **NONIDLE** operand requests that only those SLUs that have a non-idle SNA state are to be displayed. The SLU may or may not also have an active VC connection. **LUACT** is an alternate name for NONIDLE. NONIDLE or LUACT forces ID=IFN=CID=0 and RNM=LUNM= null so that all defined SLUs are tested for a non-idle SNA state.
- The **ALLID** parameter is treated as though RNM= omitted, LUNM= omitted and ID=0 were in effect even if they are not. This means that all PCEs are scanned for their MCH components.
- The **ALLIFN** parameter is treated as though IFN=0 was in effect even if it is not. This means that all MCHs are scanned for their SLU components.
- The **ALLCID** parameter is treated as though CID=0 was in effect even if it is not. This means that all SLUs are displayed for each MCH subject to filtering by the **PROT=**, **STATE=**, **TRACE=** and/or **TYPE=** operands.
- The **TYPE=** parameter is used to restrict the display to a specific SLU type.
- The **PROT=** parameter is used to restrict the display to a specific protocol for **TYPE=TCP** PCEs over which the SLUs communicate.
- The **STATE=** parameter is used to restrict the display to a specific SLU state.

Note: **STATE=CONNECTED|NONIDLE** is treated the same as the CONNECTED|NONIDLE arguments except that the command modifiers are not forced to their null values. This means that only those SLUs selected by the provided command modifiers are tested for an active VC connection or non-idle SNA state.

Note: When **STATE=BOUND** is specified, STAT column will show secondary bound state which can be SDT, CLR, DTA or SD rather than BND.

Console Commands

Note: When **STATE=OFFLINE** is specified, only those SLUs that have been varied offline with the console VARY command will be displayed subject to the command modifiers in effect.

- The **TRACE=** parameter is used to restrict the display to SLUs being traced (**ON**) or not being traced (**OFF**).

Console Commands

The following is an example of the heading and information produced by the DLU command.

```

                SPUNAME
                MCHNAME
                RTRNAME
    IFN|  CID
MPID RPID SSESINIT VCN  ADDRESS LUOPT LUST LUTO TYPE SLUNAME PLUNAME
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                             |<- PLU name
|                                             |      (APPL)
|                                             |<- HNAS SLU name
|                                             |<- SLU type (8)
|                                             |<- Active SLU timer (7)
|                                             |<- SLU state (6)
|                                             |<- SLU runtime options (5)
|                                             |<- REMOTE name or LUB address (4)
|                                             |<- SLU virtual circuit number when a network
|                                             |      VC connection is active, blank otherwise (3)
|                                             |      Note: For PVCs, the first digit is a 'P'
|<- Session initiation direction (INBOUND or OUTBOUND) or
|      the SLU connection identifier when SLU is bound, zero
|      otherwise (2)
|<- MCH interface number for an XTP router connection or the PCE
|      ID of the TCP/IP component for an XOT router connection that
|      owns the SLU/VC session (1)
|<- PCE ID for the MCH that owns the named SLU

```

Note: MPID and IFN|RPID header display change was introduced into 240 with Enhancement APAR 2400014.

Console Commands

The following display is produced when `DLU ID=8 IFN=3 CID=7-9 SHOWNAME=MCH` is entered.

```
IFN|
MPID  RPID  SESSINIT  VCN  MCHNAME  LUOPT  LUST  LUTO  TYPE  SLUNAME  PLUNAME
0008  0003  INBOUND  P001  MCH1     LDONP  DTA           PAD  R1M3P001  A06TSO
0008  0003  OUTBOUND P002  MCH1     LDONP  DTA           PAD  R1M3P002  A06TSO
```

The following display is produced when `DLU ID=8 IFN=3 CID=7-9 FMT2` is entered.

```
IFN|
MPID  RPID  CID      VCN  ADDRESS  LUOPT  LUST  LUTO  TYPE  SLUNAME  PLUNAME
0008  0003  00000007 P001  0009D220 LDONP  DTA           PAD  R1M3P001  A06TSO
0008  0003  00000009 P002  0009D720 LDONP  DTA           PAD  R1M3P002  A06TSO
```

In the previous example, no listing is given for `CID=8` because the SLU is idle, that is, `CID=8` is not assigned.

The following display is produced when `DLU BPM FMT2` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

```
IFN|
MPID  RPID  CID      VCN  ADDRESS  LUOPT  LUST  LUTO  TYPE  SLUNAME  PLUNAME
0008  0003  00000000      00097968 LD NP  IDLE      PCNE  R1M30005
0008  0003  00000000      0009C8C8 LD NP  IDLE      PAD   R1M35020
0008  0003  00000007 P001  0009D220 LDONP  DTA           PAD  R1M3P001  A06TSO
0008  0003  00000009 P002  0009D720 LDONP  DTA           PAD  R1M3P002  A06TSO
0008  0003  00000000 P003  0009DC20 LD GP  IDLE      GDAT  R1M3P003
0008  0003  00000000 P004  0009E120 LD GP  IDLE      GDAT  R1M3P004
0008  0003  00000000 P005  0009E620 LD GP  IDLE      GDAT  R1M3P005
0008  0004  00000000      0009FA88 LD NP  IDLE      PCNE  R1M40004
0008  0004  00000000      000A0A68 LD NP  IDLE      PAD   R1M45004
000D  010A  00000000      000A2820 LD NP  IDLE      PCNE  MCH10005
000D  010B  00000000      000A7780 LD NP  IDLE      PAD   MCH15000
000D  010C  00000000 0001  000A80D8 LD NP  IDLE      PAD   MCH15001  A06TSO
000D  010D  00000000 0002  000A85D8 LD NP  IDLE      PAD   MCH15002  A06TSO
000D  010E  00000000 0003  000A8AD8 LD G   IDLE      GDAT  MCH14003
000D  010F  00000000 0004  000A8FD8 LD G   IDLE      GDAT  MCH14004
000D  0110  00000000 0005  000A94D8 LD G   IDLE      GDAT  MCH14005
```

In the previous example, all SLUs for all MCHs are listed including those that are idle (`CID=0`) because no `CID` modifier was supplied for the `DLU` command.

The following display is produced when `DLU [RNM=] MCH1 FMT2` is entered.

```

      IFN|
MPID  RPID  CID      VCN  ADDRESS  LUOPT  LUST  LUTO  TYPE  SLUNAME  PLUNAME
000D  010A  00000000      000A2820 LD NP  IDLE      PCNE  MCH10005
000D  010B  00000000      000A7780 LD NP  IDLE      PAD   MCH15000
000D  010C  00000000  0001  000A80D8 LD NP  IDLE      PAD   MCH15001  A06TSO
000D  010D  00000000  0002  000A85D8 LD NP  IDLE      PAD   MCH15002  A06TSO
000D  010E  00000000  0003  000A8AD8 LD G   IDLE      GDAT  MCH14003
000D  010F  00000000  0004  000A8FD8 LD G   IDLE      GDAT  MCH14004
000D  0110  00000000  0005  000A94D8 LD G   IDLE      GDAT  MCH14005

```

In the previous example, all SLUs for the MCH named MCH1 are listed including those that are idle (CID=0).

The following display is produced when `DLU [LUNM=] MCH15001 FMT2` is entered.

```

      IFN|
MPID  RPID  CID      VCN  ADDRESS  LUOPT  LUST  LUTO  TYPE  SLUNAME  PLUNAME
000D  010C  00000000  0001  000A80D8 LD NP  IDLE      PAD   MCH15001  A06TSO

```

In the previous example, only the LU named MCH1P001 is listed.

General notes for DLU:

- 1) The **IFN|RPID** column identifies either the interface number for the physical MCH link on an IBM XTP router (REMOTE TYPE=XTP,IFNUM=xx,...) or the PCE ID of the TCP/IP component for a Cisco XOT router (REMOTE TYPE=XOT,...) to which the SLU is connected.
- 2) The **SESSINIT/CID** column identifies either how the LU/VC session was established, that is, by an INBOUND or OUTBOUND call (SHOWSESSINIT) or the VTAM connection identifier when the SLU is bound.
- 3) The **VCN** column identifies the HNAS Virtual Circuit Number. For PVCs only, the first digit of the VCN will be replaced by the character 'P'.

For XTP, the VCN is the index into the MCH Address Vector Table (AVT) for the VC. The AVT is used to locate the VC control block when a packet is sent or received across the TCPIP socket connection.

For XTP PVCs, the index is the same as the Circuit Identifier carried in the PVC Info packet. The same Circuit Identifier will be used in all subsequent packets sent and received.

For XTP Callout SVCs, the index is the same as the Circuit Identifier carried in the Outbound Call Request packet created by HNAS. The index is created from the first available slot in the AVT starting at the end and working backwards.

Console Commands

For XTP Callin SVCs, the index is assigned based on an available slot in the AVT starting at the beginning and working forward. The index is not related to the Circuit Identifier received from the router.

For XOT, this is an internal value used for information only.

For XOT PVCs, the VCN is the same as the LCN supplied in the PVC= operand which will be the LCN carried in the PVC Setup packet and all subsequent packets sent and received.

For XOT Callout SVCs, the VCN is always set to 0001 which is then used as the LCN carried in the Outbound Call Request packet created by HNAS and all subsequent packets sent and received.

For XOT Callin SVCs, the VCN is the LCN that is received from the router in the Inbound Call Request packet. It will be used as the LCN in all subsequent packets sent and received.

- 4) The **xxxNAME/ADDRESS** column identifies either a TYPE=XOT|XTP REMOTE definition statement name (SHOWNAME or SHOWNAME=RTR), a TYPE=MCH|XTP REMOTE definition statement (SHOWNAME=MCH), a TYPE=SPU REMOTE definition statement (SHOWNAME=SPU) or the LUB address (SHOWADDR). A RTRNAME|MCHNAME is displayed only if the SLU has an active VC connection. An SPUNAME is displayed only if the SLU is defined in the LUNAME= operand of a TYPE=SPU REMOTE definition statement.
- 5) The **LUOPT** column identifies HNAS options that are currently active for the SLU. A blank indicates that the option is not active. The LUOPT column also displays SLU connect status information. The following options can be displayed.

LDOGP

```
|||||
||||| <- P => LU is permanently assigned
||||| * => LU is dynamically assigned
|||||
||||| <-- G => GATE=GENERAL
||||| N => GATE=NO
|||||
||||| <--- O => ACB is open
||| <---- D => TRCLU DBK
| <----- L => TRCLU ON
```

6) The **LUST** column identifies the current SLU state. The following states can be displayed.

BN	PLU BIND issued	BND	SLU is bound
CLR	SLU is bound, PLU CLEAR issued	DTA	SLU data traffic active
IDLE	SLU is inactive but online	OFLN	SLU is offline from VARY OFF
RQS	SLU is unbound, REQSESS issued	SD	SLU is bound, PLU SHUTD issued
SDC	SLU is bound, SLU SHUTC issued	SDT	SLU is bound, PLU SDT issued
UNB	SLU is bound, PLU UNBIND issued	UBNS	SLU is bound, SLU UNBIND issued

7) The **LUTO** column identifies the active timer if one is running. The following timer values can be displayed.

DLAY	QLLC DACTLU/ACTLU delay, ACTLU issued on timer expiration	REXP	QLLC PIU sent to SLU, response expected
RQSD	QLLC REQSHUT sent to VTAM, SHUTDOWN expected	RQSE	QLLC REQSESS sent to VTAM, BIND expected

Note: The LUTO column was introduced into 240 with Enhancement APAR 2400078.

8) The **TYPE** column identifies the SLU type. The following types can be displayed.

GDAT	GATE data SLU	GATE	GATE control SLU
IDLE	SLU LLC not resolved	PCNE	Type 1 SLU session
PAD	Transparent SLU		

Console Commands

DMAP Command - Display Module Map

(changed for V2R1M0)

(changed for V2R2M0)

(changed for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DMAP	[{ <i>module</i> ALL TRACE APAR}]	C C	220 230

This command will display a HNAS module map for all or selected modules, trace and APAR assignment information. The REFID field of the DMAP report heading identifies This command is also used to identify modules with traces t locate

You may enter an HNAS *module* name to restrict the display to a single module.

- Enter **DMAP TRACE** to display the trace entry identifies for all HNAS modules.
- Enter **DMAP APAR** to display the APAR entry identifiers for all HNAS modules.

HNAS automatically executes the **DMAP APAR** command at initialization time *with no delays* so that the display of system maintenance that is logged in the HNAS SYSPRINT can be viewed using an SDSF panel.

Additionally, during the initialization pass, the DMAP APAR command creates a table that is sorted in APAR ID order so that it can be displayed using the **DNAS APAR** command. The **DMAP APAR** command displays APARs in module name order rather than APAR ID order.

Note: The **DMAP APAR** command that is executed unconditionally at HNAS startup no longer logs output in SYSPRINT. This was done to reduce SYSPRINT log activity during startup. If you wish to see DMAP APAR output, you can issue this command once the console input prompt message has been displayed.

Note: If an APAR number is unused (skipped), is special or is deferred to a later release, **NASEND** will be displayed as the module name.

Note: The **DMAP APAR** and **DNAS APAR** commands will display HNASMACX and/or HNASOBJX as an APARID when CustomUserMods are included in the HNAS product distribution. The HNAS distribution process has been modified to generate an 'APARID' of HNASMACX and/or HNASOBJX if a custom MACLIB and/or OBJLIB has been included in the distribution. These APARIDs are contained in the **NASEND** module and will be displayed in the HNAS SYSPRINT when the DMAP APAR console command is executed when HNAS is started. These APARIDs will also display whenever the DNAS APAR console command is executed. These APARIDs are intended to provide an additional reminder that custom modifications are on the HNAS system and, hence, caution should be exercised when applying maintenance. Please refer to the DNAS console command description for additional informa-

tion. Note also that the majority of customers don't have custom enhancements (Custom-UserMods).

- Enter **DMAP ALL** (which is treated as **DMAP TRACE APAR**) to display the trace and APAR entry identifiers for all HNAS modules.

If the **DMAP** command is entered without any parameters, a list of all modules that comprise the HNAS system will be displayed. When all modules are displayed, they are listed alphabetically, left to right, top to bottom.

Refer to the example heading information and samples on the following page for additional information:

Console Commands

The following is an example of the heading and information produced by the DMAP command for a single module.

<u>MODULE</u>	<u>ADDRESS</u>	<u>SIZE</u>	<u>REFNO</u>	<u>REFOF</u>	<u>REFID</u>	<u>LGTM</u>

<- time logged in trace entry (YES or NO)

<- macro identifier can be TRACE entry ID, APAR entry ID or optional CUSTOM MOD entry ID

<- macro call offset in module

<- macro call reference number

<- module size

<- module address

<- module name

The following display is produced when DMAP NASTCP is entered.

<u>MODULE</u>	<u>ADDRESS</u>	<u>SIZE</u>	<u>REFNO</u>	<u>REFOF</u>	<u>REFID</u>	<u>LGTM</u>
NASTCP	000260D8	6542	01	58B6	TRIDIPRM	YES
			02	597A	TRIDSBFR	NO
			03	5B02	TRIDTDAT	NO
			04	5C32	TRIDIBFR	YES
			05	5D58	TRIDRBFR	NO
			06	5F10	TRIDTDAT	NO
			01	6078	2200003	

The following display is produced when DMAP APAR is entered.

<u>MODULE</u>	<u>ADDRESS</u>	<u>SIZE</u>	<u>REFNO</u>	<u>REFOF</u>	<u>REFID</u>	<u>LGTM</u>
CONSDMAP	00016FA0	1600	01	1030	2300004	
CONSDNAS	000193A0	0690	01	02E0	2300004	
MCHINI	00048500	16A0	01	1096	2300004	
NASCNFG	0006F6F0	7400	01	268C	2300001	
NASCONS	000110C0	27B0	01	0126	2300004	
NASMAIN	00007230	9E90	01	003C	2300000	
NASTCP	0003BE80	7490	01	13E6	2300002	
NASUTIL	00035CA0	5790	01	0860	2300004	
XOTUT1	00068760	0E80	01	0BEA	2300003	

Console Commands

The following display is produced when DMAP is entered without a module name.

<u>MODULE</u>	<u>ADDRESS</u>	<u>MODULE</u>	<u>ADDRESS</u>	<u>MODULE</u>	<u>ADDRESS</u>
CNFGACRT	0009A130	CNFGAFLT	0009A300	CNFGALMT	0009A730
CNFGAPNM	0009AC20	CNFGBFLM	0009B0F0	CNFGBFSZ	0009B3B0
CNFGCNCM	0009B5C0	CNFGCNCCT	0009B7C0	CNFGCNLM	0009BB00
CNFGCNPR	0009BDB0	CNFGCNPW	0009BFA0	CNFGCTCP	0009C1A0
CNFGCUD	0009C910	CNFGCUD0	0009CE20	CNFGDCAD	0009D300
CNFGDLNM	0009DD60	CNFGDTAD	0009D850	CNFGDXNM	0009E4A0
CNFGFAC	0009EBC0	CNFGGATE	0009F140	CNFGHOME	0009F410
CNFGIDBK	000A01B0	CNFGIDNM	000A0470	CNFGIDTO	0009FC30
CNFGIFNM	000A07E0	CNFGINIT	000A0B70	CNFGIPAD	000A1300
CNFGLGTB	000A1ED0	CNFGLLC0	000A2410	CNFGLLC2	000A2780
CNFGLLC3	000A2AE0	CNFGLLC4	000A2EE0	CNFGLLC5	000A3250
CNFGLULM	000A3640	CNFGLUNM	000A3AC0	CNFGMBIT	000A5020
CNFGMSLM	000A52C0	CNFGMXDT	000A5730	CNFGNSNM	000A5A00
CNFGOPTS	000A5C00	CNFGPACE	000A9240	CNFGPAD	000A9650
CNFGPADP	000A9910	CNFGPKSZ	000A9D00	CNFGPORT	000AA050
CNFGPRLM	000AA710	CNFGPROT	000AA920	CNFGPRSW	000AAED0
CNFGPVC	000AB3C0	CNFGPWPR	000ACB80	CNFGRTIN	000ACF10
CNFGRTOT	000AD5B0	CNFGSCLM	000ADD40	CNFGSUBA	000ADFA0
CNFGSUBD	000AE330	CNFGSVC0	000AE720	CNFGSVC3	000AF7C0
CNFGSVC4	000B0590	CNFGSVC5	000B0F30	CNFGSYSL	000B2000
CNFGTAP	000B2A50	CNFGTPNM	000B2F40	CNFGTRAN	000B3270
CNFGTRLM	000B3670	CNFGTRTR	000B38C0	CNFGTYPE	000B4230
CNFGUSTB	000B49C0	CNFGVCLM	000B4F50	CNFGVTAM	000B5770
CONSALRM	00015FE0	CONSCID	00017580	CONSCLD	00017910
CONSCLG	00017C00	CONSDAD	00017EF0	CONSDLCL	00018560
CONSDLP	000193E0	CONSDLU	000195D0	CONSDMAP	0001AA10
CONSDMCH	0001C180	CONSDMEM	0001CD00	CONSDNAS	0001D340
CONSDNWD	0001E0C0	CONSDPCE	0001F000	CONSDPRM	00020010
CONSDRMT	00020CB0	CONSDSTS	00023B80	CONSDTRC	00024220
CONSDVC	00024760	CONSEXEC	00025910	CONSFIND	00026A40
CONSHelp	00027410	CONSIFN	00027DF0	CONSIPAD	00028180
CONSLNAM	00028510	CONSLNCT	000287E0	CONSLUN	00028A90
CONSLUNM	00028E10	CONSMLCL	000290E0	CONSMEM	0002AC00
CONSMON	0002B2C0	CONSMRMT	0002CB00	CONSPAUS	00035470
CONSPID	00035860	CONSPING	00035BF0	CONSPRNT	000373C0
CONSPWTO	00037DD0	CONSQUIT	00038100	CONSRCON	00038E60
CONSRNAM	00039060	CONSSHOW	00039330	CONSSMSG	00039610
CONSSTAT	00039960	CONSTAD	0003A260	CONSTALL	0003A6F0
CONSTBFR	0003AFF0	CONSTBRQ	0003B900	CONSTBST	0003BC10
CONSTCFG	0003BF20	CONSTCON	0003C280	CONSTDAT	0003C800
CONSTDBG	0003D100	CONSTDBK	0003D400	CONSTDSP	0003D730
CONSTIO	0003E070	CONSTLU	0003E960	CONSTLUQ	0003F730
CONSTMCH	000401D0	CONSTMCX	00040D40	CONSTPCE	000418A0
CONSTPRT	00042160	CONSTRTR	00042670	CONSTSUB	00046520
CONSTTSK	00046830	CONSTVC	00046B50	CONSTVCQ	00047580
CONSTWTO	00047F60	CONSUSER	00048260	CONSVARY	00048730
CONSVCN	00049F20	MCHBFR	0005DE40	MCHFCl	0005F2E0

Console Commands

MCHHDTRQ	0005F720	MCHHGTRQ	0005F9C0	MCHHIDRQ	00060070
MCHHL0RQ	00060240	MCHHL2RQ	00060B20	MCHHL3RQ	00060EB0
MCHHL4RQ	00061830	MCHHL5RQ	00061F70	MCHHRQ	00062810
MCHHRSP	00063480	MCHINI	000636F0	MCHLUIN	00065150
MCHNRQB	00065C10	MCHNRQC	00066020	MCHPVCI	00066BB0
MCHRL3RR	000672B0	MCHSOL	00067DA0	MCHSTRT	00069760
MCHSUP	00069DB0	MCHSVCI	0006A290	MCHTMR	0006A850
MCHTR	0006B4C0	MCHTRXD	0006C0F0	MCHTTBLS	0006C2E0
MCHUT1	0006D570	MCHUT2	0006E050	NASCNFG	000917D0
NASCONS	00012F50	NASEND	000B5AB0	NASMAIN	00007000
NASNETV	0004A290	NASPRNT	000534D0	NASTCP	000543F0
NASUTIL	0004CC70	OSUT1	0006EDE0	QLSSCP	0006F250
VCCLAC	00073830	VCCLEAR	00073A00	VCCLRQ	000744D0
VCDAT	00075890	VCDATQ	000762B0	VCINT	00076940
VCRESET	00076D70	VCTR	000774A0	VCUT1	00078120
VTMEXIT	00078D60	VTMRCV1	00079E60	VTMSND1	0007B1D0
VTMSND2	0007C620	VTMTR	0007D870	VTMUT1	0007F890
XFCNFGWA	000925C8	XFNASWA	0000C0B8	XOTBXM	00080F50
XOTBXM2	00081F00	XOTDTDC	00082780	XOTFCDC	00082D90
XOTGTCC	00083840	XOTGTDC	000840A0	XOTINI	00084720
XOTRCV	00084870	XOTSTP	00086000	XOTTR	000862A0
XOTUT1	00088220	XOTXMTc	0008B450	XTPBXM	0008C130
XTPDTDC	0008CC10	XTPFCDC	0008D110	XTPGTCC	0008DAB0
XTPGTDC	0008E1F0	XTPINI	0008E820	XTPRCV	0008E970
XTPSTP	0008F760	XTPTR	0008FA20	XTPUT1	00090B60
XTPXMTc	00090EA0				

DMCH Command - Display Multi-Channel Link

(changed for V2R2M0)

(changed for V2R3M0)

for a specific MCH

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	DMCH	[<i>mchname</i>]	C	230
[LUN= <i>minlun</i> [- <i>maxlun</i>]]		[{ <u>SHOWNAME</u> SHOWADDR}]	N	230
		[{ <u>FMT1</u> FMT2 FMT3}]	A	230

or for a collection of MCHs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	DMCH	[{ <u>SHOWNAME</u> SHOWADDR}]	N	230
[IFN= <i>minifn</i> [- <i>maxifn</i>]]		[{ <u>FMT1</u> FMT2 FMT3}]	A	230
[LUN= <i>minlun</i> [- <i>maxlun</i>]]		[ALLID]		
		[ALLIFN]		
		[ALLLUN]		

This command will display HNAS MCH state information.

- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting DMCH processing to the named MCH only for the specified **LUN=** values.
- When **LUN=*minlun*[-*maxlun*]** is specified, DMCH processing is restricted to the selected MCHXs on the selected MCHs. If **LUN=0** is specified, DMCH processing is for all MCHXs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), DMCH processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, DMCH processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, DMCH processing is restricted to the selected PCEs. If **ID=0** is specified, DMCH processing is for all PCEs.
- The **SHOWNAME** operand (the default) requests that the name of the TYPE=MCH|XTP REMOTE definition statement is to be displayed in the NAME/ADDRESS column.
- The **SHOWADDR** operand requests that the memory address of the MCH control block is to be displayed in the NAME/ADDRESS column.
- The **FMT1**, **FMT2** and **FMT3** operands (for format 1, 2 and 3) control the type of information that is displayed. Currently, **FMT1** (the default) is the same as **SHOWNAME** and **FMT2** is the

Console Commands

same as **SHOWADDR.FMT3**, which is valid for the LOCAL console only, causes the DLU command to be executed after the DMCH command completes. This will provide a display of the selected MCHs and all LUs that are associated with those MCHs. If FMT3 is entered from a REMOTE console, the DMCH command will be rejected.

Note: The SHOWxxx and FMTx operands are processed in the order specified. The last value you specify is the winner. For example, if you enter SHOWADDR FMT1, SHOWNAME will override SHOWADDR because FMT1 includes SHOWNAME.

- The **ALLID** parameter is treated as though RNM= omitted and ID=0 were in effect even if they are not. This means that all PCEs are scanned for their MCH components.
- The **ALLIFN** parameter is treated as though IFN=0 was in effect even if it is not. This means that all MCHs are displayed for each PCE.
- The **ALLLUN** parameter is treated as though LUN=0 was in effect even if it is not. This means that all MCHXs are displayed for each MCH.

The following is an example of the heading and information produced by the **DMCH** command.

<u>PID</u>	<u>IFN</u>	<u>LUN</u>	<u>NAME</u> <u>ADDRESS</u>	<u>MCHOPT</u>	<u>VCCT</u>	<u>VCLM</u>	<u>STAT</u>	<u>GNOPT</u>	<u>MCHNAME</u>	<u>CTCPNAME</u>
										<-CTCP PLU name
										<- MCH SLU name
										<- MCH config options(4)
										<- MCHX state (3)
										<- Maximum number of VCs (VCLMT)
										<- Current number of active VCs
										<- MCH runtime options (2)
										<- MCH MCHX name or address (1)
										<- MCHX (GATE) LU number
										<- MCH interface number for an XTP router, blank otherwise
										<- PCE ID for the MCH

Console Commands

The following display is produced when `DMCH BPM` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

<u>PID</u>	<u>IFN</u>	<u>LUN</u>	<u>NAME</u>	<u>MCHOPT</u>	<u>VCCT</u>	<u>VCLM</u>	<u>STAT</u>	<u>GNOPT</u>	<u>MCHNAME</u>	<u>CTCPNAME</u>
0008	003		R1M3	M IOFIO	0005	0256	ACT	G I		
		01		MD			O		NASC00A3	
0008	004		R1M4	M IOFIO	0000	0064	ACT	G I		
		01		MD			O		NASC00A4	
000D			MCH1	M IOFIO	0005	0128	ACT	G I		
		01		MD			O		NASC0006	

The following display is produced when `DMCH BPM FMT2` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

<u>PID</u>	<u>IFN</u>	<u>LUN</u>	<u>ADDRESS</u>	<u>MCHOPT</u>	<u>VCCT</u>	<u>VCLM</u>	<u>STAT</u>	<u>GNOPT</u>	<u>MCHNAME</u>	<u>CTCPNAME</u>
0008	003		00096200	M IOFIO	0005	0256	ACT	G I		
		01	0009CCC0	MD			O		NASC00A3	
0008	004		0009EA18	M IOFIO	0000	0064	ACT	G I		
		01	000A0E60	MD			O		NASC00A4	
000D			000A12B8	M IOFIO	0005	0128	ACT	G I		
		01	000A7B78	MD			O		NASC0006	

The following display is produced when `DMCH ID=8 IFN=3 LUN=1` is entered.

<u>PID</u>	<u>IFN</u>	<u>LUN</u>	<u>NAME</u>	<u>MCHOPT</u>	<u>VCCT</u>	<u>VCLM</u>	<u>STAT</u>	<u>GNOPT</u>	<u>MCHNAME</u>	<u>CTCPNAME</u>
0008	003		R1M3	M IOFIO	0005	0256	ACT	G I		
		01		MD			O		NASC00A3	

Console Commands

General notes for DMCH:

- 1) The **NAME/ADDRESS** column identifies either the MCH name (SHOWNAME) or the MCH address (SHOWADDR). The name that is used comes from the TYPE=MCH|XTP REMOTE definition statement.
- 2) The **MCHOPT** column identifies HNAS options that are currently active for the MCH or MCHX. A blank indicates that the option is not active. The following options can be displayed for the MCH.

```
M.IOFIO
| | | | |
| | | | | |<- O => TRCMCH OCLR
| | | | | |<-- I => TRCMCH ICLR
| | | | |<--- F => TRCMCH ICRF
| | | |<---- O => TRCMCH OCR
| | |<----- I => TRCMCH ICR
| |<----- reserved
|<----- M => TRCMCH ON
```

The following options can be displayed for the MCHX.

```
MD.....
| | | | |
| | | | | |<- reserved
| | | | | |<-- reserved
| | | | |<--- reserved
| | | |<---- reserved
| | |<----- reserved
| |<----- D => TRCMCHX DBK
|<----- M => TRCMCHX ON
```

- 3) The STAT column identifies the current MCH and MCHX state.

For an MCH, the state can be **ACT** or **OFLN**. ACT is displayed if the MCH was configured active via the INIT=ACT operand (the default) or made active via the VARY ON console command. OFLN is displayed if the MCH was configured inactive via the INIT=IDLE operand or made inactive via the VARY OFF console command.

For an MCHX, a blank indicates state inactivity. The following states can be displayed.

```
OENC..
| | | | |
| | | | | |<- reserved
| | | | | |<-- reserved
| | | |<--- C => GATEFC closed
| | |<---- N => GATEFC nogo
| |<----- E => Permanent open error
|<----- O => ACB is open
```

- 4) The **GNOPT** column identifies the MCH (REMOTE) configuration options. A blank indicates that the option is not active. The following options can be displayed.

```
GSPC .
| | | |
| | | | <- reserved
| | | | <-- Y => CONNECT=YES
| | | |   C => CONNECT=CUDO
| | | |   S => CONNECT=SUBD
| | | | <--- I => PAD=INTEG
| | | |   X => PAD=TRANSP
| | | | <---- S => SUBADDR=YES
| | | | <----- G => GATE=GENERAL
```

Console Commands

DNAS Command - Display HNAS Information

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DNAS	[{APAR [<i>apapid</i>] USERMODS [<i>probid</i>] } {JCL DDNAMES} {NOIDENT}	C A A A	220 230 240 240

This command will display information about the HNAS system you are using. Information provided includes the HNAS distribution level, type, creation date and time as well as maintenance base and recent APAR ID assignment and APAR ID history.

- Enter **DNAS** to display the HNAS product distribution system and maintenance information summary. The following is an example of the display produced when **DNAS** is entered with no arguments for a permanent distribution (effective with APAR 2400103).

```

HOST NAS INFORMATION FOLLOWS
  HNAS VERSION=V2R4M0 DIST=NON-SMP                      1
  HNAS PROGRAM RUNNING UNDER z/OS 01.10.00             2
  HNAS PRODUCT INSTALLED UNDER z/OS 01.10.00           3
  HNAS PRODUCT CREATED UNDER z/OS 01.11.00             4
  DNAS COMMAND ENTERED AT 18:54:01 ON 2010/12/01       5
  HNAS PROGRAM STARTED AT 18:54:01 ON 2010/12/01       6
  HNAS PRODUCT INSTALLED AT 08:12:00 ON 2010/11/29     7
  HNAS PRODUCT CREATED AT 08:19:12 ON 2010/11/28      8
  HNAS PRODUCT CREATED WITH MAINTENANCE THROUGH APAR 2400106 9
  MOST RECENT MAINTENANCE APPLIED IS APAR 2400106     10
  AUTH=000 SHIPID=1100000011199999                    11
  CUSTID=SFD_99999                                     12
  CUSTINFO=COMM-PRO ASSOCIATES                          13
  MAINTENANCE/USE ANNIVERSARY DATE IS 2010/12/31      14
  DATAFONO SUPPORT IS INCLUDED                         15
  CUSTMAC=COMM1.TEST.HNASMAC                           16
  CUSTOBJ=COMM1.TEST.HNASOBJ                           17
                                                         18
                                                         19
  APARID MAINTENANCE STATUS                             20
  ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400106 21

- or -

  APARID MAINTENANCE STATUS                             20
  apapid NOT INSTALLED                                 21
  :
  apapid NOT INSTALLED                                 n

```

For a trial distribution, DNAS display records 11 and 14 will appear as follows (for example):

```
AUTH=032D SHIPID=1100000011199999          11
TRIAL PERIOD EXPIRATION DATE IS 2010/12/31  14
```

Note: Line numbers to the right of the DNAS display above are for reference only.

Display line 1 shows the HNAS product Version, Release and Modification level and the distribution media type (SMP/E or NON-SMP).

Display line 2 shows the host system and version level under which HNAS is running.

Display line 3 shows the host system and version level under which HNAS was installed. This may be different than display line 2 if the HNAS load library is moved from one system to another.

Display line 4 shows the host system and version level under which HNAS was created. Effective with APAR 2400103, display line 4 should show z/OS 01.11.00.

Display line 5 shows the time and date when the DNAS command was entered.

Display line 6 shows the time and date when the HNAS program was started.

Display line 7 shows the time and date when the HNAS product was installed.

Display line 8 shows the time and date when the HNAS distribution was created.

Display line 9 shows the highest APAR number that was included in the HNAS distribution when it was created (***shipped_APARID***).

Display line 10 shows the highest APAR number of maintenance applied to HNAS after the distribution was installed at the customer site (***applied_APARID***). The *shipped_APARID* and the *applied_APARID* will be the same if no maintenance has been applied since the original HNAS install. If there are no missing APARs between the *shipped_APARID* and the *applied_APARID* (all APAR numbers are consecutive) then line 21 will be displayed as **'ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400104'**. If, however, there are 'holes' between the *shipped_APARID* and the *applied_APARID* then the missing APAR(s) are displayed starting at line 21 as **'*aparid* NOT INSTALLED'**.

Note: Display line 10 represents the highest apar number on the system (not the most recent APAR applied). If this number is different than the number on line 9, the customer support representative will know that maintenance was applied to the product (HNAS customer support requires that the DNAS output be provided whenever a problem is reported or a product refresh or upgrade is requested). While the default DNAS command does not identify all of the APARS that are on the HNAS system (unless DNAS APAR is specified), it does identify the base APAR level (***shipped_APARID***) and highest

Console Commands

numbered APAR applied (***applied*_APARID**). To identify all APARs on the HNAS system you would have to execute the **DNAS APAR** or **DMAP APAR** console command.

Display line 11 shows the customer SHIPID and number of months (M), weeks (W) or days (D) that the product is authorized to use starting from the distribution creation date shown in display line 8. AUTH=000 implies there is no authorization expiration (the distribution is permanent).

Display line 12 is displayed if optional customer identification was provided when the HNAS distribution was created.

Display line 13 is displayed if optional customer information was provided when the HNAS distribution was created.

Display line 14 shows the HNAS Maintenance/Use Anniversary Date (EOMDATE) for a permanent distribution (normally one year after the program was purchased or renewed) or the Trial Period Expiration Date (EOTDATE) for trial distribution.

Note: The Maintenance/Use Anniversary Date is based upon the Prepaid Maintenance or Purchase Order period that was in effect when the edistribution was generated. The date (yyyy/mm/dd) is normally updated as HNAS product refreshes are deployed with current billing information.

Display line 15 is displayed if HNAS was distributed with optional Datafono support.

Display lines 16 and/or 17 are displayed if a custom MACLIB and/or OBJLIB were used to create the HNAS distribution.

Note: For a permanent distribution, when an EOMKEY= value is supplied via the PARM= operand on the HNAS EXEC statement or as an argument for the MMEM console command, display lines 11, 14 and 18 will be modified as follows:

```
AUTH=000 SHIPID=1100000011199999 EMKYID=1100000011199999      11
MAINTENANCE/USE ANNIVERSARY DATE IS 2010/12/31*              14
EOMKEY=1760932717613627 IS IN EFFECT                         18
```

The EMKYID= value on display line 11 is the SHIPID= value extracted from the EOMKEY= value. This value *can be* different from the SHIPID= value on display line 11 in the first 2 digits only. These digits are reserved for Comm-Pro use.

The date displayed on display line 14 is the extended EOMDATE which is flagged with an asterisk (*).

The EOMKEY= text on display line 18 shows the EOMKEY= that was provided via the EXEC PARM= operand or the MMEM console command.

Note: EOMKEY= parameter logic was introduced into 240 via APAR 2400095.

Note: For a trial distribution, when an EOTKEY= value is supplied via the PARM= operand on the HNAS EXEC statement or as an argument for the MMEM console command, display lines 11, 14 and 18 will be modified as follows:

```
AUTH=060D SHIPID=1100000011199999 ETKYID=1100000011199999      11
TRIAL PERIOD EXPIRATION DATE IS 2011/01/28*                    14
EOTKEY=4961000737880526 IS IN EFFECT                          18
```

The ETKYID= value on display line 11 is the SHIPID= value extracted from the EOTKEY= value. This value *can be* different from the SHIPID= value on display line 11 in the first 2 digits only. These digits are reserved for Comm-Pro use.

The date displayed on display line 14 is the extended EOTDATE which is flagged with an asterisk (*).

The EOTKEY= text on display line 18 shows the EOTKEY= that was provided via the EXEC PARM= operand or the MMEM console command.

Note: EOTKEY= parameter logic was introduced into 240 via APAR 2400106.

Console Commands

General notes for DNAS:

- 1) The AUTH= field in display line 11 identifies whether or not the distribution has a trial period. A value of 000 indicates that the distribution is permanent (no expiration) while non-zero values identify the number of Days, Weeks or Months that the distribution will operate beyond the "HNAS PRODUCT CREATED AT hh:mm:ss ON yyyy/mm/dd" date on display line 8.

```
AUTH=limit{M|W|D}      (limit=months|weeks|days, 0=>PERMANENT >0=>TRIAL)
```

The SHIPID= field in display line 11 contains a Comm-Pro assigned customer reference number as well as flags depicting distribution types (SMP/E versus non-SMP), the presence of custom user modifications (enhancements) within the distribution and how the EOMDATE will be processed.

```
SHIPID=distribution-type_CustomUserMod-flags_custid#
0000000011099999 <-- sample non-smpe with custom macro/object.
||
||      |||||
||      ||||| |<--- CUSTOMER ID REFERENCE NUMBER: nnnnn
||
||      ||||| |<----- DATAFONO FLAG
||      ||||| | 1 => DATAFONO SUPPORT INCLUDED
||      ||||| | 0 => NO DATAFONO SUPPORT INCLUDED
||
||      ||||| |<----- CUSTOBJ FLAG
||      ||||| | 1 => CUSTOM OBJECT CHANGES INCLUDED
||      ||||| | 0 => NO CUSTOM OBJECT CHANGES INCLUDED
||
||      ||||| |<----- CUSTMAC FLAG
||      ||||| | 1 => CUSTOM MACRO CHANGES INCLUDED
||      ||||| | 0 => NO CUSTOM MACRO CHANGES INCLUDED
||
||      ||||| |<----- CUSTSRC FLAG
||      ||||| | 1 => CUSTOM SOURCE CHANGES INCLUDED
||      ||||| | 0 => NO CUSTOM SOURCE CHANGES INCLUDED
||
||      ||||| |<----- SMPDIST FLAG
||      ||||| | 1 => SMP/E DISTRIBUTION
||      ||||| | 0 => NON-SMP DISTRIBUTION
||
||      ||||| |<----- CP FLAGS
||      ||||| | 0|1 => INTERNAL USE.
```

- 2) Following display line 20, DNAS will now show a list of missing APAR IDs if the *applied*_APARID is different than the *shipped*_APARID that was incorporated when the HNAS distribution was created. For example, if you were shipped HNAS with APAR 2400059 incorporated and you then installed APAR 2400062 separately, the following would be displayed if you did not also install the 'pre-reqs' for APAR 2400062:

```
APARID   MAINTENANCE STATUS
2400060   NOT INSTALLED
```

```
2400061 NOT INSTALLED
```

- 3) If there is no missing maintenance, that is, if there are no gaps between the *shipped_APARID* value and the *applied_APARID* value (all pre-reqs were also installed), line 21 will display as follows:

```
ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400104
```

- 4) The missing APARID logic is only executed when DNAS is entered *without* the NOIDENT parameter.
- 5) Enter **DNAS APAR** to display all APAR entry identifiers (like 2400095) and custom modification entry identifiers (like P04057A) for all HNAS modules in alpha-numeric ID order in addition to the standard DNAS identification summary.
- 6) The **DMAP APAR** command creates a table at HNAS initialization that is sorted in alpha-numeric APARID order so that it can be displayed using the **DNAS APAR** command. Note that this enhancement was introduced by APAR 2300004.

The following is an example of the display produced when **DNAS APAR** is entered.

```
HOST NAS INFORMATION FOLLOWS
  HNAS VERSION=V2R4M0 DIST=NON-SMP                      1
  HNAS PROGRAM RUNNING UNDER z/OS 01.10.00             2
  HNAS PRODUCT INSTALLED UNDER z/OS 01.10.00           3
  HNAS PRODUCT CREATED UNDER z/OS 01.11.00             4
  DNAS COMMAND ENTERED AT 07:33:27 ON 2010/09/16        5
  HNAS PROGRAM STARTED AT 07:33:26 ON 2010/09/16        6
  HNAS PRODUCT INSTALLED AT 07:29:00 ON 2010/09/16      7
  HNAS PRODUCT CREATED AT 07:08:18 ON 2010/09/16        8
  HNAS PRODUCT CREATED WITH MAINTENANCE THROUGH APAR 2400104 9
  MOST RECENT MAINTENANCE APPLIED IS APAR 2400104      10
  AUTH=000 SHIPID=110000001119999                      11
  CUSTID=SFD_99999                                      12
  CUSTINFO=COMM-PRO ASSOCIATES                          13
  MAINTENANCE/USE ANNIVERSARY DATE IS 2010/09/31       14
  DATAFONO SUPPORT IS INCLUDED                        15
  CUSTMAC=COMM1.TEST.HNASMAC                           16
  CUSTOBJ=COMM1.TEST.HNASOBJ                           17
  18
  19
  APARID MAINTENANCE STATUS                             20
  ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400104  21
  22
  APARID  MODULE  APPLIED MAINTENANCE                  23
  2400000  NASMAIN
  2400001  CNFGOPTS
  CNFGPRLM
  CNFGPRSW
  CONSDMAP
  CONSDMCH
  CONSDNAS
```

Console Commands

```
CONSPRNT
CONSTALL
CONSTPRT
CONSTRTR
CONSVARY
NASCNFG
NASCONS
NASMAIN
NASPRNT
NASUTIL
:
2400104  CONSDNAS
```

- 7) If an APAR number is unused (skipped), is special or is deferred to a later release, **NASEND** will be displayed as the module name.
- 8) The **DNAS APAR** and **DMAP APAR** commands now display HNASMACX and/or HNASOBJX as an APARID when CustomUserMods are included in the HNAS product distribution. The HNAS distribution process has been modified to generate an 'APARID' of HNASMACX and/or HNASOBJX if a custom MACLIB and/or OBJLIB has been included in the distribution. These APARIDs are contained in the **NASEND** module and will be displayed in the HNAS SYSPRINT when the DMAP APAR console command is executed when HNAS is started. These APARIDs will also display whenever the DNAS APAR console command is executed. These APARIDs are intended to provide an additional reminder that custom modifications are on the HNAS system and, hence, caution should be exercised when applying maintenance. Please refer to the DMAP console command description for additional information. Note also that the majority of customers don't have custom enhancements (CustomUserMods).
- 9) Enter **DNAS USERMODS** to display only custom modification entry identifiers or problem identifiers (for example, P04057A) for all HNAS modules in alpha-numeric ID order as well as the standard summary. Note that this enhancement was introduced by APAR 2300065.

The following is an example of the display produced when **DNAS USERMODS** is entered.

```
HOST NAS INFORMATION FOLLOWS
  HNAS VERSION=V2R4M0 DIST=NON-SMP                      1
  HNAS PROGRAM RUNNING UNDER z/OS 01.10.00             2
  HNAS PRODUCT INSTALLED UNDER z/OS 01.10.00           3
  HNAS PRODUCT CREATED UNDER z/OS 01.11.00             4
  DNAS COMMAND ENTERED AT 07:33:27 ON 2010/09/16        5
  HNAS PROGRAM STARTED AT 07:33:26 ON 2010/09/16        6
  HNAS PRODUCT INSTALLED AT 07:29:00 ON 2010/09/16      7
  HNAS PRODUCT CREATED AT 07:08:18 ON 2010/09/16        8
  HNAS PRODUCT CREATED WITH MAINTENANCE THROUGH APAR 2400104  9
  MOST RECENT MAINTENANCE APPLIED IS APAR 2400104      10
  AUTH=000 SHIPID=1100000011199999                     11
  CUSTID=SFD_99999                                      12
  CUSTINFO=COMM-PRO ASSOCIATES                          13
  MAINTENANCE/USE ANNIVERSARY DATE IS 2010/09/31      14
```

```

DATAFONO SUPPORT IS INCLUDED                                15
CUSTMAC=COMM1.TEST.HNASMAC                                16
CUSTOBJ=COMM1.TEST.HNASOBJ                                17
                                                            18
                                                            19
APARID MAINTENANCE STATUS                                  20
ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400104      21
                                                            22
APARID MODULE APPLIED MAINTENANCE                         23
NO USERMODS PRESENT                                       24

- or -

APARID MODULE APPLIED MAINTENANCE                         23
  probid  module                                         24
:
  probid  module                                         n

```

- 10) Enter `DNAS APAR aparid` or `USERMODS probid` to restrict the display of applied maintenance to the specified *aparid* or *probid* only.**

For example: **DNAS APAR 2400104** will produce following display:

```

HOST NAS INFORMATION FOLLOWS
  HNAS VERSION=V2R4M0 DIST=NON-SMP                        1
  HNAS PROGRAM RUNNING UNDER z/OS 01.10.00                2
  HNAS PRODUCT INSTALLED UNDER z/OS 01.10.00              3
  HNAS PRODUCT CREATED UNDER z/OS 01.11.00                4
  DNAS COMMAND ENTERED AT 07:33:27 ON 2010/09/16          5
  HNAS PROGRAM STARTED AT 07:33:26 ON 2010/09/16          6
  HNAS PRODUCT INSTALLED AT 07:29:00 ON 2010/09/16        7
  HNAS PRODUCT CREATED AT 07:08:18 ON 2010/09/16          8
  HNAS PRODUCT CREATED WITH MAINTENANCE THROUGH APAR 2400104 9
  MOST RECENT MAINTENANCE APPLIED IS APAR 2400104        10
  AUTH=000 SHIPID=1100000011199999                       11
  CUSTID=SFD_99999                                        12
  CUSTINFO=COMM-PRO ASSOCIATES                             13
  MAINTENANCE/USE ANNIVERSARY DATE IS 2010/09/31          14
  DATAFONO SUPPORT IS INCLUDED                             15
  CUSTMAC=COMM1.TEST.HNASMAC                               16
  CUSTOBJ=COMM1.TEST.HNASOBJ                               17
                                                            18
                                                            19
APARID MAINTENANCE STATUS                                  20
ALL MAINTENANCE ON THROUGH MOST RECENT APAR 2400104      21
                                                            22
APARID MODULE APPLIED MAINTENANCE                         23
2400104 CONSDNAS                                          24

```

- 11) Enter `DNAS NOIDENT parms` to inhibit display lines 1 through 19.**

- 12) Enter `DNAS JCL|DDNAMES` to display the HNAS jobname and all DDNAMEs in use by HNAS.**

Console Commands

For example: **DNAS JCL** will produce following display:

```
HOST NAS INFORMATION FOLLOWS
LDNAS240 DDNAME      VOLSER UNIT      TTR-STC  STB-UCB
          STEPLIB   USER04 AA4      8E1C9000 80F3F8C8
          USER04   AA4      8DF6D800 80F3F8C8
          USER04   AA4      8DF85800 80F3F8C8
          VTAMLIB   Z4RES1 A80      8DF9D800 80F3E5A8
          USER04   AA4      8DFB5800 80F3F8C8
          USER04   AA4      8DFCD800 80F3F8C8
          SYSPRINT SPOOL    JES      8DFE5800 80000000
          SYSPRNT1 SPOOL    JES      8DFFD800 80000000
          SYSPRNT2 WORK08 AB8      8E015800 90F40368
          SYSPRNT3 SPOOL    JES      8E02D800 80000000
          SYSABEND SPOOL    JES      8E045800 80000000
          SYSUDUMP SPOOL    JES      8E05D800 80000000
          AUTH      USER04 AA4      8E075800 80F3F8C8
          NEWDEFN   USER04 AA4      8E08D800 80F3F8C8
          CMDLIST1 USER04 AA4      8E0E1800 80F3F8C8
          CMDLIST2 USER04 AA4      8D431800 80F3F8C8
          CMDLIST3 USER04 AA4      8D449800 80F3F8C8
          CMDLIST4 USER04 AA4      8D461800 80F3F8C8
          CONFIG    SPOOL    JES      8D479800 80000000
ALL DDNAMES LISTED
```

Note: The **DNAS** command (without an argument) is now executed when HNAS is started without having to be specified in the CONCMDQ= operand. This is done unconditionally regardless of the commands listed in CONCMDQ=. As a result, DNAS is no longer the default when CONCMDQ= is omitted. The DNAS command is also executed unconditionally during FASTRUN execution without having to specify CONCMDQ as a FASTRUN follower in the PARM= operand. FASTRUN or FASTRUN CONCMDQ are treated the same way effective with APAR 2400103.

DNWDF Command - Display New Definition CDF (Privileged)

(added for V2R3M0)
(changed for V2R4M0)

for the BUILD definition statement

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DNWDF	BUILD	A	230
		[<u>ALLPARMS</u>]		
		[NOSHOWPFX]		
		[ALRMCART [=]]		
		[ALRMFLTR [=]]		
		[ALRMLMTS [=]]		
		[APPLNAME [=]]		
		[BFRLMT [=]]		
		[BFRSIZ [=]]		
		[CONCMDQ [=]]		
		[CONLMT [=]]		
		[CONPRMT [=]]		
		[CONPSWD [=]]		
		[IDLETO [=]]		
		[LOGTAB [=]]		
		[MSGLMT [=]]		
		[NASNAME [=]]		
		[OPTIONS [=]]		
		[PRTLMT [=]]		
		[PRTSWLST [=]]	N	240
		[PULSE [=]]	A	240
		[SCHEDULE [=]]	A	240
		[TCPNAME [=]]		
		[TRCLMT [=]]		
		[TRCTRAP [=]]		
		[USSTAB [=]]		

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[VCLMT [=]]		

or for a specific LOCAL definition statement

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LNМ= <i>lclname</i>	DNWDF	[<i>lclname</i>]	A	230
		LOCAL		
		[ALLPARMS]		
		[NOSHOWPFX]		
		[INIT [=]]		
		[IPADDR [=]]		
		[OPTIONS [=]]		
		[PORT [=]]		
		[RTEIN [=]]		
		[RTEOUT [=]]		
		[SOCLMT [=]]		
		[TCPNAME [=]]		
		[TYPE [=]]		

or for a specific REMOTE definition statement

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
RNM= <i>rmtname</i>	DNWDF	[<i>rmtname</i>]	A	230
		REMOTE		
		[ALLPARMS]		
		[NOSHOWPFX]		
		[APPLNAME [=]]		
		[CONNECT [=]]		
		[CTCP [=]]		
		[CUD [=]]		
		[CUD0 [=]]		

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[DCEADDR [=]]		
		[DFLNAME [=]]	N	240
		[DFXNAME [=]]	N	240
		[DTEADDR [=]]		
		[FAC [=]]		
		[GATE [=]]		
		[HOME [=]]		
		[IDBLK [=]]		
		[IDNUM [=]]		
		[IDLETO [=]]		
		[IFNUM [=]]		
		[INIT [=]]		
		[IPADDR [=]]		
		[LLC0 [=]]		
		[LLC3 [=]]		
		[LLC4 [=]]		
		[LLC5 [=]]		
		[LOGTAB [=]]		
		[LUNAME [=]]		
		[MAXDATA [=]]		
		[MBITCHN [=]]		
		[OPTIONS [=]]		
		[PACE [=]]		
		[PAD [=]]		
		[PADPARM [=]]		
		[PORT [=]]		
		[PROTOCOL [=]]	N	240
		[PVC [=]]		
		[PWPROT [=]]		

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[SUBADDR [=]]		
		[SUBD [=]]		
		[SVC0 [=]]		
		[SVC3 [=]]		
		[SVC4 [=]]		
		[SVC5 [=]]		
		[SYSL [=]]		
		[TAP [=]]		
		[TRAN [=]]		
		[TYPE [=]]		
		[USSTAB [=]]		
		[VCLMT [=]]		

or for the entire CDF

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DNWDF	[<u>ALL</u>]	A	230
		[SHOWCOMMENTS]		
		[NOSHOWPFX]		

This command will display the records that were specified in the CDF or modified later via the MLCL or MRMT command.

To summarize, you may enter a list of CDF definition statement operands that you want to display as follows:

DNWDF Action Matrix

PARAMETER	ACTION	BUILD	LOCAL	REMOTE
ALL or omitted	Display value for all CDF operand records.			
SHOWCOMMENTS	Display CDF comment records when ALL CDF operand records are displayed.			
NOSHOWPFX	Inhibit NEWDEFN prefix control information from being displayed when CDF records are displayed.			
ALRMCART=	Display value for ALRMCART= operand.		I	I

Console Commands

PARAMETER	ACTION	BUILD	LOCAL	REMOTE
ALRMFLTR=	Display value for ALRMFLTR= operand.		I	I
ALRMLMTS=	Display value for ALRMLMTS= operand.		I	I
APPLNAME=	Display value for APPLNAME= operand.		I	
BFRLMT=	Display value for BFRLMT= operand.		I	I
BFRSIZ=	Display value for BFRSIZ= operand.		I	I
CONCMDQ=	Display value for CONCMDQ= operand.		I	I
CONLMT=	Display value for CONLMT= operand.		I	I
CONNECT=	Display value for CONNECT= operand.	I	I	
CONPRMT=	Display value for CONPRMT= operand.		I	I
CONPSWD=	Display value for CONPSWD= operand.		I	I
CTCP=	Display value for CTCP= operand.	I	I	
CUD=	Display value for CUD= operand.	I	I	
CUD0=	Display value for CUD0= operand.	I	I	
DCEADDR=	Display value for DCEADDR= operand.	I	I	
DFLNAME=	Display value for DFLNAME= operand.	I	I	
DFXNAME=	Display value for DFXNAME= operand.	I	I	
DTEADDR=	Display value for DTEADDR= operand.	I	I	
FAC=	Display value for FAC= operand.	I	I	
GATE=	Display value for GATE= operand.	I	I	
HOME=	Display value for HOME= operand.	I	I	
IDBLK=	Display value for IDBLK= operand.	I	I	
IDNUM=	Display value for IDNUM= operand.	I	I	
IDLETO=	Display value for IDLETO= operand.		I	
IFNUM=	Display value for IFNUM= operand.	I	I	
INIT=	Display value for INIT= operand.	I		
IPADDR=	Display value for IPADDR= operand.	I		
LLC0=	Display value for LLC0= operand.	I	I	
LLC3=	Display value for LLC3= operand.	I	I	
LLC4=	Display value for LLC4= operand.	I	I	
LLC5=	Display value for LLC5= operand.	I	I	
LOGTAB=	Display value for LOGTAB= operand.		I	
LUNAME=	Display value for LUNAME= operand.	I	I	
MAXDATA=	Display value for MAXDATA= operand.	I	I	

Console Commands

PARAMETER	ACTION	BUILD	LOCAL	REMOTE
MBITCHN=	Display value for MBITCHN= operand.	I	I	
MSGLMT=	Display value for MSGLMT= operand.		I	I
NASNAME=	Display value for NASNAME= operand.		I	I
OPTIONS=	Display value for OPTIONS= operand.			
PACE=	Display value for PACE= operand.	I	I	
PAD=	Display value for PAD= operand.	I	I	
PADPARM=	Display value for PADPARM= operand.	I	I	
PKTSIZ=	Display value for PKTSIZ= operand.	I	I	
PORT=	Display value for PORT= operand.	I		
PROTOCOL=	Display value for PROTOCOL= operand.	I	I	
PRTLMT=	Display value for PRTLMT= operand.		I	I
PRTSWLST=	Display value for PRTSWLST= operand.		I	I
PULSE=	Display value for PULSE= operand.		I	I
PVC=	Display value for PVC= operand.	I	I	
PWPROT=	Display value for PWPROT= operand.	I	I	
RTEIN=	Display value for RTEIN= operand.	I		I
RTEOUT=	Display value for RTEOUT= operand.	I		I
SCHEDULE=	Display value for SCHEDULE= operand.		I	I
SOCLMT=	Display value for SOCLMT= operand.	I		I
SUBADDR=	Display value for SUBADDR= operand.	I	I	
SUBD=	Display value for SUBD= operand.	I	I	
SVC0=	Display value for SVC0= operand.	I	I	
SVC3=	Display value for SVC3= operand.	I	I	
SVC4=	Display value for SVC4= operand.	I	I	
SVC5=	Display value for SVC5= operand.	I	I	
SYSL=	Display value for SYSL= operand.	I	I	
TAP=	Display value for TAP= operand.	I	I	
TCPNAME=	Display value for TCPNAME= operand.			I
TRAN=	Display value for TRAN= operand.	I	I	
TRCLMT=	Display value for TRCLMT= operand.		I	I
TRCTRAP=	Display value for TRCTRAP= operand.		I	I
TYPE=	Display value for TYPE= operand.	I		
USSTAB=	Display value for USSTAB= operand.		I	

Console Commands

PARAMETER	ACTION	BUILD	LOCAL	REMOTE
VCLMT=	Display value for VCLMT= operand.		I	

Legend: For the definition statement *type* column: I=> Invalid, blank=> supported (see Console Command Parameter Action Matrix Keys description on page CONS-21 for additional information).

If no operand list is specified, **ALL** is assumed which causes all CDF records to be displayed.

The following is an example of the heading and information produced by the **DRMT** command.

```
<NEWDEFN  PREFIX>
RECADDR   DDOOSSEE  NAME           DEF           OPER
|
|
|                                     |<- CDF Operand
|                                     |<- CDF definition statement type
|                                     |   (BUILD, LOCAL, REMOTE)
|
|                                     |<- Resource name
|
|<- DD = definition ID (80=>BUILD, 40=>LOCAL, 20=>REMOTE)
|   OO = operand ID (00=>ALRMCART, 01=>ALRMFLTR, etc.)
|   SS = start of operand data offset
|   EE = end of operand data offset
|
|<- NEWDEFN record memory address
```

Console Commands

The following display is produced when `DNWDF BUILD` is entered. Note that comments are truncated because the `NEWDEFN` prefix (`RECADDR DDOOSSEE`) is present.

```
RECADDR DDOOSSEE NAME      DEF  OPER
0011BA70 8001181F          BUILD ALRMFLTR=(ALLOW,
0011BAD4 80010F1B                NAS3****(P))
0011BB9C 80041619                BFRLMT=500           ; BUFFER POOL REQUIREM
0011BC00 80051619                BFRSIZ=236          ; 236, 708, 280 1078(1
0011C628 80071617                CONLMT=2            ; TOTAL NUMBER OF RCON
0011C68C 80091722                CONPRMT='ZDTFCS1> ` ; CONSOLE PROMPT.
0011C6F0 800A171B                CONPSWD=XXXX        ;
0011C754 8017161A                IDLETO=1440         ; NNNN MINUTES - INACT
0011C7B8 8024161A                MSGLMT=1000         ; MAX TCP/IP MSG REQUE
0011C81C 8026171F                NASNAME=NAST0TSO   ; OUR NAME
0011C880 802E161D                PRTLMT=2250000     ; TOTAL NUMBER PRINT R
0011CAD8 802F181E                PRTSWLST=(LOOP,
0011CB3C 802F0F1B                SWITCHAT6PM,
0011CBA0 802F0F18                SYSPRNT1,
0011CC04 802F0F18                SYSPRNT2,
0011CC68 802F0F18                SYSPRNT3)
0011CCCC 803E171C                TCPNAME=TCPIP      ; TCP/IP ADDRESS SPACE
0011CD30 8040161D                TRCLMT=0004096     ; TRACE TABLE REQUIREM
0011D0B4 8043161E                USSTAB=ISTINCDT    ; IBM STANDARD USSTAB
```

The following display is produced when `DNWDF BUILD NOSHOWPF` is entered. Note that comments are not truncated because the `NEWDEFN` prefix (`RECADDR DDOOSSEE`) is not present.

```
NAME      DEF  OPER
BUILD ALRMFLTR=(ALLOW,
        NAS3****(P))
        BFRLMT=500           ; BUFFER POOL REQUIREMENT.
        BFRSIZ=236          ; 236, 708, 280 1078(1024+52)
        CONLMT=2            ; TOTAL NUMBER OF RCONS
        CONPRMT='ZDTFCS1> ` ; CONSOLE PROMPT.
        CONPSWD=XXXX        ;
        IDLETO=1440         ; NNNN MINUTES - INACTIVITY T/O.
        MSGLMT=1000         ; MAX TCP/IP MSG REQUEST LMT.
        NASNAME=NAST0TSO   ; OUR NAME
        PRTLMT=2250000     ; TOTAL NUMBER PRINT RECORDS
        PRTSWLST=(LOOP,
        SWITCHAT6PM,
        SYSPRNT1,
        SYSPRNT2,
        SYSPRNT3)
        TCPNAME=TCPIP      ; TCP/IP ADDRESS SPACE NAME
        TRCLMT=0004096     ; TRACE TABLE REQUIREMENT
        USSTAB=ISTINCDT    ; IBM STANDARD USSTAB
```

Console Commands

The following display is produced when DNWDF [LNM=] LXOT LOCAL is entered.

```
RECADDR DDOOSSEE NAME      DEF  OPER
0011D3D4 40421417 LXOT    LOCAL TYPE=XOT           ; OUR TYPE
0011D438 401A1623          IPADDR=10.117.56.171   ; OUR IP ADDRESS
0011D500 402C1418          PORT=1998              ; OUR PORT NUMBER
0011D564 40321527          RTEIN=(MCHCONS/20370009,
0011D5C8 40320F1E          CLEAR/20360002,
0011D62C 40320F1D          SKIP/2036**03,
0011D690 40320F14          MCH1)
0011D758 4033163C          RTEOUT=(R2CNOT1/666612345678901/'RMT DTE #1',
0011D7BC 40330F17          R2CNOT1)
0011D820 40341619          SOCLMT=512            ; 2000 IS DEFAULT.
0011D884 403E171C          TCPNAME=TCPIP         ; TCPIP IS DEFAULT.
0011D94C 4019141C          INIT=(ACTIVE,
0011D9B0 40190F1B          DELAYTIME=1)
```

The following display is produced when DNWDF [LNM=] LXOT LOCAL NOSHOWPFX is entered.

```
NAME      DEF  OPER
LXOT      LOCAL TYPE=XOT           ; OUR TYPE
          IPADDR=10.117.56.171   ; OUR IP ADDRESS
          PORT=1998          ; OUR PORT NUMBER
          RTEIN=(MCHCONS/20370009,
          CLEAR/20360002,
          SKIP/2036**03,
          MCH1)
          RTEOUT=(R2CNOT1/666612345678901/'RMT DTE #1',
          R2CNOT1)
          SOCLMT=512        ; 2000 IS DEFAULT.
          TCPNAME=TCPIP    ; TCPIP IS DEFAULT.
          INIT=(ACTIVE,
          DELAYTIME=1)
```

Console Commands

The following display is produced when **DNWDF [RNM=] MCH1 REMOTE** is entered.

```

RECADDR DDOOSSEE NAME      DEF  OPER
00888D34 2043151A MCH1    REMOTE TYPE=(MCH)                ; REMOTE TYPE
00888D98 20271722                OPTIONS=(MCHTMR=60,             ; ELIMINATE DEFAULTS
00888EC4 20270F17                ECHOFAC)                       ; TEST NEW OPTION
00889054 20451519                VCLMT=(32)                     ; ROUTER VC COUNT
0088911C 2029131A                PAD=(INTEG)                    ; INTEGRATED PAD SUPPO
008891E4 202A171C                PADPARM=(1/1,                 ; ESC TO CMD OK.
00889248 202A0F13                2/1,                          ; ECHO_DEVICE_INPUT -
008892AC 202A0F13                3/2,                          ; DATA_FORWARD_CHAR =
00889310 202A0F13                4/0,                          ; DISABLE- FWD=5 SEC I
00889374 202A0F13                5/2,                          ; DEVICE_FLOW_CTL = XO
008893D8 202A0F14                7/21,                         ; BREAK = INT, DISCARD
0088943C 202A0F14                12/1,                         ; PAD_____FLOW_CTL = XO
008894A0 202A0F14                13/4,                         ; AUTO_LF_INS = WAS 7
00889504 202A0F14                21/0,                         ; PARITY_TREAT = NO CH
00889568 202A0F15                110/0)                        ; DISABLE PAD-8 INACT
08895CC 2032161D                PWPROT=YESWOCC                ;
00889694 2013141D                GATE=(GENERAL)                ; GATE SUPPORT
008896F8 2014141A                HOME=(LXOT)                   ; THIS DEFAULT IS LXOT
0088975C 2008171B                CONNECT=(NO)                  ; NO FAST CONNECT
008897C0 2023171C                MBITCHN=(YES)                ; EACH RU IS --- SOMET
00889824 200B1418                CTCP=(85,                     ; CUD0 TO LLC/CTCP MAP
00889888 200B0F12                80)                           ;
008898EC 200D1418                CUD0=(01,                     ; CUD0 VALUES.
00889950 200D0F14                NULL)                          ;
008899B4 2036171C                SUBADDR=(YES)                 ; PP DIGIT PROCESSI
00889A18 201C141A                LLC0=(NONE)                   ;
00889A7C 201F1417                LLC4=(4)                      ; P DIGIT 4 SETS LLC 4
00889AE0 20201418                LLC5=NONE                     ;
00889B44 2040141A                TRAN=(EVEN)                   ;
00889C0C 20221620                LUNAME=(NASC0006,            ; CALLOUT RESOURCES
00889C70 20220F18                XXXXXXXCS,                   ;
00889CD4 20220F18                XXXXXXXDS)                   ;
00889D9C 20031820                APPLNAME=(A06TSO,           ; TSO=0, CONSOLE=1, SOL.
00889E00 20030F17                CONSOLE,                     ;
00889E64 20030F16                MCHSOL)                      ;
00889EC8 2044161D                USSTAB=ZZUSST1              ; CP CUSTOM USSTAB
0088A24C 200C1317                CUD=NONE                     ; NO CALL USER DATA.
0088A2B0 200E171B                DCEADDR=NONE                 ; NO CALLING DCEADDR.
0088A314 20121317                FAC=NONE                      ; NO FACILITIES.
0088A4A4 20311319                PVC=(NONE)                   ; NO PVC SUPPORT.
0088A634 203A1419                SVC3=ALLOW                   ;
0088A6FC 20381418                SVC0=(10,                     ; CALLING ADDRESS
0088A8F0 20380F18                MCH10001,                    ;
0088A954 20380F19                MCH10002/,                   ;
0088A9B8 20380F19                MCH10003/,                   ;
0088AA1C 20380F2D                MCH10004/6666666666666666I01//,
0088AA80 20380F2E                MCH10005/6666123456789010/MXT1)
0088AC10 203B1417                SVC4=(2,                      ; GATE DIAL IN.
0088AC74 203B0F18                MCH14001,                    ;
0088ACD8 203B0F18                MCH14002)                    ;
0088B188 203C1417                SVC5=(5,                      ; CALLING ADDRESS
0088B1EC 203C0F18                MCH15001,                    ;
0088B250 203C0F18                MCH15002,                    ;
0088B2B4 203C0F18                MCH15003,                    ;
0088B318 203C0F18                MCH15004,                    ;

```


Console Commands

```
0088B37C 203C0F18      MCH15005)
0088B3E0 203D141F      SYSL=(SUBD=01/0,      ; CALLED ADDRESS
0088B444 203D0F19      SUBD=02/0,
0088B4A8 203D0F19      SUBD=03/0,
0088B50C 203D0F19      SUBD=04/0,
0088B570 203D0F19      SUBD=05/2,
0088B5D4 203D0F19      SUBD=06/0,
0088B638 203D0F19      SUBD=09/1,           ; PP DIGITS=09=CONSOLE
0088B69C 203D0F16      NULL/0)
```

Console Commands

DPARM Command - Display Command Modifiers and Parameters

(changed for V2R2M0)

(changed for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DPARM	[ALL]	N	114
		[CID [=]]		
		[CLDADDR [=]]		
		[CLGADDR [=]]		
		[EXEC]	N	220
		[ID [=]]		
		[IFN [=]]		
		[IPADDR [=]]		
		[LNCT [=]]		
		[LNМ [=]]	N	220
		[LUN [=]]		
		[LUNM [=]]	N	220
		[MODIFIERS]	A	230
		[RNM [=]]	C	220
		[VCN [=]]		

This command will display the console command modifiers and/or EXEC start parameters that are currently in effect. Note that the value of command modifiers remain in effect until they are changed or until the console session is terminated.

To summarize, you may enter a DPARM parameter that requests a specific action to be performed as follows:

DPARM Action Matrix

PARAMETER	ACTION
ALL or omitted	Display value for all command modifiers and all start parameters.
CID=	Display value for CID= modifier.
CLDADDR=	Display value for CLDADDR= modifier.
CLGADDR=	Display value for CLGADDR= modifier.
EXEC	Display value for EXEC start parameters only (withhold MODIFIERS).

PARAMETER	ACTION
ID=	Display value for ID= modifier.
IFN=	Display value for IFN= modifier.
IPADDR=	Display value for IPADDR= modifier.
LNCT=	Display value for LNCT= modifier.
LNМ=	Display value for LNМ= modifier.
LUN=	Display value for LUN= modifier.
LUNM=	Display value for LUNM= modifier.
MODIFIERS	Display value for command modifiers only (withhold EXEC).
RNM=	Display value for RNM= modifier.
VCN=	Display value for VCN= modifier.

If no command modifier list is specified, **ALL** is assumed. Note that entering **DPARM [ALL]** is equivalent to entering **DPARM CID= CLDADDR= CLGADDR= ... VCN=**.

The following is an example of the heading and information produced by the **DPARM** command.

<u>COMMAND MODIFIERS FOLLOW</u>	<u>VALID VALUES</u>
CID=00000001-00000002	0 OR 00000001-FFFFFFFFE
CLDADDR=123	1-15 DECIMAL DIGITS
CLGADDR=21	1-15 DECIMAL DIGITS
ID=0001-0002	0 OR 0001-0026
IFN=001-002	0 OR 001-255
IPADDR=001.001.001.001(01001)	STD SOCKET FORMAT
LNМ=LXOT	1-8 CHARACTER SYMBOL
LNCT=00023	0 OR 00001-65535
LUN=001-002	0 OR 01-28
LUNM=MCH15001	1-8 CHARACTER SYMBOL
RNM=MCH1	1-8 CHARACTER SYMBOL
VCN=00001-00002	0 OR 0001-4095

EXEC PARAMETERS FOLLOW

```

APFXEQ ON
APFMEMSP= (230
           229)
DUMP OFF
FASTRUN OFF
GENNWDF ON
MONTAP OFF
PFXWTO Z230SFD6 OFF
PRNTCNFG ON
PRNTDATE OFF
    
```

Console Commands

```
PRNTLU ON
PRNTON
PRNTQLLC ON
PRNTSYS ON
PRNTTCP ON
PRNTVC ON
PRNTVTAM ON
PRNTXOT ON
PRNTXTP ON
RMTCONS PRIV
SHOWCNFG ON
SHOWCONS OFF
SHOWERR
SHOWMORE OFF
STATS OFF
STATS NOTYPES
SVRSTRT OFF
TRCBFR ALLOFF          <- see Note2 below.
TRCBFR NOTYPES
TRCBFRQ OFF
TRCBST OFF
TRCCNFG OFF
TRCCONS ALLOFF
TRCDATA ALLOFF        <- see Note2 below.
TRCDATA NOTYPES
TRCDBK OFF
TRCDISP ALLOFF        <- see Note2 below.
TRCDISP NOTYPES
TRCDISP NQDQ ALLOFF
TRCIO ALLOFF          <- see Note2 below.
TRCIO NOTYPES
TRCLU ALLON           <- see Note2 below.
TRCLU MINDATA
TRCMCH ALLON          <- see Note2 below.
TRCMCH ICRF
TRCMCHX ALLON         <- see Note2 below.
TRCPRNT OFF
TRCSUBR OFF
TRCSUBR NOEVENTS
TRCTASK OFF
TRCVC ALLON           <- see Note2 below.
TRCVC MINDATA
TRCWTO OFF
USEMDFY ON USEWTOR OFF
USENETV OFF           <- parameter reserved for future use
```

Note1: For those console commands that can toggle the value established by a start parameter (*global* action), the ALLON|ALLOFF argument may be used instead of the ON|OFF argument. This is only the case when the same command can control both a *global* and *local* action. For these commands, ALLON|ALLOFF is used to manipulate the *global* action while

ON|OFF is used to manipulate the *local* action. For example, the TRCLU ALLON and TRCLU ALLOFF console commands turn on and off, respectively, the value set by the TRCLU start parameter.

Note2: The DPARM EXEC command will display ALLON or ALLOFF as a start parameter follow if that can be manipulated by a console command using the ALLON or ALLOFF argument. For a start parameter that can be manipulated by a console command using the ON or OFF argument, ON or OFF will continue to be displayed by DPARM EXEC.

The following are console commands that can manipulate start parameters with the ALLON|ALLOFF argument: TRCBFR, TRCDATA, TRCDISP, TRCIO, TRCLU, TRCMCH, TRCMCHX and TRCVC.

The following sample display is produced when DPARM CLDADDR= IPADDR= is entered as the last command of the following command sequence:

```
CLDADDR=1024888
IPADDR=5.6.7.8(1098)
DPARM CLDADDR= IPADDR=
```

COMMAND MODIFIERS FOLLOW

```
CLDADDR=1024888
IPADDR=005.006.007.008(01098)
```

VALID VALUES

```
1-15 DECIMAL DIGITS
STANDARD SOCKET FORMAT
```

Console Commands

DPCE Command - Display Process Control Element

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DPCE	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ <u>SHOWNAME</u> SHOWADDR}]	N	230
		[{ <u>FMT1</u> FMT2}]	N	114

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	DPCE	[<i>rmtname</i>]	C	230
		[{ <u>SHOWNAME</u> SHOWADDR}]	N	230
		[{ <u>FMT1</u> FMT2}]	N	114

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	DPCE	[{ <u>SHOWNAME</u> SHOWADDR}]	N	230
		[{ <u>FMT1</u> FMT2}]	N	114
		[ALLID]	N	114
		[PROT={XOT XTP}]		

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[STATE={ACTIVE CLOSING GCSCLR GCSCON GCSERP GCSINI GCSSVR IDLE OFFLINE TCPACC TCPACT TCPBND TCPCLS TCPCON TCPGBN TCPGSN TCPGTC TCPGVS TCPINI TCPIOC TCPLSN TCPSEL TCPSOC TCPSSO TCPTKS}]	N	220
		[TRACE={OFF ON}]	N	230
		[TYPE={CONS TCP TMR UTIL XOT XTP}]	N	220

This command will display HNAS PCE state information. If only the HEADER line is displayed after the command is entered it indicates that nothing matched the display criteria as requested by the command parameters entered or those currently in effect.

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs DPCE processing to the identified PCE. For more information on ***pcestatic|pcename*** processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value restricting DPCE processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, DPCE processing is restricted to the selected PCEs. If **ID=0** is specified, DPCE processing is for all PCEs.
- The **SHOWNAME** operand (the default) requests that the name of the PCE is to be displayed in the NAME/ADDRESS column. For a server PCE, the name comes from the LOCAL definition statement. For a client PCE, the name comes from the REMOTE definition statement.

Console Commands

For all other PCEs, the name is generated internally.

- The **SHOWADDR** operand requests that the memory address of the PCE is to be displayed in the NAME/ADDRESS column.
- The **FMT1** and **FMT2** operands (for format 1 and 2) control the type of information that is displayed. Currently, **FMT1** (the default) is the same as **SHOWNAME** and **FMT2** is the same as **SHOWADDR**.

Note: The SHOWxxxx and FMTx operands are processed in the order specified. The last value you specify is the winner. For example, if you enter SHOWADDR FMT1, SHOWNAME will override SHOWADDR because FMT1 includes SHOWNAME.

- The **ALLID** parameter is treated as though RNM= omitted and ID=0 were in effect even if they are not. This means that all PCEs are displayed subject to filtering by the **PROT=**, **STATE=**, **TRACE=** and/or **TYPE=** operands.
- The **TYPE=** parameter is used to restrict the display to a specific PCE type.
- The **PROT=** parameter is used to restrict the display to a specific protocol for **TYPE=TCP** PCEs.
- The **STATE=** parameter is used to restrict the display to a specific state for **TYPE=TCP** PCEs.
- The **TRACE=** parameter is used to restrict the display to PCEs being traced (**ON**) or not being traced (**OFF**).

Console Commands

The following is an example of the heading and information produced by the DPCE command.

NAME										
<u>PID</u>	<u>ADDRESS</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
										<- TCP/IP socket ID
										<- TCP port number
								<- IP address		
										<- PCE substate or the PID of the TCP/IP component for a RMTCONS connection (7)
										<- PCE state (6)
										<- PCE protocol (5)
										<- PCE type qualifier (4)
										<- PCE type (3)
										<- PCE runtime options (2)
										<- PCE name or address (1)
										<- PCE ID for the resource

Console Commands

The following display is produced when DPCE BPM is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

<u>PID</u>	<u>NAME</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
0001	WATMRPCE		TMR							
0002	WACONPCE		CONS	LCL		ACT				
0003	WANTVPCE		NETV			IDLE				
0004	WAPNGPCE		TCP	PING	XOT	IDLE		255.255.255.255	65535	
0006	XTPUTIL		XTP							
0007	XOTUTIL		XOT							
0008	LXTP		TCP	LCL	XTP	TSEL	C	192.040.060.002	03065	0000
0009	LXOT		TCP	LCL	XOT	TSEL	C	009.117.056.221	01998	0001
000A	R1M3		TCP	RMT	XTP	ACT	WC S	192.040.060.001	16476	001E
000B	R2CNOT1		TCP	RMT	XOT	ACT	TC S	009.117.056.100	01223	0003
000C	R2CNOT1		TCP	RMT	XOT	ACT	C S	009.117.056.100	01224	0004
000D	R2CNOT1		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000E	R2CNOT1		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000F	R2CNOT2		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0010	R2CNOT2		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0011	R2CNOT2		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0012	R2CNOT2		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0013	R2CNIN		TCP	RMT	XOT	ACT	C S	009.117.056.100	11002	001F
0014	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0015	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0016	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0017	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0018	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0019	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001A	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001B	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001C	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001D	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001E	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001F	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0020	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0021	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0022	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0023	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0024	R2CNIN		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0025	MCH1		TCP	MCH	XOT					
0026	RCON0026		CONS	RMT	XOT	ACT	0011	009.117.056.100	11002	001F
0005	WANASPCE		UTIL							

Console Commands

The following display is produced when `DPCE BPM FMT2` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

<u>PID</u>	<u>ADDRESS</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
0001	0000C300		TMR							
0002	0000C3B8		CONS	LCL		ACT				
0003	0000D0E8		NETV			IDLE				
0004	0000DaF8		TCP	PING	XOT	IDLE		255.255.255.255	65535	
0006	00069F20		XTP							
0007	00069F88		XOT							
0008	00069FF0		TCP	LCL	XTP	TSEL	C	192.040.060.002	03065	0000
0009	0006A41C		TCP	LCL	XOT	TSEL	C	009.117.056.221	01998	0001
000A	0006A848		TCP	RMT	XTP	ACT	WC S	192.040.060.001	16476	001E
000B	0006B2E4		TCP	RMT	XOT	ACT	TC S	009.117.056.100	01223	0003
000C	0006B978		TCP	RMT	XOT	ACT	C S	009.117.056.100	01224	0004
000D	0006C00C		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000E	0006C6A0		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000F	0006CD34		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0010	0006D3C8		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0011	0006DA5C		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0012	0006E0F0		TCP	RMT	XOT	OFLN		009.117.056.100	01998	
0013	0006E784		TCP	RMT	XOT	ACT	C S	009.117.056.100	11002	001F
0014	0006FB40		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0015	000701D4		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0016	00070868		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0017	00070EFC		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0018	00071590		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0019	00071C24		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001A	000722B8		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001B	0007294C		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001C	00072FE0		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001D	00073674		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001E	00073D08		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
001F	0007439C		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0020	00074A30		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0021	000750C4		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0022	00075758		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0023	00075DEC		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0024	00076480		TCP	RMT	XOT	IDLE		009.117.056.100	65534	
0025	00076B14		TCP	MCH	XOT					
0026	00076BB0		CONS	RMT	XOT	ACT	0011	009.117.056.100	11002	001F
0005	0000E3B0		UTIL							

Console Commands

The following display is produced when DPCE ID=9 is entered.

<u>PID</u>	<u>NAME</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
0009	LXOT		TCP	LCL	XOT	TSEL	C	009.117.056.221	01998	0001

The following display is produced when DPCE [RNM=] R2CNOT1 is entered.

<u>PID</u>	<u>NAME</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
000B	R2CNOT1		TCP	RMT	XOT	ACT	TC S	009.117.056.100	01223	0003
000C	R2CNOT1		TCP	RMT	XOT	ACT	C S	009.117.056.100	01224	0004
000D	R2CNOT1		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000E	R2CNOT1		TCP	RMT	XOT	TSOC		009.117.056.100	01998	

The following display is produced when DPCE [RNM=] R2CNOT1 FMT2 is entered.

<u>PID</u>	<u>ADDRESS</u>	<u>NASOPT</u>	<u>TYPE</u>	<u>TYPQ</u>	<u>PROT</u>	<u>STAT</u>	<u>SUBST</u>	<u>IPADDR</u>	<u>PORT</u>	<u>SOCK</u>
000B	0006B2E4		TCP	RMT	XOT	ACT	TC S	009.117.056.100	01223	0003
000C	0006B978		TCP	RMT	XOT	ACT	C S	009.117.056.100	01224	0004
000D	0006C00C		TCP	RMT	XOT	TSOC		009.117.056.100	01998	
000E	0006C6A0		TCP	RMT	XOT	TSOC		009.117.056.100	01998	

General notes for DPCE:

- 1) The **NAME/ADDRESS** column identifies either the PCE name (SHOWNAME) or the PCE address (SHOWADDR). For TYPE=XOT REMOTE PCEs, the same name can appear for different PCE ID values. This is because the name that is used comes from the REMOTE definition statement whose PORT and VCLMT operand values caused the PCEs to be generated.
- 2) The **NASOPT** column identifies HNAS options that are currently active for the PCE. A blank indicates that the option is not active. The following options can be displayed.

```
TIBDMS
| | | | |
| | | | | <- S => STATS ON
| | | | | <-- M => MONTAP ON
| | | | | <--- D => TRCDATA ON
| | | | | <---- B => TRCBFR ON
| | | | | <----- I => TRCIO ON
| | | | | <----- T => TRCDISP ON
```

3) The **TYPE** column identifies the PCE type. The following types can be displayed.

CONS	Console process	CON*	Console process (you)
TCP	TCP/IP process	TMR	Timer process
UTIL	Utility process	XTP	XTP process
XOT	XOT process		

Note that if the DPCE command is entered from a remote console, an asterisk (*) will replace the 'S' in the 'CONS' text to identify the remote PCE session receiving the display.

4) The **TYPQ** column identifies the PCE type qualifier. The following qualifiers can be displayed.

LCL	Local connection	RMT	Remote connection
MCH	Logical MCH	SPU	QLLC SPU
DFL	Datafono Leased SLU pool	DFS	Datafono Switched SLU pool

5) The **PROT** column identifies the protocol being used for the PCE connection. The following qualifiers can be displayed.

XTP	IBM's X.25 via TCP	XOT	Cisco's X.25 over TCP
------------	--------------------	------------	-----------------------

Console Commands

- 6) The **STAT** column identifies the current PCE state (request being executed). The following states can be displayed.

ACT	Process is active	GCLR	GCS CLEAR
GCON	GCS CONNECT	GERP	GCS ERP
GINI	GCS INIT	GSVR	GCS SEVER
IDLE	Process is inactive but online	OFLN	Process is offline from VARY OFF or INIT=IDLE
TACC	TCP ACCEPT	TBND	TCP BIND
TCLS	TCP CLOSE	TCON	TCP CONNECT
TGBN	TCP GETBYNAME	TGSN	TCP GETSOCKETNAME
TGTC	TCP GETCLIENTID	TGVS	TCP GIVESOCKET
TINI	TCP INIT	TIOC	TCP IOCTL
TLSN	TCP LISTEN	TSEL	TCP SELECT
TSOC	TCP SOCKET	TSSO	TCP SETSOCKETOPT
TTKS	TCP TAKESOCKET		

- 7) The **SUBST** column identifies the PCE substate. The PCE substate qualifies the state. A blank indicates substate inactivity. The following substates can be displayed.

```
TCXRH
|||||
||||| <- H => Executing TCPIP CANCEL
||||| <-- R => Executing TCPIP RECEIVE
|||||      S => Executing TCPIP SELECT
|||||
||||| <--- X => Executing TCPIP SEND
||| <---- C => Executing TCPIP Control Request
| <----- T => TAPPING Process
|           W => TAPPING Active, Waiting
|           D => Dynamic IP address
```

Note that for a remote console PCE, the **SUBST** will contain the PCE ID of the TCP/IP component for the router to which the remote console is connected.

DRMT Command - Display REMOTE Configuration

(changed for V2R2M0)
 (changed for V2R3M0)
 (changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	DRMT	[<i>rmtname</i>]	C	230
		[<u>ALL</u>]	N	114
		[APPLNAME [=]]		
		[CONNECT [=]]		
		[CTCP [=]]		
		[CUD [=]]		
		[CUD0 [=]]		
		[DCEADDR [=]]		
		[DFLNAME [=]]	N	240
		[DFXNAME [=]]	N	240
		[DTEADDR [=]]	N	230
		[FAC [=]]		
		[GATE [=]]		
		[HOME [=]]	N	220
		[IDBLK [=]]	N	220
		[IDNUM [=]]	N	220
		[IDLETO [=]]	N	230
		[IFNUM [=]]		
		[INIT [=]]		
		[IPADDR [=]]		
		[LLC0 [=]]		
		[LLC3 [=]]	N	220
		[LLC4 [=]]		
		[LLC5 [=]]		
		[LOGTAB [=]]	A	210

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[LUNAME [=sluname]]		
		[MAXDATA [=]]	N	220
		[MBITCHN [=]]		
		[OPTIONS [=]]	A C C C	210 220 230 240
		[PACE [=]]		
		[PAD [=]]		
		[PADPARM [=]]		
		[PORT [=]]		
		[PROTOCOL [=]]	N	240
		[PVC [=sluname]]		
		[PWPROT [=]]		
		[SUBADDR [=]]		
		[SUBD [=]]		
		[SVC0 [=sluname]]		
		[SVC3 [=spuname]]	N	220
		[SVC4 [=sluname]]		
		[SVC5 [=sluname]]		
		[SYSL [=]]		
		[TAP [=]]		
		[TRAN [=]]		
		[TYPE [=]]		
		[USSTAB [=]]		
		[VCLMT [=]]		

This command will display the operands that were specified in the CDF or modified later via the MRMT command for the REMOTE definition statement identified by the **RNM=** modifier. If no **RNM=** value is set, the list of all REMOTE definition statements is displayed.

To summarize, you may enter a list of REMOTE definition statement operands that you want to display as follows:

DRMT Action Matrix

PARAMETER	ACTION	X T P	X O T	M C H	M X T	S P U	D F L	D F S	D F X	D M Y	S V C
ALL or omitted	Display value for all REMOTE operands.										
APPLNAME=	Display value for APPLNAME= operand.		I		I		I	I	I	I	I
CONNECT=	Display value for CONNECT= operand.		I		I	I	I	I	I	I	I
CTCP=	Display value for CTCP= operand.		I		I	I	I	I	I	I	I
CUD=	Display value for CUD= operand.						I	I	I		
CUD0=	Display value for CUD0= operand.		I		I	I	I	I	I	I	I
DCEADDR=	Display value for DCEADDR= operand.						I	I	I		
DFLNAME=	Display value for DFLNAME= operand.	I	I		I	I	I	I	I	I	I
DFXNAME=	Display value for DFXNAME= operand.	I	I		I	I	I	I	I	I	I
DTEADDR=	Display value for DTEADDR= operand.	I		I			I	I	I		
FAC=	Display value for FAC= operand.						I	I	I		
GATE=	Display value for GATE= operand.		I		I	I	I	I	I	I	I
HOME=	Display value for HOME= operand.				I	I	I	I	I	I	I
IDBLK=	Display value for IDBLK= operand.	I	I	I	I		I	I	I	I	I
IDNUM=	Display value for IDNUM= operand.	I	I	I	I		I	I	I	I	I
IDLETO=	Display value for IDLETO= operand.		I				I	I	I	I	I
IFNUM=	Display value for IFNUM= operand.		I	I	I	I	I	I	I	I	I
INIT=	Display value for INIT= operand.				I	I	I	I	I	I	I
IPADDR=	Display value for IPADDR= operand.			I	I	I	I	I	I		I
LLC0=	Display value for LLC0= operand.		I		I	I	I	I	I	I	I
LLC3=	Display value for LLC3= operand.	I	I		I	I	I	I	I	I	I
LLC4=	Display value for LLC4= operand.		I		I	I	I	I	I	I	I
LLC5=	Display value for LLC5= operand.		I		I	I	I	I	I	I	I
LOGTAB=	Display value for LOGTAB= operand.		I				I	I	I	I	I
LUNAME=	Display value for LUNAME= operand.		I		I				I	I	I
MAXDATA=	Display value for MAXDATA= operand.	I	I	I	I		I	I	I	I	I
MBITCHN=	Display value for MBITCHN= operand.		I		I	I	I	I	I	I	I
OPTIONS=	Display value for OPTIONS= operand.						I	I		I	I
PACE=	Display value for PACE= operand.		I	I	I		I	I	I	I	I
PAD=	Display value for PAD= operand.		I		I	I	I	I	I	I	I

Console Commands

PARAMETER	ACTION	X T P	X O T	M C H	M X T	S P U	D F L	D F S	D F X	D M Y	S V C
PADPARAM=	Display value for PADPARAM= operand.		I			I	I	I	I	I	I
PKTSIZ=	Display value for PKTSIZ= operand.	I		I	I	I	I	I	I	I	I
PORT=	Display value for PORT= operand.			I	I	I	I	I	I		I
PROTOCOL=	Display value for PROTOCOL= operand.				I						I
PVC=	Display value for PVC= operand.		I		I	I	I	I	I	I	I
PWPROT=	Display value for PWPROT= operand.		I		I	I	I	I	I	I	I
SUBADDR=	Display value for SUBADDR= operand.		I		I	I	I	I	I	I	I
SUBD=	Display value for SUBD= operand.		I		I	I	I	I	I	I	I
SVC0=	Display value for SVC0= operand.		I		I	I	I	I	I	I	I
SVC3=	Display value for SVC3= operand.	I	I		I	I	I	I	I	I	I
SVC4=	Display value for SVC4= operand.		I		I	I	I	I	I	I	I
SVC5=	Display value for SVC5= operand.		I		I	I	I	I	I	I	I
SYSL=	Display value for SYSL= operand.		I		I		I	I	I	I	I
TAP=	Display value for TAP= operand.			I	I	I	I	I	I	I	I
TRAN=	Display value for TRAN= operand.		I		I	I	I	I	I	I	I
TYPE=	Display value for TYPE= operand.										I
USSTAB=	Display value for USSTAB= operand.		I				I	I	I	I	I
VCLMT=	Display value for VCLMT= operand.				I	I			I	I	I

Legend: For the REMOTE *type* column: I=> Invalid, blank=> supported (see Console Command Parameter Action Matrix Keys description on page CONS-21 for additional information).

If no operand list is specified, **ALL** is assumed. Note that entering **DRMT [ALL]** is equivalent to entering **DRMT APPLNAME= CONNECT= ... VCLMT=**.

Certain keywords may specify an SLU name (e.g., SVC0=*sluname*), in which case only the list entry that corresponds to the named SLU will be displayed (see example below).

Note: For keywords on a TYPE=MXT REMOTE definition statement, NONE|NULL *will be* displayed if NONE|NULL is coded for the operand in the CDF (e.g., CUD=NONE|NULL). If an parameter is omitted in the CDF, NULL or no value (blank) *can be* displayed (e.g., CUD= omitted displays as CUD=NULL (this is also the case for DCEADDR=, DTEADDR= and PADPARAM=) while IDLE= omitted (as well as LOGTAB= and USSTAB=) displays as IDLE= no value (blank).

Note: For keywords on a TYPE=SPU|MCH|XTP|XOT REMOTE definition statement, NULL *can be* displayed when NONE|NULL is coded for the operand in the CDF (e.g.,

CUD=NONE|NULL). If an parameter is omitted in the CDF, a default value or no value *can* be displayed (CUD= omitted displays as CUD= 01000000 while DCEADDR= omitted displays as DCEADDR=).

The following is an example of the heading and information produced by the **DRMT** command.

```

RMTNAME  OPERAND  TYPE
|
|
|          |<- REMOTE type
|
|          |<- Operand/Value or
|          |REMOTE address
|
|<- REMOTE name

```

The following display is produced when **DRMT RNM=** is entered (no REMOTE name given).

```

RMTNAME  OPERAND  TYPE
MCH1      0007E140  MCH
MCH1P301  0008F078  SPU
MCH13001  000902C0  SPU
MCH13101  00091508  SPU
Q1990100  00092750  SPU
Q2000100  00093998  SPU
Q2010100  00094BE0  SPU
Q2020100  00095E28  SPU
Q2030100  00097070  SPU
Q2040100  000982B8  SPU
Q2050100  00099500  SPU
Q2060100  0009A748  SPU
Q2070100  0009B990  SPU
Q2080100  0009CBD8  SPU
Q2090100  0009DE20  SPU
Q2100100  0009F068  SPU
Q9910100  000A02B0  SPU
MCH2      000A14F8  MCH
MXT0      000B2430  MXT
MXT1      000B2880  MXT
R2CNOT1   000B2CD0  XOT
R2CNOT2   000B2D9C  XOT
R2CNIN    000B2E68  XOT
R3CNIN    000B2F34  XOT

```

Console Commands

The following display is produced when DRMT [RNM=] Q9910100 is entered.

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
Q9910100	000A02B0	SPU
	APPLNAME=MCHSOL	(000)
	A06TSO	(001)
	CUD=NULL	
	DCEADDR=NULL	
	FAC=NULL	
	IDBLK=991	
	IDNUM=00001	
	IDLETO=00010	
	INIT=ACTIVE	
	LOGTAB=	
	LUNAME=*****	(001)
	Q1990102/201/201/01/PVCMXT	(002)
	Q1990103	(003)
	MAXDATA=00265	
	OPTIONS=CLOTINITYP=NONE	
	PEER	
	PACE=NONE	
	NONE	
	PROTOCOL=XOT	
	SYSL=DATA=LOGON/00	
	TYPE=SPU	
	USSTAB=	

The following display is produced when DRMT [RNM=] MCH1 is entered.

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
MCH1	0007E140	MCH
	APPLNAME=A06TSO	(000)
	CONSOLE	(001)
	MCHSOL	(002)
	CONNECT=NO	
	CTCP=85	(000)
	80	(001)
	CUD=01000000 4C4F4749 4E3A4350 32363231	
	CUD0=01	(000)
	FF	(001)
	DCEADDR=2036	
	DFLNAME=	
	DFXNAME=	
	FAC=01014209 09430505	
	GATE=GENERAL	
	INIT=ACTIVE	
	LLC0=NONE	
	LLC3=03	
	00	
	LLC4=04	

Console Commands

```
LLC5=NONE
LOGTAB=ZZLOGTAB (00006038) LOADED AT 08:53:29 ON 2007/04/09
LUNAME=
MBITCHN=YES
OPTIONS=NOCUD0SELECTSLU
        NODELAYBINDRESP
        ECHODTEADDR
        ECHOFAC
        NOINHIBITBIDREJ
        NOLCN0USED
        NOLLC0CTCPCHK
        NOLLC5CTCPCHK
        MCHTMR=060
        NOONEPIUINB
        NOPFXDCEADDR
        PVCRECONTMR=060
        PVCSETUPREJ=
        PVCSETUPTMR=060
        NOREPDCEADDR
        REQSSESSDELAY=002
        NORESETINO
        RESIDSTART=00001
        RTRBIDREJ
        NOSTRIPFAC
        NOSTRIPRTEIN
        SVCCALLTMR=030
PACE=000
PAD=INTEG
PADPARM=001/001
        002/001
        003/002
        004/000
        005/002
        007/021
        012/001
        013/007
        021/000
        110/000
PROTOCOL=XOT
PVC=NONE
PWPROT=YESWOCC
SUBADDR=YES
SUBD=
SVC0=0005
        MCH10001/I/
        MCH10002/I/
        MCH10003/I/
        MCH10004/6666666666666666I/
        TEST16LU/1036000301-1036000103-6666123453333010/
SVC3=0015
```

Console Commands

```
MCH13001/I/  
MCH13101/I/  
Q1990100/I/  
Q2000100/I/  
Q2010100/I/  
Q2020100/I/  
Q2030100/I/  
Q2040100/I/  
Q2050100/I/  
Q2060100/I/  
Q2070100/I/  
Q2080100/I/  
Q2090100/I/  
Q2100100/I/  
Q9910100/I/  
SVC4=0002  
MCH14001  
MCH14002  
SVC5=0020  
MCH15001/I/  
MCH15002/I/  
MCH15003/I/  
MCH15004/I/  
MCH15005/I/  
MCH15006/I/  
MCH15007/I/  
MCH15008/I/  
MCH15009/I/  
MCH15010/I/  
MCH15011/I/  
MCH15012/I/  
MCH15013/I/  
MCH15014/10360001I/  
MCH15015/I/  
MCH15016/2621I/  
MCH15017/2621I/  
MCH15018/2621I/  
MCH15019/9999I/  
MCH15020/1036000103O/MXT1  
SYSL=SUBD=01/00  
SUBD=02/00  
SUBD=03/00  
SUBD=04/00  
SUBD=05/02  
SUBD=09/01  
NULL/00  
TRAN=SPACE  
TYPE=MCH  
USSTAB=ISTINCDT (85E00418) LOADED AT 08:54:07 ON 2007/04/09  
VCLMT=00048
```


Console Commands

The following display is produced when `DRMT [RNM=]MCH1 GATE= USSTAB=` is entered.

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
MCH1	0007E140	MCH
	GATE=GENERAL	
	USSTAB=ISTINCDT	(85E00418)

The following display is produced when `DRMT [RNM=]MCH1 SVC0=MCH10020` is entered.

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
MCH1	0007E140	MCH
	SVC0=0020	
	MCH15020/10360001030/MXT1	

Console Commands

The following display is produced when `DSTATS ID=6-9` is entered at the end of the following command sequence:

```
ID=                <- reset default PCE ID limits
STATS ON           <- start global stats
STATS ID=6-9 ON    <- start PCE stats for ID=6-9
STATS ID=6-9 OFF   <- stop PCE stats for ID=6-9 after 4 minutes
STATS OFF          <- stop global stats
DSTATS ID=6-9      <- display results
```

<u>PID</u>	<u>INTERVAL</u>	<u>DISPATCH</u>	<u>TIMEOUT</u>	<u>XMT-PKT</u>	<u>XMT-CHAR</u>	<u>RCV-PKT</u>	<u>RCV-CHAR</u>
0006	0:03:46	00000000	00000000	00000000	00000000	00000000	00000000
0007	0:03:46	00000368	00000001	0000080C	00028343	00000811	000038A5
0008	0:03:46	00000000	00000000	00000000	00000000	00000000	00000000
0009	0:03:46	00000000	00000000	00000000	00000000	00000000	00000000
	0:02:24	00000531	00000004	0000080C	00028343	00000811	000038A5

The following display is produced when `DSTATS ID=7` is entered.

<u>PID</u>	<u>INTERVAL</u>	<u>DISPATCH</u>	<u>TIMEOUT</u>	<u>XMT-PKT</u>	<u>XMT-CHAR</u>	<u>RCV-PKT</u>	<u>RCV-CHAR</u>
0007	0:03:46	00000368	00000001	0000080C	00028343	00000811	000038A5
	0:02:24	00000531	00000004	0000080C	00028343	00000811	000038A5

General notes for DSTATS:

- 1) The DSTATS command displays the latest statistical information.
- 2) If statistics have never been started, the interval will display as 0:00:00.
- 3) If statistics were started (STATS ON) and then stopped (STATS OFF), the interval and counts displayed will be those at the time statistics collecting was terminated.
- 4) If statistics were started (STATS ON) and left running, the interval and counts displayed will be those at the time of the display.
- 5) *Global* statistics collecting can also be started when HNAS is activated via the `PARM='STATS'` option on the Z/OS, OS/390 or MVS program EXEC statement. In the examples above, STATS was specified as an HNAS start option. This is why global statistics are displayed and PCE statistics are not. PCE statistics collecting can only be started using the STATS ON console command.

DTRC Command - Display Trace Table

(changed for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	DTRC	[count]		

This command will display HNAS trace table entries starting with the most recent entry then going backwards in time.

You may enter a **count** value to restrict the display to a specific number of 16-byte trace entries. If no **count** value is specified, all trace entries will be displayed.

The following display is produced when DTRC 16 is entered.

```

CURRENT=002B0710 START=002A4E80 END=002B4E80 WRAPCNT=00000001

002B0710 23242526 2A2B2D3D 3A3B2C2E 2F3F0D34 .....
002B0700 6C6D6E6F 70717273 74757677 78797A40 %_>?
002B06F0 36373839 30616263 64656667 68696A6B ...../¬f¿¡ĐŸ«-¶,
002B06E0 7129B9F0 00140047 58595A31 32333435 ...æ0...ÂÏ?!.....
002B06D0 50515253 54555657 00000000 00000000 &ÈÍÊËÌÔÛ.....
002B06C0 363A3231 2E313732 20303136 3335204F .....|
002B06B0 40232425 262A2B2D 3D3A3B2C 2E2F0D34 .....
002B06A0 6B6C6D6E 6F707172 73747576 7778797A ,%_>?
002B0690 53980008 0C048889 00236A58 8001DD86 îQ....HI..¶ïÿ.
002B0680 00000000 00000000 00000000 00000000 .....
002B0670 00000997 00000000 40404040 40404040 ...P....
002B0660 80019A4C 001300FA 00236BF8 00010000 Ÿ.™<...š.,8....
002B0650 33980008 15462360 00236A58 00019A5A .Q...."-...¶ï.™!
002B0640 FFFFFFFF 00000023 00000000 00000000 ****.....
002B0630 0029D9D0 0029D9D0 00000007 00000000 ..R}.R}.....
002B0620 00000000 000000C0 0029E53C 00000000 .....{..V.....
002B0610 00000558 00237054 00000010 0029D9FC ...ï..
002B0600 8001E0D8 00237028 00000024 00237080 Ÿ.\Q..
002B05F0 63980008 0C048884 00236A58 8001D768 fQ....HD..¶ïÿ.P«
002B05E0 00000000 00000000 00000000 00000000 .....
002B05D0 00000996 00000000 4CC5E9C1 E2D4C96E ...O....<EZASMI>
002B05C0 80019A4C 00100002 00236C20 00010000 Ÿ.™<.....%.....

```

Console Commands

DVC Command - Display Virtual Circuit

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

for collection of VCs on a specific MCH

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	DVC	[<i>mchname</i>]	C	230
		[{ <u>SHOWNAME</u> [{ =SLU =SPU =MCH =RTR }] SHOWADDR }]	N C	230 230
[VCN= <i>minvcn</i> [- <i>maxvcn</i>]]		[{ <u>SHOWCGAD</u> <u>SHOWCDAD</u> SHOWIPAD }]	N	230
		[{ <u>SHOWVCST</u> <u>SHOWLUST</u> }]	N	230
		[{ <u>SHOWSESSINIT</u> <u>SHOWCID</u> }]	N	240
		[{ <u>FMT1</u> <u>FMT2</u> }]		
		[STATE= { P1 IDLE } { P2 DTEWAIT } { P3 DCEWAIT } { P4D1 DATRDY } { P4D2 DTERST } { P4D3 DCERST } { P5 CALLCOL } { P6 DTECLR } { P7 DCECLR }]	N	220
		[TRACE= { OFF ON }]	N	230
		[TYPE= { GATE LLC4 } { PAD LLC5 } { PCNE LLC0 } { QLLC LLC3 }]	N	220

or for a collection of VCs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	DVC	[{ <u>SHOWNAME</u> [{ =SLU =SPU =MCH =RTR }] SHOWADDR }]	N C	230 230

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[IFN= <i>minifn</i> [- <i>maxifn</i>]]		[{SHOWCGAD SHOWCDAD SHOWIPAD}]	N	230
[VCN= <i>minvcn</i> [- <i>maxvcn</i>]]		[{SHOWVCST SHOWLUST}]	N	230
		[{SHOWSESSINIT SHOWCID}]	N	240
		[{FMT1 FMT2}]		
		[ALLID]		
		[ALLIFN]		
		[ALLVCN]		
		[PROT={XOT XTP}]		
		[STATE={P1 IDLE P2 DTEWAIT P3 DCEWAIT P4D1 DATRDY P4D2 DTERST P4D3 DCERST P5 CALLCOL P6 DTECLR P7 DCECLR}]	N	220
		[TRACE={OFF ON}]	N	230
		[TYPE={GATE LLC4 PAD LLC5 PCNE LLC0 QLLC LLC3}]	N	220

This command will display HNAS VC state information for connected VC's. If only the HEADER line is displayed after the command is entered it indicates that no VC connections exist or nothing matched the display criteria as requested by the command parameters entered or those currently in effect.

- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting DVC processing to the named MCH only for the specified **VCN=** values. DVC processing is for the VCs on the named MCH only.
- When **VCN=*minvcn*[-*maxvcn*]** is specified, DVC processing is restricted to the selected VCs on the selected MCHs. If **VCN=0** is specified, DVC processing is for all VCs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), DVC processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, DVC processing is for all MCHs on the selected PCEs.

Console Commands

- When **ID=miniid[-maxid]** is specified, DVC processing is restricted to the selected PCEs. If **ID=0** is specified, DVC processing is for all PCEs.
- The **SHOWNAME** operand (the default) requests that the name of the SLU or SPU associated with the VC is to be displayed in the SLUNAME/ADDRESS column. If the VC is LLC0|LLC4|LLC5 (PCNE|GATE|PAD) and does not have an active SLU connection or if the VC is LLC3 (QLLC) and does not have an active SPU connection, no name is displayed.
- The **SHOWNAME=SLU** operand requests that the name of the SLU associated with the VC is to be displayed in the SLUNAME/ADDRESS column. If the VC is LLC0|LLC4|LLC5 (PCNE|GATE|PAD) and does not have an active SLU connection or if the VC is LLC3 (QLLC), no name is displayed.
- The **SHOWNAME=SPU** operand requests that the name of the TYPE=SPU REMOTE definition statement associated with the VC is to be displayed in the SPUNAME/ADDRESS column. This REMOTE identifies the SPU that is using the VC connection. If the VC is not LLC3 or if the VC does not have an active SPU connection (XID sequence incomplete), no name is displayed.
- The **SHOWNAME=MCH** operand requests that the name of the TYPE=MCH|XTP REMOTE definition statement associated with the VC is to be displayed in the MCHNAME/ADDRESS column. This REMOTE identifies the logical MCH that is supporting the VC connection. If the VC does not have an active TCPIP connection, no name is displayed.
- The **SHOWNAME=RTR** operand requests that the name of the TYPE=XOT|XTP REMOTE definition statement associated with the VC is to be displayed in the RTRNAME/ADDRESS column. This REMOTE identifies the router that is supporting the VC connection. If the VC does not have an active TCPIP connection, no name is displayed.
- The **SHOWADDR** operand requests that the memory address of the VC control block (VCB) is to be displayed in the NAME/ADDRESS column.
- The **SHOWCGAD** operand (the default) requests that the *calling* DTE address for the VC is to be displayed in the CLGADDR/CLDADDR/IPADDR column.
- The **SHOWCDAD** operand requests that the *called* DTE address for the VC is to be displayed in the CLGADDR/CLDADDR/IPADDR column.
- The **SHOWIPAD** operand requests that the IP address for the VC is to be displayed in the CLGADDR/CLDADDR/IPADDR column.
- The **SHOWVCST** operand (the default) requests that the VC state is to be displayed in the VCST/LUST column.
- The **SHOWLUST** operand requests that the SLU state is to be displayed in the VCST/LUST column. If the VC does not have an active SLU connection, no SLU state data is displayed.
- The **SHOWSESSINIT** operand (the default) requests that the direction of the session initiation is to be displayed in the SESSINIT/CID column. If the VC session was established via an

inbound or outbound call, INBOUND or OUTBOUND is displayed.

- The **SHOWCID** operand requests that the VTAM connection identifier for the connected SLU is to be displayed in the SESSINIT/CID column. If the VC does not have an SLU connection, blanks are displayed.
- The **FMT1** and **FMT2** operands (for format 1 and 2) control the type of information that is displayed. Currently, **FMT1=SHOWNAME+SHOWCGAD+SHOWVCST+SHOWSESSINIT** (the default) and **FMT2=SHOWADDR+SHOWIPAD+SHOWLUST+SHOWCID**.

Note: The SHOWxxx and FMTx operands are processed in the order specified. The last value you specify is the winner. For example, if you enter SHOWADDR SHOWIPAD FMT1, SHOWNAME will override SHOWADDR and SHOWCGAD will override SHOWIPAD because FMT1 includes both SHOWNAME and SHOWCGAD.

- The **ALLID** parameter is treated as though RNM= omitted and ID=0 were in effect even if they are not. This means that all PCEs are scanned for their MCH components.
- The **ALLIFN** parameter is treated as though IFN=0 was in effect even if it is not. This means that all MCHs are scanned for their SLU components.
- The **ALLVCN** parameter is treated as though VCN=0 was in effect even if it is not. This means that all VCs are displayed for each MCH subject to filtering by the **PROT=**, **STATE=**, **TRACE=** and/or **TYPE=** operands.
- The **TYPE=** parameter is used to restrict the display to a specific VC type.
- The **PROT=** parameter is used to restrict the display to a specific protocol for **TYPE=TCP** PCEs over which the VCs communicate.
- The **STATE=** parameter is used to restrict the display to a specific VC state.
- The **TRACE=** parameter is used to restrict the display to SLUs being traced (**ON**) or not being traced (**OFF**).

Console Commands

The following is an example of the heading and information produced by the `DVC` command.

```

RTRNAME
MCHNAME
SPUNAME
CLGADDR
IFN|   CID   SLUNAME   LUST   CLDADDR
MPID  RPID  VCN  SESSINIT  ADDRESS  VCOPT  VCST  VCTO  LLC  IPADDR
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                             |<- DTE address or
|                                             |   IP address (9)
|                                             |<- VC logical line
|                                             |   control (8)
|                                             |<- Active VC timer (7)
|                                             |<- VC or SLU state (6)
|                                             |<- VC runtime options (5)
|                                             |<- REMOTE name, SLU name or VCB address (4)
|<- Session initiation direction (INBOUND or OUTBOUND) or
|   the SLU connection identifier when the VC is connected
|   to an SLU, blank otherwise (3)
|<- VC virtual circuit number when network
|   connection is active, zero otherwise (2)
|   Note: For PVCs, the first digit is a 'P'
|<- MCH interface number for an XTP router connection or the
|   PCE ID of the TCP/IP component for an XOT router connection
|   that owns the VC session (1)
|<- PCE ID for the MCH that owns the listed VC

```

Note: MPID and IFN|RPID header display change was introduced into 240 with Enhancement APAR 2400014.

The following display is produced when `DVC ID=8 IFN=3 VCN=1-2` is entered.

IFN			SPUNAME							
<u>MPID</u>	<u>RPID</u>	<u>VCN</u>	<u>SESSINIT</u>	<u>SLUNAME</u>	<u>VCOPT</u>	<u>VCST</u>	<u>VCTO</u>	<u>LLC</u>	<u>CLGADDR</u>	
0008	0003	P001		R1M3P001	V	PN	IDLE	SUWT	PAD	
0008	0003	P002	OUTBOUND	R1M3P002	V	PN	IDLE		PAD	

The following display is produced when `DVC BPM SHOWCID SHOWADDR` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

IFN										
<u>MPID</u>	<u>RPID</u>	<u>VCN</u>	<u>CID</u>	<u>ADDRESS</u>	<u>VCOPT</u>	<u>VCST</u>	<u>VCTO</u>	<u>LLC</u>	<u>CLGADDR</u>	
0008	0003	P001	00000000	0034BB38	V	PN	DATA	PAD		
0008	0003	P002	00000000	0034C060	V	PN	DATA	PAD		
0008	0004	0001	2000000C	002B6248	V	SN	DATA	PAD	8103600030000000	
03A2	000A	P001	6A000008	0044D310	V	PN	DATA	PAD		
03A2	000B	P002	4C00000A	0044D838	V	PN	DATA	PAD		
03A2	0398	0001	30000006	002B6008	V	SN	DATA	PAD	A103600010400000	
03A2	0399	0001		002B6128	V	SN	DATA	CONS	A103600010300000	

The following display is produced when `DVC BPM SHOWCID SHOWLUST SHOWCDAD` is entered. Note that the display lists the state information in PCE creation order, not PCE ID order.

IFN			SPUNAME							
<u>MPID</u>	<u>RPID</u>	<u>VCN</u>	<u>CID</u>	<u>SLUNAME</u>	<u>VCOPT</u>	<u>LUST</u>	<u>VCTO</u>	<u>LLC</u>	<u>CLDADDR</u>	
0008	0003	P001	00000000	R1M3P001	V	PN	IDLE	PAD		
0008	0003	P002	00000000	R1M3P002	V	PN	IDLE	PAD		
0008	0004	0001	2000000C	R1M45003	V	SN	DTA	PAD	8203600020000000	
03A2	000A	P001	6A000008	MCH1P001	V	PN	DTA	PAD		
03A2	000B	P002	4C00000A	MCH1P002	V	PN	DTA	PAD		
03A2	0398	0001	30000006	MCH15001	V	SN	DTA	PAD	8203600020000000	
03A2	0399	0001			V	SN		CONS	8203600090000000	

General notes for DVC:

- 1) The **IFN|RPID** column identifies either the physical MCH link on an IBM XTP router (REMOTE TYPE=XTP,IFNUM=xx,...) or the PCE ID of the TCP/IP component for a Cisco XOT router (REMOTE TYPE=XOT,...) to which the VC is connected.
- 2) The **VCN** column identifies the HNAS Virtual Circuit Number. For PVCs only, the first digit of the VCN will be replaced by the character 'P'.

For XTP, the VCN is the index into the MCH Address Vector Table (AVT) for the VC. The AVT is used to locate the VC control block when a packet is sent or received across the TCPIP socket connection.

Console Commands

For XTP PVCs, the index is the same as the Circuit Identifier carried in the PVC Info packet. The same Circuit Identifier will be used in all subsequent packets sent and received.

For XTP Callout SVCs, the index is the same as the Circuit Identifier carried in the Outbound Call Request packet created by HNAS. The index is created from the first available slot in the AVT starting at the end and working backwards.

For XTP Callin SVCs, the index is assigned based on an available slot in the AVT starting at the beginning and working forward. The index is not related to the Circuit Identifier received from the router.

For XOT, this is an internal value used for information only.

For XOT PVCs, the VCN is the same as the LCN supplied in the PVC= operand which will be the LCN carried in the PVC Setup packet and all subsequent packets sent and received.

For XOT Callout SVCs, the VCN is always set to 0001 which is then used as the LCN carried in the Outbound Call Request packet created by HNAS and all subsequent packets sent and received.

For XOT Callin SVCs, the VCN is the LCN that is received from the router in the Inbound Call Request packet. It will be used as the LCN in all subsequent packets sent and received.

- 3) The **SESSINIT/CID** column identifies either how the VC session was established, that is, by an INBOUND or OUTBOUND call (SHOWSESSINIT) or the VTAM connection identifier when the VC has an SLU component that is bound.
- 4) The **xxxNAME/ADDRESS** column identifies either SLU name (SHOWNAME or SHOWNAME=SLU), a TYPE=SPU REMOTE definition statement name (SHOWNAME or SHOWNAME=SPU), a TYPE=MCH|XTP REMOTE definition statement (SHOWNAME=MCH), a TYPE=XOT|XTP REMOTE definition statement name (SHOWNAME=RTR) or the VCB address (SHOWADDR). An SLUNAME is displayed only if the VC is LLC0|LLC4|LLC5 and has an active SLU connection. An SPUNAME is displayed only if the VC is LLC3 and has an active SPU connection (XID sequence is complete). A RTRNAME|MCHNAME is displayed only if the VC has an active TCPIP connection.

- 5) The **VCOPT** column identifies HNAS options that are currently active for the VC. A blank indicates that the option is not active. The VCOPT column also displays VC connect status information. The following options can be displayed.

```

VD.SN
|||||<- N => SVC is attached to net or PVC completed setup
|||||   D => SVC is detached from net or PVC has not completed setup
|||||   I => PVC has received link inoperative reset (1D/73)
|||||
|||||<-- S => Switched VC (SVC)
|||||   P => Permanent VC (PVC)
|||||
|||<---- reserved
||<----- D => TRCVC DBK
|<----- V => TRCVC ON

```

- 6) The **VCST/LUST** column identifies the either current VC state (SHOWVCST) or current SLU state (SHOWLUST).

The following VC states can be displayed for SHOWVCST.

CALX	Call Request transmitted (P2)	CALR	Call Request received (P3)
CLRX	Clear transmitted (P6)	CLRR	Clear received (P7)
COLL	Call/Clear collision (P5)	DATA	VC is active (P4D1)
IDLE	VC is inactive (P1)	RSTX	Reset transmitted (P4D2)
RSTR	Reset received (P4D3)		

The following SLU states can be displayed for SHOWLUST.

BN	PLU BIND issued	BND	LU is bound
CLR	PLU CLEAR issued	DTA	LU data traffic active
IDLE	LU is inactive	RQS	SLU REQSESS issued
SD	PLU SHUTD issued	SDC	SLU SHUTC issued
SDT	PLU SDT issued	UNB	PLU UNBIND issued
UBNS	SLU UNBIND issued		

Console Commands

7) The **VCTO** column identifies the active timer if one is running. The following timer values can be displayed.

CALL	SVC Call Request sent to DTE, response expected	CLR	SVC Clear Request sent to DTE, response expected
CLSD	QLLC SPU close wait state, open performed on timer expiration	DISC	QLLC QDISC sent to SPU, response expected
EMSG	Datafono EMSGE sent to DTE, response expected	ICOL	QLLC SPU input collection in progress
MSYN	Datafono MULTISYNC sent to DTE, response expected	OMTR	QLLC SPU output metering in progress
REXP	QLLC PIU sent to SPU, response expected	RQSD	REQSHUT sent to VTAM, SHUT-DOWN expected
RQSE	REQSESS sent to VTAM, BIND expected	RQWT	PVC reconnect wait state (PVCRE-CONTMR=), REQSESS issued on timer expiration
STLG	REQSESS wait state (REQSESS-DELAY=), REQSESS issued on timer expiration	STMD	QLLC QSM sent to SPU, response expected
STUP	PVC Setup sent to DTE, response expected	SUWT	PVC Setup wait state (PVC-SETUPTMR=), Setup issued on timer expiration
TEST	QLLC QTEST sent to SPU, response expected	XID	QLLC QXID sent to SPU, response expected

Note: The VCTO column was introduced into 240 with Enhancement APAR 2400078.

8) The **LLC** column identifies the VC logical line control. The following LLCs can be displayed.

CONS	Console session	CON*	Console session (you)
GATE	LLC4 session	PAD	LLC5 session
PCNE	LLC0 session	QLLC	LLC3 session

Note: If the DVC command is entered from a remote console, an asterisk (*) will replace the 'S' in the 'CONS' text to identify the remote VCB session receiving the display.

9) The **CLGADDR/CLDADDR/IPADDR** column identifies the either **calling** DTE address (SHOWCGAD), **called** DTE address (SHOWCDAD) or IP address (SHOWIPAD).

The first digit of a DTE address is the address length which is given in hexadecimal notation. The remaining digits are decimal.

For a **PVC**, DTE addresses come from the PVC Information packet (XTP) or PVC Setup packet (XOT). For an SVC, DTE addresses come from the Call Request packet.

Console Commands

ECHOXEQ Command - HNASXEQ Echo Control

(added for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	ECHOXEQ	[{ MAX MIN NO }]	A	240

This command is used to control how much modifier and parameter data is echoed back to the console operator prior to command execution. Echoed data is prefixed by the HNASXEQ-> text string.

- Enter **ECHOXEQ MAX** to cause all applicable command modifiers and parameters to be echoed on multiple lines (if necessary) with the HNASXEQ-> prefix for each line. Data at the end of one line is continued on the next with an ellipsis (...) suffix as an indication that more information exists.
- Enter **ECHOXEQ MIN** to cause all applicable command modifiers and parameters to be echoed on a single line. If more information exists than can be displayed on one line, an ellipsis (...) will terminate the line. ECHOXEQ MIN is the default state.
- Enter **ECHOXEQ NO** to cause the echoing of command modifiers and parameters to be inhibited.

Note: ECHOXEQ support was introduced into 240 with Enhancement APAR 2400014.

To summarize, you may enter a ECHOXEQ parameter that requests a specific action to be performed as follows:

ECHOXEQ Action Matrix

PARAMETER	ACTION
MAX	Force all command modifier and parameter information to be echoed on multiple lines, if necessary, prior to command execution.
MIN or omitted	Force a single line of command modifier and parameter information to be echoed prior to command execution.
NO	Inhibit command modifier and parameter echoing prior to command execution.

Example 1: Display REMOTE definitions for MCH1 with ECHOXEQ MIN in effect.

```
HNASCMD-> DRMT MCH1
HNASXEQ-> DRMT RNM=MCH1 APPLNAME CONNECT CTCP CUD CUD0 DCEADDR DF...
RMTNAME  OPERAND  TYPE
MCH1     00831EAC MCH
          APPLNAME=MCHSOL      (000)
          :
```

Example 2: Display REMOTE definitions for MCH1 with ECHOXEQ MAX in effect.

```
HNASCMD-> ECHOXEQ MAX
HNASXEQ-> ECHOXEQ MAX
HNASCMD-> DRMT MCH1
HNASXEQ-> DRMT RNM=MCH1 APPLNAME CONNECT CTCP CUD CUD0 DCEADDR DF...
HNASXEQ->      LNAME DFXNAME DTEADDR FAC GATE HOME IDBLK IDNUM ID...
HNASXEQ->      LETO IFNUM INIT IPADDR LLC0 LLC3 LLC4 LLC5 LOGTAB ...
HNASXEQ->      LUNAME MAXDATA MBITCHN OPTIONS PACE PAD PADPARM PK...
HNASXEQ->      TSIZ PORT PROTOCOL PVC PWPROT SUBADDR SUBD SVC0 SV...
HNASXEQ->      C3 SVC4 SVC5 SYSL TAP TRAN TYPE USSTAB VCLMT
RMTNAME  OPERAND  TYPE
MCH1     00831EAC MCH
          APPLNAME=MCHSOL      (000)
          :
```

General notes for ECHOXEQ:

- 1) HNAS console sessions activate with **ECHOXEQ MIN** in effect.

Console Commands

END Command - Delimit EXEC Command List

(apar/added for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	END		A	240

This command is used to delimit an EXEC command list file. When the END statement is encountered, HNAS stops queuing commands. This will reduce the likelihood of receiving the NASC054E message.

EXEC Command - Execute Command List

(new for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	EXEC	[{LCLCONS <i>rconname</i> }]	A	240
		[{ <i>ddname</i> (<i>options</i> , <i>cmd1</i> , . . . , <i>cmdn</i>) }] [LIST <i>ddname</i>] [STOP]	N C	240 240

This command is used to execute a command list file identified by ***ddname*** or supplied as an inline command list (***cmd1*,...,*cmdn***), to display a command list file (**LIST *ddname***) or to stop the execution of a command list that is currently active (**STOP**).

- When the **LCLCONS** or ***rconname*** argument is provided, it directs EXEC processing to the identified console. This allows one console to alter EXEC processing for another console. For example, EXEC RCON0031 (DNAS,ALARM SHOW) will cause the DNAS and ALARM SHOW commands to be executed for the remote console named RCON0031 regardless of which console actually entered the command. For more information on LCLCONS|*rconname* processing, please refer to section entitled 'Console PCE name as a Suffix Command Modifier' on page CONS-11.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

EXEC Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
STOP	none	LCLCONS <i>rconname</i>	1
<i>ddname</i>	(<i>options,cmd1</i> ,..., <i>cmdn</i>)	LCLCONS <i>rconname</i>	2
(<i>options,cmd1</i> ,..., <i>cmdn</i>)	<i>ddname</i>	LCLCONS <i>rconname</i>	3
LIST	none	LCLCONS <i>rconname</i>	4

- Enter **EXEC *ddname*** to execute a command list file identified by *ddname*. *ddname* identifies a DDNAME JCL statement that exists in the HNAS start job. DDNAME, in turn, points a file that contains a list of console commands. The DDNAMEs you that provide in the HNAS start job are arbitrary: For example:

```
//CMDLIST1 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST1),DISP=SHR
//CMDLIST2 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST2),DISP=SHR
//CMDLIST3 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST3),DISP=SHR
```

Console Commands

```
//CMDLIST4 DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST4),DISP=SHR
:
```

These command list files can be executed using the EXEC console command as follows:

```
EXEC CMDLIST1
EXEC CMDLIST2
EXEC CMDLIST3
EXEC CMDLIST4
```

If a *ddname* is specified that does not exist in the HNAS start JCL, the following message is issued:

```
NASC051E EXEC ddname INVALID, CANNOT BE OPENED
```

If a *ddname* identifies a DDNAME that references a member of a partitioned dataset and the member does not exist, the following message is issued:

```
NASC204E ddname ABEND PARMLIST=01301886 0008A8B4 008CC410 00000000
```

When a valid command list *ddname* is specified and it has been read successfully, the following message is generated:

```
NASC055I EXEC ddname FILE HAS BEEN READ, IT WILL NOW BE EXECUTED
```

A command list file can contain another EXEC *ddname* statement. When the embedded EXEC command is decoded, the balance of the current command list will be ignored and the new command list will then be executed. This allows you to chain command lists. If a command list contains an EXEC command that points at itself (e.g. EXEC CMDLIST3 is contained in CMDLIST3), the current command list (CMDLIST3 in this case) will be terminated and the following message will be issued:

```
NASC050E EXEC CMDLIST3 INVALID, CANNOT POINT AT ITSELF
```

You can also chain command lists via JCL by concatenating the command list dataset names as long as the concatenation forms a sequential dataset. For example:

```
//CMDLISTS DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST1),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST2),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST3),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(CMDLIST4),DISP=SHR
```

These command list files can be executed using the EXEC console command as follows:

```
EXEC CMDLISTS
```

Note: In the initial development, the command lists are always sequential datasets or members of partitioned datasets. The EXEC command does not currently allow you to specify a DDNAME and MEMBER name if DDNAME references a PDS.

Note: All DDNAMEs and the members they reference are completely arbitrary. The only requirement is that the *ddname* you provide for the EXEC command **must** exist in the HNAS start JCL.

Note: If DISP=SHR is specified for all command list DDNAMEs above, it will allow you to modify the command lists while HNAS is running.

The commands you provide in a command list file are completely arbitrary. The EXEC command processor does not check the commands for validity. Validity checking is provided by the individual command processors.

A command list file can contain comment records that start with an asterisk (*) or semi-colon (;) in record column 1. For command records in a command list file, a comment can be provided that follows the command text if the first character of the comment is a semi-colon (just like the CDF parsing). Command text is assumed to start with the first non-blank character of a command record and end with the last non-blank character of the record (prior to the comment start ; if it is present).

If an END statement or embedded EXEC command is decoded, queuing of commands is terminated. Any commands that follow an END statement or EXEC command are ignored.

Queued Command Savearea Size

The maximum number of commands that can be queued depends on the available queued storage space. A total of 512 bytes are reserved for queued console commands. Each blank that is part of a command is counted as a text character. The 512 byte maximum also includes a length byte for each queued command. For example, if EXEC *ddname* referenced a file with DPARM, DMAP and TRCMCH ICR specified on 3 records, 22 bytes would be required to queue the commands: 6 for DPARM (1+5), 5 for DMAP (1+4) and 11 for TRCMCH ICR (1+10). If you provide data in a command list that exceeds the 512 byte limit, the following message will be issued:

```
NASC054W EXEC XXXXXXXX FILE EXCEEDS QUEUED COMMAND LIMIT,
```

Note: The BUILD CONCMDQ= operand queue area is also used to save commands provided by the EXEC and QE (QUITEXEC) console commands.

Note: The BUILD CONCMDQ= operand can include the **EXEC *ddname*** command. If **EXEC *ddname*** is specified in the **CONCMDQ=** operand, it should be the last command in the list. This is because HNAS will stop executing the **CONCMDQ=** command list and start executing the **EXEC *ddname*** command list when it detects the EXEC command (the same memory is used to remember the CONCMDQ= and the EXEC command list values). The BUILD CONCMDQ= command list is considered to be the initial command list.

Note: The DCB parameters for datasets identified by the **EXEC *ddname*** command should be RECFM=FB and LRECL=80 with BLKSIZE= as a multiple of LRECL=.

Listed below is a sample command list file:

Console Commands

```
* THIS IS A SAMPLE CONSOLE COMMAND LIST FILE. COMMENTS CAN
* BE SUPPLIED THAT START WITH '*' OR ';' IN RECORD COLUMN 1.
* COMMENTS ON INDIVIDUAL LINES CAN BE SUPPLIED THAT START
* WITH ';'. CONSOLE COMMANDS WILL BE EXTRACTED FROM EACH
* RECORD FROM THE FIRST NON-BLANK CHARACTER TO THE LAST
* NON-BLANK CHARACTER ON EACH LINE. THE SEARCH FOR THE
* FIRST NON-BLANK CHARACTER IS EXECUTED FOR NON-COMMENT
* RECORDS ONLY (*|; IS NOT IN CC1). THE SEARCH FOR THE
* LAST NON-BLANK CHARACTER IS AFFECTED AFTER THE LINE
* COMMENT STARTING DELIMITER (;) IS FOUND.
* |<-- FIRST NON-BLANK
* |
* |           |<----- LAST NON-BLANK
* |           |
* V           V
NOPURGEONERROR           ; NO PURGE ON ERROR OPTION
DNAS                     ; FIRST QUEUED COMMAND
DPARM EXEC               ; SECOND QUEUED COMMAND
```

This file would be processed as though CONCMDQ=(DNAS,DPARM) were specified.

- Enter **EXEC** (*options,cmd1,...,cmdn*) to schedule an inline command list on a single line without having to invoke a *ddname*. Prior to the introduction of the EXEC command, only multiple non-display type commands could be entered on a single line. Using the EXEC command, multiple display commands can be scheduled. For example, if EXEC (DNAS,DPARM) were entered, the DNAS and DPARM commands would be executed consecutively.

Currently, *options* can be **PURGEONERROR|NOPURGEONERROR**

PURGEONERROR (the default) specifies that the remaining commands in an active command list will be purged if an error occurs for any command in the command list.

NOPURGEONERROR specifies that the remaining commands in an active command list will still be executed even if an error occurs for any command in the command list.

- Notes:**
- 1) The PURGEONERROR|NOPURGEONERROR options are valid for the EXEC= operand on the BUILD definition statement as well as the EXEC console command.
 - 2) The PURGEONERROR|NOPURGEONERROR options are not included in the command list but are decoded and acted upon immediately when parsed.
 - 3) Although the PURGEONERROR|NOPURGEONERROR options should be specified as the first command list element, the parser will accept the keywords anywhere in the list. However, the last occurrence of either option is the value that will be used.
 - 4) The PURGEONERROR|NOPURGEONERROR option may be specified as the

first non-comment record in a *ddname* command list.

- 5) The PURGEONERROR|NOPURGEONERROR option remains in effect until changed by the EXEC console command. To view the current option in effect, specify the following:

```
EXEC LIST
```

(command list omitted) which will yield the following display:

```
OPTONLY COMMAND QUEUE COUNT: 0000/0512
PURGEONERROR <- IN EFFECT
```

- 6) If the PURGEONERROR|NOPURGEONERROR option is specified and the EXEC *cmdlist* LIST command is entered, the value of the specified option will be listed first regardless of where it was specified in the command list. For example:

```
EXEC (DLP ,NOPURGEONERROR ,DPARM ,DLU) LIST
```

will yield the following display:

```
INLINE COMMAND QUEUE COUNT: 0014/0512
NOPURGEONERROR <- SPECIFIED
=> DLP
=> DPARM
=> DLU
```

Note: The new NOPURGEONERROR|PURGEONERROR keyword processing was introduced into 240 by Enhancement APAR 2400098.

Note: An inline command list is subject to the same queue criteria as a *ddname* command list. See the section above entitled '**Queued Command Savearea Size**' for details.

- Enter **EXEC *ddname* LIST** to display the individual commands in the command list file identified by *ddname*. If CMDLIST1 identifies a file that contains the sample command list described above, the following would be displayed when EXEC LIST CMDLIST1 was entered:

```
NASC055I EXEC CMDLIST1 FILE HAS BEEN READ, IT WILL NOW BE LISTED
=> DNAS
=> DPARM EXEC
```

Note: EXEC LIST *ddname* displays commands only. Comments are not displayed.

- Enter **EXEC STOP** to terminate the active command list.

Note: Any operator input will terminate a running command and the following message will be issued:

Console Commands

```
NASC005W cmdname ABORTED DUE TO OPERATOR INPUT
```

If the current command is part of a running command list, the following message will also be displayed:

```
NASC006W ddname COMMAND LIST INTERRUPTED
```

The interrupted command list will resume with the next command. If you wish to stop the active command list, enter EXEC STOP.

General notes for EXEC:

- 1) The *ddname* you enter must be defined in the EXEC PGM=HNAS start JOB.
- 2) If the dataset identified by *ddname* contains another EXEC command, the current command list will be terminated and the new one will be started.
- 3) If an EXEC command that is embedded in a command list points at itself, the current command list will be terminated and the following message will be issued:

```
NASC050E EXEC ddname INVALID, CANNOT POINT AT ITSELF
```

- 4) Operator commands can be entered while a command list is running but will terminate the current command in progress and then be executed. The remaining commands in the command list will be executed after the operator command completes.
- 5) You can create a command list that will be executed after it is created by specifying a list of commands, each separated by a comma, within a sublist (parenthesized expression). This will allow the execution of consecutive display commands which cannot be done when commands are executed immediately from normal operator input.
- 6) Supply an END statement or an embedded EXEC command in a command list file to stop queuing of commands. Any commands that follow the embedded END or EXEC command will be ignored. This will reduce the likelihood of receiving the NASC054E error message due to the 512 byte queuing limit being reached.
- 7) You may enclose a *cmdi* within single or double quotes (e.g., *cmdi*, '*cmdi*' or "*cmdi*" are valid). If single quotes are part of a *cmdi*, it can be enclosed in double quotes (e.g., smsg 'test' or "smsg 'test'" are valid). The enveloping single or double quotes are removed from each *cmdi* before the values are saved.
- 8) Leading and trailing blanks are removed from each *cmdi* before the values are saved.
- 9) For both the EXEC and SCHEDULE command, the CONCMDQ queue is used to execute commands. For the EXEC command, *cmdi* values are enqueued to CONCMDQ in a first in, first out (FIFO) manner. For the SCHEDULE command, *cmdi* values are enqueued to CONCMDQ in a last in, first out (LIFO) manner. LIFO enqueue is used because sched-

uled commands must be executed at the specified time whereas EXEC commands are executed in sequence.

Console Commands

F or FIND Command - Find Data in Storage (Privileged)

(new for V2R1M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	F [IND]	[B= <i>startaddress</i>]	N	210
		[E= <i>endaddress</i>]		
		D= ' <i>textdata</i> ' <i>hexdata</i>		

This command will locate the data given by the **D=** operand within the bounds established by the **B=** and **E=** operands. If the **B=** parameter is omitted, the default base established by the Display Memory or Modify Memory (D base + offset or M base + offset, respectively) will be used. If the **E=** parameter is omitted, the end of HNAS executable memory (NASEND) will be used. The **D=** operand, which is required, may specify up to 63 text characters enclosed in quotes or up to 63 hex bytes without the framing characters X" (hex digits must be paired).

The following display is produced when **F B=6D08 E=FFFF D='XFNASWA'** is entered.

```
CURRENT=00006D08 START=00006D08 END=0000FFFF
FIND=E7C6D5C1 E2E6C1 'XFNASWA'
CURRENT=00007D08 START=00006D08 END=0000FFFF
FIND=E7C6D5C1 E2E6C1 'XFNASWA'
:
```

Note: The FIND command progress is indicated by the value displayed for **CURRENT** parameter. This message is issued each time X'1000' bytes of data has been scanned until the target data is found or **E=** limit is reached.

When the specified data is found, the following message is generated.

```
TEXT FOUND, ADDRESS=00008490
```

This also sets a new base value for the next FIND, DMEM or MMEM command. If you reenter the FIND command with no operands after a 'hit', the command will continue looking for the same data from the new base until the end address specified by the original **E=** operand.

If the specified data is not found within the established boundaries, the following message is produced.

```
TEXT NOT FOUND
```


HELP or ? Command - Display Command Help

(changed for V2R1M0)
 (changed for V2R2M0)
 (changed for V2R3M0)
 (changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	HELP or ?	{ [<i>command</i>] SHOWALL }	C	240

This command will display the HNAS Console Subsystem command list with a brief description of each command or the syntax required for a selected command.

You may enter a **command** name to restrict the display to a single command. In this case, the display is **verbose** which means that all command information is displayed. If the **command** name is omitted, a short list (**non-verbose**) of all commands that are supported by the HNAS Console Subsystem will be displayed. When all commands are displayed, they are listed alphabetically, top to bottom.

When the **SHOWALL** argument is specified, the **verbose** display is produced for every command.

Note: The HELP display will now list the common parameters that may be specified for all commands immediately after the display header record (see example below). This new HELP display support was introduced into 240 with Enhancement APAR 2400014.

Console Commands

The following is an example of the heading and information produced by the `HELP` command.

```
COMMAND  *DESCRIPTION (* => PRIVILEGED)
|         |
|         | |<- command description
|         |
|         | |<- privileged command indicator (*)
|         |
|<- command name
```

The following display is produced when `HELP TRCADDR` is entered.

```
COMMAND  DESCRIPTION (* => PRIVILEGED)
COMMON PARAMETERS FOR ALL COMMANDS: cmdname parm
      parm=? to display help for cmdname.
      BPM to bypass permanent modifiers for cmdname.

TRCADDR  *EVENT TRACE CONTROL FOR RESOURCE ADDRESSES
ENTER> [CLDADDR=ddd...ddd] TRCADDR {ADD|DEL|PRG}
ENTER> [CLGADDR=ddd...ddd] TRCADDR {ADD|DEL|PRG}
ENTER> [IPADDR=aaa.bbb.ccc.ddd[(pppp)]] TRCADDR {ADD|DEL|PRG}

NOTE: TRACING REQUIRES ADDITIONAL CPU CYCLES
```

The following display is produced when HELP is entered without a command name.

```

COMMAND      DESCRIPTION (* => PRIVILEGED)
COMMON PARAMETERS FOR ALL COMMANDS: cmdname parm
                parm=? to display help for cmdname.
                BPM to bypass permanent modifiers for cmdname.

@              *CUSTOM/SPECIAL COMMANDS FOR COMM-PRO USE ONLY
ALARM          *ALARM CONSOLE CONTROL
CID=          SET LOGICAL UNIT CONNECTION IDENTIFIER EXTENTS
CLDADDR=      SET RESOURCE CALLED DTE ADDRESS
CLGADDR=      SET RESOURCE CALLING DTE ADDRESS
DADDR         DISPLAY RESOURCE ADDRESSES
D[MEM]        DISPLAY MEMORY
DLCL          DISPLAY LOCAL CONFIGURATION PARAMETERS
DLP           DISPLAY HNAS LOAD POINT
DLU           DISPLAY LOGICAL UNIT STATUS
DMAP          DISPLAY HNAS MODULE MAP
DMCH          DISPLAY MULTI-CHANNEL LINK STATUS
DNAS          DISPLAY HNAS INFORMATION
DPARM         DISPLAY CONSOLE PARAMETER VALUES
DPCE          DISPLAY PROCESS CONTROL ELEMENT STATUS
DRMT          DISPLAY REMOTE CONFIGURATION PARAMETERS
DSTATS        DISPLAY PROCESS CONTROL ELEMENT STATISTICS
DTRC          DISPLAY HNAS TRACE TABLE
DVC           DISPLAY VIRTUAL CIRCUIT STATUS
ECHOXEQ       MODIFY COMMAND EXECUTION ECHO OPTION
EXEC          EXECUTE COMMAND LIST
F[IND]        *FIND DATA IN MEMORY
HELP          DISPLAY CONSOLE COMMAND HELP INFORMATION
ID=           SET PROCESS CONTROL ELEMENT IDENTIFIER
IFN=          SET MULTI-CHANNEL LINK INTERFACE NUMBER EXTENTS
IPADDR=       SET RESOURCE IP ADDRESS AND OPTIONAL PORT NUMBER
LNM=          SET LOCAL NAME
LNCT=         SET SCROLL LINE COUNT (SIMULATED ATTENTION ENFORCED)
LUN=          SET MULTI-CHANNEL LINK CTCP LOGICAL UNIT EXTENTS
LUNM=         SET LU NAME
M[MEM]        *MODIFY MEMORY
MLCL          *MODIFY LOCAL CONFIGURATION PARAMETERS
MON[ITOR]     MONITOR RESOURCE UTILIZATION
MRMT          *MODIFY REMOTE CONFIGURATION PARAMETERS
PAUSE         PAUSE CONSOLE PROCESSING (GO TO SLEEP)
PFXWTO        *WTO PREFIX CONTROL
PING          *PING REMOTE ROUTER AND/OR MCH LINK
PRNT          *CONSOLE PRINT CONTROL
Q[UIT]        TERMINATE CONSOLE OPERATIONS
RMTCONS       *REMOTE CONSOLE ACCESS CONTROL
RNM=          SET REMOTE NAME
SCHEDULE      SCHEDULE COMMAND LIST
SHOW          *CONSOLE LOGGING CONTROL
MSG           SEND MESSAGE TO CONSOLE OPERATOR
SNAP          *SNAP A DUMP OF SELECTED HNAS AREAS
STATS         *STATISTICS CONTROL FOR PROCESS CONTROL ELEMENTS
TRCADDR       *EVENT TRACE CONTROL FOR RESOURCE ADDRESSES

```

Console Commands

TRCALL *TRACE ALL CONTROL
TRCBFR *BUFFER TRACE CONTROL FOR PROCESS CONTROL ELEMENTS
TRCBFRQ *BUFFER REQUEST TRACE CONTROL
TRCBST *BINARY SEARCH TABLE TRACE CONTROL
TRCCNFG *CONFIGURATION UPDATE TRACE CONTROL
TRCDATA *DATA TRACE CONTROL FOR PROCESS CONTROL ELEMENTS
TRCDBK *DATA BLOCK TRACE CONTROL FOR LOGICAL UNITS AND VIRTUAL CIRCUITS
TRCDISP *DISPATCHER TRACE CONTROL FOR PROCESS CONTROL ELEMENTS
TRCIO *I/O TRACE CONTROL FOR PROCESS CONTROL ELEMENTS
TRCLU *EVENT TRACE CONTROL FOR LOGICAL UNITS
TRCLUQ *EVENT TRACE CONTROL FOR LOGICAL UNIT QUEUES
TRCMCH *EVENT TRACE CONTROL FOR MULTI-CHANNEL LINKS
TRCMCHX *EVENT TRACE CONTROL FOR MULTI-CHANNEL LINK GATE LOGICAL UNITS
TRCPCE *EVENT TRACE CONTROL FOR PROCESS CONTROL ELEMENTS
TRCPRNT *PRINT TRACE CONTROL
TRCSUBR *SUBROUTINE CALL TRACE CONTROL
TRCTASK *TASK WAIT/POST TRACE CONTROL
TRCTRAP *TRACE TRAP CONTROL
TRCVC *EVENT TRACE CONTROL FOR VIRTUAL CIRCUITS
TRCVCQ *EVENT TRACE CONTROL FOR VIRTUAL CIRCUIT QUEUES
TRCWTO *WTO CALL TRACE CONTROL
V[ARY] *VARY RESOURCE STATE
VCN= SET VIRTUAL CIRCUIT EXTENTS

ID= Modifier - Set PCE Identifier

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
ID= <i>minid</i> [- <i>maxid</i>] ID=?	<i>command</i>	[ID= <i>minid</i> [- <i>maxid</i>]	C	240

This modifier is used to select specific PCE(s) for the commands that follow. HNAS allocates a PCE for every process that it controls. The **ID=** value serves as an identifier for each HNAS subtask. For more information on PCE identifiers, refer to page CONS-33 of this document.

Note: The ID= modifier is used by the DLU, DMCH, DPCE, DSTATS, DVC, MON, SMSG, STATS, TRCBFR, TRCCONS, TRCDATA, TRCDISP, TRCIO, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVQC and VARY commands.

- If ID= (null) is specified, the command operates on all PCEs unless noted otherwise.
- If ID=0 is specified (ID=0-0 is not permitted), the command also operates on all PCEs unless noted otherwise. For most commands, ID= (null) and ID=0 are treated identically. The exceptions are for the TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVQC, VARY and MON TAP commands. Please refer to description of these commands for further details.
- If an ID= value is specified as a range (e.g., ID=1-3), the command operates on the selected PCEs.
- If an ID= value is specified as a single element (e.g., ID=1) or as a range where the extents are the same (e.g., ID=1-1), the command operates on the selected single PCE.
- If an invalid ID= value is specified, the balance of the command line is ignored.
- If an ID= value is specified, it must be entered as a hexadecimal number.

ID=*minid*[-*maxid*] extent values can range from 1 to *n* where *n* is the last configured PCE. To see the value of *n*, issue the DPARM command and look under the VALID VALUES column for the ID= modifier.

- Enter **ID=?** to display the permanent ID= value.

Console Commands

IFN= Modifier - Set MCH Interface Number

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
IFN= <i>minifn</i> [- <i>maxifn</i>] IFN=?	<i>command</i>	[IFN= <i>minifn</i> [- <i>maxifn</i>]]	C	240

This modifier is used to select specific XTP MCH(s) for the commands that follow. HNAS allocates an MCH for each TYPE=XTP|MCH REMOTE definition statement. The **IFN=** value serves as an identifier for XTP Multi-channel Link resources only. XOT logical MCHs are identified completely by the **ID=** value. For more information on XTP MCH identifiers, refer to page CONS-35 of this document.

Note: The IFN= modifier is used by the DLU, DMCH, DVC, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCVC and TRCVCQ commands.

- If IFN= (null) is specified, the command operates on all MCHs unless noted otherwise.
- If IFN=0 is specified (IFN=0-0 is not permitted), the command also operates on all MCHs unless noted otherwise. For all commands, IFN= (null) and IFN=0 are treated identically.
- If an IFN= value is specified as a range (e.g., IFN=2-17), the command operates on the selected MCHs.
- If an IFN= value is specified as a single element (e.g., IFN=2) or as a range where the extents are the same (e.g., IFN=2-2), the command operates on the selected single MCH.
- If an invalid IFN= value is specified, the balance of the command line is ignored.
- If an IFN= value is specified, it must be entered as a decimal number.

IFN=*minifn*[-*maxifn*] values can range from 1 to 255.

- Enter **IFN=?** to display the permanent IFN= value.

IPADDR= Modifier - Set DTE IP Address

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
IPADDR= <i>aaa.bbb.ccc.ddd</i> [(<i>ppppp</i>)]	<i>command</i>	[IPADDR= <i>aaa.bbb.ccc.ddd</i> [(<i>ppppp</i>)]]	N	114
IPADDR=?			C	240

This modifier is used to select a specific IP address and optional port number for the TRCADDR command. The TRCADDR command is used to start or stop tracing for a specific TCP socket or collection of TCP sockets when no port number is given.

- The **IPADDR** value must be entered in standard 'dotted decimal' notation. If an optional port number is required, it must be enclosed in parentheses and appended to the IP address digits.
- If a null IPADDR value is entered, the remembered IPADDR parameter is reset.
- Enter **IPADDR=?** to display the permanent IPADDR= value.

Console Commands

LNCT= Modifier - Set Remote Console Scroll Line Count

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LNCT=value	<i>command</i>		N	112
LNCT=?			C	240

This modifier is used to set the scroll line count for a remote console session. The scroll line count controls how many display lines are written to the remote console terminal before a simulated attention response is required. The simulated attention forces a pause in the display output so that a screen full of data can be easily read before the next screen is presented.

The simulated attention prompt is displayed as 3 asterisks (***) in the bottom left corner of the display. The operator can enter an 'A' to abort the display or a null line to resume the display. This mechanism allows the remote console operator to control how data is presented to his terminal.

- You may enter a decimal **LNCT=** value between 0 and 65535. A value of zero (0) forces the simulated attention to be inhibited and allows display scrolling to continue unabated. A default **LNCT=** value of **23** is set when the remote console session is established.
- Enter **LNCT=?** to display the current LNCT= value.

LNM= Modifier - Set LOCAL Name

(new for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LNM= <i>lcname</i>	<i>command</i>	[LNM= <i>lcname</i>]	N	220
LNM=?			C	240

This modifier is used to select a specific LOCAL definition statement name for the commands that follow. The **LNM=** value must identify a valid LOCAL definition statement in the HNAS Configuration Data File. Use **LNM=** to target a specific server resource.

Note: The LOCAL resource named by the LNM= modifier is used by the DLCL, DNWDF, MLCL and VARY LCL commands.

- When a ***lcname*** value is specified, **LNM=** takes precedence over the **ID=** value.
- If the **LNM=** modifier is entered with no ***lcname*** value (null), the remembered LOCAL name is reset.
- Enter **LNM=?** to display the permanent LNM= value.

Console Commands

LUN= Modifier - Set MCHX (CTCP) Identifier

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LUN= <i>minlun</i> [- <i>maxlun</i>] LUN=?	<i>command</i>	[LUN= <i>minlun</i> [- <i>maxlun</i>]]	C	240

This modifier is used to select specific MCHX(s) for the commands that follow. HNAS allocates an MCHX for each CTCP control session SLU connection. The **LUN=** value serves as an identifier for HNAS CTCP control session SLU resources. For more information on MCHX identifiers, refer to page CONS-35 of this document.

Note: The LUN= modifier is used by the DMCH, TRCLUQ and TRCMCHX commands.

- If LUN= (null) is specified, the command operates on all MCHXs unless noted otherwise.
- If LUN=0 is specified (LUN=0-0 is not permitted), the command also operates on all MCHXs unless noted otherwise. For all commands, LUN= (null) and LUN=0 are treated identically.
- If a LUN= value is specified as a range (e.g., LUN=1-3), the command operates on the selected MCHXs.
- If a LUN= value is specified as a single element (e.g., LUN=1) or as a range where the extents are the same (e.g., LUN=1-1), the command operates on the selected single MCHX.
- If an invalid LUN= value is specified, the balance of the command line is ignored.
- If a LUN= value is specified, it must be entered as a decimal number.

LUN=*minlun*[-*maxlun*] values can range from 1 to 28.

- Enter **LUN=?** to display the permanent LUN= value.

LUNM= Modifier - Set LU Name

(new for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LUNM= <i>luname</i> LUNM=?	<i>command</i>	[LUNM= <i>luname</i>]	N C	220 240

This modifier is used to select a specific SLU name for the commands that follow. The **LUNM=** value must identify a valid SLU that is defined in the LUNAME=, PVC=, SVC0= SVC4= or SVC5= operand for some REMOTE definition statement in the HNAS Configuration Data File. Use **LUNM=** to target a specific SLU resource.

Note: The LU resource named by the LUNM= modifier is used by the DLU, TRCLU, TRCM-CHX and VARY LU commands.

- When a ***luname*** value is specified, **LUNM=** takes precedence over the **ID=**, **IFN=** and **CID=** or **LUN=** value combination.
- If the **LUNM=** modifier is entered with no ***luname*** value (null), the remembered LU name is reset.
- Enter **LUNM=?** to display the permanent LUNM= value.

Console Commands

M or MMEM Command - Modify Memory (Privileged)

to change the HNAS Maintenance/Use Anniversary Date (EOMDATE)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	M [MEM]	EOMKEY=ddddddddddddddd	A	240

or to change the HNAS Trial Period Expiration Date (EOTDATE)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	M [MEM]	EOTKEY=ddddddddddddddd	A	240

or to modify a location in HNAS storage

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	M [MEM]	address [+offset] xx...xx		

This command is used to modify HNAS storage areas.

- **For a permanent distribution**, you may enter **MMEM EOMKEY=dd...dd** to allow the MAINTENANCE/USE ANNIVERSARY DATE (EOMDATE) to be extended using a special 16 decimal digit key provided by the **dd...dd** digits. HNAS is normally shipped with an EOMDATE that specifies when the MAINTENANCE/USE license will expire. An unexpired EOMDATE is required to use HNAS. In the past, the only way to extend the EOMDATE was to order and install a new refresh distribution. The new MMEM EOMKEY=**dd...dd** command now allows the EOMDATE to be extended without the need of a new refresh distribution or without having to stop and re-start HNAS. The EOMKEY=**dd...dd** start parameter is also provided so that the EOMDATE can be extended without having to issue the MMEM EOMKEY=**dd...dd** command each time HNAS is stopped and re-started. Please see the PARM='EOMKEY=**dd...dd**' description in Chapter 2 for additional information. The EOMKEY=**dd...dd** digits are provided by Comm-Pro in a special file that is sent as an email attachment or is downloaded from our FTP server. The EOMKEY=**dd...dd** string can then be cut and pasted to the MMEM console command (or the PARM= operand - see Chapter 2). The EOMKEY file has the following format:

```
EOMKEY=7790732630972316
HNAS EOMKEY CREATED AT 14:55:49 ON 2009/09/14
MAINTENANCE/USE ANNIVERSARY DATE IS 2009/12/31
CUSTID=SFD_99999
CUSTINFO=COMM-PRO ASSOCIATES
EMKYDC=320091231119999
```

Note: MMEM EOMKEY= command logic was introduced into 240 via APAR 2400095.

Note: The EOMKEY= file format was modified via APAR 2400096.

- **For a trial distribution**, you may enter **MMEM EOTKEY=dd...dd** to allow the TRIAL PERIOD EXPIRATION DATE (EOTDATE) to be extended using a special 16 decimal digit key provided by the **dd...dd** digits. HNAS is normally shipped with an EOTDATE that specifies when the TRIAL AUTHORIZATION will expire. An unexpired EOTDATE is required to use HNAS. In the past, the only way to extend the EOTDATE was to order and install a new trial refresh distribution. The new MMEM EOTKEY=**dd...dd** command now allows the EOTDATE to be extended without the need of a new refresh distribution or without having to stop and re-start HNAS. The EOTKEY=**dd...dd** start parameter is also provided so that the EOTDATE can be extended without having to issue the MMEM EOTKEY=**dd...dd** command each time HNAS is stopped and re-started. Please see the PARM='EOTKEY=**dd...dd**' description in Chapter 2 for additional information. The EOTKEY=**dd...dd** digits are provided by Comm-Pro in a special file that is sent as an email attachment or is downloaded from our FTP server. The EOTKEY=**dd...dd** string can then be cut and pasted to the MMEM console command (or the PARM= operand - see Chapter 2). The EOTKEY file has the following format:

```
EOTKEY=4961000737880526
HNAS EOTKEY CREATED AT 08:17:02 ON 2010/11/29
TRIAL PERIOD EXPIRATION DATE IS 2011/01/28
CUSTID=SFD_99999
CUSTINFO=COMM-PRO ASSOCIATES
ETKYDC=0201101281199999
```

Note: MMEM EOTKEY= command logic was introduced into 240 via APAR 2400106.

- **For a trial distribution**, you may enter **MMEM EOMKEY=dd...dd** to change the trial distribution to a permanent distribution dynamically using the key provided by the **dd...dd** digits.

If EOMKEY=4962030747980516 (for example) is used to convert a trial distribution to a permanent distribution, the DNAS display will reflect this by changing DNAS display records 11, 14 and 18 as follows:

```
AUTH=000 SHIPID=1100000011199999 EMKYID=1100000011199999      11
MAINTENANCE/USE ANNIVERSARY DATE IS 2010/12/31*                14
EOMKEY=4962030747980516 IS IN EFFECT                          18
```

Note that AUTH=000 on DNAS display record 11 above reflects the new permanent status.

Note: EOMKEY= trial conversion logic was introduced into 240 via APAR 2400106.

- You may enter an absolute **address** or a relative address as an offset from an established base (**+ offset**). A new base is set when the **address** and **+ offset** parameters are entered together. For example, M 6500 + 20 47F0 will modify the contents of address 6520 to 47F0 and set the address base to 6500. The address base is initially set to the NASMAIN load point.

The hexadecimal digits (**xx...xx**) you enter will overlay the data at the target address. You must enter an even number digits.

The M command generates the following request message.

Console Commands

```
HNASXEQ-> MMEM ADDRESS=xxxxxxxx DATA=xxxxxxxx xxxxxxxx ... xxxxxxxx  
HNASXEQ-> ENTER: N=ABORT, Y=APPLY
```

You may reply with **N** or **Y**.

N causes the modify memory request to be aborted. **Y** causes the modify memory request to be completed. In both cases, a prompt is then issued for a new command.

Note: If the MMEM command references a memory address that HNAS is not authorized to modify (the address is invalid for the machine configuration or the address is not in the same storage key as HNAS), the following error message will be displayed:

```
NASC611W MODIFY MEMORY ADDRESSING EXCEPTION, CONSOLE COMMAND ABORTED
```

MLCL Command - Modify LOCAL Configuration (Privileged)

(new for V2R2M0)
 (changed for V2R3M0)
 (changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LNМ= <i>lcname</i>	MLCL	[<i>lcname</i>]	C	230
		[INIT={ACTIVE IDLE} [, DELAYTIME= <i>minutes</i>] [, RETRYLMT= <i>count</i>]]	N	230
		[OPTIONS= [, {BALANCERTEIN NOBALANCERTEIN}] [, {BALANCERTEOUT NOBALANCERTEOUT}]]]	N A	220 230
		[RTEIN= [<i>ith</i>] [,] {* CLEAR [- <i>nth</i>] SKIP [- <i>nth</i>] <i>mchname</i> [- <i>nth</i>] } [/{* <i>dteaddr</i> [{T S}]]]]]	A N N A	230 240 240 230
		[RTEOUT= [<i>ith</i>] [,] {* <i>rmtname</i> [- <i>nth</i>] } [/{* <i>dteaddr</i> [{T S}]]] [/{* <i>desctext</i> }]]]]	A N	230 240

This command is used to modify LOCAL configuration parameters for the LOCAL definition statement identified by the **LNМ=** modifier. If no **LNМ=** value is set, no modification is performed.

To summarize, you may enter a list of LOCAL definition statement operands that you want to modify as follows:

MLCL Action Matrix

PARAMETER	ACTION	X T P	X O T
INIT=	Supply value for INIT=		

Console Commands

PARAMETER	ACTION	X T P	X O T
OPTIONS=	Supply value for OPTIONS= [[NO]BALANCERTEIN [[NO]BALANCERTEOUT	I I	
RTEIN=	Supply value for RTEIN=	I	
RTEOUT=	Supply value for RTEOUT=	I	

Legend: For LOCAL *type* column: I=> Invalid, blank=> supported (see Console Command Parameter Action Matrix Keys description on page CONS-21 for additional information).

General notes for MLCL:

- 1) The modified parameters will take effect for new sessions only.
- 2) A new CDF can be created from the original CDF plus any changes that are made during HNAS execution using the MLCL and MRMT console commands. The new CDF is produced when the GENNWDF start parameter is specified and the NEWDEFN DD statement is included in the HNAS start JOB. New or modified records are identified in the new CDF by the characters ;**NWDF** starting in character position 67. The NEWDEFN file is maintained in memory until HNAS is stopped at which time it is then written to disk. You can display the updated NEWDEFN file in memory by issuing the DNWDF command which is described on page CONS-89.

MLCL operand syntax:

```
INIT={ACTIVE | IDLE}                                (XTP | XOT)
      [, DELAYTIME=minutes]
      [, RETRYLMT=count]
```

Specify the LOCAL initialization options to set or reset. If the LOCAL state changes from ACTIVE to IDLE or vice versa, a VARY LCL ON|OFF command is propagated.

Note: Varying a LOCAL resource off and then on again in rapid succession can cause a TCPIP BIND request to fail and the following alarm message to be displayed:

```
NAS2321W BIND REQUEST FAILED RC=FFFFFFFF 00000030
```

The ERNO=30 at the end of the RC indicates that LOCAL 'IP address is in a timed wait because of a LINGER delay from a previous close or another process is using the address'. When this event occurs, HNAS enforces the DELAYTIME= value and will not retry the BIND until the delay timeout expires. At this time, HNAS will also reset the LINGER timeout that the stack is enforcing thus allowing the BIND to complete. If the default DELAYTIME= value

of 5 minutes is too long to wait for a BIND retry, you should specify DELAYTIME=1 in the CDF or modify it using the MRMT INIT=DELAYTIME=1 console command.

```
OPTIONS= [, {BALANCERTEIN|NOBALANCERTEIN}] XOT
          [, {BALANCERTEOUT|NOBALANCERTEOUT}] XOT
                                               (changed for V2R3M0)
```

Specify the LOCAL options to set or reset.

For a **TYPE=XOT LOCAL** definition statement, you may specify OPTIONS= operand values of **[NO]BALANCERTEOUT**.

```
RTEIN= [ith] [,] { * | CLEAR [-nth] | (XOT only)
              SKIP [-nth] |
              mchname [-nth] }
          [/{ * | dteaddr [{T|S}] } ]
                                               (changed for V2R4M0)
```

For the *nth* occurrence of the named **TYPE=MCH REMOTE** (*mchname*), **SKIP** or **CLEAR** in the RTEIN= operand list on a **TYPE=XOT LOCAL** definition statement, you may add, replace or delete (*) the decimal DTE address value (*dteaddr*) which is used as a callin routing identifier.

You may enter up to 15 decimal digits for *dteaddr*. If you enter a single asterisk (*) for the callin routing identifier, the old DTE address value is removed. In this case, any DTE address will be able to access an associated MCH.

You may also specify filtering characters for the *dteaddr* value.

@ as the first *dteaddr* character tells HNAS to accept any DTE address whose trailing digits match the *dteaddr* digits that follow the @. For example, @6789 will allow DTE addresses of 123456789, 16789, 3216789, etc. to be considered a match.

* within the *dteaddr* (not by itself which is recognized as the delete symbol) will be considered a wildcard character. For example, 12**56 will allow DTE addresses of 120056, 120156, 121056, 120256, etc. to be considered a match.

The @ and * characters can be used together.

Note: In the standard US Code Table an **at sign** @ has a value of X'7C'. The equivalent symbol in French is à or in German/Italian is §.

Note: In the standard US Code Table an **asterisk** * has a value of X'5C'. The equivalent symbol for the EU is the **not-equal symbol**.

You may also add or change the callin routing delimiter (**T|S**) associated with the RTEIN= operand entry.

Console Commands

If the *nth* value is omitted, the first occurrence of the *mchname*, **SKIP** or **CLEAR** in the RTEIN= operand list is used. The *nth* value you specify can identify any existing occurrence of *mchname*, **SKIP** or **CLEAR** in the RTEIN= operand list. If the *nth* value exceeds the occurrences for an *mchname*, **SKIP** or **CLEAR**, a new entry will be created so long as the total number of entries in the RTEIN= operand list does not exceed 1023.

Use the *ith* index value to identify an insert point for a new entry (*mchname*) or a delete point for an existing entry (*). If specified, the *ith* value must be given relative to one, that is, 1 identifies the first entry.

Note: Prior to V2R3M0 enhancement APAR 2300056, if a new entry was to be added to the RTEIN= or RTEOUT= operand, it could only be added to the end of each operand's list. If the associated DTE address is a superset of a previous entry, the new entry would never be used. For example, assume the following RTEIN= operand list:

```
RTEIN= (ABCD/47113456,  
        EFGH/23456,  
        IJKL/345689)
```

When MLCL RTEIN=XYZA/2345678 is entered, the RTEIN= operand list will look as follows:

```
RTEIN= (ABCD/47113456,  
        EFGH/23456,  
        IJKL/345689,  
        XYZA/2345678)
```

Because DTE address 23456 occurs earlier in the RTEIN= list (for MCH EFGH), the new entry for MCH XYZA will not be accessed.

To correct this anomaly, the MLCL command has been modified so that a new entry can be inserted at a specific position in the RTEIN= and RTEOUT= operand lists. In this way the new entry can be tested before the old entry that has a subset of the new DTE address. Using the example above, to insert XYZA/2345678 as the second entry in the RTEIN= operand list, prefix the MCH name (XYZA) with a decimal entry number value as follows:

```
MLCL RTEIN=2,XYZA/2345678      <- comma before XYZA is optional
```

This command changes the RTEIN= operand list to look as follows:

```
RTEIN= (ABCD/47113456,  
        XYZA/2345678,  
        EFGH/23456,  
        IJKL/345689)
```

Note also that logic has been added that allows you to delete an entire entry, not just its DTE address. To remove the entry for MCH EFGH in the RTEIN= list above, enter the following command:

MLCL RTEIN=3,* <- comma before * is optional

This command changes the RTEIN= operand list to look as follows:

```
RTEIN= (ABCD/47113456,
        XYZA/2345678,
        IJKL/345689)
```

The insert/delete function described above for RTEIN= is also valid for the RTEOUT= operand.

```
RTEOUT= [ith] [,] { * | rmtname [-nth] } (XOT only)
          [/{ * | dteaddr [{T|S}]}]
          [/{ * | descstext}]
                                               (changed for V2R4M0)
```

For the *nth* occurrence of the named **TYPE=XOT REMOTE** (*rmtname*) in the RTEOUT= operand list on a **TYPE=XOT LOCAL** definition statement, you may add, replace or delete (*) the decimal DTE address value (*dteaddr*) which is used as a callout routing identifier.

You may enter up to 15 decimal digits for *dteaddr*. If you enter a single asterisk (*) for the callout routing identifier, the old DTE address value is removed. In this case, any DTE address will be able to access the associated XOT router.

You may also specify filtering characters for the *dteaddr* value.

@ as the first *dteaddr* character tells HNAS to accept any DTE address whose trailing digits match the *dteaddr* digits that follow the @. For example, @6789 will allow DTE addresses of 123456789, 16789, 3216789, etc. to be considered a match.

* within the *dteaddr* (not by itself which is recognized as the delete symbol) will be considered a wildcard character. For example, 12**56 will allow DTE addresses of 120056, 120156, 121056, 120256, etc. to be considered a match.

The @ and * characters can be used together.

Note: In the standard US Code Table an **at sign** @ has a value of X'7C'. The equivalent symbol in French is à or in German/Italian is §.

Note: In the standard US Code Table an **asterisk** * has a value of X'5C'. The equivalent symbol for the EU is the **not-equal symbol**.

You may also add or change the callout routing delimiter (**T|S**) associated with the RTEOUT= operand entry.

You may also provide a description that will be used in the NAS7717W message in lieu of the *dteaddr*. The **descstext** suboperand must follow the callout routing delimiter (**T|S**) preceded by a forward slash (/). The *descstext* value is a quoted text string that can be from 1 to 15 characters in length including blanks but excluding the quotes.

Console Commands

For example, RTEOUT=(XOTCLNT1/1234T/'NYC DTE #1'). If you enter a single asterisk (*) or a null text string (") for the descriptor text, the old *desc*text value is removed. In this case, the DTE address will be used in the NAS7717W message.

If the *nth* value is omitted, the first occurrence of the *rmtname* in the RTEOUT= operand list is used. The *nth* value you specify can identify any existing occurrence of *rmtname* in the RTEOUT= operand list. If the *nth* value exceeds the occurrences for a *rmtname*, a new entry will be created so long as the total number of entries in the RTEOUT= operand list does not exceed 1023.

Use the *ith* index value to identify an insert point for a new entry (*rmtname*) or a delete point for an existing entry (*). If specified, the *ith* value must be given relative to one, that is, 1 identifies the first entry.

Note: If invalid data is entered for an operand, its value is not changed and the MLCL command is aborted at that point.

MLCL Examples:

As an illustration of how the MLCL and DLCL commands can be used together, consider the following examples. Note that you should always issue a DLCL command before making any changes so you will have a log of initial values.

Initially, the following display is produced when **LNM=LXOT DLCL RTEIN** is entered (LNM=LXOT sets the LOCAL name for subsequent MLCL and DLCL commands).

```
LNM=LXOT DLCL RTEIN
```

```
LCLNAME OPERAND TYPE
LXOT      00077084  XOT
           RTEIN=MCH1    /203612345678
           MCH1         /2036
           MCH2         /9
           MCH3         /8
```

- 1) Change the DTE address for the first occurrence of the MCH named MCH1 from 203612345678 to 8888 then verify the change.

```
MLCL RTEIN=MCH1/8888
DLCL RTEIN
```

```
LCLNAME OPERAND TYPE
LXOT      00077084  XOT
           RTEIN=MCH1    /8888
           MCH1         /2036
           MCH2         /9
           MCH3         /8
```

- 2) Change the DTE address for the second occurrence of the MCH named MCH1 from 2036 to 20360010 then verify the change.

```
MLCL RTEIN=MCH1-2/20360010
DLCL RTEIN
```

```
LCLNAME OPERAND TYPE
LXOT      00077084  XOT
           RTEIN=MCH1    /8888
           MCH1         /20360010
           MCH2         /9
           MCH3         /8
```

- 3) Add a second entry for the MCH named MCH3 with a DTE address of 20360011 then verify the change.

```
MLCL RTEIN=MCH3-2/20360011
DLCL RTEIN
```

Console Commands

```
LCLNAME OPERAND TYPE  
LXOT      00077084  XOT  
          RTEIN=MCH1  /8888  
          MCH1       /20360010  
          MCH2       /9  
          MCH3       /8  
          MCH3       /20360011
```

- 4) Insert a second entry for the MCH named MCH2 with a DTE address of 9903 before the first occurrence of MCH2 in the list then verify the change.

```
MLCL RTEIN=3,MCH2/9903  
DLCL RTEIN
```

```
LCLNAME OPERAND TYPE  
LXOT      00077084  XOT  
          RTEIN=MCH1  /8888  
          MCH1       /20360010  
          MCH2       /9903  
          MCH2       /9  
          MCH3       /8  
          MCH3       /20360011
```

MONITOR Command - Monitor HNAS Utilization (Privileged)

(changed for V2R1M0)

(changed for V2R3M0)

(changed for V2R4M0)

to monitor TAP processing for a specific XTP|XOT REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
RNM=rmtname	MON [ITOR]	[rmtname]	A	230
		TAP [{ON OFF}]	A	230
		[PKTDATA MAXDATA 	A	240
		MINDATA NODATA]		

or to monitor TAP processing for a collection of XTPI|XOT REMOTES

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
ID=minid[-maxid]	MON [ITOR]	TAP [{ON OFF}]	A	230
		[PKTDATA MAXDATA 	A	240
		MINDATA NODATA]		

or to monitor TAP processing for all XTP|XOT REMOTES

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	MON [ITOR]	TAP [{ALLON ALLOFF}]	A	230
		[PKTDATA MAXDATA 	A	240
		MINDATA NODATA]		

or to monitor HNAS global resource utilization

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	MON [ITOR]	[{seconds 10}]	N	112
		[{ALL ALLINIT} 		
		{BFR BFRINIT}		
		{CPU CPUINIT}		
		{LU LUINIT}	N	210
		{NOTRACE}	N	210
		{STATS STATSINIT}		
		{TASK TASKINIT}	N	210
		{VC VCINIT}]	N	210

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		Terminate Monitoring: Any SYSCONS operation (HNAS command input) will stop MONitor processing for global resource utilization.		

- When the TAP argument is NOT specified, monitoring is for HNAS resource utilization.

The MON command (non-TAP) is used to start buffer utilization (**BFR|BFRINIT**), CPU utilization (**CPU|CPUINIT**), LU utilization (**LU|LUINIT**), statistics collection (**STATS|STATSINIT**), task utilization (**TASK|TASKINIT**) and/or VC utilization (**VC|VCINIT**).

The 'INIT' suffix for the non-TAP arguments cause the associated counts to be reset before the monitor process is started.

If no resource list is specified, **ALL** is assumed for HNAS *global* resource utilization. Note that entering **MON [ALL]** is equivalent to entering **MON BFR CPU LU STATS TASK VC**.

When the TAP argument is *not* specified, this command will place the console session in monitor mode. The decimal **seconds** value specifies the monitor interval in **seconds**. If a **seconds** value is not specified, ten (10) seconds is assumed. When the monitor interval expires, results are displayed. A new interval is then started.

You may specify a **seconds** value between 1 and 3600 (1-hour). We do not recommend using a **seconds** value less than 10 seconds.

Note: The **seconds** interval is not used when the TAP argument is entered.

Following the monitor **seconds** interval, you may enter the list of resources that you want to monitor. Once started, the monitored resources cannot be changed. If you want to change the monitored resources, simply re-enter the MONitor command with a new resource list.

If **NOTRACE** is specified, the monitor display will not include a line showing the current trace table pointer prior to each resource display. This argument allows you to reduce the amount of information produced by the monitor display when time interval completes.

Note: The monitor command for *global* resource utilization is ended by **ANY** operator input.

- When the TAP argument is specified, monitoring is restricted to REMOTE resources.

The MON TAP command is used to start (**ON**) or stop (**OFF**) *local* PCE TAP monitor processing for the PCEs identified by the command modifiers (ID= or RNM=) or to start (**ALLON**) or stop (**ALLOFF**) *global* PCE TAP monitor processing or to control the type of data (**PKT-DATA|MINDATA|MAXDATA|NODATA**) that is displayed for the REMOTEs being monitored. TAP status log entries are written to SYSPRINT only and are identified by alert message IDs

of the form NAS251xM.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting MON TAP ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, MON TAP ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, MON TAP ON|OFF processing is for all PCEs. *The ID= modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.*
- Enter **MON TAP [ON]** to start *local* PCE TAP monitoring for the PCEs identified by the command modifiers. *Local* PCE TAP monitoring will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **MON TAP OFF** to stop *local* PCE TAP monitoring for the PCEs identified by the command modifiers. *Local* PCE TAP monitoring will be deactivated for all PCEs if **ID=0** and **RNM=** (null) is specified.

Note: The MON TAP ON|OFF command requires a valid value for either RNM= or ID=. The command will be rejected if both RNM= and ID= are null.

- Enter **MON TAP ALLON** to start *global* PCE TAP monitoring (equivalent to the MONTAP start parameter).
- Enter **MON TAP ALLOFF** to stop *global* and all *local* PCE TAP monitoring.
- Enter **MON TAP PKTDATA** to enable *global* data display with raw packet data being displayed for the routers currently being monitored for TAP.

```
NAS2513M CLIENT=iii.iii.iii.iii(port) SOCKID=sockid PCEID=pceid NAME=rmtname
NAS2513M XOT TAP SEQUENCE status, TRANSMITTING pktttype
NAS2513M PKT=xxxxxxxxx...xxxxxxxxx <- PKTDATA
```

- Enter **MON TAP MAXDATA** to enable *global* data display with a maximum amount of configuration data being displayed for the routers currently being monitored for TAP.

```
NAS2513M CLIENT=iii.iii.iii.iii(port) SOCKID=sockid PCEID=pceid NAME=rmtname
NAS2513M XOT TAP SEQUENCE status, TRANSMITTING pktttype
NAS2513M DTEADDR=dd...dd DCEADDR=dd...dd <- MINDATA|MAXDATA
NAS2513M FAC=xx...xx <- MAXDATA
NAS2513M CUD=xx...xx <- MAXDATA
```

- Enter **MON TAP MINDATA** to enable *global* data display with a minimum amount of configuration data being displayed for the routers currently being monitored for TAP.

```
NAS2513M CLIENT=iii.iii.iii.iii(port) SOCKID=sockid PCEID=pceid NAME=rmtname
NAS2513M XOT TAP SEQUENCE status, TRANSMITTING pktttype
NAS2513M DTEADDR=dd...dd DCEADDR=dd...dd <- MINDATA|MAXDATA
```

Console Commands

- Enter **MON TAP NODATA** to disable *global* packet and configuration data displayed for the routers currently being monitored for TAP.

```
NAS2513M CLIENT=iii.iii.iii.iii(port) SOCKID=sockid PCEID=pceid NAME=rmtname
NAS2513M XOT TAP SEQUENCE status, TRANSMITTING pkttype
```

Note: MON TAP PKTDATA|MAXDATA|MINDATA|NODATA argument support was introduced into 240 as Enhancement APAR 2400044.

To summarize, you may enter a MONITOR parameter that requests a specific action to be performed as follows:

MONITOR Action Matrix

PARAMETER	ACTION
ALL or omitted	Monitor all HNAS resource utilization.
ALLINIT	Monitor all HNAS resource utilization, reset counts first.
BFR	Monitor HNAS buffer utilization.
BFRINIT	Monitor HNAS buffer utilization, reset counts first.
CPU	Monitor HNAS CPU utilization.
CPUINIT	Monitor HNAS CPU utilization, reset counts first.
LU	Monitor HNAS LU utilization.
LUINIT	Monitor HNAS LU utilization, reset counts first.
NOTRACE	Do not display current trace entry address with MONITOR results.
STATS	Monitor HNAS statistics collection.
STATSINIT	Monitor HNAS statistics collection, reset counts first.
TASK	Monitor HNAS TASK activity.
TASKINIT	Monitor HNAS LU activity, reset counts first.
VC	Monitor HNAS VC utilization.
VCINIT	Monitor HNAS VC utilization, reset counts first.
TAP	Provide TAP monitor service.
Note: To stop monitoring	Any SYSCONS operation (HNAS command input) will stop MONitor processing for global resource utilization monitoring.

The following display is produced when **MON 60 ALL** is entered.

```
9:10:33 CPU:      TRACE=001F2EF0
9:10:33 CPU:      INTERVAL=7.220918 (00000006 E2EB6000)
9:10:33 CPU:      TOTAL=40.487110 (00000026 9C8C69BB)
9:10:33 BFR:      TRACE=001F2EF0 AVAILABLE=0000042B MAXIMUM=0000043D
9:10:33 BFR:      00-20%   21-40%   41-60%   61-80%   81-100%
9:10:33 BFR:      INTERVAL=000006D2 00000000 00000000 00000000 00000000
```

Console Commands

```

9:10:33 BFR:      TOTAL=00001AFE 00000000 00000000 00000000 00000000
9:10:33 STATS:    TRACE=001F2EF0
9:10:34 STATS:      DISPATCH  TIMEOUT  XMT-PKT XMT-CHAR  RCV-PKT RCV-CHAR
9:10:34 STATS: INTERVAL=00000271 00000003 0000034D 0001A823 0000034F 00001729
9:10:34 STATS:    TOTAL=00001557 00000091 00000D64 000694EF 00000D63 00005FC9
9:10:34 VC:      TRACE=001F2EF0
9:10:34 VC:      ACTIVE  ATTACH  DETACH
9:10:34 VC:    INTERVAL=      00000000 00000000
9:10:34 VC:    TOTAL=00000007 00000008 00000001
9:10:34 LU:      TRACE=001F2EF0
9:10:35 LU:      ACTIVE  ATTACH  DETACH
9:10:35 LU:    INTERVAL=      00000000 00000000
9:10:35 LU:    TOTAL=00000001 00000002 00000001
9:10:35 TASK:    TRACE=001F2EF0
9:10:35 TASK:      TCPIP    VTAM    MCH    PCE    CONS    TOTAL
9:10:35 TASK: INTERVAL=0000058D 00000200 0000034C 00000258 00000000 00000D31
9:10:35 TASK:    TOTAL=0000192E 00000892 00000E87 00001562 00000001 000045A9
9:11:36 CPU:      TRACE=001F2EF0
9:11:36 CPU:    INTERVAL=0.193761 (00000000 2F4E1000)
9:11:36 CPU:    TOTAL=40.680871 (00000026 CBDA7F51)
9:11:36 BFR:      TRACE=001F2EF0 AVAILABLE=0000042B MAXIMUM=0000043D
9:11:36 BFR:      00-20%   21-40%   41-60%   61-80%   81-100%
9:11:36 BFR:    INTERVAL=00000001 00000000 00000000 00000000 00000000
9:11:36 BFR:    TOTAL=00001AFF 00000000 00000000 00000000 00000000
9:11:36 STATS:    TRACE=001F2EF0
9:11:37 STATS:      DISPATCH  TIMEOUT  XMT-PKT XMT-CHAR  RCV-PKT RCV-CHAR
9:11:37 STATS: INTERVAL=00000040 00000003 00000000 00000000 00000000 00000000
9:11:37 STATS:    TOTAL=00001597 00000094 00000D64 000694EF 00000D63 00005FC9
9:11:37 VC:      TRACE=001F2EF0
9:11:37 VC:      ACTIVE  ATTACH  DETACH
9:11:37 VC:    INTERVAL=      00000000 00000000
9:11:37 VC:    TOTAL=00000007 00000008 00000001
9:11:37 LU:      TRACE=001F2EF0
9:11:38 LU:      ACTIVE  ATTACH  DETACH
9:11:38 LU:    INTERVAL=      00000000 00000000
9:11:38 LU:    TOTAL=00000001 00000002 00000001
9:11:38 TASK:    TRACE=001F2EF0
9:11:38 TASK:      TCPIP    VTAM    MCH    PCE    CONS    TOTAL
9:11:38 TASK: INTERVAL=00000005 00000000 00000002 00000040 00000000 00000047
9:11:38 TASK:    TOTAL=00001933 00000892 00000E89 000015A2 00000001 000045F0

```

The following display is produced when MON 60 CPU STATS NOTRACE is entered.

```

9:10:33 CPU:      INTERVAL=7.220918 (00000006 E2EB6000)
9:10:33 CPU:    TOTAL=40.487110 (00000026 9C8C69BB)
9:10:34 STATS:      DISPATCH  TIMEOUT  XMT-PKT XMT-CHAR  RCV-PKT RCV-CHAR
9:10:34 STATS: INTERVAL=00000271 00000003 0000034D 0001A823 0000034F 00001729
9:10:34 STATS:    TOTAL=00001557 00000091 00000D64 000694EF 00000D63 00005FC9
9:11:36 CPU:    INTERVAL=0.193761 (00000000 2F4E1000)
9:11:36 CPU:    TOTAL=40.680871 (00000026 CBDA7F51)
9:11:37 STATS:      DISPATCH  TIMEOUT  XMT-PKT XMT-CHAR  RCV-PKT RCV-CHAR
9:11:37 STATS: INTERVAL=00000040 00000003 00000000 00000000 00000000 00000000
9:11:37 STATS:    TOTAL=00001597 00000094 00000D64 000694EF 00000D63 00005FC9

```

Console Commands

General notes for MON (without TAP argument):

- 1) Unlike the MON TAP command, MON (without TAP) locks the console up while the monitor utilization function is running. The monitor utilization function is stopped and the console is restored when any input is entered. The input can be a new command or a null line.
- 2) The **TRACE=** value in all utilization displays represents the current HNAS trace entry address at the time of the display. It is provided for information only. You can inhibit its display by specifying the **NOTRACE** option.
- 3) The **INTERVAL=** value(s) in all utilization displays represents usage counts for the current time interval. For the **CPU** utilization display, it represents the amount of CPU processor time (in seconds) that HNAS was given (i.e., its TCB was the active TCB) during the monitor interval. The value in parenthesis is the CPU processor time in time-of-day format.
- 4) The **TOTAL=** value(s) in all utilization displays represents usage counts since HNAS was loaded or the counts were reset by an 'INIT' request (e.g., BFRINIT). For the **CPU** utilization display, it represents the amount of CPU processor time (in seconds) that HNAS was given (i.e., its TCB was the active TCB) since it was started or re-initialized by a CPUINIT request. The value in parenthesis is the CPU processor time in time-of-day format.
- 5) The **AVAILABLE=** value in the **BFR** utilization display represents the current number of free buffers in the HNAS buffer pool at the time of the display.
- 6) The **MAXIMUM=** value in the **BFR** utilization display represents the maximum number of free buffers in the HNAS buffer pool.
- 7) The **percent** column values (e.g., **00-20%**) in the **BFR** utilization display represent the number of buffer allocation requests that were made when the buffer pool was depleted by the given percentage of buffers.

The **INTERVAL=** values are counts for the current monitor interval.

The **TOTAL=** values are aggregate counts since they were last reset via the **MON ALLINIT|BFRINIT** command or at HNAS start time.

- 8) The **counter** values (e.g., **DISPATCH**) in the **STATS** collection display represent the metric for the named statistic.

The **INTERVAL=** values are counts for the current monitor interval.

The **TOTAL=** values are aggregate counts since they were last reset via the **MON ALLINIT|STATSINIT** command, the **STATS ON** command or via the **STATS** start parameter.

- 9) The **counter** values (e.g., **ATTACH|DETACH**) in the **LU and VC** collection display represent the metric for the named statistic.

The **INTERVAL=** values are counts for the current monitor interval. The **ATTACH** and

DETACH counts represent the number of connects and disconnects, respectively, that occurred during the monitor interval.

The **TOTAL=** values are aggregate counts since they were last reset via the **MON ALLINIT|LUINIT** or **ALLINIT|VCINIT** command. The **ACTIVE** column value represents the number of active connections at the time of this display.

- 10) The **counter** values (e.g., **TCPIP**) in the **TASK** collection display represent the metric for the named statistic. These counts represent the number of times the ECB for the named HNAS component was posted and processed.

The **INTERVAL=** values are counts for the current monitor interval.

The **TOTAL=** values are aggregate counts since they were last reset via the **MON ALLINIT|TASKINIT** command.

General notes for MON (with TAP argument):

- 1) Unlike the MON (without TAP) command, MON TAP does not lock the console up while the monitor TAP function is running. The monitor TAP function is stopped when MON TAP OFF|ALLOFF is entered (*local/global* monitor, respectively). New console commands can always be entered and will be acted upon when the monitor TAP function is running.
- 2) The TAP monitor will display all packets sent and received during a single TAP interval.
- 3) The TAP monitor will work for XTP and XOT REMOTES. For an XOT REMOTE, OPTIONS=TAPWITHCLR can be enabled or disabled.
- 4) The *global* TAP monitoring state can be displayed with the DPARM EXEC console command.
- 5) The *global* TAP monitoring state can be changed using the MON TAP {ALLON|ALLOFF} console command.
- 6) The MON TAP {ALLON|ALLOFF} console command ignores the setting of the RNM= and ID= modifiers.
- 7) The *local* TAP monitoring state can be displayed with the DPCE console command. In this case, the 5th character under the NASOPT column will show blank if the TAPping PCE is not being monitored or as 'M' if it is.
- 8) The *local* TAP monitoring state can be changed using the MON TAP {ON|OFF} console command.
- 9) The MON TAP {ON|OFF} console command uses the setting of the RNM= and/or ID= modifiers to locate the PCEs to be monitored.
- 10) Most NAS251xM monitor messages contain an English description of the packet that was

Console Commands

transmitted or received as well as the first 24-bytes of the raw packet (starting with the XOT packet length which is 4-bytes). If a packet is less than 24-bytes in length, the display will be truncated.

- 11) The NAS251 *nM* monitor messages are normally written to SYSPRINT only but can also be routed to SYSCONS using the BUILD ALRMFLTR= operand the ALARM FILTER= command. For example, when FILTER=(NAS251 *nM*(FC)) is specified, NAS251 *nM* monitor messages will flow to SYSCONS if the SHOWON option is in effect. In addition, when FILTER=(NAS251 *nM*(FU)) is specified, NAS251 *nM* monitor messages will flow to SYSCONS unconditionally.
- 12) The NAS251 *nM* monitor messages can be filtered from SYSPRINT and/or SYSCONS by the BUILD ALRMFLTR= operand or the ALARM FILTER= command. For example, when FILTER=(NAS251 *nM*(P)) is specified, NAS251 *nM* monitor messages will be purged from SYSPRINT and SYSCONS.
- 13) The NAS251 *nM* monitor messages are in addition the existing Keep Alive alarm messages (NAS2501W, NAS2502E, NAS2503W) which are written to both SYSPRINT and the SYSCONS.

Note: The MON TAP ON console command causes special monitor messages to be written to SYSPRINT when the PRNT ON option is in effect. These special monitor messages start with a message ID of NAS251 *nM* and are not normally sent to the SYSCONS (system operator console). However, these messages can be forced to go to SYSCONS by specifying the message IDs in the ALRMFLTR= list either via the CDF or the ALARM command.

For example, if ALRMFLTR=(...,NAS251*M(FU),...) is specified on the BUILD definition statement or if the ALARM FILTER=(...,NAS251*M(FU),...) console command is issued, TAP monitor messages will also go to SYSCONS.

Please refer to the specific **NAS251 *nM*** message type located in the Alert Messages section of the HNAS Messages and Codes Guide.

MRMT Command - Modify REMOTE Configuration (Privileged)

(changed for V2R1M0)

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
RNM=rmtname	MRMT	[<i>rmtname</i>]	C	230
		[CUD={NULL NONE [nn/]xx...xx}]	N C	114 210
		[DCEADDR={NULL NONE dd...dd}]		
		[DTEADDR={NULL NONE dd...dd}]	N	230
		[FAC={NULL NONE [nn/]xx...xx}]	C	210
		[IDBLK=xxx]	N	220
		[IDNUM=xxxxxx]	N	220
		[IDLETO=minutes]	N	230
		[INIT={ACTIVE IDLE}]	N	230
		[IPADDR=a.b.c.d[(port)]]	N	240
		[LOGTAB=lg t name[-R]]	A C	210 240
	For MCH	[LUNAME= <i>sluname</i> [-{A I}] [/{ <i>pluname</i> {*} *}]]	A	240
	For DFS	[LUNAME= <i>sluname</i> [-{A I}] [/{ <i>pluname</i>] [/{ <i>idnum</i> *}]]	A	240
	For DFL	[LUNAME= <i>sluname</i> [-{A I}] [/{ <i>pluname</i> *}]]	A	240
	For SPU	[LUNAME= <i>sluname</i> [-{A I}] [/{ <i>rpccnt</i> *}] [/{ <i>spccnt</i> *}] [/{ <i>applid</i> *}] [/{ <i>mxtname</i> *}]]	N A N N	220 240 230 230

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	For SPU	[LUNAME= (<i>locaddr</i> , { <i>sluname</i> *} [-{A I}] [/{ <i>rpccnt</i> *}] [/{ <i>spccnt</i> *}] [/{ <i>applid</i> *}] [/{ <i>mxtname</i> *}], : { <i>sluname</i> *} [-{A I}] [/{ <i>rpccnt</i> *}] [/{ <i>spccnt</i> *}] [/{ <i>applid</i> *}] [/{ <i>mxtname</i> *}])]	N A N N A N N	230 240 230 230 240 230 230
		[MAXDATA= <i>bytecnt</i>]	N	220
		[MBITCHN={YES NO}]	N	240

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[OPTIONS=	A	210
		[CLOTINITYP={NONE BIND TIMER CONSOLE}]	A	230
		[CLOTFAILRTYLMT= <i>count</i>]	A	230
		[CLOTCONLMT= <i>count</i>]	A	230
		[, {CLOSEONTAPFAILURE NOCLOSEONTAPFAILURE}]	A	240
		[, {CUD0SELECTSLU NOCUD0SELECTSLU}]	A	240
		[, {DATAF NODATAF}]	N	240
		[, {DATAFAM NODATAFAM}]	N	240
		[, {DELAYBINDRESP NODELAYBINRESP}]	N	240
		[, {ECHODTEADDR NOECHODTEADDR}]	A	220
		[, {ECHOFAC NOECHOFAC}]	A	220
		[, {EMSGE NOEMSGE}]	N	240
		[, {IDTST NOIDTST}]	A	240
		[, {IMS NOIMS}]	N	240
		[, {INHIBITBIDREJ NOINHIBITBIDREJ}]	N	230
		[, {LLC0CTCPCHK NOLLC0CTCPCHK}]	A	230
		[, {LLC5CTCPCHK NOLLC5CTCPCHK}]	A	230
		[, MCHTMR= <i>seconds</i>]	A	211
		[, NRITAB= <i>nrtbname</i> [-R]]	N	240
		[, {ONEPIUINB NOONEPIUINB}]	N	230
		[, {PEER PRI SEC}]	N	220
		[, {PFXDCEADDR NOPFXDCEADDR}]	A	230
		[, PVCRECONTMR= <i>seconds</i>]	A	240
		[, PVCSETUPTMR= <i>seconds</i>]	A	240
		[, PVCSETUPREJ= <i>code</i>]	A	240
		[, {REPDCEADDR NOREPDCEADDR}]		
		[, REQSESSDELAY= <i>seconds</i>]	N	230
		[, {RESETINO NORESETINO}]	A	240
		[, {RETPIU NORETPIU}]	N	240
		[, {RTRBIDREJ NORTRBIDREJ}]	N	230
		[, {STRIPFAC NOSTRIPFAC}]		
		[, {STRIPRTEIN NOSTRIPRTEIN}]		
		[, SVCCALLTMR= <i>seconds</i>]	A	240
		[, {TAPWITHCLR NOTAPWITHCLR}]	A	220
		[, T CPRBLMT= <i>bfrcnt</i>]	A	220
		[, XID={NO STD TAB TABSTD (<i>idnum, idcnt</i>)}]]	N	240
		[PACE={NONE NULL <i>pktcnt</i> } (<i>{rpccnt *}</i> , <i>{spccnt *}</i>)]	A	220

Console Commands

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
		[PADPARAM=NULL NONE (<i>pn1</i> , <i>pv1</i> , . . . , <i>pnk</i> , <i>pvk</i>)]	A	210
		[PORT= <i>number</i>]	N	240
		[PROTOCOL={XTP XOT}]	N	240
		[SVC0= <i>sluname</i> = [{ <i>newname</i> *}] [+ <i>gluname</i>] [-{A I}] [/{ <i>dteid1</i> *}] [-{ <i>dteid2</i> *}] [-{ <i>dteid3</i> *}] {T O I} [{ <i>applid</i> *}] [/{ <i>mxtname</i> *}] [/{ <i>cud</i> *}] <i>dteid</i> = <i>dteaddr</i> <i>Xidnum</i> < <i>rmtname</i> >	C A A C	220 240 230 240
		[SVC3= <i>spuname</i> [/{ <i>dteaddr</i> *}] [{I O}] [/{ <i>mxtname</i> *}]	A C	220 230
		[SVC4= <i>sluname</i> = [{ <i>newname</i> *}] [-{A I}]]	A A	230 240
		[SVC5= <i>sluname</i> = [{ <i>newname</i> *}] [+ <i>gluname</i>] [-{A I}] [/{ <i>dteid1</i> *}] [-{ <i>dteid2</i> *}] [-{ <i>dteid3</i> *}] {T O I} [{ <i>applid</i> *}] [/{ <i>mxtname</i> *}] [/{ <i>cud</i> *}] <i>dteid</i> = <i>dteaddr</i> <i>Xidnum</i> < <i>rmtname</i> >	C A A C	220 240 230 240
		[TAP= <i>value</i>]	A	114
		[TRAN={NO USER EVEN ODD MARK SPACE NPSIEVEN NPSIODD NPSIMARK NPSISPACE}]	A	230
		[USSTAB= <i>ustbname</i> [-R]]	C	240

This command is used to modify REMOTE configuration parameters for the REMOTE definition statement identified by the **RNM=** modifier. If no **RNM=** value is set, no modification is performed.

To summarize, you may enter a list of REMOTE definition statement operands that you want to modify as follows:

MRMT Action Matrix

PARAMETER	ACTION	X T P	X O T	M C H	M X T	S P U	D F L	D F S	D F X	D M Y	S V C
CUD=	Supply value for CUD=						I	I	I		
DCEADDR=	Supply value for DCEADDR=						I	I	I		
DTEADDR=	Supply value for DTEADDR=	I		I			I	I	I		
FAC=	Supply value for FAC=						I	I	I		
IDBLK=	Supply value for IDBLK=	I	I	I	I		I	I	I	I	I
IDNUM=	Supply value for IDNUM=	I	I	I	I		I	I	I	I	I
IDLETO=	Supply value for IDLETO=		I				I	I	I	I	I
INIT=	Supply value for INIT=				I	I	I	I	I	I	I
IPADDR=	Supply value for IPADDR=	I	I	I	I	I	I	I	I		I
LOGTAB=	Supply value for LOGTAB=		I				I	I	I	I	I
LUNAME=	Supply value for LUNAME=		I		I				I	I	I
MAXDATA=	Supply value for MAXDATA=	I	I	I	I		I	I	I	I	I
MBITCHN=	Supply value for MBITCHN=		I		I	I	I	I	I	I	I

Console Commands

PARAMETER	ACTION	X T P	X O T	M C H	M X T	S P U	D F L	D F S	D F X	D M Y	S V C
OPTIONS=	Supply value for OPTIONS=										
	CLOTINITYP=	I	I	I	I		I	I	I	I	I
	CLOTFAILRTYLMT=	I	I	I	I		I	I	I	I	I
	CLOTCONLMT=	I	I	I	I		I	I	I	I	I
	[NO]CLOSEONTAPFAILURE			I	I	I	I	I	I	I	I
	[NO]CUD0SELECTSLU		I			I	I	I	I	I	I
	[NO]DATAF	I	I	I	I	I	I			I	I
	[NO]DATAFAM	I				I	I			I	I
	[NO]DELAYBINDRESP		I			I	I	I		I	I
	[NO]ECHODTEADDR	I	I			I	I	I	I	I	I
	[NO]ECHOFAC	I	I			I	I	I		I	I
	[NO]EMSGE	I	I	I	I	I	I			I	I
	[NO]IDTST	I	I	I	I	I	I			I	I
	[NO]IMS	I	I	I	I	I	I			I	I
	[NO]INHIBITBIDREJ		I			I	I	I	I	I	I
	[NO]LLC0CTCPCHK	I	I			I	I	I	I	I	I
	[NO]LLC5CTCPCHK	I	I			I	I	I	I	I	I
	MCHTMR=		I			I	I	I	I	I	I
	NRITAB=	I	I	I	I	I	I	I	I	I	I
	[NO]ONEPIUINB					I	I	I	I	I	I
	[NO]PFXDCEADDR	I	I			I	I	I	I	I	I
	PR SEC PEER	I	I	I	I		I	I	I	I	I
	PVCRECONTMR=	I	I			I	I	I	I	I	I
	PVCSETUPTMR=	I	I			I	I	I	I	I	I
	PVCSETUPREJ=	I	I			I	I	I	I	I	I
	[NO]REPDCEADDR	I	I			I	I	I	I	I	I
	REQSESSDELAY=		I			I	I	I	I	I	I
	[NO]RESETINO		I			I	I	I	I	I	I
	[NO]RETPIU	I	I	I	I	I	I			I	I
	[NO]RTRBIDREJ		I			I	I	I	I	I	I
	[NO]STRIPFAC	I	I			I	I	I	I	I	I
	[NO]STRIPRTEIN	I	I			I	I	I	I	I	I
	SVCCALLTMR=	I	I			I	I	I	I	I	I
	[NO]TAPWITHCLR	I		I	I	I	I	I	I	I	I
	TCPRBLMT=			I	I	I	I	I	I	I	I
	XID=	I	I	I	I	I	I			I	I
PACE=	Supply value for PACE=		I	I	I		I	I	I	I	I
PADPARM=	Supply value for PADPARM=		I			I	I	I	I	I	I
PORT=	Supply value for PORT=	I	I	I	I	I	I	I	I		I
PROTOCOL=	Supply value for PROTOCOL=	I	I	I	I	I	I	I	I		I
SVC0=	Supply value for SVC0=		I		I	I	I	I	I	I	I
SVC3=	Supply value for SVC3=	I	I		I	I	I	I	I	I	I
SVC4=	Supply value for SVC4=		I		I	I	I	I	I	I	I
SVC5=	Supply value for SVC5=		I		I	I	I	I	I	I	I
TAP=	Supply value for TAP=			I	I	I	I	I	I	I	I

PARAMETER	ACTION	X T P	X O T	M C H	M X T	S P U	D F L	D F S	D F X	D M Y	S V C
TRAN=	Supply value for TRAN=		I		I	I	I	I	I	I	I
USSTAB=	Supply value for USSTAB=		I				I	I	I	I	I

Legend: For the REMOTE *type* column: I=> Invalid, blank=> supported (see Console Command Parameter Action Matrix Keys description on page CONS-21 for additional information).

General notes for MRMT:

- 1) The modified parameters will take effect for new sessions only.
- 2) A new CDF can be created from the original CDF plus any changes that are made during HNAS execution using the MLCL and MRMT console commands. The new CDF is produced when the GENNWDF start parameter is specified and the NEWDEFN DD statement is included in the HNAS start JOB. New or modified records are identified in the new CDF by the characters ;**NWDF** starting in character position 67. The NEWDEFN file is maintained in memory until HNAS is stopped at which time it is then written to disk. You can display the updated NEWDEFN file in memory by issuing the DNWDF command which is described on page CONS-89.
- 3) If the MRMT command is going to be used to add an SLU to LUNAME=, SVC0=, SVC4= or SVC5= operand list, a dynamic reconfiguration pool must be specified. This is done using the **OPTIONS=LUDRPOOLCNT=value** operand on the BUILD definition statement. You should specify a *value* large enough to accommodate all your SLU addition requests.

MRMT operand syntax:

CUD=NULL | NONE | [nn/] xx...xx (XTP | XOT | MCH | MXT | SPU | DMY | SVC)
(changed for V2R4M0)

For a **TYPE=XTP|XOT|MCH|SPU|DMY|SVC REMOTE** definition statement, specify **NULL** or **NONE** to delete the existing CUD= operand value.

For a **TYPE=MXT REMOTE** definition statement, specify **NULL** to substitute the MCH CUD= operand value or specify **NONE** to delete the CUD= operand value and not substitute the MCH CUD= operand value. In the latter case, if this MXT is referenced by an SVC0= or SVC5= operand entry on the root MCH, no CUD will be inserted into an outbound Call Request packet even if a CUD= operand value is specified for the MCH.

For a **TYPE=XTP|XOT|MCH|MXT|SPU|DMY|SVC REMOTE** definition statement, specify **xx...xx** to add new or replace existing CUD= operand values with the given hexadecimal data starting at the first byte of the CUD= operand (offset 0). You may enter up to 126 paired digits

Console Commands

(**xx**). If you wish to change a portion of an existing CUD= operand, specify an offset value (**nn**) followed by a slash (/) before the new CUD= data (**xx...xx**). For example, CUD=4/C1C2 will add or replace CUD= operand data starting at byte 4 with C1C2. If no offset is specified, zero (0) is used. To completely replace an existing CUD= operand, first specify **CUD=NONE** then **CUD=xx...xx**.

Note: HNAS does not check the CUD= data (**xx...xx**) for standardized X.25 values. The only requirement is that the data must be hexadecimal, the number of digits must not exceed 126 and the digits must be paired (an even number of digits). Although up to 63 bytes of CUD= data are allowed, most routers and PADs will not accept more than 16 bytes when the Protocol ID (CUD byte 0) is set to 01. If more than 16 bytes are specified, the call will most likely be cleared.

```
DCEADDR=NULL | NONE | dd . . . dd (XTP | XOT | MCH | MXT | SPU | DMY | SVC)
                                         (changed for V2R3M0)
                                         (changed for V2R4M0)
```

For a **TYPE=XTP|XOT|MCH|SPU|DMY|SVC REMOTE** definition statement, specify **NULL** or **NONE** to delete the DCEADDR= operand value. In this case, all non-GATE Call Request packets that HNAS generates **will not include a calling** DTE address.

For a **TYPE=MXT REMOTE** definition statement, specify **NULL** to substitute the MCH DCEADDR= operand value or specify **NONE** to delete the DCEADDR= operand value and not substitute the MCH DCEADDR= operand value. In the latter case, if this MXT is referenced by an SVC0= or SVC5= operand entry on the root MCH, no **calling** DTE address will be inserted into an outbound Call Request packet even if a DCEADDR= operand value is specified for the MCH.

For a **TYPE=XTP|XOT|MCH|MXT|SPU|DMY|SVC REMOTE** definition statement, specify **dd...dd** to replace the DCEADDR= operand value with the given decimal data. In this case, all non-GATE Call Request packets that HNAS generates **will include a calling** DTE address. You may enter up to 15 digits (dd).

Note: HNAS does not check the DCEADDR= data (**dd...dd**) for standardized X.25 values. The only requirement is that the data must be decimal and the number of digits must not exceed 15.

```
DTEADDR=NULL | NONE | dd . . . dd (XOT | MXT | SPU | DMY | SVC)
                                         (new for V2R3M0)
                                         (changed for V2R4M0)
```

For a **TYPE=XOT|MXT|SPU|DMY|SVC REMOTE** definition statement, specify **NULL** or **NONE** to delete the DTEADDR= operand value. In this case, HNAS TAP Call Request packets **will not include a called** DTE address.

For a **TYPE=XOT|MXT|SPU|DMY|SVC REMOTE** definition statement, specify **dd...dd** to replace the DTEADDR= operand value with the given decimal data. In this case, HNAS TAP Call Request packets **will include a called** DTE address. You may enter up to 15 digits (dd).

Note: HNAS does not check the DTEADDR= data (**dd...dd**) for standardized X.25 values. The only requirement is that the data must be decimal and the number of digits must not exceed 15.

FAC=NULL | NONE | [*nn*/] *xx...xx* (XTP | XOT | MCH | MXT | SPU | DMY | SVC)
(changed for V2R4M0)

For a **TYPE=XTP|XOT|MCH|SPU|DMY|SVC REMOTE** definition statement, specify **NULL** or **NONE** to delete the FAC= operand value.

For a **TYPE=MXT REMOTE** definition statement, specify **NULL** to substitute the MCH FAC= operand value or specify **NONE** to delete the FAC= operand value and not substitute the MCH FAC= operand value. In the latter case, if this MXT is referenced by an SVC0= or SVC5= operand entry on the root MCH, no facilities will be inserted into an outbound Call Request packet even if a FAC= operand value is specified for the MCH.

For a **TYPE=XTP|XOT|MCH|MXT|SPU|DMY|SVC REMOTE** definition statement, specify **xx...xx** to add new or replace existing FAC= operand values with the given hexadecimal data starting at the first byte of the FAC= operand (offset 0). You may enter up to 126 paired digits (**xx**). If you wish to change a portion of an existing FAC= operand, specify an offset value (**nn**) followed by a slash (**/**) before the new FAC= data (**xx...xx**). For example, FAC=6/0101 will add or replace FAC= operand data starting at byte 6 with 0101. If no offset is specified, zero (0) is used. To completely replace an existing FAC= operand, first specify **FAC=NONE** then **FAC=xx...xx**.

Note: HNAS does not check the FAC= data (**xx...xx**) for standardized X.25 values. The only requirement is that the data must be hexadecimal, the number of digits must not exceed 126 and the digits must be paired (an even number of digits).

IDBLK=**xxx** (SPU only)
(new for V2R2M0)

For a **TYPE=SPU REMOTE** definition statement, you may specify up to 3 hex digits (**xxx**) that represents the ID block number for the real remote SPU.

Note: HNAS does not check the IDBLK= parameter data for standardized SDLC network values. The only requirement is that the data must be hexadecimal and the number of digits must not exceed 3.

IDNUM=**xxxxxx** (SPU only)
(new for V2R2M0)

For a **TYPE=SPU REMOTE** definition statement, you may specify up to 5 hex digits (**xxxxxx**) that represents the ID number for the real remote SPU.

Console Commands

Note: HNAS does not check the IDNUM= parameter data for standardized SDLC network values. The only requirement is that the data must be hexadecimal and the number of digits must not exceed 5.

IDLETO=minutes (XTP | MCH | MXT | SPU)
(new for V2R3M0)

For a **TYPE=XTP|MCH|MXT|SPU REMOTE** definition statement, you may specify an inactivity timeout value from 0 to 255 minutes. A value of 0 inhibits inactivity timeout processing.

INIT={ACTIVE | IDLE} (XTP | XOT | MCH)

For a **TYPE=XTP|XOT|MCH REMOTE** definition statement, you may specify the REMOTE initialization options to set or reset. If the REMOTE state changes from ACTIVE to IDLE or vice versa, a VARY RMT ON/OFF command is propagated.

IPADDR=a.b.c.d [(port)] (DMY only)
(new for V2R4M0)

For a **TYPE=DMY REMOTE** definition statement, you may specify an IP address and optional port number in standard dotted notation to be used for the HNAS PING command. The port number can also be changed or set separately (see PORT= parameter below).

LOGTAB=lgtname [-R] (XTP | MCH | MXT | SPU)
(apar/changed for V2R4M0)

For a **TYPE=XTP|MCH|MXT|SPU REMOTE** definition statement, specify the name of a valid logon table.

When the -R follower is omitted, the given **lgtname** is compared against all LOGTAB= names currently in use. If the name is found, the given LOGTAB= is copied from the *found* REMOTE to the *specified* REMOTE. If the name is not found, the given **lgtname** is LOADED into memory.

When the -R follower is specified, the given **lgtname** is unconditionally loaded into memory even if it is already present. The new version of the table is then propagated to all other REMOTES that share the table. This means that changes to a table that are made while HNAS is running can be put in to effect without having to stop and restart HNAS.

Note: The MRMT LOGTAB= [-R] support described above was introduced into 240 with APAR 2400032.

LUNAME=sluname (XTP | MCH)
[-{A | I}]

[/{*pluname*{*}/*}]

(new for V2R4M0)

For the named SLU (*sluname*) in the LUNAME= operand list on a **TYPE=XTP|MCH REMOTE** definition statement, you may change the SLU state (-{**A|I**}), add, replace or delete (*) a PLU name (*pluname*) or specify the REQSESS indicator (*) following the *pluname*.

An *sluname* value is required for this **fixed form** LUNAME= parameter. If you enter an asterisk (*) for any LUNAME= entry value (except *sluname*), the old value is removed.

If *sluname*-{**A|I**} is entered and this changes the current SLU state, an appropriate **VARY *sluname* ON|OFF** console command is issued internally.

Note: *sluname*-{**A|I**} support was introduced into 240 as Enhancement APAR 2400028.

Examples:

Enter LUNAME=MCH10001/* to remove the PLU association with SLU MCH10001.

Enter LUNAME=MCH10001/CPTCICS* to set the REQSESS indicator for the PLU named CPTCICS that is associated with the SLU named MCH10001.

Enter LUNAME=MCH10001/CPTCICS to reset the REQSESS indicator for the PLU named CPTCICS that is associated with the SLU named MCH10001.

Note: LUNAME= update support for TYPE=XTP|MCH REMOTE was introduced into 240 as Enhancement APAR 2400008.

LUNAME=*sluname* (DFL only)
 [-{**A|I**}]
 [/{*pluname*/*}]

(new for V2R4M0)

For the named SLU (*sluname*) in the LUNAME= operand list on a **TYPE=DFL REMOTE** definition statement, you may change the SLU state (-{**A|I**}), add, replace or delete (*) a PLU name (*pluname*).

An *sluname* value is required for this **fixed form** LUNAME= parameter. If you enter an asterisk (*) for any LUNAME= entry value (except *sluname*), the old value is removed.

If *sluname*-{**A|I**} is entered and this changes the current SLU state, an appropriate **VARY *sluname* ON|OFF** console command is issued internally.

Note: *sluname*-{**A|I**} support was introduced into 240 as Enhancement APAR 2400028.

Note: LUNAME= update support for TYPE=DFL REMOTE was introduced into 240 as Enhancement APAR 2400028.

Console Commands

```
LUNAME=sluname (DFS only)
  [-{A|I}]
  [/{pluname}]
  [/{idnum|*}]
                                     (new for V2R4M0)
```

For the named SLU (*sluname*) in the LUNAME= operand list on a **TYPE=DFS REMOTE** definition statement, you may change the SLU state (**-{A|I}**), add or replace but not delete (*) a PLU name (*pluname*) or add, replace or delete (*) a hex ID number (*idnum*).

An *sluname* value is required for this **fixed form** LUNAME= parameter. If you enter an asterisk (*) for any LUNAME= entry value (except *sluname* or *pluname*), the old value is removed.

If ***sluname*-{A|I}** is entered and this changes the current SLU state, an appropriate **VARY *sluname* ON|OFF** console command is issued internally.

Note: *sluname*-{A|I} support was introduced into 240 as Enhancement APAR 2400028.

Note: LUNAME= update support for TYPE=DFS REMOTE was introduced into 240 as Enhancement APAR 2400028.

```
LUNAME=sluname (SPU only)
  [-{A|I}]
  [/{rpccnt|*}]
  [/{spccnt|*}]
  [/{applid|*}]
  [/{mxtname|*}]
                                     (new for V2R2M0)
                                     (changed for V2R3M0)
                                     (changed for V2R4M0)
```

For the named SLU (*sluname*) in the LUNAME= operand list on a **TYPE=SPU REMOTE** definition statement, you may change the SLU state (**-{A|I}**), add, replace or delete (*) a receive pacing count (*rpccnt*), a send pacing count (*spccnt*), an APPLNAME= operand index (*applid*) and/or the name of the TYPE=MXT REMOTE associated with the LUNAME= operand entry (*mxtname*).

An *sluname* value is required for this **fixed form** LUNAME= parameter. If you enter an asterisk (*) for any LUNAME= entry value (except *sluname*), the old value is removed.

If ***sluname*-{A|I}** is entered and this changes the current SLU state, an appropriate **VARY *sluname* ON|OFF** console command is issued internally.

Note: *sluname*-{A|I} support was introduced into 240 as Enhancement APAR 2400028.

Note: When no receive or send pacing count is associated with an *sluname* in the LUNAME= operand, the corresponding value from the PACE= operand on the same TYPE=SPU REMOTE definition statement is used.

```
LUNAME= (locaddr,                                     (SPU only)
        {sluname|*}
        [-{A|I}]
        [//{rpcecnt|*}]
        [//{spcecnt|*}]
        [//{applid|*}]
        [//{mxtname|*}],...
        :
        {sluname|*}
        [-{A|I}]
        [//{rpcecnt|*}]
        [//{spcecnt|*}]
        [//{applid|*}]
        [//{mxtname|*}])

                                     (new for V2R3M0)
                                     (changed for V2R4M0)
```

Starting at the local address identified by the **locaddr** value in the LUNAME= operand list on a **TYPE=SPU REMOTE** definition statement, you may add, replace or delete (*) an SLU name (**sluname**) change the SLU state (**-{A|I}**), add, replace or delete (*) a receive pacing count (**rpcecnt**), a send pacing count (**spcecnt**), an APPLNAME= operand index (**applid**) and/or the name of the TYPE=MXT REMOTE associated with the LUNAME= operand entry (**mxtname**).

A **locaddr** value is required for this **list form** LUNAME=(*list*) parameter. If you enter an asterisk (*) for any LUNAME= entry value (except **sluname**), the old value is removed. If you enter an asterisk (*) for the **sluname** value, the entire LUNAME= operand entry is removed.

If **sluname-{A|I}** is entered and this changes the current SLU state, an appropriate **VARY sluname ON|OFF** console command is issued internally.

Note: **sluname-{A|I}** support was introduced into 240 as Enhancement APAR 2400028.

Note: When no receive or send pacing count is associated with an **sluname** in the LUNAME= operand, the corresponding value from the PACE= operand on the same TYPE=SPU REMOTE definition statement is used.

To summarize, for a **TYPE=SPU REMOTE** definition statement, you may add, replace or delete **multiple** LUNAME= operand list entries using the **list form** of the LUNAME= parameter where:

locaddr is the starting LOCADDR entry in the LUNAME= operand.

sluname is an existing or new SLU name for the selected entry.

{A|I} is an existing or new SLU state for the selected entry.

rpcecnt is a changed or new receive pacing count for the selected entry.

spcecnt is a changed or new send pacing count for the selected entry.

applid is a changed or new APPLNAME= operand index for the selected entry.

mxtname is a changed or new TYPE=MXT REMOTE name for the selected entry.

Console Commands

* indicates that the selected value is to be removed from LUNAME= operand.

Note: If *locaddr* is greater than the existing LUNAME= operand list size, LUs will be allocated from the LU Dynamic Reconfiguration Pool (**LUDRPOOLCNT=** suboperand of the **OPTIONS=** operand on **BUILD** definition statement) to satisfy the addition of new list entries up to a maximum number of 255. If an LUNAME= operand list entry is being deleted, the associated LU is returned to the LUDRPOOL for later use. The LU name for an allocated LU is set to the name you specify in the MRMT console command.

Note: If *sluname* represents a new name for an existing or new LUNAME= operand entry, it must also be added and activated in an HNAS Application Major Node File (AMNF).

Note: If an LU is active at a *locaddr* entry, it will be deactivated (UNBOUND, ACB closed) if its *sluname* is being changed or deleted.

MAXDATA=bytecnt (SPU only)
(new for V2R2M0)

For a **TYPE=SPU REMOTE** definition statement, you may specify a *bytecnt* value between 64 and 8192. The *bytecnt* value represents the maximum number of bytes that can be delivered to the real remote SPU in a single PIU. This value account for the RU, RH and TH (6 bytes for a PUT2 and 2 bytes for a PUT1).

OPTIONS= [, CLOTINITYP={NONE BIND TIMER CONSOLE}]	SPU
[, CLOTFAILRTYLMT= <i>count</i>]	SPU
[, CLOTCONLMT= <i>count</i>]	SPU
[, {CLOSEONTAPFAILURE NOCLOSEONTAPFAILURE}]	XTP XOT
[, {CUD0SELECTSLU NOCUD0SELECTSLU}]	XTP MCH MXT
[, {DATAF NODATAF}]	DFX
[, {DATAFAM NODATAFAM}]	DFX
[, {DELAYBINDRESP NODELAYBINDRESP}]	XTP MCH
[, {ECHODTEADDR NOECHODTEADDR}]	MCH
[, {ECHOFAC NOECHOFAC}]	MCH
[, {EMSGE NOEMSGE}]	DFX
[, {IDTST NOIDTST}]	DFX
[, {IMS NOIMS}]	DFX
[, {INHIBITBIDREJ NOINHIBITBIDREJ}]	XTP MCH
[, {LLC0CTCPCHK NOLLC0CTCPCHK}]	MCH
[, {LLC5CTCPCHK NOLLC5CTCPCHK}]	MCH
[, MCHTMR= <i>seconds</i>]	XTP MCH
[, NRITAB= <i>nrtbname</i> [-R]]	DFX
[, {ONEPIUINB NOONEPIUINB}]	XTP MCH
[, {PEER PRI SEC}]	SPU
[, {PFXDCEADDR NOPFXDCEADDR}]	MCH
[, PVCRECONTMR= <i>seconds</i>]	MCH MXT
[, PVCSETUPTMR= <i>seconds</i>]	MCH MXT
[, PVCSETUPREJ= <i>code</i>]	MCH MXT
[, {REPDCEADDR NOREPDCEADDR}]	MCH

[,REQSESSDELAY= <i>seconds</i>]	XTP MCH
[, { RESETINO NORESETINO }]	XTP MCH
[, { RETPIU NORETPIU }]	DFX
[, { RTRBIDREJ NORTRBIDREJ }]	XTP MCH
[, { STRIPFAC NOSTRIPFAC }]	MCH
[, { STRIPRTEIN NOSTRIPRTEIN }]	MCH
[, SVCCALLTMR= <i>seconds</i>]	MCH MXT
[, { TAPWITHCLR NOTAPWITHCLR }]	XOT
[, TCPRBLMT= <i>bfrcnt</i>]	XTP XOT
[, XID= { NO STD TAB TABSTD (<i>idnum, idcnt</i>) }]	DFX
	(changed for V2R2M0)
	(changed for V2R3M0)
	(changed for V2R4M0)

Specify the REMOTE options to set or reset.

For a **TYPE=XTP|MCH|MXT REMOTE** definition statement, you may specify **OPTIONS=** operand values of **[NO]CUD0SELECTSLU**.

Note: The **[NO]CUD0SELECTSLU** option was introduced into 240 with enhancement APAR 2400074.

For a **TYPE=XTP|MCH REMOTE** definition statement, you may specify **OPTIONS=** operand values of **[NO]DELAYBINDRESP**, **[NO]INHIBITBIDREJ**, **MCHTMR=*seconds*** (where ***seconds***=4-60), **[NO]ONEPIUINB**, **REQSESSDELAY=*seconds*** (where ***seconds***=1-254), **[NO]RESETINO** and/or **[NO]RTRBIDREJ**.

For a **TYPE=MCH|MXT REMOTE** definition statement, you may specify **OPTIONS=** operand values of **PVCRECONTMR=*seconds*** (where ***seconds***=5-254), **PVCSETUPTMR=*seconds*** (where ***seconds***=10-254), **PVCSETUPREJ=*code*** (where ***code***=01-7F except for 12) and/or **SVCCALLTMR=*seconds*** (where ***seconds***=10-254).

Note: **T21=** can be specified as an alternate name for the **SVCCALLTMR=** suboperand.

For a **TYPE=MCH REMOTE** definition statement only, you may specify **OPTIONS=** operand values of **[NO]ECHODTEADDR**, **[NO]ECHOFAC**, **[NO]LLC0CTCPCHK**, **[NO]LLC5CTCPCHK**, **[NO]PFXDCEADDR**, **[NO]REPDCEADDR**, **[NO]STRIPFAC** and/or **[NO]STRIPRTEIN**.

For a **TYPE=XTP|XOT REMOTE** definition statement, you may specify **OPTIONS=** operand values of **[NO]CLOSEONTAPFAILURE** and **TCPRBLMT=*bfrcnt*** (where ***bfrcnt***=1-7).

Note: The **[NO]CLOSEONTAPFAILURE** option was introduced into 240 with enhancement APAR 2400055.

For a **TYPE=XOT REMOTE** definition statement only, you may specify **OPTIONS=** operand values of **[NO]TAPWITHCLR**.

Note: For HNAS release V2R2M0, Keep Alive logic used a Call Request packet as the shoulder TAP request packet. Some router configurations cause the this Call Request packet to

Console Commands

be propagated to the connected X.25 network which is an undesirable side effect. Normally, the router simply 'eats' the HNAS Call Request and returns a Clear Request which satisfies the HNAS TAP requirement. In order to eliminate this side effect and still permit the HNAS TAP logic to function, the TAPWITHCLR option has been added which will condition HNAS to use a Clear Request rather than a Call Request as the TAP request packet.

Note: For HNAS releases before V2R2M0, a Clear Request was used as the TAP request but this was changed to a Call Request because the IOS for some Cisco routers do not respond to Clear Requests. This can make an otherwise functioning router appear down. This is why the TAP request was changed to a Call Request which ensures a response from the router when it and its XOT component are both active. For installations that prefer, and can use a Clear Request as the TAP request, the TAPWITHCLR option may be specified.

For a **TYPE=SPU REMOTE** definition statement only, you may specify **OPTIONS=** operand values of **PEER**, **PRI**, **SEC**, **CLOTINITYP={NONE|BIND|TIMER|CONSOLE}**, **CLOTFAILR-TYLMT=count** (where *count*=0-254) and/or **CLOTCONLMT=count** (where *count*=0-254).

For a **TYPE=DFX REMOTE** definition statement only, you may specify **OPTIONS=** operand values of **[NO]DATAF**, **[NO]DATAFAM**, **[NO]EMSGE**, **[NO]IDTST**, **[NO]IMS**, **NRITAB=nrtbname[-R]**, **[NO]RETPIU** and/or **XID={NO|STD|TAB|TABSTD}(idnum, idcnt)**.

Note: The **[NO]IDTST** option was introduced into 240 with enhancement APAR 2400074.

For NRITAB=:

When the -R follower is omitted, the given *nrtbname* is compared against all NRITAB= names currently in use. If the name is found, the given NRITAB= is copied from the *found* REMOTE to the *specified* REMOTE. If the name is not found, the given *nrtbname* is LOADED into memory.

When the -R follower is specified, the given *nrtbname* is unconditionally loaded into memory even if it is already present. The new version of the table is then propagated to all other REMOTES that share the table. This means that changes to a table that are made while HNAS is running can be put in to effect without having to stop and restart HNAS.

Note: The MRMT NRITAB= [-R] support described above was introduced into 240 with APAR 2400032.

```
PACE={NONE | NULL | pktcnt} | (XTP)
      ({rpccnt | *}, {spccnt | *}) (SPU)
                                      (new for V2R2M0)
```

For a **TYPE=XTP REMOTE** definition statement, specify **NULL|NONE** to delete the PACE= operand value.

For a **TYPE=SPU REMOTE** definition statement, specify **NULL** to substitute the pacing values in the BIND image or specify **NONE** to delete the PACE= operand value and not substi-

tute the pacing values from the BIND image. In the latter case, no inbound or outbound pacing will be performed for all SLUs on this SPU.

For a **TYPE=XTP REMOTE** definition statement, specify a decimal *pktcnt* value between 0 and 254.

For a **TYPE=SPU REMOTE** definition statement, you may add, replace or delete (*) a receive pacing count (*rpccnt*) and/or a send pacing count (*spccnt*). The values are entered as a sublist enclosed in parentheses. If you enter an asterisk (*) for either pacing count, the old value is removed. When no receive or send pacing count is associated with the PACE= operand value, the corresponding value from the BIND image for each SLU on the SPU is used.

PADPARAM=NULL | NONE | (pn1, pv1, . . . , pnk, pvk) (XTP | MCH | MXT)

For a **TYPE=XTP|MCH REMOTE** definition statement, specify **NULL|NONE** to delete the PADPARAM= operand value.

For a **TYPE=MXT REMOTE** definition statement, specify **NULL** to substitute the MCH PADPARAM= operand value or specify **NONE** to delete the PADPARAM= operand value and not substitute the MCH PADPARAM= operand value. In the latter case, if this MXT is referenced by an SVC0= or SVC5= operand entry on the root MCH, no PAD parameters will be transmitted to the remote DTE even if a PADPARAM= operand value is specified for the MCH.

For a **TYPE=XTP|MCH|MXT REMOTE** definition statement, specify **(pn1,pv1,....,pnk,pvk)** to replace or modify the PADPARAM= operand value with the given PAD parameter data. You may enter up to 127 decimal number/value pairs **(pni,pvi)** *enclosed in parenthesis*. If a PAD parameter number already exists, the new value will replace the old value. If a PAD parameter number is new, the number and its value will be added to the PAD parameter list.

Note: HNAS does not check the PADPARAM= data **(pn1,pv1,....,pnk,pvk)** for standardized X.25 values. The only requirement is that the data must be decimal in the range 0-255 and the number of number/value pairs must not exceed 127. Note that all PADPARAM= values are treated as international PAD parameters.

PORT=number (DMY only)
(new for V2R4M0)

For a **TYPE=DMY REMOTE** definition statement, you may specify a port number to be used for the HNAS PING command. The port number can also be specified as part of the IP address (see IPADDR= parameter above).

PROTOCOL={XTP | XOT} (DMY only)
(new for V2R4M0)

For a **TYPE=DMY REMOTE** definition statement, you may specify the X.25 encapsulation protocol to be used for the HNAS PING command.

Console Commands

```
SVC0=sluname=[{newname|*}] (XTP|MCH)
  [+gluname] [-{A|I}]
  [/{dteaddr1|Xidnum1<rmtname1>|*}
    [-{dteaddr2|Xidnum2<rmtname2>|*}
      [-{dteaddr3|Xidnum3<rmtname3>|*}]]]{T|O|I} [{applid|*}]]
  [/{mxtname|*}]
  [/{cud|*}]
                                     (changed for V2R2M0)
                                     (changed for V2R4M0)
```

For the named SLU (*sluname*) in the SVC0= operand list on a **TYPE=XTP|MCH REMOTE** definition statement, you may add, delete or modify the following SLU entry values:

***sluname*=[{*newname**}]**

If *sluname* is specified by itself and *sluname* exists in the SVC0= operand list, the SLU remains unchanged but suboperands associated with the SLU may be modified.

If *sluname=sluname* is specified and *sluname* does not exist, the new SLU is added. For SLU add requests, the same name must be specified on both sides of the equal sign.

If *sluname=newname* is specified and *newname* is unique, the SLU is renamed. If the SLU is active at the time the rename takes place, the call is cleared and the ACB is closed. For this reason, you should verify the SLU state using the DLU LUNM=*sluname* command before making this change.

If *sluname=** is specified, the entire SLU entry is removed from the SVC0= operand. If the SLU is active at the time the deletion takes place, the call is cleared and the ACB is closed. For this reason, you should verify the SLU state using the DLU LUNM=*sluname* command before making this change.

If the *sluname* is not connected but its ACB is opened when a name change or deletion is requested (for example, awaiting a callout BIND), the following error message is generated:

```
NASC421E SLU sluname IS NOT IDLE, REQUIRED
```

In this case, you must issue V NET,INACT,ID=*sluname* at the VTAM console to deactivate the SLU.

If the *newname* is already defined when a name change is requested, the following error message is generated:

```
NASC422E SLU newname ALREADY EXISTS, REQUIRED
```

If the *newname* is unique when an addition is requested but no dynamic LU pool is defined or all dynamic LUs are in use, the following error message is generated:

```
NASC423E SLU sluname COULD NOT BE ALLOCATED, REQUIRED
```


In this case, you must ensure the value specified for `OPTIONS=LUDRPOOLCNT=value` on the BUILD definition statement is large enough to accommodate all your dynamic LU addition requests.

+gluname

is a generic SLU name that will be used in place of the real SLU name when a SETLOGON request is presented to VTAM during *callin* processing.

Note: *sluname+gluname* support was introduced into 240 as Enhancement APAR 2400084.

-{A|I}

Is the SLU state. If omitted, no change is effected. If *sluname-{A|I}* is entered and this changes the current SLU state, an appropriate **VARY sluname ON|OFF** console command is issued internally.

Note: *sluname-{A|I}* support was introduced into 240 as Enhancement APAR 2400028.

```
{dteaddr1|Xidnum1|<rmtname1>|*}
[-{dteaddr2|Xidnum2|<rmtname1>|*}
[-{dteaddr3|Xidnum3|<rmtname1>|*}]]
```

You may specify up to three (3) *dteidi* values (*dteidi* is an abbreviation for *dteaddr*, *Xidnum* or *<rmtname>*), each of which must be separated by a hyphen (-). Each *dteaddr* can be up to fifteen (15) decimal digits in length, each *Xidnum* can be up to fourteen (14) paired hex digits in length and each *<rmtname>* must identify a TYPE=MXT|SVC REMOTE definition statement whose name must be enclosed in non-equivalence symbols (<>). The connection identifier follows the *dteidi* list.

Note: When the first character of the *dteaddr* is an **X**, it indicates that a hex *Xidnum* value follows rather than a decimal *dteaddr* value. You should always code an even number of hex digits using zero (0) as the right most pad digit if the *Xidnum* value is odd.

If an *<rmtname>* value is specified, it must point at a TYPE=MXT|SVC REMOTE definition statement. The DTEADDR= operand on the named MXT|SVC will provide the *dteaddr* value for inbound *calling* DTE address matching and for outbound *called* DTE address targeting. Additionally, for outbound calls, the DCEADDR=, FAC= and CUD= operands on the named MXT|SVC provide values for the *calling* DTE address, facilities data and call user data, respectively.

If an asterisk (*) is specified for a *dteidi* value, the value is removed from the SLU entry.

When a hyphen is entered without a preceding *dteidi* value, it acts as a place holder preserving the value of the skipped *dteidi* list entry.

Note: *<rmtname>* support was introduced into 240 as Enhancement APAR 2400003.

{|O|T} (connection identifier)

Console Commands

Specifies that the SLU is used for callin (I), callout (O) or twoway (T) communication. The connection identifier may be changed dynamically.

{*applid*|*}

Specifies an APPLNAME= operand index value that follows the connection identifier. An *applid* value is permitted for callin and twoway SLUs only (type of I|T). If an asterisk (*) is specified for an *applid* value, the value is removed from the SLU entry.

{*mxtname*|*}

Specifies the name of a TYPE=MXT REMOTE definition statement that is to be associated with the SLU. The *mxtname* is valid for all SLU types. If an asterisk (*) is specified for an *mxtname* value, the value is removed from the SLU entry.

{*cud*|*}

Specifies 4-bytes (8 hex digits) of call user data for callout or twoway SLUs. If an asterisk (*) is specified for a *cud* value, the value is removed from the SLU entry. If you require more than 4-bytes of CUD, you should associate an MXT with the SLU and use the CUD= operand on that MXT. The CUD= operand allows for up to 63-bytes of call user data.

Note: If the connection identifier is omitted, the existing connection identifier remains unchanged. If this is a new SVC0= SLU entry, (I) is assumed.

Examples:

- 1) Change/add a DTE address for the existing SLU named MCH10001 on MCH1 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH10001/123456, DRMT SVC0=
```

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
MCH1	00074920	MCH
	SVC0=0001	
	MCH10001/123456I/	

- 2) Associate the MXT named MXT1 with the existing SLU named MCH10001 on MCH1 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH10001//MXT1, DRMT SVC0=
```

<u>RMTNAME</u>	<u>OPERAND</u>	<u>TYPE</u>
MCH1	00074920	MCH
	SVC0=0001	
	MCH10001/123456I/MXT1	

- 3) Add an *Xidnum* and *<rmtname>* value to the *dteidf* list while leaving the *dteaddr* value alone:

```
MRMT MCH1 SVC0=MCH10001/-X6789-<MTX0>, DRMT MCH1 SVC0
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0020
           MCH10001/123456-X6789-<MXT0>I/MXT1
```

Note: When a hyphen is entered without a preceding value, it acts as a place holder preserving the value of the skipped *dteid* list entry (123456 in this case).

- 4) Change the connection identifier from callin to twoway and add an *applid* of 2 for the existing SLU named MCH10001 on MCH1 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH10001/T2, DRMT SVC0=
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0001
           MCH10001/123456-X6789-<MXT0>T02/MXT1
```

- 5) Add a new SLU named MCH1NEW on MCH1 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH1NEW=MCH1NEW/45456677T2//C0000000, DRMT SVC0=
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0002
           MCH10001/123456-X6789-<MXT0>T02/MXT1
           MCH1NEW /45456677T02//C0000000
```

- 6) Change the name of the existing SLU named MCH1NEW on MCH1 to MCH10002 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH1NEW=MCH10002, DRMT SVC0=
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0002
           MCH10001/123456-X6789-<MXT0>T02/MXT1
           MCH10002/45456677T02//C0000000
```

- 7) Delete the existing SLU named MCH10002 on MCH1 then display the result.

```
RNM=MCH1 MRMT SVC0=MCH10002=*, DRMT SVC0=
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0001
           MCH10001/123456-X6789-<MXT0>T02/MXT1
```

SVC3=spuname

(MCH only)

Console Commands

```
[/{dteaddr | *} [{I | O}]]  
[/{mxtname | *}]
```

(new for V2R2M0)

For the named SPU (*spuname*) in the SVC3= operand list on a **TYPE=MCH REMOTE** definition statement that identifies a callin resource (I) or callout resource (O), you may add, replace or delete (*) the value for the resource identifier with a decimal DTE address value (*dteaddr*). You may enter up to 15 decimal digits for *dteaddr*. If you enter an asterisk (*) for the resource identifier, the old value is removed. You may also add, change or delete (*) the name of the TYPE=MXT REMOTE (*mxtname*) associated with the SVC3= operand entry.

Note: If the callin (I) or callout (O) delimiter is entered, it must match the value that was specified for the SVC3= operand entry in the CDF. If the delimiter is omitted, callin (I) is assumed.

```
SVC4=sluname = [{newname | *}] (XTP | MCH)  
[- {A | I}]
```

(changed for V2R3M0)

(changed for V2R4M0)

For the named SLU (*sluname*) in the SVC4= operand list on a **TYPE=XTP|MCH REMOTE** definition statement, you may add, delete or modify the following SLU entry values:

```
sluname=[{newname*}]
```

If *sluname* is specified by itself and *sluname* exists in the SVC4= operand list, the SLU remains unchanged.

If *sluname=sluname* is specified and *sluname* does not exist, the new SLU is added. For SLU add requests, the same name must be specified on both sides of the equal sign.

If *sluname=newname* is specified and *newname* is unique, the SLU is renamed. If the SLU is active at the time the rename takes place, the call is cleared and the ACB is closed. For this reason, you should verify the SLU state using the DLU LUNM=*sluname* command before making this change.

If *sluname=** is specified, the entire SLU entry is removed from the SVC4= operand. If the SLU is active at the time the deletion takes place, the call is cleared and the ACB is closed. For this reason, you should verify the SLU state using the DLU LUNM=*sluname* command before making this change.

If the *sluname* is not connected but its ACB is opened when a name change or deletion is requested (for example, awaiting a callout BIND), the following error message is generated:

```
NASC421E SLU sluname IS NOT IDLE, REQUIRED
```

In this case, you must issue V NET,INACT,ID=*sluname* at the VTAM console to deactivate the SLU.

If the *newname* is already defined when a name change is requested, the following error message is generated:

```
NASC422E SLU newname ALREADY EXISTS, REQUIRED
```

If the *newname* is unique when an addition is requested but no dynamic LU pool is defined or all dynamic LUs are in use, the following error message is generated:

```
NASC423E SLU sluname COULD NOT BE ALLOCATED, REQUIRED
```

In this case, you must ensure the value specified for `OPTIONS=LUDRPOOLCNT=value` on the `BUILD` definition statement is large enough to accommodate all your dynamic LU addition requests.

-{A|I}

Is the SLU state. If omitted, no change is effected. If *sluname*-{A|I} is entered and this changes the current SLU state, an appropriate **VARY *sluname* ON|OFF** console command is issued internally.

Note: *sluname*-{A|I} support was introduced into 240 as Enhancement APAR 2400028.

```
SVC5=sluname=[{newname|*}] (XTP|MCH)
      [+gluname] [-{A|I}]
      [/{dteaddr1|Xidnum1|<rmtname1>|*}
        [-{dteaddr2|Xidnum2|<rmtname2>|*}
          [-{dteaddr3|Xidnum3|<rmtname3>|*}]] {T|O|I} [{applid|*}]]
      [/{mxtname|*}]
      [/{cud|*}]
                                     (changed for V2R2M0)
                                     (changed for V2R4M0)
```

Note: The syntax for the `SVC5=` parameter is identical to that for the `SVC0=` operand. Please refer to the description of `SVC0=` on page CONS-194 for details.

```
TAP=value (XTP|XOT)
```

For a **TYPE=XTP|XOT REMOTE** definition statement, specify a shoulder tap timeout value between 0 and 4095. If 0 is specified, 'Keep Alive' processing is inhibited for the associated router. Please refer to Chapter 4 description of `TAP=` operand for usage restrictions.

```
TRAN={NO|USER|EVEN|ODD|MARK|SPACE| (XTP|MCH)
      NPSIEVEN|NPSIODD|NPSIMARK|NPSISPACE}
                                     (changed for V2R3M0)
```

Console Commands

For a **TYPE=XTP|MCH REMOTE** definition statement, specify a valid translate table type.

```
USSTAB=ustbname [-R] (XTP | MCH | MXT | SPU)
                        (apar/changed for V2R4M0)
```

For a **TYPE=XTP|MCH|MXT|SPU REMOTE** definition statement, specify the name of a valid USS table.

When the -R follower is omitted, the given ***ustbname*** is compared against all USSTAB= names currently in use. If the name is found, the given USSTAB= is copied from the *found* REMOTE to the *specified* REMOTE. If the name is not found, the given ***ustbname*** is LOADED into memory.

When the -R follower is specified, the given ***ustbname*** is unconditionally loaded into memory even if it is already present. The new version of the table is then propagated to all other REMOTES that share the table. This means that changes to a table that are made while HNAS is running can be put in to effect without having to stop and restart HNAS.

Note: The MRMT USSTAB= [-R] support described above was introduced into 240 with APAR 2400032.

General Notes for APAR 2400032:

- 1) Because the transmission of a USSMSG in a USSTAB can span task dispatches (and TCPIP interrupts), HNAS will refuse to reload a USSTAB if it is currently being used for a USSMSG transmission. In this case, the following message is issued:

```
NASC031W USSTAB ISTINCDT IS CURRENTLY IN USE, RETRY MRMT COMMAND LATER
```

This is the case because of a potential ABEND that can result due to an addressing exception if the new table alters USSMSGs currently being transmitted.

Further, if you attempt to load a table that is not appropriate for the specified operand, for example a USS table is specified for a LOGON table (e.g., LOGTAB=ISTINCDT), the following message is issued:

```
NASC030E LOGTAB ISTINCDT HAS INVALID FORMAT, MRMT COMMAND ABORTED
```

- 2) The following message is also issued if you specify the wrong table in the CDF, for example a USS table is specified for a LOGON table (e.g., LOGTAB=ISTINCDT):

```
NAS1311E REMOTE mchname LOGTAB=ISTINCDT IS NOT A VALID LOGON TABLE, REQUIRED
```

*** THIS NEW MESSAGE WILL PREVENT HNAS FROM STARTING ***

Prior to APAR 2400032, you would not have known that a bad table was specified until it was accessed during call setup.

For a bad USSTAB=, the following message is issued and the call is cleared:

```
NAS5702E LU sluname ADDRESSES INV USSTAB
```

For a bad LOGTAB= value, no action is taken (treated as if no LOGTAB= value was specified). In this case USSTAB= is used. If the USSTAB= operand is (also) missing, the following message is issued and the call is cleared:

```
NAS5703E LU sluname MISSING USSTAB
```

Note: If invalid data is entered for an operand, its value is not changed and the MRMT command is aborted at that point.

Console Commands

MRMT Examples:

As an illustration of how the MRMT and DRMT commands can be used together, consider the following examples. Note that you should always issue a DRMT command before making any changes so you will have a log of initial values.

Initially, the following display is produced when **RNM=MCH1 DRMT SVC0** is entered (RNM=MCH1 sets the REMOTE name for subsequent MRMT and DRMT commands).

```
RNM=MCH1 DRMT SVC0
```

```
RMTNAME  OPERAND  TYPE  
MCH1      00074920 MCH  
          SVC0=0005  
          MCH10001/I/  
          MCH10002/I/  
          MCH10003/666601010/  
          MCH10004/6666666666666666/  
          MCH10005/6666123456789010/MXT1
```

- 1) Change the DTE address for the SLU named MCH10004 from 6666666666666666 to 3036102400 then verify the change.

```
MRMT SVC0=MCH10004/3036102400  
DRMT SVC0
```

```
RMTNAME  OPERAND  TYPE  
MCH1      00074920 MCH  
          SVC0=0005  
          MCH10001/I/  
          MCH10002/I/  
          MCH10003/666601010/  
          MCH10004/30361024000/  
          MCH10005/6666123456789010/MXT1
```

- 2) Define a TYPE=MXT REMOTE named MXT1 for the SLU named MCH10004 then verify the change.

```
MRMT SVC0=MCH10004//MXT1  
DRMT SVC0
```

```
RMTNAME  OPERAND  TYPE  
MCH1      00074920 MCH  
          SVC0=0005  
          MCH10001/I/  
          MCH10002/I/  
          MCH10003/666601010/  
          MCH10004/30361024000/MXT1  
          MCH10005/6666123456789010/MXT1
```


- 3) Supply a TYPE=MXT REMOTE named MXT1 and change the callout DTE address for the SLU named MCH10003 from 66660101 to 3036102500 then verify the change.

```
MRMT SVC0=MCH10003/3036102500O/MXT1
DRMT SVC0
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0005
           MCH10001/I/
           MCH10002/I/
           MCH10003/3036102500O/MXT1
           MCH10004/3036102400O/MXT1
           MCH10005/666612345678901O/MXT1
```

- 4) Add a TYPE=MXT REMOTE named MXT1 and a callin DTE address of 3036102600 for the SLU named MCH10002 then verify the change.

```
MRMT SVC0=MCH10002/3036102600/MXT1
DRMT SVC0
```

```
RMTNAME  OPERAND  TYPE
MCH1      00074920  MCH
           SVC0=0005
           MCH10001/I/
           MCH10002/3036102600I/MXT1
           MCH10003/3036102500O/MXT1
           MCH10004/3036102400O/MXT1
           MCH10005/666612345678901O/MXT1
```

Console Commands

PAUSE Command - Pause Console Processing (Sleep)

(new for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	PAUSE	<i>seconds</i>	N	240

This command is used to suspend or delay execution of console commands that follow the PAUSE command for the amount of time specified by the *seconds* value. The PAUSE command is useful for delaying queued command execution (CONCMDQ= operand on the BUILD definition statement) when HNAS is first started until initialization activity has subsided or to delay commands provided in a command list (EXEC *ddname*(*cmd1*,...,*cmdn*).

You may specify a ***seconds*** value between 1 and 3600 (1-hour). If ***seconds*** is omitted, 10 will be used.

PFXWTO Command - WTO Prefix Control (Privileged)

(changed for V2R3M0)

Entered from the local console

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	PFXWTO	[{ ON NASNAME <i>text</i> OFF }] [CONS { ON OFF }]	A A	230 230

Entered from a remote console

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	PFXWTO	[{ ON TIME OFF }]		

For local consoles, this command is used to enable (**ON|NASNAME**) or disable (**OFF**) WTO prefixing for alarm messages or to enable (**CONS ON**) or disable (**CONS OFF**) WTO prefixing for console command output using the text supplied by the **NASNAME=** operand of the **BUILD** definition statement. If the *text* parameter is specified, WTO prefixing is enabled and the *text* value will be used to override the **NASNAME=** operand value. From 1 to 8 non-blank characters may be specified.

WTO prefix support is provided so that data center operations personnel can quickly identify HNAS generated messages in the local console (**SYSCONS**) log.

For remote consoles, this command is used to enable (**ON|TIME**) or disable (**OFF**) WTO prefixing using a time stamp.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

PFXWTO Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER	LCL	RMT
ON	OFF	1		
OFF	ON	2		
NASNAME	<i>text</i>	3		I
<i>text</i>	NASNAME	4		I
CONS ON	CONS OFF	5		I
CONS OFF	CONS ON	6		I
TIME	OFF	1	I	

Console Commands

- Enter **PFXWTO [ON|NASNAME]** from a local console to cause the text provided by the NAS-NAME= operand of the BUILD definition statement to be appended to the beginning of each **alarm** WTO written to the **SYSCONS**. This processing does not affect local console command output.
- Enter **PFXWTO OFF** from a local console to inhibit WTO prefix support for alarm message output.
- Enter **PFXWTO CONS [ON]** from a local console to cause the text provided by the NAS-NAME= operand of the BUILD definition statement to be appended to the beginning of each **console command** WTO written to the **SYSCONS**. This processing requires that the **SHOW CONS ON** option must also be in effect. This processing does not affect alarm output.
- Enter **PFXWTO CONS OFF** from a local console to inhibit WTO prefix support for console command output.
- Enter **PFXWTO text** from a local console to cause the *text* value to be appended to the beginning of each **alarm** WTO in lieu of the NASNAME= operand value. Up to 8 non-blank characters may be specified.
- Enter **PFXWTO text PFXWTO OFF CONS ON** if you only want console output to be prefixed with the *text* value.
- Enter **PFXWTO [ON|TIME]** from a remote console to cause the text provided by the time of day clock to be appended to the beginning of each WTO written to the remote console.
- Enter **PFXWTO OFF** to inhibit WTO prefix support.

General notes for PFXWTO:

- 1) HNAS activates with **PFXWTO OFF** set in the absence of the **PFXWTO** start parameter.
- 2) The **PFXWTO [ON]**, **PFXWTO OFF** and **PFXWTO text** start parameters perform the same function as the **PFXWTO [ON]**, **PFXWTO OFF** and **PFXWTO text** console commands, respectively, for *global* message prefix control. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

PING Command - Ping Remote Router and/or MCH Link (Privileged)

(new for V2R3M0)
(changed for V2R4M0)

PINGing based on supplied parameters

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[IPADDR= <i>aaa.bbb.ccc.ddd</i> [(<i>ppppp</i>)]]	PING	[<u>XOT</u> XTP]	N	230
[CLDADDR= <i>ddd...ddd</i>]		[<i>aaa.bbb.ccc.ddd</i> [(<i>ppppp</i>)]]		
[CLGADDR= <i>ddd...ddd</i>]		[<i>ddd...ddd</i>]		
[IFN= <i>ifn</i>]		[<i>ifn</i>]		
[VCN= <i>vcn</i>]		[<i>vcn</i>]		

or PINGing based on REMOTE parameters with optional overrides

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>dmyname</i>]	PING	[<i>dmyname</i>]	N	240
[IFN= <i>ifn</i>]		[<u>XOT</u> XTP]		
[VCN= <i>vcn</i>]		[<i>aaa.bbb.ccc.ddd</i> [(<i>ppppp</i>)]]		
		[<i>ddd...ddd</i>]		
		[<i>ifn</i>]		
		[<i>vcn</i>]		

This command will transmit a Call Request packet to the remote DTE identified by the command modifiers (default values) or the specified **positional** command parameters.

The purpose of this command is to verify connectivity from HNAS to the destination router and beyond (including the X.25 serial interface and network when configured with the appropriate X.25 DTE|DCE addresses, routes, etc.).

PING Call Request Parameter Hierarchy Matrix

PARAMETER	When DMY specified	When DMY <u>not</u> specified
<i>called</i> DTE address	DTEADDR= from DMY, PING argument override or null	CLDADDR= modifier, PING argument override or null
<i>calling</i> DTE address	DCEADDR= from DMY or null	CLGADDR= modifier or null
facilities data	FAC= from DMY or null	defaults to 080100420707430202
call user data	CUD= from DMY or null	defaults to 01000000HNASPING

Console Commands

Note: If the operand of the hierarchy list for a particular Call Request parameter is undefined (e.g., NONE|NULL), the corresponding Call Request field will be null.

If you supply the name of a TYPE=DMY REMOTE definition statement via the RNM= modifier, it will be used to supply the IPADDR=, PORT=, PROTOCOL= (either XTP or XOT), CUD=, DTEADDR= (same function as CLDADDR=), DCEADDR= (same function as CLGADDR=) and FAC= values for the PING command. If you wish to override certain DMY operands, you can enter the associated override values as positional PING command arguments. If the PING is for an XTP call, the *ifn* and *vcn* values must be supplied via the respective command modifiers or as positional parameters. In the latter case, commas should be used to identify omitted positional parameters (,,) that precede *ifn* and *vcn*. The use of RNM=*dmyname* provides more flexibility than simply using the other command modifiers since all Call Request packet fields can be provided via the DMY. **Conversely, when a DMY is not used, default CUD and FAC values are used (see below).**

Note: All supported operands for a TYPE=DMY REMOTE can be specified in the CDF. They can also be changed and/or added dynamically using the MRMT command.

If you set the IPADDR=, CLDADDR=, CLGADDR=, IFN= and VCN= modifiers, they become the default values for the PING command when RNM=*dmyname* is not provided. They will be used if PING is entered with no parameters. Default values can be overridden using positional parameters that follow the remote protocol (XOT is assumed if omitted) where the IP address is the first parameter, followed by the **called** DTE address, MCH interface number and MCH virtual circuit number (the last two (2) values are only used when the protocol is XTP).

If PING is entered with no parameters and both IPADDR= and CLDADDR= are null (not set), the command will be rejected. XOT is the default remote protocol unless you specifically enter XTP. You can always override the default IP address and/or **called** DTE address by specifically entering them as positional PING command parameters.

Example: If you have set default values and only want to change the **called** DTE address, enter **PING *ddd...ddd***.

For XTP only, two (2) additional parameters are required: *ifn* selects the actual MCH interface on the IBM router and *vcn* selects the logical channel number on the MCH link for the call.

The PING command sends a Call Request packet to the target IP address carrying the **called** DTE address that you specify. A **calling** DTE address is supplied from the CLGADDR= modifier if one is given, otherwise, the **calling** DTE address is null. The facilities and call user data are fixed as follows:

```
facilities: 080100420707430202
cud:       01000000HNASPING
```

The PING (XOT) Call Request packet is not routed through the LOCAL RTEOUT=values for TYPE=XOT REMOTE selection because the PING operation already know the destination remote router IP address.

The target IP address selects the router. The target DTE address selects the MCH serial interface on the router.

Note: The router is typically configured to map the target DTE address to a specific serial interface or to the router clear operation (via '**x25 route dte-addr clear**' configuration).

General notes for PING:

- 1) Right side positional parameters can be used to override default values set by left side command modifiers.
- 2) XOT is assumed if a protocol is not specified.
- 3) If an overriding IP address **and** DTE address are both required, the IP address must be specified first.
- 4) If an overriding IP address **or** DTE address is required, either can be specified by themselves (no comma place holder is needed).
- 5) The IFN= and VCN= modifiers are only required for XTP routers. If overriding IFN and VCN parameters are required without overriding IP and/or DTE addresses, comma(s) must be used as place holders.
- 6) If the RNM= modifier identifies a TYPE=DMY REMOTE or if a *dmyname* is provided as the first PING argument, **all** PING operands will come from the specified REMOTE. However, if standard PING arguments are also given, after the *dmyname*, they will override the operands on the given TYPE=DMY REMOTE.
- 7) When a DMY is specified for the PING command, the DTEADDR, DCEADDR, FAC and CUD operands are used to supply, respectively, the *called* DTE address, the *calling* DTE address, facilities and call user data. If **NONE** is specified for any of these values, the associated field is null in the Call Request packet. The IPADDR= and PORT= operands on the DMY are used to create the TCPIP socket for the Call Request.

You can override some operand values set for DMY by specifying them as PING command arguments. For example, to override the IPADDR and DTEADDR values for a DMY, you could enter, for example:

```
PING dmyname 192.168.1.100(1998) 20360009
```

When the PING is entered **without a DMY**, the IPADDR=, PORT=, DTEADDR= and DCEADDR= values come from, respectively, the associated command modifier: IPADDR= (aaa.bbb.ccc.ddd(port)), CLDADDR= and CLGADDR=. Since there is no modifier for facilities and call user data, these fields default to 080100420707430202 and 01000000HNASPING, respectively.

Whether a DMY is provided or Call Request information comes from modifiers and PING

Console Commands

command arguments, the IFN and VCN come from the IFN= and VCN= modifiers or from positional arguments specified for the PING command.

- 8) The PING can result in a Call Accept from the network if the call reaches its destination. Most likely, the PING will result in a Clear Request. The Clear Request cause and diagnostic codes can then be used to determine how far the actual calling function has gone. Please refer to the Cisco documentation and HNAS documentation for a list of clear reason and diagnostic codes.

The following responses can be returned by the PING command.

```
NAS2613M PINGING SOCKET=aaa.bbb.ccc.ddd(port) FOR consname (seqno)
NAS2613M          DTEADDR=ddd...ddd DCEADDR=ddd...ddd
NAS2613M          FAC=xx...xxx
NAS2613M          CUD=xx...xxx
```

This message is generated when the PING operation is started if valid values are supplied for the IP address, Port number and *called* DTE address, *calling* DTE address, facilities data and call user data. These values can come from a TYPE=DMY REMOTE that is specified for the PING command and/or override values that are specified with the PING command.

```
NAS2611M PING CALL TIMED OUT FOR SOCKET=aaa.bbb.ccc.ddd(port)
          DTEADDR=ddd...ddd (seqno)
```

This message is generated when no response is received for the PING Call Request packet within a timeout interval fixed at 15 seconds. A timeout normally indicates that the specified IP address is invalid or the target router is not connected to the network.

```
NAS2615M PING CALL CLEARED (cc/dd) FOR SOCKET=aaa.bbb.ccc.ddd(port)
          DTEADDR=ddd...ddd (seqno)
```

This message is generated when a Clear Request packet is received as the response to the PING Call Request packet. The **cc/dd** value provides additional information. Please refer to the Cisco documentation and HNAS documentation for a breakdown of the clear cause and diagnostic codes.

```
NAS2617M PING CALL ACCEPTED FOR SOCKET=aaa.bbb.ccc.ddd(port)
          DTEADDR=ddd...ddd (seqno)
```

This message is generated when a Call Accept packet is received as the response to the PING Call Request packet.

Note: PING NAS261nM message support was introduced into 240 with APAR 2400022.

Note: PING NAS261nM message support was updated to include the correlation sequence number (**seqno**) and IP and DTE addresses in the response messages effective with APAR 2400039.

Console Commands

PRNT Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
CLSOPN <i>ddname</i>	CLOSE OPEN <i>ddname</i>	3
CLOSE	CLSOPN <i>ddname</i>	3
OPEN <i>ddname</i>	CLSOPN <i>ddname</i>	4
DATE ON	DATE OFF	5
DATE OFF	DATE ON	6
QLLC ON	QLLC OFF	7
QLLC OFF	QLLC ON	8
CNFG ON	CNFG OFF	9
CNFG OFF	CNFG ON	10
LU ON	LU OFF	11
LU OFF	LU ON	12
SYS ON	SYS OFF	13
SYS OFF	SYS ON	14
TCP ON	TCP OFF	15
TCP OFF	TCP ON	16
VC ON	VC OFF	17
VC OFF	VC ON	18
VTAM ON	VTAM OFF	19
VTAM OFF	VTAM ON	20
XOT ON	XOT OFF	21
XOT OFF	XOT ON	22
XTP ON	XTP OFF	23
XTP OFF	XTP ON	24
TIMESTAMP= <i>format</i> {+D -D}]	none	25
RSMEPRSW	none	26
NEXTPRSW SWITCHNOW	none	27
PRTSWLST= <i>*</i> SWITCH= <i>*</i>	none	28
PRTSWLST= <i>list</i> SWITCH= <i>list</i>	none	29
DDNAME=?	none	30

PARAMETER	CONFLICT	ORDER
PRTSWLST=? SWITCH=?	none	31

- Enter **TIMESTAMP=HH:MM:SS[.T[H[M[I]]]]** to set the HNAS SYSPRINT log timestamp format thus forcing the resolution is to be seconds, tenths of seconds (T), hundredths of seconds (H), thousandths of seconds (M) or ten-thousandths of seconds (I). **STD** and **EXT** are abbreviations for **HH:MM:SS** and **HH:MM:SS.THMI**, respectively.

Append **+D** to the **TIMESTAMP** format to cause the Julian Date to prefix the timestamp for each SYSPRINT record (treated the same as PRNT DATE ON).

Append **-D** to the **TIMESTAMP** format to prevent the Julian Date from prefixing the timestamp for each SYSPRINT record (treated the same as PRNT DATE OFF).

- Enter **PRNT PRTSWLST=({LOOP|STOP},
 {SWITCHAT hh00}
 SWITCHATMIDNIGHT|SWITCHAT6AM|
 SWITCHATMIDDAY|SWITCHAT6PM},
 {ddnamei|DYNAMIC=ocls},...,{ddnamen|DYNAMIC=ocls})**

to update PRTSWLST= operand actions and/or list entries of static (*ddnamei*) or dynamic (DYNAMIC=*ocls*) DDNAMEs that permit automatic SYSPRINT switching when the current SYSPRINT log file becomes full or when the designated action occurs. You may specify static DDNAMEs and/or request DYNAMIC DDNAME allocation in any combination. The DDNAMEs you specify or request dynamically are used sequentially. The default SYSPRINT file is always used initially (DDNAME=SYSPRINT).

When static DDNAMEs are specified in the PRTSWLST= operand list, they must be defined in the HNASXEQ JOB otherwise the following error message will be issued:

```
NASC211E ddnamei LOG FILE COULD NOT BE OPENED, REQUIRED
```

If you specify DYNAMIC= (no output class) or DYNAMIC (no equal sign), class A is assumed.

You can also specify just one DYNAMIC value with the LOOP action which will cause a new dynamically allocated SYSOUT file to be used when the PRTLMT is reached, the specified switch action event occurs or when the PRNT NEXTPRSW console command is entered. For example, PRTSWLST=* PRTSWLST=(LOOP, SWITCHATMIDNIGHT, DYNAMIC).

The dynamic datasets are allocated with a DDNAME of DYN#xxxx where xxxx=0001 for the first dynamically allocated dataset, xxxx=0002 for the second and so on. xxxx is incremented by one as new datasets are allocated. If you issue a DNAS JCL command, you will see the dynamically allocated DDNAMEs listed. This DDNAME naming convention was chosen so the dynamic DDNAMEs would be easy to remember.

Note: If you specify a DDNAME of the form DYN#xxxx (where xxxx=0001, 0002, etc.) in the HNASXEQ JOB, the following alarm message will be generated:

Console Commands

NAS0210E DDNAME(S) OF THE FORM DYN#xxxxx WERE SPECIFIED, PRTSWLST=DYNAMIC
NAS0210E WILL NOT BE ALLOWED, DDNAME(S) CONFLICT

This message is also issued if a PRTSWLST= switch is requested for a DYNAMIC entry. The reason for this message is that DDNAME(s) of this form are reserved for PRTSWLST=DYNAMIC support and thus cannot be specified as static DDNAMEs in the HNAS start JCL. Note also that the DYNAMIC entry is skipped and the next non-DYNAMIC real DDNAME in the PRTSWLST= operand list is used. If there are no real DDNAMEs in the PRTSWLST= operand list, SYSPRINT logging is terminated (the STOP action is forced).

Note: PRTSWLST=DYNAMIC support was introduced into 240 as Enhancement APAR 2400001.

LOOP, STOP, SWITCHAT hh 00, SWITCHATMIDNIGHT, SWITCHAT6AM, SWITCHATMIDDAY and SWITCHAT6PM are reserved keywords that can be specified anywhere in the PRTSWLST= operand list. They are NOT treated as DDNAMEs.

- **LOOP** specifies that the DDNAMEs in the PRTSWLST= operand list are to be used in a round robin fashion. When the default SYSPRINT file becomes full, it is closed and *ddname1* is then used. When *ddname1* becomes full, *ddname2* is then used. This continues until *ddnamen* (the last DDNAME in the list) is used, in which case the *ddname1* file is reused and the process repeats. Note that the default SYSPRINT file is not reused unless SYSPRINT is specified as a *ddnamei* entry in the PRTSWLST= operand list.
- **STOP** specifies that SYSPRINT logging stops when the last DDNAME (*ddnamen*) in the PRTSWLST= operand list becomes full.
- **SWITCHAT hh 00** (military time) specifies that logging in the current PRTSWLST= dataset is to stop and logging in the *ddnamei* dataset is to start at the hour specified by *hh* every day. Note that *hh* can be 01 to 24|00 (00 is treated the same as 24).
- **SWITCHAT6AM** (=SWITCHAT0600) specifies that logging in the current PRTSWLST= dataset is to stop and logging in the next PRTSWLST= *ddnamei* dataset is to start at 6AM every day.
- **SWITCHATMIDDAY** (=SWITCHAT1200) specifies that logging in the current PRTSWLST= dataset is to stop and logging in the next PRTSWLST= *ddnamei* dataset is to start at 12PM every day.
- **SWITCHAT6PM** (=SWITCHAT1800) specifies that logging in the current PRTSWLST= dataset is to stop and logging in the next PRTSWLST= *ddnamei* dataset is to start at 6PM every day.
- **SWITCHATMIDNIGHT** (=SWITCHAT2400) specifies that logging in the current PRTSWLST= dataset is to stop and logging in the next PRTSWLST= *ddnamei* dataset is to start at 12AM every day.

Note: If the STOP action is in effect, logging is terminated when a switch occurs. Switching can occur based on a PRTSWLST= action like SWITCHATMIDNIGHT or when the current

PRTSWLST= *ddnamei* dataset becomes full. For this reason, we recommend that the LOOP action be used when SWITCHAFTERINIT or any of the SWITCHAT*time* actions is specified.

Example: PRNT PRTSWLST=(LOOP, SWITCHATMIGNIGHT, SYSPRNT1, SYSPRNT2, SYSPRNT3) .

You may enter up to 16 DDNAMEs.

The PRNT console command processor will append PRTSWLST= DDNAME values to the existing PRTSWLST= array rather than resetting the array first. This eliminates the need to enter an entire list of DDNAMEs in order to add just one entry to the end of the list. For example, if PRTSWLST=(LOOP,SYSPRNT1) was specified on the BUILD definition statement in the CDF and if PRNT PRTSWLST=(SYSPRNT2) is then issued as a console command, The **PRNT PRTSWLST=?** command would produce the following display:

```
PRNTDDNM=SYSPRINT   (OPEN)
PRTSWLST=LOOP       (INACTIVE)
                   SWITCHATMIGNIGHT
                   SYSPRNT1
                   SYSPRNT2
```

The default SYSPRINT DDNAME should not be included in the list unless you want it to be reused. If a list entry is reused after it was detected full and DISP=MOD is specified, it will appear full again immediately when the first record is written because new data is added to the end of the file. DISP=OLD will cause the old data to be purged so that new data is logged at the beginning of the file when it is reused.

In all cases, an alert message is issued when a SYSPRINT switch takes place and, in the case of the STOP action, when the last PRTSWLST= DDNAME (*ddnamen*) file is used. This will indicate that SYSPRINT logging has been terminated. If you wish to restart SYSPRINT logging, you will manually have to enter the PRNT OPEN *ddname* command or the new PRNT RSMELIST command.

- Enter **PRNT PRTSWLST=*** to force the PRTSWLST= array to be cleared. The array count is set to zero, all actions and DDNAMEs are set to null values.

If you wish to clear the PRTSWLST= array before entering new values, enter PRNT PRTSWLST=* to clear the entries followed by PRTSWLST=({LOOP|STOP},...,*ddnamelist*) to set new actions and DDNAME entries.

- Enter **PRNT PRTSWLST=?** to display the PRTSWLST= actions and DDNAMEs that are currently in effect. The following is example of the information produced by the PRNT PRTSWLST=? command when

```
PRTSWLST=(LOOP, SWITCHATMIGNIGHT, SYSPRNT1, SYSPRNT2, SYSPRNT3)
```

has been specified on the BUILD definition statement or when

```
PRNT PRTSWLST=* PRTSWLST=(LOOP, SWITCHATMIGNIGHT, SYSPRNT1, SYSPRNT2, SYSPRNT3)
```

has been entered as a console command:

Console Commands

```

PRNTDDNM=SYSPRINT  (OPEN)
PRTSWLST=LOOP      (INACTIVE)
                    SWITCHATMIDNIGHT
                    SYSPRINT1
                    SYSPRINT2
                    SYSPRINT3

```

- To summarize, you may enter a PRNT parameter that requests a specific action to be performed as follows:

PRNT Action Matrix

PARAMETER	ACTION
ON or omitted	Write output to the SYSPRINT log file.
OFF	Do not write output to the SYSPRINT log file.
CLOSE	Close the current SYSPRINT log file. If it the SYSPRINT DD statement specifies DISP=SHR OLD, all data will be lost if the same SYSPRINT log file is reopened. If the SYSPRINT DD statement specifies DISP=MOD, future logging will resume where it left off when the dataset was closed. Note that if the SYSPRINT dataset is the JES SYSOUT=* spool, DISP=MOD is the default so no data is lost if the dataset is closed and reopened.
OPEN <i>ddname</i>	Open a new SYSPRINT log file. If a SYSPRINT log file is already opened, an error message is generated. The current SYSPRINT log file must be closed before a new one can be opened.
CLSOPN <i>ddname</i>	Open a new SYSPRINT log file after the old one is closed. PRNT CLSOPN <i>ddname</i> provides the same function as PRNT CLOSE followed by PRNT OPEN <i>ddname</i> .
RSMEPRSW	Resume BUILD PRTSWLST= operand processing that has been STOPped.
NEXTPRSW SWITCHNOW	Force switch to next DDNAME in BUILD PRTSWLST= operand list.
PRTSWLST={?}* <i>(list)</i> or SWITCH={?}* <i>(list)</i>	Display, clear or update BUILD PRTSWLST= operand array.
DDNAME=?	Display current SYSPRINT DDNAME.
DATE [ON]	Prefix each record written to the SYSPRINT log file with a Julian Date. Date format provided is <i>yy.dte</i> (i.e. 06.001 for 2006, January 1st)
DATE OFF	Do not prefix each record written to the SYSPRINT log file with the Julian Date.
TIMESTAMP= <i>format</i> {+D -D}]	Set the SYSPRINT log timestamp format and, optionally, activate or deactivate the Julian Date prefix.
CNFG [ON]	Allow configuration information alert messages (NAS1xxx) to be written to the SYSPRINT log file.

PARAMETER	ACTION
CNFG OFF	Do not allow configuration information alert messages to be written to the SYSPRINT log file.
LU [ON]	Allow LU information alert messages (NAS4xxxI) to be written to the SYSPRINT log file.
LU OFF	Do not allow LU information alert messages to be written to the SYSPRINT log file.
QLLC [ON]	Allow QLLC information alert messages (NAS8xxxI) to be written to the SYSPRINT log file.
QLLC OFF	Do not allow QLLC information alert messages to be written to the SYSPRINT log file.
SYS [ON]	Allow system information alert messages (NAS0xxxI and NAS9xxxI) to be written to the SYSPRINT log file.
SYS OFF	Do not allow system information alert messages to be written to the SYSPRINT log file.
TCP [ON]	Allow TCP/IP information alert messages (NAS2xxxI) to be written to the SYSPRINT log file.
TCP OFF	Do not allow TCP/IP information alert messages to be written to the SYSPRINT log file.
VC [ON]	Allow VC information alert messages (NAS5xxxI and NASAxxxI) to be written to the SYSPRINT log file.
VC OFF	Do not allow VC information alert messages to be written to the SYSPRINT log file.
VTAM [ON]	Allow VTAM information alert messages (NAS3xxxI) to be written to the SYSPRINT log file.
VTAM OFF	Do not allow VTAM information alert messages to be written to the SYSPRINT log file.
XOT [ON]	Allow XOT information alert messages (NAS7xxxI) to be written to the SYSPRINT log file.
XOT OFF	Do not allow XOT information alert messages to be written to the SYSPRINT log file.
XTP [ON]	Allow XTP information alert messages (NAS6xxxI) to be written to the SYSPRINT log file.
XTP OFF	Do not allow XTP information alert messages to be written to the SYSPRINT log file.

Console Commands

General Notes for PRNT:

- 1) HNAS activates with **PRNTON**, **PRNTCNFG**, **PRNTLU**, **PRNTQLLC**, **PRNTSYS**, **PRNTTCP**, **PRNTVC**, **PRNTVTAM**, **PRNTXOT** and **PRNTXTP** set in the absence of any **PRNTxxx** start parameter.
- 2) The **PRNTON**, **PRNTOFF**, **PRNTCNFG**, **PRNTLU**, **PRNTQLLC**, **PRNTSYS**, **PRNTTCP**, **PRNTVC**, **PRNTVTAM**, **PRNTXOT** and **PRNTXTP** start parameters perform the same functions as the **PRNT [ON]**, **PRNT OFF**, **PRNT CNFG**, **PRNT LU**, **PRNT QLLC**, **PRNT SYS**, **PRNT TCP**, **PRNT VC**, **PRNT VTAM**, **PRNT XOT** and **PRNT XTP** console commands, respectively, for *global* SYSPRINT control. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 3) If multiple SYSPRINT log files are to be opened and closed, we recommend using **DISP=SHR** so that the closed files can be manipulated while HNAS is running.

When the HNASXEQ job specifies multiple SYSPRINT datasets, each can be used serially (but not in parallel) via the **PRNT CLSOPN *ddname*** console command. If you plan to 'look in' a dataset (a DASD file and not just the JES SYSOUT=* spool) while HNAS is running, you must specify **DISP=SHR** for these datasets in the HNASXEQ job. This will allow you to examine and manipulate the dataset while HNAS is running after it is closed via the **PRNT CLSOPN *newddname*** console command. If **DISP=OLD|MOD** is specified, these datasets will not be available until HNAS is terminated. When **DISP=OLD|SHR** is specified for a DASD dataset, old data will be deleted if the dataset is closed and reopened. If **DISP=MOD** is specified, data will be added to the end of the dataset if it is closed and reopened but as mentioned, it cannot be examined until HNAS is terminated. The exception to this rule is when SYSPRINT is the JES SYSOUT=* spool. In this case, **DISP=MOD** is the default and SYSPRINT can always be examined and saved via the SDSF DA or ST menu.

- 4) If the number of records written to the SYSPRINT data set reaches the limit specified by the **PRTLMT=** operand on the **BUILD** definition statement, HNAS will stop logging output. The SYSPRINT data set can be the JES spool, an z/OS, OS/390 or MVS sequential data set. A message will be written to the local console each time 4096 records are lost.
- 5) If the **PRTSWLST=({LOOP|STOP},SWITCHAT*time*,*ddname*1,...,*ddnamen*)** operand is provided on the **BUILD** definition statement, a secondary log file will automatically be opened when the current log file is closed due to the **PRTLMT=** value being reached, when the dataset is detected as being full or at the specified time. The **PRTSWLST=** operand allows multiple log files to be specified so that each can be used successively as the current file is filled. The **LOOP|STOP** keyword suboperands of the **PRTSWLST=** operand provide an action of what HNAS should do when the end of the list is detected. **LOOP** indicates that the **PRTSWLST=** function should repeat starting with the first **PRTSWLST=** file (*ddname*1). **STOP** indicates that logging should be stopped when the last **PRTSWLST=** file (*ddnamen*) is filled. In this case, you would have to manually restart the **PRTSWLST=** function using the **PRNT OPEN *ddname*** or **PRNT RSMEPRSW** command.
- 6) You may enter **PRTSWLST=** or **SWITCH=** as a **PRNT** command operand. These keywords are treated the same and their list values are processed identically.

- 7) When **PRTSWLST=?** is entered, the current SYSPRINT DDNAME is displayed followed by the PRTSWLST= operand actions and DDNAMEs. In addition, the display will show the state of the current SYSPRINT DDNAME and PRTSWLST= array. For example:

```
PRNTDDNM=ddname      (ddnmstate)
PRTSWLST=LOOP        (prswstate)
                    SWITCHATMIDNIGHT
                    SYSPRNT1 (curddnm)
                    SYSPRNT2
                    SYSPRNT3
```

Where: *ddname* = current SYSPRINT DDNAME

ddnmstate = OPEN|CLOSED

prswstate = INACTIVE => switch has not occurred - default SYSPRINT is being used

ACTIVE => switch has occurred

STOPPED => STOP action was specified and last DDNAME was used

SUSPENDED => PRNT CLOSE issued when PRTSWLST= list was active

curddnm = marks the DDNAME that is currently in use when *prswstate*=ACTIVE or the DDNAME that was last used when *prswstate*=STOPPED|SUSPENDED.

Note: When PRNTDDNM=*ddname* identifies a DDNAME that is CLOSED, SHOW CONS ON must be active so that the PRTSWLST=? display will be directed to SYSCONS.

- 8) Forced alarm messages **NAS0207W**, **NAS0208I** and **NAS0209E** are now generated when PRTSWLST= SYSPRINT switching support is enabled. Please refer to the Alert/Alarm Message and Clear/Reset Code Enhancements area of this section for a description of the messages.
- 9) Forced alarm messages **NAS0210I**, **NAS0211W** or **NAS0230W** are now generated, respectively, when the PRNT ON, PRNT OFF or PRNT DATE ON|OFF TCP ON|OFF ... commands are entered to inform the SYSCONS operator of changes to SYSPRINT logging. Please refer to the Alert/Alarm Message and Clear/Reset Code Enhancements area of this section for a description of the messages.

Console Commands

Q or QUIT Command - Terminate Operations

(changed for V2R2M0)

(changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	Q [UIT]			
	QA [/pswd]		C	220
	QY [/pswd]		C	220
	QQ [/pswd]		C	220
	QS		N	220
	QE	<i>ddname</i> (<i>cmd1</i> , . . . , <i>cmdn</i>)	N	240
	QN			

This command is used by the local console operator to shutdown HNAS and by a remote console operator to terminate his console session.

The **Q** (QUIT) command, entered by itself, generates the following prompt message.

```
NASC000I ENTER: N=RESUME, Y=END, E=EXEC, S=STOP, Q=QUICK, A=ABEND
```

To bypass the prompt, you may enter the response as a follower to the **Q** command (e.g., **QS**).

- **For remote console sessions**, you may reply with **N** or **Y**.

N causes the remote console session to resume with a prompt for a new command.

Y causes the remote console session to be terminated and an XTP or XOT Clear Request packet to be transmitted to the remote router.

All other followers are an invalid reply from a remote console operator.

- **For local console sessions**, you may reply with **N**, **Y**, **Q**, **A**, **S** or **E**.

N causes the local console session to resume with a prompt for a new command.

Y causes HNAS to shutdown resulting in all TCP/IP and VTAM connections being quiesced then severed (graceful termination) with a SNAP dump of all HNAS control blocks to be formatted in SYSPRINT. The **Y** reply is useful after conducting tests where control block review is required.

Q is treated the same as **Y** except that a SNAP dump of HNAS control blocks is not taken making shutdown faster and less CPU intensive. The **Q** reply is considered the normal shutdown method.

A causes HNAS to ABEND resulting in fast termination of all TCP/IP and VTAM connections (abrupt termination). An HNAS storage dump is also produced.

Note: The **Y**, **Q** and **A** replies from a local console operator will require a password exchange to complete the operation if the CONPSWD= operand was specified on the BUILD definition statement. You may enter the console password with the reply (*/pswd*) to avoid a separate password prompt and password exchange.

The **S** reply is the same as the **Q** reply except no password is required even if one was specified for the CONPSWD= operand.

The **E** reply is used to schedule the execution of a command list prior to shutdown. The command list can be provided in a file which is identified by the **ddname** argument or can be provided on the same line as the QE command via the (**cmd1,...,cmdn**) argument. Note that no prompt is provided for the QE command argument. If QE is entered without a **ddname** or inline command list, it is processed as though QS were entered. The following is a sample command list that can be provided via **QE ddname**:

```
* THIS IS A SAMPLE CONSOLE COMMAND LIST FILE. COMMENTS CAN
* BE SUPPLIED THAT START WITH '*' OR ';' IN RECORD COLUMN 1.
* COMMENTS ON INDIVIDUAL LINES CAN BE SUPPLIED THAT START
* WITH ';'. CONSOLE COMMANDS WILL BE EXTRACTED FROM EACH
* RECORD FROM THE FIRST NON-BLANK CHARACTER TO THE LAST
* NON-BLANK CHARACTER ON EACH LINE. THE SEARCH FOR THE
* FIRST NON-BLANK CHARACTER IS EXECUTED FOR NON-COMMENT
* RECORDS ONLY (*|; IS NOT IN CC1). THE SEARCH FOR THE
* LAST NON-BLANK CHARACTER IS AFFECTED AFTER THE LINE
* COMMENT STARTING DELIMITER (;) IS FOUND.
* |<-- FIRST NON-BLANK
* |
* | |<----- LAST NON-BLANK
* | | |
* V V V
DPARM ; 1ST QUEUED COMMAND TO DISPLAY FINAL HNAS PARMS
DNAS JCL ; 2ND QUEUED COMMAND TO DISPLAY FINAL HNAS JCL
```

The SYSPRINT log now contains the HNAS global parameters in effect at shutdown as well as the final HNAS DDNAMEs that were allocated either statically or dynamically (see PRTSWLST=DYNAMIC support on page CONS-213 for details). For more information on command list processing, see Input Rules, Command Lists on page CONS-9 and the EXEC command description or page CONS-139.

Note: The **ALARM LOG=?** command is executed automatically when HNAS is SHUTDOWN using the Q (QUIT) command. This is done unconditionally for any QUIT command follower. If QE **ddname** is entered, the ALARM LOG=? command is executed before the command list identified by **ddname**.

Note: The **N**, **Y**, **Q**, **A**, **S** and **E** followers are abbreviations for **NO**, **YES**, **QUICK**, **ABEND**, **STOP** and **EXEC** which can also be entered. For example, **QS** and **QSTOP** are treated identically.

Console Commands

- **Shutdown status messages:**

When HNAS terminated with **QQ**, **QS** or **QE**, the following message is displayed.

```
NAS0030I SHUTDOWN STARTED, RELEASING RESOURCES
```

When HNAS terminated with **QY**, the following message is displayed.

```
NAS0031I SHUTDOWN STARTED, FORMATTING STORAGE, RELEASING RESOURCES
```

When HNAS terminated with **QA**, the following message is displayed.

```
NAS0032I SHUTDOWN STARTED, FORCED ABEND REQUESTED
```

For all HNAS termination requests except **QA**, the following message is displayed when shutdown is complete.

```
NAS0035I SHUTDOWN COMPLETED, RC=retcode
```

RMTCONS Command - Remote Console Control (Privileged)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	RMTCONS	[{ON OFF PRIV}]		

This command is used to enable (**ON|PRIV**) or disable (**OFF**) HNAS remote console access. The command is provided so that data center operations personnel can control remote access to the HNAS Console Subsystem for security reasons.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

RMTCONS Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
PRIV	none	3

- Enter **RMTCONS ON** to enable remote console access. This will be required for remote HNAS product support. Remote console access **can** and **should** be password protected. For more information, see description of the CONPSWD operand of the BUILD definition statement in Chapter 4 of the HNAS Guide and Reference documentation.
- Enter **RMTCONS PRIV** to enable privileged remote console access. The remote console operator can **select privileged status by entering the console password backwards**. Privileged remote console access **must** be password protected. A console password that is the same when entered backward or forwards (e.g., CONPSWD=WOW), will prevent privileged status from being attained. In this case, remote console access will be 'display only'. Privileged remote consoles can enter commands that affect HNAS operation (e.g., TRCDISP ON) while non-privileged remote consoles cannot. HNAS diagnostic support may require privileged remote console access. This command allows data center personnel to control who may access their system remotely and what they can do.

Note: When CONLMT=0 is specified on the BUILD definition statement, the RMTCONS ON|PRIV command will be rejected with message '**NASC511E PARAMETERS CONFLICT, REQUIRED**' because no console control blocks were created to support remote console sessions.

- Enter **RMTCONS OFF** to inhibit remote console access. An attempt to connect to the HNAS Console Subsystem from a remote location will result in the transmission of an XTP or XOT Clear Request packet.

Console Commands

General Notes for RMTCONS:

- 1) HNAS activates with **RMTCONS OFF** set in the absence of the **RMTCONS** or **RMTCONP** start parameters.
- 2) The **RMTCONS [ON]** and **RMTCONP** start parameters perform the same function as the **RMTCONS [ON]** and **RMTCONS PRIV** console commands, respectively, for REMOTE console enabling. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

RNM= Modifier - Set REMOTE Name

(changed for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
RNM= <i>rmtname</i>	<i>command</i>	[RNM= <i>rmtname</i>]	N	114
RNM=?			C	240

This modifier is used to select a specific REMOTE definition statement name for the commands that follow. The **RNM=** value must identify a valid REMOTE definition statement in the HNAS Configuration Data File. Use **RNM=** to target a specific client resource.

Note: The REMOTE resource named by the RNM= modifier is used by the DLU, DMCH, DNWDF, DPCE, DRMT, DSTATS, DVC, MON, MRMT, PING, STATS, TRCBFR, TRCDATA, TRCDISP, TRCIO, TRCLU, TRCLUQ, TRCMCH, TRCMCHX, TRCPCE, TRCVC, TRCVCQ and VARY RMT commands.

- When a **rmtname** value is specified, **RNM=** takes precedence over the **ID=** and **IFN=** value combination. If the **RNM=** modifier is entered with no **rmtname** value, the remembered REMOTE name is reset.
- Enter **RNM=?** to display the permanent RNM= value.

Console Commands

SCHEDULE Command - Schedule Commands for Execution

(new for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	SCHEDULE	[{LCLCONS <i>rconname</i> }]	A	240
		[{ <i>ddname</i> (<i>time1,cmd1,...,timen,cmdn</i>)] [LIST [<i>ddname</i>]] [SUSP SUSPEND}] [RSME RESUME}] [PRG PURGE}]	A	240

This command is used to execute a schedule list file identified by ***ddname*** or supplied as an *inline* schedule list (***time1,cmd1,...,timen,cmdn***), to display a schedule list file identified by ***ddname*** (**LIST *ddname***), to display the active (RESIDENT) schedule list (**LIST**), to suspend the active schedule list (**SUSP|SUSPEND**), to restart the suspended schedule list (**RSME|RESUME**) or to delete the active schedule list (**PRG|PURGE**).

- When the **LCLCONS** or ***rconname*** argument is provided, it directs SCHEDULE processing to the identified console. This allows one console to alter SCHEDULE processing for another console. For example, SCHEDULE RCON0031 (12:00:00,DNAS,13:00:00,ALARM SHOW) will cause the DNAS command to be executed at noon and the ALARM SHOW command to be executed at 1pm for the remote console named RCON0031 regardless of which console actually entered the command. For more information on LCLCONS|*rconname* processing, please refer to section entitled 'Console PCE name as a Suffix Command Modifier' on page CONS-11.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

SCHEDULE Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
SUSP SUSPEND	RSME RESUME	LCLCONS <i>rconname</i>	1
RSME RESUME	SUSP SUSPEND	LCLCONS <i>rconname</i>	2
PRG PURGE	none	LCLCONS <i>rconname</i>	3
<i>ddname</i>	(<i>time1,cmd1,...,timen,cmdn</i>)	LCLCONS <i>rconname</i>	4
(<i>time1,cmd1,...,timen,cmdn</i>)	<i>ddname</i>	LCLCONS <i>rconname</i>	5
LIST	none	LCLCONS <i>rconname</i>	6

- Enter **SCHEDULE *ddname*** to execute a schedule list file identified by *ddname*. *ddname* identifies a DDNAME JCL statement that exists in the HNAS start job. DDNAME, in turn, points a file that contains a list of times and console commands. The DDNAMEs you that provide in the HNAS start job are arbitrary: For example:


```
//SCHDLST1 DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST1),DISP=SHR
//SCHDLST2 DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST2),DISP=SHR
//SCHDLST3 DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST3),DISP=SHR
//SCHDLST4 DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST4),DISP=SHR
:
```

These schedule list files can be executed using the SCHEDULE console command as follows:

```
SCHEDULE SCHDLST1
SCHEDULE SCHDLST2
SCHEDULE SCHDLST3
SCHEDULE SCHDLST4
```

If a *ddname* is specified that does not exist in the HNAS start JCL, the following message is issued:

```
NASC051E SCHEDULE ddname INVALID, CANNOT BE OPENED
```

If a *ddname* identifies a DDNAME that references a member of a partitioned dataset and the member does not exist, the following message is issued:

```
NASC204E ddname ABEND PARMLIST=01301886 0008A8B4 008CC410 00000000
```

When a valid schedule list *ddname* is specified and it has been read successfully, the following message is generated:

```
NASC055I SCHEDULE ddname FILE HAS BEEN READ, IT WILL NOW BE SCHEDULED
```

Note: Each time **SCHEDULE *ddname*** is executed, the identified schedule list data will be appended to the end of the active schedule list.

A schedule list file can contain another SCHEDULE *ddname* statement. When the embedded SCHEDULE command is decoded, the balance of the current schedule list will be ignored. The new schedule list will replace the active schedule list at the time associated with the embedded SCHEDULE command. This allows you to chain schedule lists.

You can also chain schedule lists via JCL by concatenating the schedule list dataset names as long as the concatenation forms a sequential dataset. For example:

```
//SCHDLSTS DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST1),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST2),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST3),DISP=SHR
//          DD DSN=COMM1.V2R4M0.TEMPMAC(SCHDLST4),DISP=SHR
```

These schedule list files can be executed using the SCHEDULE console command as follows:

Console Commands

SCHEDULE SCHDLSTS

Note: In the initial development, the schedule lists are always sequential datasets or members of partitioned datasets. The SCHEDULE command does not currently allow you to specify a DDNAME and MEMBER name if DDNAME references a PDS.

Note: All DDNAMEs and the members they reference are completely arbitrary. The only requirement is that the *ddname* you provide for the SCHEDULE command **must** exist in the HNAS start JCL.

Note: If DISP=SHR is specified for all schedule list DDNAMEs above, it will allow you to modify the schedule lists while HNAS is running.

The commands you provide in a schedule list file are completely arbitrary. The SCHEDULE command processor does not check the commands for validity. Validity checking is provided by the individual command processors.

A schedule list file can contain comment records that start with an asterisk (*) or semi-colon (;) in record column 1. For data records in a schedule list file, a comment can be provided that follows the command text if the first character of the comment is a semi-colon (just like the CDF parsing).

A single time and command can be specified on a single data record as follows:

(hh:mm:ss , cmd) ; comment

Multiple times and commands can also be specified on a single record as follows:

(hh:mm:ss , cmd , ... , hh:mm:ss , cmd) ; comment

Command text is assumed to start with the first non-blank character after the comma that separates the schedule time and command of a data record and end with the last non-blank character of the record (prior to a comma separator or closing parenthesis). Times are given in *hh:mm:ss* notation where *hh*=00-23, *mm*=00-59 and *ss*=00-59 (00:00:00 is midnight and 12:00:00 is noon).

If an END statement or embedded SCHEDULE command is decoded, saving of commands is terminated. Any commands that follow an END statement or SCHEDULE command are ignored.

Scheduled Command Savearea Size

The maximum number of times and commands that can be saved depends on the available schedule storage space. A total of 512 bytes are reserved for saved times and console commands. Each blank is counted as a text character. The 512 byte maximum also includes 6-bytes for the time and a length byte for each saved command. For example, if SCHEDULE *ddname* referenced a file containing the following:

06:00:00 , DPARM EXEC ; execute first command at 6am

12:00:00 , ALARM LOG=? ; execute second command at noon
 01:00:00 , TRCPCE ALLON ; execute third command at 1am
 02:00:00 , TRCPCE ALLOFF ; execute fourth command at 2am

74 bytes would be required to save the commands: 17 for DPARM EXEC (6+1+10), 18 for ALARM LOG=? (6+1+11), 19 for TRCPCE ALLON (6+1+12) and 20 for TRCPCE ALLOFF (6+1+13). If you provide data in a schedule list that exceeds the 512 byte limit, the following message will be issued:

```
NASC054E SCHEDULE XXXXXXXX COMMAND QUEUE LIMIT count/limit,
          EXCEEDED, SCHEDULE COMMAND ABORTED
```

Where: *count* = required number of bytes
limit = 512 (currently)

Note: 6 bytes are required to save the time value (*hh:mm:ss*) because an upper window edge (UWE) time is also saved. The UWE time is computed by adding 5 seconds to the specified time. The UWE time is required to provide a time window during which the scheduled command can be executed. Exact times can never actually be used because scheduled commands are processed by the HNAS interval timer subtask which is imprecise because of system task dispatching and task switching.

Note: The CONCMDQ queue area in the console PCE is not used to save scheduled commands but is used when a saved scheduled command is actually scheduled. A separate queue area is used to remember scheduled commands.

Note: The BUILD CONCMDQ= operand can include the **SCHEDULE *ddname*** command.

Note: The DCB parameters for datasets identified by the **SCHEDULE *ddname*** command should be RECFM=FB and LRECL=80 with BLKSIZE= as a multiple of LRECL=.

Listed below is a sample schedule list file:

```
* THIS IS A SAMPLE CONSOLE SCHEDULE LIST FILE. COMMENTS CAN
* BE SUPPLIED THAT START WITH '*' OR ';' IN RECORD COLUMN 1.
* COMMENTS ON INDIVIDUAL LINES CAN BE SUPPLIED THAT START
* WITH ';'. CONSOLE COMMANDS WILL BE EXTRACTED FROM EACH
* RECORD FROM THE FIRST NON-BLANK CHARACTER TO THE LAST
* NON-BLANK CHARACTER THAT FOLLOWS THE TIME/COMMAND COMMA
* SEPARATOR ON EACH LINE. THE SEARCH FOR THE FIRST NON-BLANK
* CHARACTER IS EXECUTED FOR NON-COMMENT RECORDS ONLY (*|; IS
* NOT IN CC1). THE SEARCH FOR THE LAST NON-BLANK CHARACTER IS
* AFFECTED AFTER THE LINE COMMENT STARTING DELIMITER (;) IS
* FOUND.
*          |<-- FIRST NON-BLANK
*          |
*          |          |<----- LAST NON-BLANK
*          |          ||||
*          V          VVVV
```

Console Commands

```
06:00:00 , DPARM EXEC           ; FIRST SCHEDULED COMMAND
12:00:00 , ALARM LOG=?         ; SECOND SCHEDULED COMMAND
01:00:00 , TRCPCE ALLON        ; THIRD SCHEDULED COMMAND
02:00:00 , TRCPCE ALLOFF       ; FOURTH SCHEDULED COMMAND
```

- Enter **SCHEDULE** (*time1,cmd1,...,timen,cmdn*) to create an *inline* schedule list on a single line without having to invoke a *ddname*. Inline times and commands are added to the end of the active schedule list if one exists.

Note: Inline schedule lists are subject to the same save criteria as *ddname* schedule lists. See the section above entitled '**Scheduled Command Savearea Size**' for details.

- Enter **SCHEDULE LIST** *ddname* to display the individual times and commands in the schedule list file identified by *ddname*. If SCHDLST1 identifies a file that contains the sample schedule list described above, the following would be displayed when SCHEDULE LIST SCHDLST1 was entered:

```
NASC055I SCHEDULE SCHDLST1 FILE HAS BEEN READ, IT WILL NOW BE LISTED

=> 06:00:00 DPARM EXEC
=> 12:00:00 ALARM LOG=?
=> 01:00:00 TRCPCE ALLON
=> 02:00:00 TRCPCE ALLOFF
```

Note: SCHEDULE LIST *ddname* displays times and commands only. Comments are not displayed.

- Enter **SCHEDULE LIST** to display the individual times and commands in the active (RESIDENT) schedule list.
- Enter **SCHEDULE SUSP** to suspend the active schedule list. This does not remove the schedule list but prevents any command entries from being scheduled.
- Enter **SCHEDULE RSME** to resume the suspended schedule list. This allows schedule list command entries to be scheduled.
- Enter **SCHEDULE PRG** to delete the active schedule list. This removes all times and commands thus preventing any commands from being scheduled.

Note: A scheduled command will terminate a running command and the following message will be issued:

```
NASC005W cmdname ABORTED DUE TO OPERATOR INPUT
```

If the aborted command is part of a running command list, the following message will also be displayed:

```
NASC006W ddname COMMAND LIST INTERRUPTED
```

The interrupted command list will resume with the next command after the scheduled command executes.

General notes for SCHEDULE:

- 1) You may enclose a *cmd* within single or double quotes (e.g., *cmd*, '*cmd*' or "*cmd*" are valid). If single quotes are part of a *cmd*, it can be enclosed in double quotes (e.g., SMSG '*text*' or "SMSG '*text*'" are valid). The enveloping single or double quotes are removed from each *cmd* before the values are saved.
- 2) Leading and trailing blanks are removed from each *cmd* and *time* before the values are saved.
- 3) When SCHEDULE *ddname* is specified, an END command will signal the end of data in the referenced file. In addition, an embedded SCHEDULE command will also signal the end of data in the file. Any records that follow these statements will be ignored. This will reduce the likelihood of receiving the NASC054E error message due to the 512 byte queuing limit being reached.
- 4) The CONCMDQ queue within the console PCE, which is normally used to execute an EXEC *cmdlist*, is also used to execute scheduled commands. For the EXEC command, *cmd* values are enqueued to CONCMDQ in a first in, first out (FIFO) manner. For the SCHEDULE command, *cmd* values are enqueued to CONCMDQ in a last in, first out (LIFO) manner. LIFO enqueue is used because scheduled commands must be executed at the specified time rather than after any other queued commands.

Note: There is an independent CONCMDQ queue for every console PCE (local and remote). The BUILD CONCMDQ= operand is saved in the CONCMDQ queue within the local console PCE only. When a console user issues an EXEC or SCHEDULE command, the CONCMDQ queue in the associated console PCE is used so that the queued command(s) are executed only for the console issuing the EXEC or SCHEDULE command.

WARNING: If a command is currently running when a scheduled command is enqueued, the current command is aborted in favor of the scheduled command (the same action takes place when a command is entered by a console operator). If a command list is running, the list is interrupted while the scheduled command executes. The command list is then restarted with the next queued command after the scheduled command executes.

- 5) Multiple commands can be scheduled for execution at the same time. For example:

```
(12:00:00,ALARM LOG=?,12:00:00,DNAS)
```

WARNING: Because scheduled commands are enqueued to the CONCMDQ queue in a LIFO manner, commands with the same schedule time are executed in the reverse order from how they are listed in the schedule list. In the list above, DNAS will be executed before ALARM LOG=? at approximately noon each day. You should consider this when listing commands in a schedule list.

Console Commands

A simple solution to ensure processing order (avoiding reverse coding) is to sequentially list the commands and step by 1 second as depicted in the following sample:

```
(12:00:00,ALARM LOG=?,12:00:01,DNAS)
```

- 6) Wildcards (*) may be specified for any time digit except the low order seconds digit. When a wildcard character is supplied for a time digit (*hh:mm:ss*), it will be replaced with the corresponding digit from the current time then the resulting time will be tested against the current time.

Examples:

If (***:**:00,ALARM LOG=?*) is a scheduled command, the **** will be replaced by the current hours and minutes values so that *ALARM LOG=?* will be executed every 60 seconds.

If (***:30:00,ALARM LOG=?*) is a scheduled command, the **** will be replaced by the current hours value so that *ALARM LOG=?* will be executed at half past every hour.

If (*1*:00:00,ALARM LOG=?*) is a scheduled command, the *** will be replaced by the low order hours digit so that *ALARM LOG=?* will be executed on the hour between 10:00 and 19:00 each day.

If (*12:**:00,ALARM LOG=?*) is a scheduled command, the **** will be replaced by the current minutes value so that *ALARM LOG=?* will be executed once per minute between 12:00 and 12:59 each day.

Note: You can specify a wildcard for any time digit except the low order seconds digit (*hh:mm:s**). The low order seconds digit must be a value between 0 and 9. A wildcard is not allowed because it could cause a scheduled command to be executed every second which would impact HNAS performance.

- 7) When an *inline* list or *ddname* list is given, entries are added to the end of the active schedule list in effect (the RESIDENT list). If the RESIDENT list contains another SCHEDULE command, the specified schedule list will replace the RESIDENT list. This allows you to chain schedule lists (see Note 8 examples below).

Note: Each console PCE (local and remote) has its own independent RESIDENT queue as it does a COMCMDQ queue. The RESIDENT queue holds the RESIDENT list while the CONCMDQ queue holds scheduled commands ready for execution.

- 8) A schedule list that contains an embedded SCHEDULE command allows you to chain schedule lists.

Examples:

If you want to run a different schedule list each day, you could structure them as follows (assume that the SCHEDULE command is entered on Monday):

```
SCHEDULE DD4MON
```

```
//DD4MON DD DSN=hlq.HNASMAC (DD4MON) , DISP=SHR
//DD4TUE DD DSN=hlq.HNASMAC (DD4TUE) , DISP=SHR
//DD4WED DD DSN=hlq.HNASMAC (DD4WED) , DISP=SHR
//DD4THU DD DSN=hlq.HNASMAC (DD4THU) , DISP=SHR
//DD4FRI DD DSN=hlq.HNASMAC (DD4FRI) , DISP=SHR
//DD4SAT DD DSN=hlq.HNASMAC (DD4SAT) , DISP=SHR
//DD4SUN DD DSN=hlq.HNASMAC (DD4SUN) , DISP=SHR
```

Each schedule list file ends with a SCHEDULE command that points at the next file which will take effect at midnight.

The DD4MON file ends with the following statement: (00:00:00,SCHEDULE DD4TUE)

The DD4TUE file ends with the following statement: (00:00:00,SCHEDULE DD4WED)

:

The DD4SUN file ends with the following statement: (00:00:00,SCHEDULE DD4MON)

In this way, you can operate with a different set of scheduled commands each day and because DISP=SHR is specified for each *ddname*, you can make changes to any of the schedule list files while HNAS is running. Note also that you can alter the normal schedule list flow by simply entering a new SCHEDULE command from the operator console.

As another example, suppose you want to run different schedule lists during the day and night, you could structure them as follows (assume that the SCHEDULE command is entered during the day):

```
SCHEDULE DD4DAY
```

```
//DD4DAY DD DSN=hlq.HNASMAC (DD4DAY) , DISP=SHR
//DD4NIT DD DSN=hlq.HNASMAC (DD4NIT) , DISP=SHR
```

As before, each schedule list file ends with a SCHEDULE command that points at the other file which will take effect at the specified time.

The DD4DAY file ends with the following statement: (00:00:00,SCHEDULE DD4NIT)

The DD4NIT file ends with the following statement: (06:00:00,SCHEDULE DD4DAY)

- 9) When a scheduled command is executed from the CONSMDQ queue, the normal console command echo prefix is changed from HNASCMD-> to SCHDCMD-> so that scheduled commands can be identified in the SYSPRINT log file.
- 10) If you enter SCHEDULE *ddname*, the DDNAME must be defined in the EXEC PGM=HNAS start JOB.

Console Commands

Note: The new SCHEDULE command support was introduced into 240 as Enhancement APAR 2400064.

SHOW Command - SYSCONS Display Control (Privileged)

(changed for V2R2M0)

(changed for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	SHOW	[{ ON OFF ERR MSG { ON OFF } CONS { ON OFF } ALLON ALLOFF MORE LESS }]	C A N N A	220 240 230 230 230

This command is used to start (**ON**) or stop (**OFF**) SYSCONS display for **all** asynchronous alarm messages (unsolicited output), to start (**ERR**) SYSCONS display for **error** alarm messages only, to start (**MSG [ON]**) or stop (**MSG OFF**) message compression processing, to start (**CONS [ON]**) or stop (**CONS OFF**) SYSCONS display for synchronous console command output (solicited output), to start (**ALLON**) or stop (**ALLOFF**) SYSCONS display for all HNAS output (asynchronous and synchronous) or to request more verbose (**MORE**) or less verbose (**LESS**) alarm/trace information to be displayed on SYSCONS and/or logged in SYSPRINT. HNAS messages are always logged in the SYSPRINT log (if **PRNT ON** is in effect) regardless of the SHOW state.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

SHOW Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ERR	none	3
MSG ON	MSG OFF	4
MSG OFF	MSG ON	5
CONS ON	CONS OFF	6
CONS OFF	CONS ON	7
ALLON	ALLOFF	8
ALLOFF	ALLON	9
MORE	LESS	10
LESS	MORE	11

Console Commands

- Enter **SHOW [ON]** to allow **all** alarm messages to be written to SYSCONS.
- Enter **SHOW OFF** to prevent any alarm message from being written to SYSCONS.
- Enter **SHOW ERR** to allow **only error** alarm messages to be written to SYSCONS. Informational alarm messages are not written to SYSCONS.

Note: The SHOW ON|OFF|ERR action for alarm messages is restricted to the SYSCONS only. Regardless of the SHOW state, all alarm messages will be logged SYSPRINT if **PRNT ON** is in effect.

Note: If SHOW OFF and PRNT OFF are both in effect (or PRNTLMT= has been reached), there is no way communicate error or informational messages to the operator. For this reason, we recommend running with SHOW ERR (the default when HNAS is started).

Note: The SHOW ON|OFF|ERR parameters are mutually exclusive and have no effect on console command output.

Note: For a discussion of the interaction between **SHOW ERR** (start parameter **SHOWERR**) and the ALRMFLTR= operand, see note under the description ALARM FILTER= command in this document or under the description of the ALRMFLTR= operand in Chapter 4 of the HNAS Guide and Reference.

- Enter **SHOW CMSG [ON]** to **allow all** alarm messages to be compressed (multiple consecutive blanks removed).
- Enter **SHOW CMSG OFF** to **prevent any** alarm message from being compressed.

Note: The **SHOWCMSG** start parameter or **SHOW CMSG ON** console command allows alarm messages containing variable length text data to be compressed (multiple consecutive blanks are removed).

Prior to APAR 2400036, alarm messages that contain names or other variable text data can cause multiple blanks to appear in the alarm messages. Removing multiple blanks makes messages look cleaner in SYSPRINT log and on SYSCONS. If the SHOWCMSG parameter is not specified, no compression is performed. All messages appear as they always have. This will allow customers to control the compression process for those who use message filtering tools that depend on fixed message offsets. Consider the following message for example:

NAS3799I Without Compression (SHOWCMSG OFF):

```
0           1           2           3           4           5           6
0123456789012345678901234567890123456789012345678901234567890123456789
|
NAS3799I LU MCH1PVC  ENDING  SESSION ON MCH MCH1      RMT  CAUSE/DIAG=
000/130 (00/82) DIAGX=0000
|
01234567890123456789012345
7           8           9
```

NAS3799I With Compression (SHOWCMSG ON):

```

0           1           2           3           4           5           6
012345678901234567890123456789012345678901234567890123456789
|
NAS3799I LU MCH1PVC ENDING SESSION ON MCH MCH1 RMT CAUSE/DIAG=000/130
(00/82) DIAGX=0000
|
012345678901234567
7           8

```

Note: While message compression does use additional CPU cycles, the affect appears to be minimal. However, HNAS environments with excessive alert message activity should consider measuring the effect upon CPU load with compression enabled (SHOWCMSG ON) and disabled (SHOWCMSG OFF) to see if compression is causing an unacceptable percentage of CPU load. Our in-house testing revealed a CPU seconds difference per WTO for SHOWCMSG ON versus SHOWCMSG OFF to be an additional 0.000011048 seconds per WTO or approximately 0.002846% additional overhead per WTO.

Note: The SHOWCMSG support described above was introduced into 240 with APAR 2400036.

- Enter **SHOW CONS [ON]** to allow all console command output to be written to SYSCONS.
- Enter **SHOW CONS OFF** to prevent console command output from being written to SYSCONS.

Note: The SHOW CONS ON|OFF action for console command output is restricted to the SYSCONS only. Regardless of the SHOW CONS state, all console output will be logged SYSPRINT if **PRNT ON** is in effect.

Note: The SHOW CONS ON|OFF parameters have no effect on alarm message output.

- Enter **SHOW ALLON** to allow all alarm messages and console output to be displayed at SYSCONS (equivalent to the SHOWON start parameter or SHOW ON CONS ON console command).
- Enter **SHOW ALLOFF** to inhibit alarm messages and console output from being displayed at SYSCONS (equivalent to the SHOWOFF start parameter or SHOW OFF CONS OFF console command). Regardless of the SHOW state, all alarm messages and console output will be logged SYSPRINT if **PRNT ON** is in effect.
- Enter **SHOW MORE** to allow additional alarm/trace information to be displayed at SYSCONS and/or logged in SYSPRINT (if **PRNT ON** is in effect).
- Enter **SHOW LESS** to inhibit additional alarm/trace information from being displayed at SYSCONS and/or logged in SYSPRINT.

Console Commands

- To summarize, you may enter a SHOW parameter to control which type of HNAS output is delivered to SYSCONS as follows:

SHOW Action Matrix

PARAMETER	ACTION	I	W	E	S	A	C
ERR or omitted	Route error alarm messages to SYSCONS	N	Y	Y	Y	Y	
ON	Route all alarm messages to SYSCONS	Y	Y	Y	Y	Y	
OFF	Withhold all alarm messages from SYSCONS	N	N	N	N	N	
CMSG ON	Allow alarm message compression	Y	Y	Y	Y	Y	
CMSG OFF	Prevent alarm message compression	Y	Y	Y	Y	Y	
CONS ON	Route all console output to SYSCONS						Y
CONS OFF	Withhold all console output from SYSCONS						N
ALLON	Route all alarm messages and console output to SYSCONS	Y	Y	Y	Y	Y	Y
ALLOFF	Withhold all alarm messages and console output from SYSCONS	N	N	N	N	N	N
MORE	Route extended information with alarm messages to SYSCONS	O	OE	OE	OE	OE	
LESS	Withhold extended information with alarm messages to SYSCONS	O	OE	OE	OE	OE	

For Table Header: I => informational alarms
W => warning alarms
E => error alarms
S => severe error alarms
A => alarms that require user action
C => Console command output

For Table Body: N => NO
Y => YES
O => When SHOWON is in effect
E => When SHOWERR is in effect
blank => Not Applicable

General notes for SHOW:

- 1) When the SHOWMORE option is effect, alarm/trace information like the following is displayed at SYSCONS and/or logged in SYSPRINT:

```
NAS2711I PCESOCDS=FFFAF10B 03FEFDFD 00000000 00000000
NAS2711I          00000000 00000000 00000000 00000000
NAS2711I          00000000 00000000 00000000 00000000
NAS2711I          00000000 00000000 00000000 00000000
:
```

These messages are subject to alarm filtering (ALRMFLTR=) and limiting (ALRMLMTS=). When the SHOWMORE option is not active (SHOWMORE start parameter omitted or SHOW LESS console command entered), these additional alarm/trace messages are withheld.

- 2) If the number of records written to the SYSPRINT data set reaches the limit specified by the PRTLMT operand on the BUILD definition statement, HNAS will stop logging output. The SYSPRINT data set can be the JES spool, an Z/OS, OS/390 or MVS sequential data set file. A message will be written to the local console each time 4096 records are lost.
- 3) HNAS activates with **SHOWERR, SHOWCONS OFF, SHOWMORE OFF** set in the absence of any **SHOWxxx** start parameters.
- 4) The **SHOWON, SHOWOFF, SHOWERR, SHOWCONS** and **SHOWMORE** start parameters perform the same function as the **SHOW [ON], SHOW OFF, SHOW ERR, SHOW CONS** and **SHOW MORE** console commands, respectively, for *global* SYSCONS control. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 5) Forced alarm messages **NAS0110I, NAS0111W, NAS0112I** or **NAS0130W** are now generated, respectively, when the SHOW ON, SHOW OFF, SHOW ERR or SHOW MORE|LESS commands are entered to inform the SYSCONS operator of changes to SYSCONS display output. Please refer to the Alert/Alarm Message and Clear/Reset Code Enhancements area of this section for a description of the messages.

Console Commands

SMSG Command - Send Message to Another Console

(changed for V2R4M0)

for a specific console

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	SMSG	[{LCLCONS rconname}]	A	240
		'msgtext'	N	114

or for a collection of consoles

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID=minid[-maxid]]	SMSG	'msgtext'	N	114

This command is used to send a one line message supplied by the *msgtext* string to the HNAS console operator identified by the **ID=** modifier.

- When the **LCLCONS** or *rconname* argument is provided, it directs SMSG processing to the identified console. This allows one console to send a message to another console. For example, SMSG RCON0031 'are you there?' will display the text 'are you there?' on the remote console named RCON0031. For more information on LCLCONS|rconname processing, please refer to section entitled 'Console PCE name as a Suffix Command Modifier' on page CONS-11.
- When **ID=minid[-maxid]** is specified, the message is sent to the selected console PCEs. If **ID=0** is specified, the message is broadcast to all active consoles PCEs.
- The *msgtext* string must be enclosed in quotes and may be up to 90 characters in length (excluding the quotes).

Please refer to the Process Control Element Identification (ID=) Table in this manual for additional information concerning ID= assignment.

SNAP Command - Dump HNAS Memory Areas To SYSPRINT (Privileged)

(new for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	SNAP	[{ <u>ALL</u> <i>trgtlist</i> }]	A	240

This command is used to dump **ALL** or a specific list (*trgtlist*) of HNAS memory areas.

```
trgtlist={ ALOG | ALARMLOG } <- alarm log
          { BFR | BFRSTOR } <- buffer pool
          { CNFG | CONFIG } <- configuration area
          { CVT } <- communications vector table
          { DNAS | CONSDNAS } <- DNAS module (NASIDENT)
          { MCH | MCHSTOR } <- MCH area (MCH,VCB,LUB)
          { MLOG | MAINTLOG } <- maintenance log
          { PCE | PCESTOR } <- dynamic PCE area
          { TINT | TCPINTBL } <- TCPIP interrupt table
          { TRC | TRACE } <- internal trace table
          { VINT | VTAMINTBL } <- VTAM interrupt table
          { WA | XFNASWA } <- workarea
          { WAX } <- workarea extension
```

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

SNAP Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
WA XFNASWA	none	1
WAX	none	2
CVT	none	3
MLOG MAINTLOG	none	4
ALOG ALARMLOG	none	5
DNAS CONSDNAS	none	6
TINT TCPINTBL	none	7
VINT VTAMINTBL	none	8
PCE PCESTOR	none	9
BFR BFRSTOR	none	10
MCH MCHSTOR	none	11
CNFG CONFIG	none	12
TRC TRACE	none	13

Console Commands

Warning: HNAS SNAP dumping requires additional computing cycles which can influence HNAS performance.

General notes for SNAP:

- 1) Enter **ALL** to dump all HNAS control areas (ALL is the default when no arguments are specified).
- 2) Enter a list of areas to be dumped. For example: SNAP WA WAX TINT will dump these 3 areas only.
- 3) SNAP processing requires additional CPU cycles. HNAS processing is momentarily interrupted while the SNAP dump is taken.

STATS Command - Statistics Collection Control (Privileged)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	STATS	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ ON OFF }]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[<i>RNM=rmtname</i>]	STATS	[<i>rmtname</i>]	C	230
		[{ ON OFF }]	C	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[<i>ID=minid</i> [- <i>maxid</i>]]	STATS	[{ ON OFF }]	C	230

or for the system aggregate

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
ID=0	STATS	[{ ON OFF }]	C	230
RNM=		[{ ALLTYPES NOTYPES CONS NETV TCP TMR UTIL XOT XTP }]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE statistics collecting for the PCEs identified by the command modifiers (*ID=* or *RNM=*), to start (**ID=0 RNM= STATS ON**) or stop (**ID=0 RNM= STATS OFF**) *global* PCE statistics collecting (system aggregate) and/or to identify the type(s) of processes (**ALLTYPES|CONS|NETV|TCP|TMR|UTIL|XOT|XTP**) for which *global* PCE statistics collecting is applicable.

Note: All STATS arguments can be entered at the same time with each one separated by space character. For example, **STATS ON TCP TMR**. An error message will be generated if duplicate or conflicting arguments are entered. For example, **STATS ON ON** is rejected because ON is duplicated and **STATS ON OFF** is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

Console Commands

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs STATS processing to the identified PCE. For more information on *pcestatic|pcename* processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting STATS ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, STATS ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, STATS ON|OFF processing is for all PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

STATS Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	<i>pcestatic pcename RNM= ID=</i>	1
OFF	ON	<i>pcestatic pcename RNM= ID=</i>	2
ALLTYPES	NOTYPES	system wide	3
NOTYPES	ALLTYPES	system wide	4
CONS	none	system wide	5
NETV	none	system wide	6
TCP	none	system wide	7
TMR	none	system wide	8
UTIL	none	system wide	9
XOT	none	system wide	10
XTP	none	system wide	11

- Enter **STATS [ON]** to start *local* PCE statistics collecting for the PCEs identified by the command modifiers. *Global* PCE statistics collecting will be activated if **ID=0** and **RNM=** (null) is specified. *Global* PCE statistics collecting is provided only for those PCEs that pass the type filter.
- Enter **STATS OFF** to stop *local* PCE statistics collecting for the PCEs identified by the command modifiers. *Global* PCE statistics collecting will be deactivated if **ID=0** and **RNM=** (null) is specified.
- Enter **STATS ALLTYPES** to set all PCE types for *global* statistics collecting.
- Enter **STATS NOTYPES** to reset all PCE types for *global* statistics collecting. This prevents PCE statistics from being collected when only *global* statistics collecting is active (type filter-

ing does not affect *local* statistics collecting).

- Enter **STATS {CONS|NETV|TCP|TMR|UTIL|XOT|XTP}** to set one or more PCE types for *global* statistics collecting.

Note: To restrict *global* PCE statistics collecting to a specific process or processes, for example TCP and XOT, enter **STATS NOTYPES STATS TCP XOT**.

- To summarize, you may enter a STATS parameter that requests a specific action to be performed as follows:

STATS Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE statistics collecting for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE statistics collecting for the PCEs identified by the ID= or RNM= modifiers.
ID=0 RNM= ON	Activate <i>global</i> PCE statistics collecting (system wide).
ID=0 RNM= OFF	Deactivate <i>global</i> PCE statistics collecting (system wide).
ALLTYPES	Allow <i>global</i> PCE statistics collecting for all PCE types.
NOTYPES	Inhibit <i>global</i> PCE statistics collecting for all PCE types.
CONS	Allow <i>global</i> PCE statistics collecting for CONSOLE PCEs.
NETV	Allow <i>global</i> PCE statistics collecting for the NETVIEW PCE (future support).
TCP	Allow <i>global</i> PCE statistics collecting for TCP/IP PCEs.
TMR	Allow <i>global</i> PCE statistics collecting for the system TIMER PCE.
UTIL	Allow <i>global</i> PCE statistics collecting for the system UTILITY PCE.
XOT	Allow <i>global</i> PCE statistics collecting for the XOT UTILITY PCE.
XTP	Allow <i>global</i> PCE statistics collecting for the XTP UTILITY PCE.

Example #1: To start *global* PCE statistics collecting for all PCEs, enter

```
ID=0 RNM= STATS [ON]
```

Example #2: To start *local* PCE statistics collecting for a specific PCE when you are not sure of the current state of statistics collecting within HNAS, enter

```
ID=0 RNM=      <- prepare for global processing
STATS OFF      <- stop global statistics collecting
ID=pceid      <- identify PCE
```

Console Commands

STATS [ON] <- start *local* statistics collecting for PCE *pceid*

Example #3: To start *local* PCE statistics collecting for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of statistics collecting within HNAS, enter

ID=0 RNM= <- prepare for *global* processing
STATS OFF <- stop *global* statistics collecting
RNM=rmtname <- identify REMOTE
STATS [ON] <- start *local* statistics collecting for PCEs on *rmtname*

Warning: HNAS statistics collecting requires additional computing cycles which can influence HNAS performance.

Refer to the description of the DSTATS command on page CONS-123 of this document for information on how to display statistics information.

General notes for STATS:

- 1) If ID=0 RNM= STATS ALLON and STATS NOTYPES is in effect, no *global* PCE statistics collecting will be performed. Note that the type filter does not affect *local* PCE statistics collecting.
- 2) The STATS ON|OFF commands do not alter the PCE type(s) that are currently in effect.
- 3) HNAS activates with **STATS OFF** and **STATS NOTYPES** set in the absence of the **STATS** start parameter.
- 4) The **STATS [ON]** start parameter performs the same function as the **ID=0 RNM= STATS [ON]** and **STATS ALLTYPES** console commands for *global* PCE statistics collecting. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 5) **ON** is assumed if STATS is entered with no argument.
- 6) If **NOTYPES** is in effect when **ON** is set, **ALLTYPES** is forced.

TRCADDR Command - Specific Resource Trace Control (Privileged)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[CLDADDR= <i>ddd</i> . . . <i>ddd</i>]	TRCADDR	[{ <u>ADD</u> DEL PRG }]	N	114
[CLGADDR= <i>ddd</i> . . . <i>ddd</i>]				
[IPADDR= <i>aaa</i> . <i>bbb</i> . <i>ccc</i> . <i>ddd</i> [(<i>ppppp</i>)]]				

This command is used to add (**ADD**) or remove (**DEL**) a resource address from the HNAS internal resource address table or to purge (**PRG**) the table of all addresses effectively stopping all resource address event tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCADDR Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ADD	DEL	1
DEL	ADD	2
PRG	none	3

- The **TRCADDR** command can be used in lieu of **TRCVC** or **TRCLU** to limit tracing to specific resources. Using the **TRCADDR** command, you can trace events for up to 16 **called** DTE addresses and/or 16 **calling** DTE addresses and/or 16 **TCP sockets**.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of all HNAS trace entries can be found in the TRACE or CONSTRC book in section Trace.

Console Commands

TRCALL Command - Trace ALL Control (Privileged)

(changed for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCALL	[{ { <u>ON</u> <u>START</u> <u>STRT</u> } { <u>OFF</u> <u>STOP</u> } } [{ <u>SUSP</u> <u>SUSPEND</u> } { <u>RSME</u> <u>RESUME</u> } }]	C	230

This command is used to start (**ON|START|STRT**) or stop (**OFF|STOP**) *global* event tracing for **all** resources (PCE, MCH, MCHX, LU and VC), to suspend (**SUSP|SUSPEND**) or to resume (**RSME|RESUME**) active tracing without altering the HNAS trace state.

Note: All TRCALL arguments can be entered at the same time with each one separated by space character. For example, TRCALL ON RSME. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCALL RSME RSME is rejected because RSME is duplicated and TRCALL RSME SUSP is rejected because RSME and SUSP conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCALL Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON START STRT	OFF STOP	1
OFF STOP	ON START STRT	2
SUSP SUSPEND	RSME RESUME	3
RSME RESUME	SUSP SUSPEND	4

- Enter **TRCALL [ON]** to start *global* event tracing for all resources (equivalent to the TRCALL start parameter).

Note: TRCALL [ON] is treated as though TRCBFR ALLON, TRCBFR ALLTYPES, TRCDATA ALLON, TRCDATA ALLTYPES, TRCDBK ON, TRCDISP ALLON, TRCDISP ALLTYPES, TRCIO ALLON, TRCIO ALLTYPES, TRCMCH ALLON, TRCMCHX ALLON, TRCLU ALLON and TRCVC ALLON were entered.

Note: Since 230, TRCALL [ON] no longer includes TRCSUBR ON.

- Enter **TRCALL OFF** to stop *global* event tracing for all resources.

Note: TRCALL OFF is treated as though TRCBFR ALLOFF, TRCBFR NOTYPES, TRCDATA ALLOFF, TRCDATA NOTYPES, TRCDBK OFF, TRCDISP ALLOFF, TRCDISP NOTYPES, TRCIO ALLOFF, TRCIO NOTYPES, TRCMCH ALLOFF, TRCMCHX ALLOFF, TRCLU ALLOFF and TRCVC ALLOFF were entered.

Note: Since 230, TRCALL OFF no longer includes TRCSUBR OFF.

- Enter **TRCALL SUSP** to manually suspend active tracing.
- Enter **TRCALL RSME** to resume tracing that has been suspended.
- To summarize, you may enter a TRCALL parameter that requests a specific action to be performed as follows:

TRCALL Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>global</i> event tracing for all resources.
OFF	Deactivate <i>global</i> event tracing for all resources.
SUSP	Suspend all tracing.
RSME	Resume suspended tracing.
START	Equivalent to ON.
STRT	Equivalent to ON.
STOP	Equivalent to OFF.
SUSPEND	Equivalent to SUSP.
RESUME	Equivalent to RSME.

Warning: This console command can start several traces. HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of all HNAS trace entries can be found in the Trace Table Entries section of this product documentation.

General notes for TRCALL:

- 1) HNAS activates with **TRCALL OFF** set in the absence of the **TRCALL** start parameter.
- 2) The **TRCALL** start parameter performs the same function as the **TRCALL [ON]**, **TRCLU MAXDATA** and **TRCVC MAXDATA** console commands for *global* event tracing. For

Console Commands

more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCBFR Command - PCE I/O Buffer Trace Control (Privileged)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCBFR	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ <u>ON</u> OFF}]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	TRCBFR	[<i>rmtname</i>]	C	230
		[{ <u>ON</u> OFF}]	C	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCBFR	[{ <u>ON</u> OFF}]	C	230

or for all PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCBFR	[{ <u>ALLON</u> <u>ALLOFF</u> }]	A	230
		[{ <u>ALLTYPES</u> <u>NOTYPES</u> CONS NETV TCP TMR UTIL XOT XTP}]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE I/O buffer tracing for the PCEs identified by the command modifiers (ID= or RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* PCE I/O buffer tracing and/or to identify the type(s) of processes (**ALLTYPES**|**CONS**|**NETV**|**TCP**|**TMR**|**UTIL**|**XOT**|**XTP**) for which *global* PCE I/O buffer tracing is applicable. PCE I/O buffer trace entries are logged only if PCE I/O tracing is also active (see **TRCIO**).

Note: All TRCBFR arguments can be entered at the same time with each one separated by space character. For example, TRCBFR ON TCP TMR. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCBFR ON ON is rejected because ON is duplicated and TRCBFR ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

Console Commands

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs TRCBFR processing to the identified PCE. For more information on ***pcestatic|pcename*** processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting TRCBFR ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, TRCBFR ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, TRCBFR ON|OFF processing is for all PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCBFR Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	<i>pcestatic pcename RNM= ID=</i>	1
OFF	ON	<i>pcestatic pcename RNM= ID=</i>	2
ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4
ALLTYPES	NOTYPES	system wide	5
NOTYPES	ALLTYPES	system wide	6
CONS	none	system wide	7
NETV	none	system wide	8
TCP	none	system wide	9
TMR	none	system wide	10
UTIL	none	system wide	11
XOT	none	system wide	12
XTP	none	system wide	13

- Enter **TRCBFR [ON]** to start *local* PCE I/O buffer tracing for the PCEs identified by the command modifiers. *Local* PCE I/O buffer tracing will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **TRCBFR OFF** to stop *local* PCE I/O buffer tracing for the PCEs identified by the command modifiers. *Local* PCE I/O buffer tracing will be deactivated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **TRCBFR ALLON** to start *global* PCE I/O buffer tracing (equivalent to the TRCBFR start parameter). *Global* PCE I/O buffer trace entries are logged only for those PCEs that pass

the type filter.

- Enter **TRCBFR ALLOFF** to stop *global* and all *local* PCE I/O buffer tracing.
- Enter **TRCBFR ALLTYPES** to set all PCE types for *global* PCE I/O buffer tracing.
- Enter **TRCBFR NOTYPES** to reset all PCE types for *global* PCE I/O buffer tracing. This prevents PCE I/O buffer trace entries from being logged when only *global* PCE I/O buffer tracing is active (type filtering does not affect *local* PCE I/O buffer tracing).
- Enter **TRCBFR {CONS|NETV|TCP|TMR|UTIL|XOT|XTP}** to set one or more PCE types for *global* PCE I/O buffer tracing.

Note: To restrict *global* PCE I/O buffer tracing to a specific process or processes, for example TCP and XOT, enter **TRCBFR NOTYPES TRCBFR TCP XOT**.

- To summarize, you may enter a TRCBFR parameter that requests a specific action to be performed as follows:

TRCBFR Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE I/O buffer tracing for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE I/O buffer tracing for the PCEs identified by the ID= or RNM= modifiers.
ALLON	Activate <i>global</i> PCE I/O buffer tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> PCE I/O buffer tracing (system wide).
ALLTYPES	Allow <i>global</i> PCE I/O buffer tracing for all PCE types.
NOTYPES	Inhibit <i>global</i> PCE I/O buffer tracing for all PCE types.
CONS	Allow <i>global</i> PCE I/O buffer tracing for CONSOLE PCEs.
NETV	Allow <i>global</i> PCE I/O buffer tracing for the NETVIEW PCE (future support).
TCP	Allow <i>global</i> PCE I/O buffer tracing for TCP/IP PCEs.
TMR	Allow <i>global</i> PCE I/O buffer tracing for the system TIMER PCE.
UTIL	Allow <i>global</i> PCE I/O buffer tracing for the system UTILITY PCE.
XOT	Allow <i>global</i> PCE I/O buffer tracing for the XOT UTILITY PCE.
XTP	Allow <i>global</i> PCE I/O buffer tracing for the XTP UTILITY PCE.

Example #1: To start *global* PCE I/O and PCE I/O buffer tracing for all PCEs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP
```

```
<- stop all tracing
```

Console Commands

```
TRCIO ALLON TRCIO ALLTYPES <- start global PCE I/O tracing
TRCBFR ALLON TRCBFR ALLTYPES <- start global PCE I/O buffer tracing
```

Example #2: To start *local* PCE I/O and PCE I/O buffer tracing for a specific PCE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP <- stop all tracing
ID=pceid <- identify PCE
TRCIO [ON] <- start local I/O tracing for PCE pceid
TRCBFR [ON] <- start local I/O buffer tracing for PCE pceid
```

Example #3: To start *local* PCE I/O and PCE I/O buffer tracing for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP <- stop all tracing
RNM=rmtname <- identify REMOTE
TRCIO [ON] <- start local I/O tracing for PCEs on rmtname
TRCBFR [ON] <- start local I/O buffer tracing for PCEs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS buffer trace entries (ID=5|6) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCBFR:

- 1) If TRCBFR is locally active for a PCE, PCE I/O buffer trace entries will only be logged if TRCIO is also locally active for the PCE or is globally active for the system (TRCIO ALLON).
- 2) If TRCBFR ALLON and TRCBFR NOTYPES are in effect, no *global* PCE I/O buffer trace entries will be logged. Note that the type filter does not affect *local* PCE I/O buffer tracing.
- 3) The TRCBFR ON|OFF|ALLON|ALLOFF commands do not alter the PCE type(s) that are currently in effect.
- 4) HNAS activates with **TRCBFR OFF** and **TRCBFR NOTYPES** set in the absence of the **TRCBFR** start parameter.
- 5) The **TRCBFR [ON]** start parameter performs the same function as the **TRCBFR ALLON** and **TRCBFR ALLTYPES** console commands for *global* PCE I/O buffer tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 6) **ON** is assumed if TRCBFR is entered with no argument.

7) If **NOTYPES** is in effect when **ON|ALLON** is set, **ALLTYPES** is forced.

Console Commands

TRCBFRQ Command - XFBFR Call Trace Control (Privileged)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCBFRQ	[{ON OFF}]		

This command is used to start (**ON**) or stop (**OFF**) XFBFR subroutine call tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCBFRQ Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- XFBFR subroutine call tracing allows buffer lease and release requests to be logged in the HNAS internal trace table. This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS subroutine call trace entries (ID=8) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCBFRQ:

- 1) HNAS activates with **TRCBFRQ OFF** set in the absence of the **TRCBFRQ** start parameter.
- 2) The **TRCBFRQ [ON]** and **TRCBFRQ OFF** start parameters perform the same function as the **TRCBFRQ [ON]** and **TRCBFRQ OFF** console commands, respectively, for *global* buffer request tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCBST Command - Binary Search Trace Control (Privileged)

(new for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCBST	[{ <u>ON</u> OFF }]	N	220

This command is used to start (**ON**) or stop (**OFF**) binary search table update tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCBST Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- Binary search table update tracing allows add, delete and search requests to be logged in the HNAS internal trace table. This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS binary search trace entries (ID=81) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCBST:

- HNAS activates with **TRCBST OFF** set in the absence of the **TRCBST** start parameter.
- The **TRCBST [ON]** and **TRCBST OFF** start parameters perform the same function as the **TRCBST [ON]** and **TRCBST OFF** console commands, respectively, for *global* binary search table tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

Console Commands

TRCCNFG Command - Configuration Call Trace Control (Privileged)

(new for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCCNFG	[{ON OFF}]	N	230

This command is used to start (**ON**) or stop (**OFF**) configuration subroutine call tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCCNFG Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- Configuration subroutine call tracing allows the configuration update process using the MLCL and MRMT console commands to be monitored and logged in the HNAS internal trace table. This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS subroutine call trace entries (ID=8) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCCNFG:

- HNAS activates with **TRCCNFG OFF** set in the absence of the **TRCCNFG** start parameter.
- The **TRCCNFG [ON]** and **TRCCNFG OFF** start parameters perform the same function as the **TRCCNFG [ON]** and **TRCCNFG OFF** console commands, respectively, for *global* configuration process tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCCONS Command - Console Trace Control (Privileged)

(added for V2R3M0)
(changed for V2R4M0)

for a specific console PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCCONS	[{LCLCONS <i>rconname</i> }]	A	240
		[{ON OFF}]	A	230

or for a collection of console PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCCONS	[{ON OFF}]	A	230

or for all console PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCCONS	[{ALLON ALLOFF}]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* console PCE event tracing for the PCEs identified by the ID= command modifiers or to start (**ALLON**) or stop (**ALLOFF**) *global* console PCE tracing.

Console event tracing allows console activity to be monitored and logged in the HNAS internal trace table. This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When the **LCLCONS** or **rconname** argument is provided, it directs EXEC processing to the identified console. This allows one console to alter TRCCONS processing for another console. For example, TRCCONS RCON0031 ON will cause the console tracing to be started for the remote console named RCON0031 regardless of which console actually entered the command. For more information on LCLCONS|rconname processing, please refer to section entitled 'Console PCE name as a Suffix Command Modifier' on page CONS-11.
- When **ID=minid[-maxid]** is specified, TRCCONS ON|OFF processing is restricted to the selected console PCEs. If **ID=0** is specified, TRCCONS ON|OFF processing is for all console PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

Console Commands

TRCCONS Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	LCLCONS <i>rconname</i> ID=	1
OFF	ON	LCLCONS <i>rconname</i> ID=	2
ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4

- Enter **TRCCONS [ON]** to start *local* console PCE event tracing for the PCEs identified by the command modifiers. *Local* console PCE event tracing will be activated for all console PCEs if **ID=0** is specified.
- Enter **TRCCONS OFF** to stop *local* console PCE event tracing for the PCEs identified by the command modifiers. *Local* console PCE event tracing will be deactivated for all console PCEs if **ID=0** is specified.
- Enter **TRCCONS ALLON** to start *global* console event tracing (equivalent to the TRCCONS start parameter).
- Enter **TRCCONS ALLOFF** to stop *global* and all *local* console PCE event tracing.
- To summarize, you may enter a TRCCONS parameter that requests a specific action to be performed as follows:

TRCCONS Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> console PCE event tracing for the PCEs identified by the ID= modifier.
OFF	Deactivate <i>local</i> console PCE event tracing for the PCEs identified by the ID= modifier.
ALLON	Activate <i>global</i> console PCE event tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> console PCE event tracing (system wide).

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS console event trace entries (ID=9) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCCONS:

- 1) HNAS activates with **TRCCONS ALLOFF** set in the absence of the **TRCCONS** start parameter.
- 2) The **TRCCONS [ALLON]** and **TRCCONS ALLOFF** start parameter performs the same function as the **TRCCONS ALLON** and **TRCCONS ALLOFF** console commands, respectively, for *global* console process tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

Console Commands

TRCDATA Command - PCE I/O Data Trace Control (Privileged)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCDATA	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ <u>ON</u> OFF}]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	TRCDATA	[<i>rmtname</i>]	C	230
		[{ <u>ON</u> OFF}]	C	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCDATA	[{ <u>ON</u> OFF}]	C	230

or for all PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCDATA	[{ALLON ALLOFF}]	A	230
		[{ALLTYPES NOTYPES CONS NETV TCP TMR UTIL XOT XTP}]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE I/O data tracing for the PCEs identified by the command modifiers (ID= or RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* PCE I/O data tracing and/or to identify the type(s) of processes (**ALLTYPES|CONS|NETV|TCP|TMR|UTIL|XOT|XTP**) for which *global* PCE I/O data tracing is applicable. PCE I/O data trace entries are logged only if PCE I/O tracing is also active (see **TRCIO**).

Note: All TRCDATA arguments can be entered at the same time with each one separated by space character. For example, TRCDATA ON TCP TMR. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCDATA ON ON is rejected because ON is duplicated and TRCDATA ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs TRCDATA processing to the identified PCE. For more information on *pcestatic|pcename* processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting TRCDATA ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, TRCDATA ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, TRCDATA ON|OFF processing is for all PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCDATA Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	<i>pcestatic pcename RNM= ID=</i>	1
OFF	ON	<i>pcestatic pcename RNM= ID=</i>	2
ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4
ALLTYPES	NOTYPES	system wide	5
NOTYPES	ALLTYPES	system wide	6
CONS	none	system wide	7
NETV	none	system wide	8
TCP	none	system wide	9
TMR	none	system wide	10
UTIL	none	system wide	11
XOT	none	system wide	12
XTP	none	system wide	13

- Enter **TRCDATA [ON]** to start *local* PCE I/O data tracing for the PCEs identified by the command modifiers. *Local* PCE I/O data tracing will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **TRCDATA OFF** to stop *local* PCE I/O data tracing for the PCEs identified by the command modifiers. *Local* PCE I/O data tracing will be deactivated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **TRCDATA ALLON** to start *global* PCE I/O data tracing (equivalent to the TRCDATA start parameter). *Global* PCE I/O data trace entries are logged only for those PCEs that

Console Commands

pass the type filter.

- Enter **TRCDATA ALLOFF** to stop *global* and all *local* PCE I/O data tracing.
- Enter **TRCDATA ALLTYPES** to set all PCE types for *global* PCE I/O data tracing.
- Enter **TRCDATA NOTYPES** to reset all PCE types for *global* PCE I/O data tracing. This prevents PCE I/O data trace entries from being logged when only *global* PCE I/O data tracing is active (type filtering does not affect *local* PCE I/O data tracing).
- Enter **TRCDATA {CONS|NETV|TCP|TMR|UTIL|XOT|XTP}** to set one or more PCE types for *global* PCE I/O data tracing.

Note: To restrict *global* PCE I/O data tracing to a specific process or processes, for example TCP and XOT, enter **TRCDATA NOTYPES TRCDATA TCP XOT**.

- To summarize, you may enter a TRCDATA parameter that requests a specific action to be performed as follows:

TRCDATA Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE I/O data tracing for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE I/O data tracing for the PCEs identified by the ID= or RNM= modifiers.
ALLON	Activate <i>global</i> PCE I/O data tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> PCE I/O data tracing (system wide).
ALLTYPES	Allow <i>global</i> PCE I/O data tracing for all PCE types.
NOTYPES	Inhibit <i>global</i> PCE I/O data tracing for all PCE types.
CONS	Allow <i>global</i> PCE I/O data tracing for CONSOLE PCEs.
NETV	Allow <i>global</i> PCE I/O data tracing for the NETVIEW PCE (future support).
TCP	Allow <i>global</i> PCE I/O data tracing for TCP/IP PCEs.
TMR	Allow <i>global</i> PCE I/O data tracing for the system TIMER PCE.
UTIL	Allow <i>global</i> PCE I/O data tracing for the system UTILITY PCE.
XOT	Allow <i>global</i> PCE I/O data tracing for the XOT UTILITY PCE.
XTP	Allow <i>global</i> PCE I/O data tracing for the XTP UTILITY PCE.

Example #1: To start *global* PCE I/O and PCE I/O data tracing for all PCEs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
TRCIO ALLON TRCIO ALLTYPES <- start global PCE I/O tracing
TRCDATA ALLON TRCDATA ALLTYPES <- start global PCE I/O data tracing
```

Example #2: To start *local* PCE I/O and PCE I/O data tracing for a specific PCE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
ID=pceid                  <- identify PCE
TRCIO [ON]                 <- start local I/O tracing for PCE pceid
TRCDATA [ON]               <- start local I/O data tracing for PCE pceid
```

Example #3: To start *local* PCE I/O and PCE I/O data tracing for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
RNM=rmtname               <- identify REMOTE
TRCIO [ON]                 <- start local I/O tracing for PCEs on rmtname
TRCDATA [ON]               <- start local I/O data tracing for PCEs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS data trace entries (ID=7) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCDATA:

- 1) If TRCDATA is locally active for a PCE, PCE I/O data trace entries will only be logged if TRCIO is also locally active for the PCE or is globally active for the system (TRCIO ALLON).
- 2) If TRCDATA ALLON and TRCDATA NOTYPES are in effect, no *global* PCE I/O data trace entries will be logged. Note that the type filter does not affect *local* PCE I/O data tracing.
- 3) The TRCDATA ON|OFF|ALLON|ALLOFF commands do not alter the PCE type(s) that are currently in effect.
- 4) HNAS activates with **TRCDATA OFF** and **TRCDATA NOTYPES** set in the absence of the **TRCDATA** start parameter.
- 5) The **TRCDATA [ON]** start parameter performs the same function as the **TRCDATA ALLON** and **TRCDATA ALLTYPES** console commands for *global* PCE I/O data tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 6) **ON** is assumed if TRCDATA is entered with no argument.

Console Commands

7) If **NOTYPES** is in effect when **ON|ALLON** is set, **ALLTYPES** is forced.

TRCDBK Command - Data Block Trace Control (Privileged)

(new for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCDBK	[{ <u>ON</u> OFF }]	N	220

This command is used to start (**ON**) or stop (**OFF**) *global* (common) data block tracing for all LUs and VCs.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCDBK Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- Data block tracing allows extended control block information to be logged in the HNAS internal trace table or written in the SYSPRINT log (if **PRNT ON** is in effect). This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

Note: Unless instructed by Comm-Pro technical personnel, the use of TRCDBK should be avoided due to the amount of additional data that can be logged in SYSPRINT.

General notes for TRCDBK:

- HNAS activates with **TRCDBK OFF** set in the absence of the **TRCDBK** start parameter.
- The **TRCDBK [ON]** start parameter performs the same function as the **TRCDBK [ON]** console command for *global* data block tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

Console Commands

TRCDISP Command - PCE Dispatcher Trace Control (Privileged)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCDISP	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[NQDQ] [{ON OFF}]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	TRCDISP	[<i>rmtname</i>]	C	230
		[NQDQ] [{ON OFF}]	C	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCDISP	[NQDQ] [{ON OFF}]	C	230

or for all PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCDISP	[NQDQ] [{ALLON ALLOFF}]	A	230
		[{ALLTYPES NOTYPES CONS NETV TCP TMR UTIL XOT XTP}]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE dispatcher tracing for the PCEs identified by the command modifiers (ID= or RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* PCE dispatcher tracing and/or to identify the type(s) of processes (**ALLTYPES**|**CONS**|**NETV**|**TCP**|**TMR**|**UTIL**|**XOT**|**XTP**) for which *global* PCE dispatcher tracing is applicable. If **NQDQ** is entered before ON (*local*) or ALLON (*global*), it causes XFWAIT, XFPOST, XFSTMR and XFRTMR macro calls to be logged with the dispatcher trace entries.

Note: All TRCDISP arguments can be entered at the same time with each one separated by space character. For example, TRCDISP ON TCP TMR. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCDISP ON ON is rejected because ON is duplicated and TRCDISP ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs TRCDISP processing to the identified PCE. For more information on ***pcestatic|pcename*** processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting TRCDISP ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, TRCDISP ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, TRCDISP ON|OFF processing is for all PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCDISP Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
[NQDQ] ON	OFF	<i>pcestatic pcename</i> RNM= ID=	1
OFF	ON	<i>pcestatic pcename</i> RNM= ID=	2
[NQDQ] ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4
ALLTYPES	NOTYPES	system wide	5
NOTYPES	ALLTYPES	system wide	6
CONS	none	system wide	7
NETV	none	system wide	8
TCP	none	system wide	9
TMR	none	system wide	10
UTIL	none	system wide	11
XOT	none	system wide	12
XTP	none	system wide	13

- Enter **TRCDISP [[NQDQ] ON]** to start *local* PCE dispatcher tracing for the PCEs identified by the command modifiers. *Local* PCE dispatcher tracing will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified. When **NQDQ ON** is specified, subtask XFWAIT/XFPOST and XFSTMR/XFRTRM tracing is activated in addition to dispatcher tracing for the identified PCEs.
- Enter **TRCDISP OFF** to stop *local* PCE dispatcher tracing for the PCEs identified by the command modifiers. *Local* PCE dispatcher tracing will be deactivated for all PCEs if **ID=0** and

Console Commands

RNM= (null) is specified.

- Enter **TRCDISP [NQDQ] ALLON** to start *global* PCE dispatcher tracing (equivalent to the TRCDISP start parameter). Global PCE dispatcher trace entries are logged only for those PCEs that pass the type filter. When **NQDQ ALLON** is specified, subtask XFWAIT/XFPOST and XFSTMR/XFRTMR tracing is activated in addition to dispatcher tracing for all PCEs.
- Enter **TRCDISP ALLOFF** to stop *global* and all *local* PCE dispatcher tracing.
- Enter **TRCDISP ALLTYPES** to set all PCE types for *global* PCE dispatcher tracing.
- Enter **TRCDISP NOTYPES** to reset all PCE types for *global* PCE dispatcher tracing. This prevents PCE dispatcher trace entries from being logged when only *global* PCE dispatcher tracing is active (type filtering does not affect *local* PCE dispatcher tracing).
- Enter **TRCDISP {CONS|NETV|TCP|TMR|UTIL|XOT|XTP}** to set one or more PCE types for *global* PCE dispatcher tracing.

Note: To restrict *global* PCE dispatcher tracing to a specific process or processes, for example TCP and XOT, enter **TRCDISP NOTYPES TRCDISP TCP XOT**.

- To summarize, you may enter a TRCDISP parameter that requests a specific action to be performed as follows:

TRCDISP Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE dispatcher tracing for the PCEs identified by the ID= or RNM= modifiers.
NQDQ ON	Activate <i>local</i> PCE dispatcher tracing plus XFWAIT, XFPOST, XFSTMR and XFRTMR macro tracing for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE dispatcher tracing for the PCEs identified by the ID= or RNM= modifiers.
ALLON	Activate <i>global</i> PCE dispatcher tracing (system wide).
NQDQ ALLON	Activate <i>global</i> PCE dispatcher tracing plus XFWAIT, XFPOST, XFSTMR and XFRTMR macro tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> PCE dispatcher tracing (system wide).
ALLTYPES	Allow <i>global</i> PCE dispatcher tracing for all PCE types.
NOTYPES	Inhibit <i>global</i> PCE dispatcher tracing for all PCE types.
CONS	Allow <i>global</i> PCE dispatcher tracing for CONSOLE PCEs.
NETV	Allow <i>global</i> PCE dispatcher tracing for the NETVIEW PCE (future support).
TCP	Allow <i>global</i> PCE dispatcher tracing for TCP/IP PCEs.

PARAMETER	ACTION
TMR	Allow <i>global</i> PCE dispatcher tracing for the system TIMER PCE.
UTIL	Allow <i>global</i> PCE dispatcher tracing for the system UTILITY PCE.
XOT	Allow <i>global</i> PCE dispatcher tracing for the XOT UTILITY PCE.
XTP	Allow <i>global</i> PCE dispatcher tracing for the XTP UTILITY PCE.

Example #1: To start *global* PCE dispatcher tracing for all PCEs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
TRCDISP ALLON TRCDISP ALLTYPES <- start global PCE dispatcher tracing
```

Example #2: To start *local* PCE dispatcher tracing for a specific PCE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
ID=pceid                  <- identify PCE
TRCDISP [ON]               <- start local dispatcher tracing for PCE pceid
```

Example #3: To start *local* PCE dispatcher tracing for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
RNM=rmtname               <- identify REMOTE
TRCDISP [ON]               <- start local dispatcher tracing for PCEs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS dispatcher trace entries (ID=0|1|2|9|A|B|C) can be found starting in the Trace Table Entries section of this product documentation.

General notes for TRCDISP:

- 1) If TRCDISP ALLON and TRCDISP NOTYPES are in effect, no *global* PCE dispatcher trace entries will be logged. Note that the type filter does not affect *local* PCE dispatcher tracing.
- 2) The TRCDISP ON|OFF|ALLON|ALLOFF commands do not alter the PCE type(s) that are currently in effect.
- 3) HNAS activates with **TRCDISP OFF** and **TRCDISP NOTYPES** set in the absence of the **TRCDISP** start parameter.

Console Commands

- 4) The **TRCDISP [ON]** start parameter performs the same function as the **TRCDISP ALLON** and **TRCDISP ALLTYPES** console commands for *global* PCE dispatcher tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 5) **ON** is assumed if TRCDISP is entered with no argument.
- 6) If **NOTYPES** is in effect when **ON|ALLON** is set, **ALLTYPES** is forced.

TRCIO Command - PCE I/O Trace Control (Privileged)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCIO	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ ON OFF }]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	TRCIO	[<i>rmtname</i>]	C	230
		[{ ON OFF }]	C	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCIO	[{ ON OFF }]	C	230

or for all PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCIO	[{ ALLON ALLOFF }]	A	230
		[{ ALLTYPES NOTYPES CONS NETV TCP TMR UTIL XOT XTP }]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE I/O tracing for the PCEs identified by the command modifiers (ID= or RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* PCE I/O tracing and/or to identify the type(s) of processes (**ALLTYPES**|**CONS**|**NETV**|**TCP**|**TMR**|**UTIL**|**XOT**|**XTP**) for which *global* PCE I/O tracing is applicable.

Note: All TRCIO arguments can be entered at the same time with each one separated by space character. For example, TRCIO ON TCP TMR. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCIO ON ON is rejected because ON is duplicated and TRCIO ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

Console Commands

- When the ***pcestatic*** (**LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL**) or ***pcename*** argument is provided, it directs TRCIO processing to the identified PCE. For more information on ***pcestatic|pcename*** processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting TRCIO ON|OFF processing to the named REMOTE only.
- When **ID=*minid[-maxid]*** is specified, TRCIO ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, TRCIO ON|OFF processing is for all PCEs.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCIO Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	<i>pcestatic pcename RNM= ID=</i>	1
OFF	ON	<i>pcestatic pcename RNM= ID=</i>	2
ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4
ALLTYPES	NOTYPES	system wide	5
NOTYPES	ALLTYPES	system wide	6
CONS	none	system wide	7
NETV	none	system wide	8
TCP	none	system wide	9
TMR	none	system wide	10
UTIL	none	system wide	11
XOT	none	system wide	12
XTP	none	system wide	13

- Enter **TRCIO [ON]** to start *local* PCE I/O tracing for the PCEs identified by the command modifiers. *Local* PCE I/O tracing will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified.
- Enter **TRCIO OFF** to stop *local* PCE I/O tracing for the PCEs identified by the command modifiers. *Local* PCE I/O tracing will be deactivated for all PCEs if **ID=0** and **RNM=** (null) is specified.

- Enter **TRCIO ALLON** to start *global* PCE I/O tracing (equivalent to the TRCIO start parameter). *Global* PCE I/O trace entries are logged only for those PCEs that pass the type filter.
- Enter **TRCIO ALLOFF** to stop *global* and all *local* PCE I/O tracing.
- Enter **TRCIO ALLTYPES** to set all PCE types for *global* PCE I/O tracing.
- Enter **TRCIO NOTYPES** to reset all PCE types for *global* PCE I/O tracing. This prevents PCE I/O trace entries from being logged when only *global* PCE I/O tracing is active (type filtering does not affect *local* PCE I/O tracing).
- Enter **TRCIO {CONS|NETV|TCP|TMR|UTIL|XOT|XTP}** to set one or more PCE types for *global* PCE I/O tracing.

Note: To restrict *global* PCE I/O tracing to a specific process or processes, for example TCP and XOT, enter **TRCIO NOTYPES TRCIO TCP XOT**.

- To summarize, you may enter a TRCIO parameter that requests a specific action to be performed as follows:

TRCIO Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE I/O tracing for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE I/O tracing for the PCEs identified by the ID= or RNM= modifiers.
ALLON	Activate <i>global</i> PCE I/O tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> PCE I/O tracing (system wide).
ALLTYPES	Allow <i>global</i> PCE I/O tracing for all PCE types.
NOTYPES	Inhibit <i>global</i> PCE I/O tracing for all PCE types.
CONS	Allow <i>global</i> PCE I/O tracing for CONSOLE PCEs.
NETV	Allow <i>global</i> PCE I/O tracing for the NETVIEW PCE (future support).
TCP	Allow <i>global</i> PCE I/O tracing for TCP/IP PCEs.
TMR	Allow <i>global</i> PCE I/O tracing for the system TIMER PCE.
UTIL	Allow <i>global</i> PCE I/O tracing for the system UTILITY PCE.
XOT	Allow <i>global</i> PCE I/O tracing for the XOT UTILITY PCE.
XTP	Allow <i>global</i> PCE I/O tracing for the XTP UTILITY PCE.

Example #1: To start *global* PCE I/O tracing for all PCEs when you are not sure of the current state of tracing within HNAS, enter

Console Commands

```
TRCALL STOP                <- stop all tracing
TRCIO ALLON TRCIO ALLTYPES <- start global PCE I/O tracing
```

Example #2: To start *local* PCE I/O tracing for a specific PCE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
ID=pceid                  <- identify PCE
TRCIO [ON]                 <- start local I/O tracing for PCE pceid
```

Example #3: To start *local* PCE I/O tracing for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP                <- stop all tracing
RNM=rmtname              <- identify REMOTE
TRCIO [ON]                 <- start local I/O tracing for PCEs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS I/O trace entries (ID=3|4) can be found starting in the Trace Table Entries section of this product documentation.

General notes for TRCIO:

- 1) If TRCIO ALLON and TRCIO NOTYPES are in effect, no *global* PCE I/O trace entries will be logged. Note that the type filter does not affect *local* PCE I/O tracing.
- 2) The TRCIO ON|OFF|ALLON|ALLOFF commands do not alter the PCE type(s) that are currently in effect.
- 3) HNAS activates with **TRCIO OFF** and **TRCIO NOTYPES** set in the absence of the **TRCIO** start parameter.
- 4) The **TRCIO [ON]** start parameter performs the same function as the **TRCIO ALLON** and **TRCIO ALLTYPES** console commands for *global* PCE I/O tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 5) **ON** is assumed if TRCIO is entered with no argument.
- 6) If **NOTYPES** is in effect when **ON|ALLON** is set, **ALLTYPES** is forced.

TRCLU Command - LU Trace Control (Privileged)

(changed for V2R2M0)

for a specific LU

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[LUNM= <i>sluname</i>]	TRCLU	[<i>sluname</i>]	C	230
		[{ <u>ON</u> OFF}]	C	220
		[DBK { <u>ON</u> OFF}]	C	240
		[{MAXDATA MINDATA NODATA}]	A	220

or for the LUs on a specific MCH or SPU

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM={ <i>mchname</i> <i>spuname</i> }]	TRCLU	[{ <i>mchname</i> <i>spuname</i> }]	C	230
[CID= <i>mincid</i> [- <i>maxcid</i>]]		[{ <u>ON</u> OFF}]	C	220
		[DBK { <u>ON</u> OFF}]	C	240
		[{MAXDATA MINDATA NODATA}]	A	220

or for a collection of LUs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCLU	[{ <u>ON</u> OFF}]	C	220
		[DBK { <u>ON</u> OFF}]	C	240
		[{MAXDATA MINDATA NODATA}]	A	220
[IFN= <i>minifn</i> [- <i>maxifn</i>]]				
[CID= <i>mincid</i> [- <i>maxcid</i>]]				

or for all LUs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCLU	[{ <u>ALLON</u> <u>ALLOFF</u> }]	C	220
		[{MAXDATA MINDATA NODATA}]	A	220

This command is used to start (**ON**) or stop (**OFF**) *local* LU event tracing or to enable *local* data block logging (**DBK**) for the LUs identified by the command modifiers (ID=, IFN=, CID=, RNM=, LUNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* LU event tracing or to control the amount of data (**MAXDATA|MINDATA|NODATA**) that is logged for the LUs currently being traced.

Note: All TRCLU arguments can be entered at the same time with each one separated by space character. For example, TRCLU ON MAXDATA. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCLU ON ON is rejected because ON is duplicated and TRCLU ON OFF is rejected because ON and OFF conflict.

Console Commands

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **LUNM=*sluname*** is specified, it overrides the **ID=**, **IFN=** and **CID=** and **RNM=** values restricting the TRCLU ON|OFF|DBK processing to the named LU only.

Note: When an **LUNM=** value is specified for the **TRCLU** command, a VC trace is also enabled for the duration of the session (PCNE|GATE|PAD sessions only).

- When **RNM={*mchname|spuname*}** is specified, it overrides the **ID=** and **IFN=** values restricting TRCLU ON|OFF|DBK processing to the named MCH or SPU for the specified **CID=** values. TRCLU ON|OFF|DBK processing will affect the LUs on the named MCH only.
- When **CID=*mincid*[-*maxcid*]** is specified, TRCLU ON|OFF|DBK processing is restricted to the selected LUs on the selected MCHs. If **CID=0** is specified, TRCLU ON|OFF|DBK processing is for all LUs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCLU ON|OFF|DBK processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCLU ON|OFF|DBK processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, TRCLU ON|OFF|DBK processing is restricted to the selected PCEs. If **ID=0** is specified, TRCLU ON|OFF|DBK processing is for all PCEs. *The ID= modifier is only used if the RNM= and LUNM= modifiers are not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCLU Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
DBK ON	DBK OFF	5
DBK OFF	DBK ON	6
MAXDATA	MINDATA NODATA	7
MINDATA	MAXDATA NODATA	8
NODATA	MINDATA MAXDATA	9

-

- Enter **TRCLU [ON]** to start *local* LU event tracing for the LUs identified by the command modifiers.
- Enter **TRCLU OFF** to stop *local* LU event tracing and *local* data block logging (disables DBK) for the LUs identified by the command modifiers.
- Enter **TRCLU DBK [ON]** to enable *local* data block logging for the LUs identified by the command modifiers. This is equivalent to MAXDATA on an LU basis rather than a system wide basis.
- Enter **TRCLU DBK OFF** to disable *local* data block logging for the LUs identified by the command modifiers. This is equivalent to MAXDATA on an LU basis rather than a system wide basis.
- Enter **TRCLU ALLON** to start *global* LU event tracing (equivalent to the TRCLU start parameter).
- Enter **TRCLU ALLOFF** to stop *global* and *local* LU event tracing and *local* data block logging (disables DBK) for all defined LUs.
- Enter **TRCLU MAXDATA** to enable *global* data block logging with a maximum amount of data being logged for the LUs currently being traced.
- Enter **TRCLU MINDATA** to enable *global* data block logging with a minimum amount of data being logged for the LUs currently being traced.
- Enter **TRCLU NODATA** to disable *global* data block logging for the LUs currently being traced. This prevents any additional data being logged when an LU event trace entry is recorded.

Note: For HNAS release V2R2M0, the MAXDATA, MINDATA and NODATA parameters also started event tracing for all LUs defined to HNAS. This precluded their use to control data logging for a single LU. For this reason, the LU event start function has been removed from these parameters. *Global* LU event tracing must now be started and stopped using the ALLON and ALLOFF parameters, respectively.

- To summarize, you may enter a TRCLU parameter that requests a specific action to be performed as follows:

TRCLU Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> LU event tracing for the LUs identified by the ID=, IFN= and CID= modifiers or the RNM= and CID= modifiers or the LUNM= modifier.
OFF	Deactivate <i>local</i> LU event tracing and <i>local</i> data block logging for the LUs identified by the ID=, IFN= and CID= modifiers or the RNM= and CID= modifiers or the LUNM= modifier.

Console Commands

PARAMETER	ACTION
DBK ON or omitted	Enable <i>local</i> data block logging for the LUs identified by the ID=, IFN= and CID= modifiers or the RNM= and CID= modifiers or the LUNM= modifier.
DBK OFF	Disable <i>local</i> data block logging for the LUs identified by the ID=, IFN= and CID= modifiers or the RNM= and CID= modifiers or the LUNM= modifier.
ALLON	Activate <i>global</i> LU event tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> LU event tracing (system wide).
MAXDATA	Activate <i>global</i> data block logging with a maximum amount of data being logged for the LUs currently being traced.
MINDATA	Activate <i>global</i> data block logging with a minimum amount of data being logged for the LUs currently being traced.
NODATA	Deactivate <i>global</i> data block logging for the LUs currently being traced.

Example #1: To start *global* LU event tracing for all LUs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
TRCLU ALLON          <- start global LU event tracing
```

Example #2: To start *local* LU event tracing for a specific LU when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
LUNM=sluname        <- identify LU
TRCLU [ON]           <- start local event tracing for LU sluname
```

Example #3: To start *local* LU event tracing for all the LUs associated with a TYPE=MCH|SPU REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
RNM=rmtname         <- identify REMOTE
TRCLU [ON]           <- start local event tracing for LUs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS LU event trace entries (ID=VOPN|VCLS|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCLU:

- 1) Entering **TRCLU OFF** will terminate *local* event tracing and *local* data block (**DBK**) logging.
- 2) Entering **TRCLU ON|OFF|DBK|ALLON|ALLOFF** will not alter the *global* data block logging state (**MAXDATA|MINDATA|NODATA**).
- 3) The **TRCLU** command now produces expanded trace entries containing formatted inbound and outbound call request packet fields. The expanded information is located in the SYSPRINT output (not SYSCONS) and is only generated when **TRCLU** is enabled or when **TRCMCH ICR** or **OCR** options are enabled. Please refer to **TRCMCH** command description to view sample **NASnnnnT** trace alert message layouts.
- 4) HNAS activates with **TRCLU ON** and **TRCLU MINDATA** set in the absence of the **TRCLU** start parameter.
- 5) The **TRCLU [ON]**, **TRCLU OFF**, **TRCLU MAXDATA**, **TRCLU MINDATA** and **TRCLU NODATA** start parameters perform the same functions as the **TRCLU ALLON**, **TRCLU ALLOFF**, **TRCLU MAXDATA**, **TRCLU MINDATA** and **TRCLU NODATA** console commands, respectively, for *global* LU event tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

Console Commands

TRCLUQ Command - MCH LU Queue Trace Control (Privileged)

for the LUQs on a specific MCH

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	TRCLUQ	[<i>mchname</i>]	C	230
[LUN= <i>minlun</i> [- <i>maxlun</i>]]		[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	C	240

or for a collection of LUQs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCLUQ	[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	C	240
[IFN= <i>minifn</i> [- <i>maxifn</i>]]				
[LUN= <i>minlun</i> [- <i>maxlun</i>]]				

or for all LUQs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCLUQ	[{ <u>ALLON</u> <u>ALLOFF</u> }]	C	230

This command is used to start (**ON**) or stop (**OFF**) *local* LU event tracing or to initiate *local* data block logging (**DBK**) as new LU connections are established for the MCHs and MCHXs identified by the command modifiers (ID=, IFN=, LUN=, RNM=). *Local* LU event tracing and *local* data block logging for **all** LUQs can be started (**ALLON**) and stopped (**ALLOFF**). This command is provided so that LU tracing can be initiated as soon as a LUB is added to its active LU queue.

Note: All TRCLUQ arguments can be entered at the same time with each one separated by space character. For example, TRCLUQ ON DBK ON. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCLUQ ON ON is rejected because ON is duplicated and TRCLUQ ON OFF is rejected because ON and OFF conflict.

Note: LUQ=MCHLUQ for LLC0 (PCNE) and LLC5 (PAD) LUs (contained in MCH) while LUQ=MCHXLUAQ for LLC4 (GATE) LUs (contained in MCHX).

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting TRCLUQ processing to the named MCH only for the specified **LUN=** values. TRCLUQ processing will affect the LUQs on the named MCH only.

- When **LUN=*minlun*[-*maxlun*]** is specified, TRCLUQ processing is restricted to the selected MCHXs on the selected MCHs. If **LUN=0** is specified, TRCLUQ processing is for all MCHXs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCLUQ processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCLUQ processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, TRCLUQ processing is restricted to the selected PCEs. If **ID=0** is specified, TRCLUQ processing is for all PCEs. *The ID= modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCLUQ Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
DBK ON	DBK OFF	5
DBK OFF	DBK ON	6

- Enter **TRCLUQ [ON]** to start *local* LUQ event tracing for the LUQs identified by the command modifiers.
- Enter **TRCLUQ OFF** to stop *local* LUQ event tracing and *local* data block logging (disables DBK) for the LUQs identified by the command modifiers.
- Enter **TRCLUQ DBK [ON]** to enable *local* data block logging for the LUQs identified by the command modifiers.
- Enter **TRCLUQ DBK OFF** to disable *local* data block logging for the LUQs identified by the command modifiers.
- Enter **TRCLUQ ALLON** to start *local* LUQ event tracing and *local* data block logging (enables DBK) for **all** LUQs.
- Enter **TRCLUQ ALLOFF** to stop *local* LUQ event tracing and *local* data block logging (disables DBK) for **all** LUQs.
- To summarize, you may enter a TRCLUQ parameter that requests a specific action to be performed as follows:

Console Commands

TRCLUQ Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> LUQ event tracing for the LUQs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers.
OFF	Deactivate <i>local</i> LUQ event tracing and <i>local</i> data block logging for the LUQs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers.
DBK ON or omitted	Enable <i>local</i> data block logging for the LUQs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers.
DBK OFF	Disable <i>local</i> data block logging for the LUQs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers.
ALLON	Activate all <i>local</i> LUQ event tracing and <i>local</i> data block logging (system wide).
ALLOFF	Deactivate all <i>local</i> LUQ event tracing and <i>local</i> data block logging (system wide).

Example #1: To start *local* LUQ event tracing for all LUQs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
ID=0 IFN=0 LUN=0     <- force all LUQs to be referenced
TRCLUQ [ON]          <- start local event tracing for all LUQs
```

Example #2: To start *local* LUQ event tracing for all the LUQs associated with a TYPE=MCH|XTP REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
RNM=rmtname         <- identify REMOTE
LUN=0                <- operate on MCH and all MCHXs
TRCLUQ [ON]          <- start local event tracing for LUQs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS LU event trace entries (ID=VOPN|VCLS|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCLUQ:

1) HNAS activates with **TRCLUQ OFF** set. There is no equivalent start parameter.

TRCMCH Command - MCH Trace Control (Privileged)

for a specific MCH

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	TRCMCH	[<i>mchname</i>]	C	230
		[{ <u>ON</u> OFF}] [<u>LCL</u> <u>GBL</u>] [ICR { <u>ON</u> OFF}] [ICRF { <u>ON</u> OFF}] [OCR { <u>ON</u> OFF}] [ICLR { <u>ON</u> OFF}] [OCLR { <u>ON</u> OFF}]	C A	114 230

or for a collection of MCHs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCMCH	[{ <u>ON</u> OFF}] [<u>LCL</u> <u>GBL</u>] [ICR { <u>ON</u> OFF}] [ICRF { <u>ON</u> OFF}] [OCR { <u>ON</u> OFF}] [ICLR { <u>ON</u> OFF}] [OCLR { <u>ON</u> OFF}]	A	230
[IFN= <i>minifn</i> [- <i>maxifn</i>]]				

or for all MCHs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCMCH	[{ <u>ALLON</u> <u>ALLOFF</u> }] [<u>GBL</u>] [ICR { <u>ON</u> OFF}] [ICRF { <u>ON</u> OFF}] [OCR { <u>ON</u> OFF}] [ICLR { <u>ON</u> OFF}] [OCLR { <u>ON</u> OFF}]		

This command is used to start (**ON**) or stop (**OFF**) *local* MCH event tracing, to enable *local* (**LCL**) or *global* (**GBL**) logging of MCH Incoming Call Requests (**ICR**), Outgoing Call Requests (**OCR**), Incoming Call Request Failures (**ICRF**), Incoming Clear Requests (**ICLR**) or Outgoing Clear Requests (**OCLR**) for the MCHs identified by the command modifiers (ID=, IFN=, RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* MCH event tracing.

The ICR and OCR operands produce trace messages in SYSPRINT providing detailed information about the call request and PVC SETUP packets that HNAS receives (ICR) and sends (OCR). The output generated (see below for the message format) is affected by the BUILD statement **OPTIONS=ALRMSGTXT=SHORT** parameter. When SHORT is coded, inbound calls result in **NAS7730I (ICR)** or **NAS7731I (OCR)** messages which are sent to SYSPRINT

Console Commands

and to the operator's console. These messages are designed for use by programs that monitor the job log for call request information.

Note: All TRCMCH arguments can be entered at the same time with each one separated by space character. For example, TRCMCH ON LCL ICR OCR. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCMCH ON ON is rejected because ON is duplicated and TRCMCH ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting TRCMCH ON|OFF|...|ICLR|OCLR processing to the named MCH only.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCMCH ON|OFF|...|ICLR|OCLR processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCMCH ON|OFF|...|ICLR|OCLR processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, TRCMCH ON|OFF|INI|...|ICLR|OCLR processing is restricted to the selected PCEs. If **ID=0** is specified, TRCMCH ON|OFF|INI|...|ICLR|OCLR processing is for all PCEs. *The ID= modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCMCH Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
ICR ON	ICR OFF	5
ICR OFF	ICR ON	6
ICRF ON	ICRF OFF	7
ICRF OFF	ICRF ON	8
OCR ON	OCR OFF	9
OCR OFF	OCR ON	10
ICLR ON	ICLR OFF	11
ICLR OFF	ICLR ON	12
OCLR ON	OCLR OFF	13

PARAMETER	CONFLICT	ORDER
OCLR OFF	OCLR ON	14

- Enter **TRCMCH [ON]** to start *local* MCH event tracing for the MCHs identified by the command modifiers. This option provides LU and VC tracing for all sessions on the selected MCHs.
- Enter **TRCMCH OFF** to stop *local* MCH event tracing and *local* data logging (disables ICR, OCR, ICRF, ICLR and OCLR) for the MCHs identified by the command modifiers.

Note: The **TRCMCH** command supports the ICRF, ICR, OCR, ICLR and OCLR arguments to allow tracing of Inbound Call failures (ICRF), all Inbound Calls (ICR), all Outbound Calls (OCR), all Inbound Clears (ICLR) and all Outbound Clears (OCLR). These operators can have *local* or *global* significance depending on whether the LCL or GBL argument is also specified.

- If **GBL** is specified, the ICRF, ICR, OCR, ICLR and/or OCLR trace flags are maintained in the HNAS common area (XFNASWA) and thus affect all MCHs. *Global* ICRF, ICR, OCR, ICLR and/or OCLR trace entries are only logged if all MCHs are also being traced (TRCMCH ALLON is in effect). **GBL is assumed if LCL is not set.**

If you want ICRF, ICR, OCR, ICLR and/or OCLR to have *global* significance, we recommend that you should always enter GBL immediately after the TRCMCH command (e.g., TRCMCH GBL ICR ... OCLR) or set RNM= and ID= to null values.

- If **LCL** is specified, the ICRF, ICR, OCR, ICLR and/or OCLR trace flags are maintained in the MCH control blocks identified by the RNM=*mchname* or ID=*loid-hiid* command modifiers. *Local* ICRF, ICR, OCR, ICLR and/or OCLR trace entries are only logged if the MCH is also being traced (TRCMCH ON is in effect for the MCH). **RNM= or ID= must be set if LCL is specified.**

If you want ICRF, ICR, OCR, ICLR and/or OCLR to have *local* significance, we recommend that you should enter LCL and omit GBL immediately after the TRCMCH command (e.g., TRCMCH LCL ICR ... OCLR) and set RNM= or ID= to a valid value.

- Enter **TRCMCH LCL ICR [ON]** to enable *local* Incoming Call Request logging for the MCHs identified by the command modifiers. Inbound PVC Setup packets will also be traced when **ICR** is entered.
- Enter **TRCMCH LCL ICR OFF** to disable *local* Incoming Call Request logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL ICRF [ON]** to enable *local* Incoming Call Request Failure logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL ICRF OFF** to disable *local* Incoming Call Request Failure logging for the MCHs identified by the command modifiers.

Console Commands

- Enter **TRCMCH LCL OCR [ON]** to enable *local* Outgoing Call Request logging for the MCHs identified by the command modifiers. Outbound PVC Setup packets will also be traced when **OCR** is entered.
- Enter **TRCMCH LCL OCR OFF** to disable *local* Outgoing Call Request logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL ICLR [ON]** to enable *local* Incoming Clear Request logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL ICLR OFF** to disable *local* Incoming Clear Request logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL OCLR [ON]** to enable *local* Outgoing Clear Request logging for the MCHs identified by the command modifiers.
- Enter **TRCMCH LCL OCLR OFF** to disable *local* Outgoing Clear Request logging for the MCHs identified by the command modifiers.

Note: TRCMCH LCL ICR ... OCLR is treated the same as TRCMCH LCL ICR ... TRCMCH LCL OCLR.

- Enter **TRCMCH [GBL] ICR [ON]** to enable *global* Incoming Call Request logging for all MCHs. Inbound PVC Setup packets will also be traced when **ICR** is entered.
- Enter **TRCMCH [GBL] ICR OFF** to disable *global* Incoming Call Request logging for all MCHs.
- Enter **TRCMCH [GBL] ICRF [ON]** to enable *global* Incoming Call Request Failure logging for all MCHs.
- Enter **TRCMCH [GBL] ICRF OFF** to disable *global* Incoming Call Request Failure logging for all MCHs.
- Enter **TRCMCH [GBL] OCR [ON]** to enable *global* Outgoing Call Request logging for all MCHs. Outbound PVC Setup packets will also be traced when **OCR** is entered.
- Enter **TRCMCH [GBL] OCR OFF** to disable *global* Outgoing Call Request logging for all MCHs.
- Enter **TRCMCH [GBL] ICLR [ON]** to enable *global* Incoming Clear Request logging for all MCHs.
- Enter **TRCMCH [GBL] ICLR OFF** to disable *global* Incoming Clear Request logging for all MCHs.
- Enter **TRCMCH [GBL] OCLR [ON]** to enable *global* Outgoing Clear Request logging for all MCHs.

- Enter **TRCMCH [GBL] OCLR OFF** to disable *global* Outgoing Clear Request logging for all MCHs.

Note: TRCMCH GBL ICR ... OCLR is treated the same as TRCMCH GBL ICR ... TRCMCH GBL OCLR.

- Enter **TRCMCH ALLON** to start *global* MCH event tracing. ALLON does not alter the data logging options (ICR, OCR, ICRF, ICLR and OCLR) currently in effect (equivalent to the TRCMCH [ALLON] start parameter).
- Enter **TRCMCH ALLOFF** to stop *global* MCH event tracing. ALLOFF does not alter the data logging options (ICR, OCR, ICRF, ICLR and OCLR) currently in effect (equivalent to the TRCMCH ALLOFF start parameter).

Note: TRCMCH parameters **ICR** and **OCR** now produce expanded trace entries containing formatted inbound and outbound call request packet fields. The expanded information is located in the SYSPRINT output (not SYSCONS) and is only generated when the options are enabled or when **TRCLU** is enabled.

The following is a sample of the information provided in the expanded trace entries, X.25 addresses are limited to 15 decimal digits. The first 32 bytes of facilities and call user data are displayed:

For **TRCMCH ICR**:

Call Request

```
NAS7718T 010.117.056.100(24321) CALL REQ TO MCH MCH1
NAS7798T CALLED: 20360005 CALLING: 262199
NAS7798T FAC-LN: 06 FAC: 42070743 0707
NAS7798T USER DATA: 01000000
```

When **OPTIONS=ALRMSGTXT=SHORT** is coded on build the above 4 messages are replaced by:

```
NAS7730I ED:called-dte-addr ING:calling-dte-addr
CUD:4 bytes FAC:11(length)+6 bytes FAC data MCH:mch-name
IP:ip-addr
```

NAS7730I is sent to SYSPRINT and to the operator's console.

PVC Setup

```
NAS7718T 010.117.056.100(24321) PVCSETUP REQ TO MCH MCH1
NAS7798T PVCSTATUS=00 INIT LCN:NM 01:Serial0/1
RESP LCN:NM 02:SerialMCH1
NAS7798T (SENDER) IN.WIN=4 OUT.WIN=4 IN.PSZ (2**N)=7
OUT.PSZ (2**N)=7
```

For **TRCMCH OCR**:

Call Request

Console Commands

```
NAS7719T OUTBOUND CALL REQ GENERATED FOR LU MCH14001
          PLU=NASCTCP  REMOTE=R2CNOT1
NAS7798T CALLED: 10360003          CALLING: 1
NAS7798T FAC-LN: 06 FAC: 42070743 0202
NAS7798T USER DATA: 5C5C5C5C
```

When **OPTIONS=ALRMSGTXT=SHORT** is coded on build the above 4 messages are replaced by:

```
NAS7731I ED:called-dte-addr      ING:calling-dte-addr
CUD:4-bytes      FAC:length+6 bytes FAC data RMT:rmt-name
LU:lu-name
```

NAS7731I is sent to SYSPRINT and the operator's console.

PVC Setup

```
NAS7719T OUTBOUND PVCSETUP GENERATED FOR LU MCH14001
          PLU=NASCTCP  REMOTE=R2CNOT1
NAS7798T PVCSTATUS=00 INIT LCN:NM 01:SerialMCH1
          RESP LCN:NM 02:Serial0/1
NAS7798T (SENDER) IN.WIN=4 OUT.WIN=4 IN.PSZ (2**N)=7
          OUT.PSZ (2**N)=7
```

Note: The **ICR** trace generates records for all LLC types. The information is displayed is from the call request packet before any HNAS processing (STRIPRTEIN, etc.). The **OCR** trace generates records for LLC0, LLC4, and LLC5. The information displayed is from the call request packet when it is ready for link transfer. SYSPRINT records are generated whether or not TRCPRINT ON has been set. Records are not generated if the print limit (PRTLMT=) has been reached.

- To summarize, you may enter a TRCMCH parameter that requests a specific action to be performed as follows:

TRCMCH Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> MCH event tracing for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
OFF	Deactivate <i>local</i> MCH event tracing and <i>local</i> data logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL ICR ON or omitted	Enable <i>local</i> Incoming Call Request logging and PVC Setup for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL ICR OFF	Disable <i>local</i> Incoming Call Request logging and PVC Setup for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.

PARAMETER	ACTION
LCL ICRF ON or omitted	Enable <i>local</i> Incoming Call Request Failure logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL ICRF OFF	Disable <i>local</i> Incoming Call Request Failure logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL OCR ON or omitted	Enable <i>local</i> Outgoing Call Request and PVC Setup logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL OCR OFF	Disable <i>local</i> Outgoing Call Request and PVC Setup logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL ICLR ON or omitted	Enable <i>local</i> Incoming Clear Request logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL ICLR OFF	Disable <i>local</i> Incoming Clear Request logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL OCLR ON or omitted	Enable <i>local</i> Outgoing Clear Request logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
LCL OCLR OFF	Disable <i>local</i> Outgoing Clear Request logging for the MCHs identified by the ID= and IFN= modifiers or the RNM= modifier.
[GBL] ICR ON or omitted	Enable <i>global</i> Incoming Call Request logging and PVC Setup for all MCHs.
[GBL] ICR OFF	Disable <i>global</i> Incoming Call Request logging and PVC Setup for all MCHs.
[GBL] ICRF ON or omitted	Enable <i>global</i> Incoming Call Request Failure logging for all MCHs.
[GBL] ICRF OFF	Disable <i>global</i> Incoming Call Request Failure logging for all MCHs.
[GBL] OCR ON or omitted	Enable <i>global</i> Outgoing Call Request and PVC Setup logging for all MCHs.
[GBL] OCR OFF	Disable <i>global</i> Outgoing Call Request and PVC Setup logging for all MCHs.
[GBL] ICLR ON or omitted	Enable <i>global</i> Incoming Clear Request logging for all MCHs.
[GBL] ICLR OFF	Disable <i>global</i> Incoming Clear Request logging for all MCHs.
[GBL] OCLR ON or omitted	Enable <i>global</i> Outgoing Clear Request logging for all MCHs.
[GBL] OCLR OFF	Disable <i>global</i> Outgoing Clear Request logging for all MCHs.
ALLON	Activate <i>global</i> MCH event tracing and <i>global</i> data logging (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> MCH event tracing and data logging (system wide).

Example #1: To start *global* MCH event tracing for all MCHs when you are not sure of the current state of tracing within HNAS, enter

Console Commands

<code>TRCALL STOP</code>	<- stop all tracing
<code>TRCMCH ALLON</code>	<- start <i>global</i> MCH event tracing

Example #2: To start *local* MCH event tracing for a specific MCH when you are not sure of the current state of tracing within HNAS, enter

<code>TRCALL STOP</code>	<- stop all tracing
<code>RNM=<i>rmtname</i></code>	<- identify REMOTE
<code>TRCMCH [ON]</code>	<- start <i>local</i> event tracing for MCH <i>rmtname</i>
<code>TRCMCH LCL ICR</code>	<- log Incoming Call Requests for <i>rmtname</i>
<code>TRCMCH LCL OCR</code>	<- log Outgoing Call Requests for <i>rmtname</i>

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS MCH event trace entries (ID=RTMC|RTCR|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCMCH:

- 1) HNAS activates with **TRCMCH ON** set in the absence of the **TRCMCH** start parameter.
- 2) The **TRCMCH [ON]** and **TRCMCH OFF** start parameters perform the same functions as the **TRCMCH ALLON** and **TRCMCH ALLOFF** console commands, respectively, for *global* MCH event tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCMCHX Command - MCH CTCP Trace Control (Privileged)

(changed for V2R2M0)

for a specific MCHX,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[LUNM= <i>sluname</i>]	TRCMCHX	[<i>sluname</i>]	C	230
		[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	C	240

or for the MCHXs on a specific MCH,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	TRCMCHX	[<i>mchname</i>]	C	230
[LUN= <i>minlun</i> [- <i>maxlun</i>]]		[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	C	240

or for a collection of MCHXs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCMCHX	[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	C	240
[IFN= <i>minifn</i> [- <i>maxifn</i>]]				
[LUN= <i>minlun</i> [- <i>maxlun</i>]]				

or for all MCHXs,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCMCHX	[{ <u>ALLON</u> <u>ALLOFF</u> }]	C	220

This command is used to start (**ON**) or stop (**OFF**) *local* MCHX event tracing (GATE control session SLU activity) or to enable *local* data block logging (**DBK**) for the MCHXs identified by the command modifiers (ID=, IFN=, LUN=, RNM=, LUNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* MCHX event tracing (all GATE control session SLU activity).

Note: All TRCMCHX arguments can be entered at the same time with each one separated by space character. For example, TRCMCHX ON DBK ON. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCMCHX ON ON is rejected because ON is duplicated and TRCMCHX ON OFF is rejected because ON and OFF conflict.

Console Commands

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **LUNM=*sluname*** is specified, it overrides the **ID=**, **IFN=**, **LUN=** and **RNM=** values restricting TRCMCHX ON|OFF|DBK processing to the named MCHX (CTCP SLU) only.
- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting TRCMCHX ON|OFF|DBK processing to the named MCH only for the specified **LUN=** values. TRCMCHX ON|OFF|DBK processing will affect the MCHXs on the named MCH only.
- When **LUN=*minlun*[-*maxlun*]** is specified, TRCMCHX ON|OFF|DBK processing is restricted to the selected MCHXs on the selected MCHs. If **LUN=0** is specified, TRCMCHX ON|OFF|DBK processing is for all MCHXs on the selected MCHs.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCMCHX ON|OFF|DBK processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCMCHX ON|OFF|DBK processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, TRCMCHX ON|OFF|DBK processing is restricted to the selected PCEs. If **ID=0** is specified, TRCMCHX ON|OFF|DBK processing is for all PCEs. *The ID= modifier is only used if the RNM= and LUNM= modifiers are not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCMCHX Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
DBK ON	DBK OFF	5
DBK OFF	DBK ON	6

- Enter **TRCMCHX [ON]** to start *local* MCHX event tracing for the MCHXs identified by the command modifiers. This option allows tracing of LU activity associated with selected GATE (LLC4) control sessions. There is an MCHX for each control session LU named by the LUNAME= operand.
- Enter **TRCMCHX OFF** to stop *local* MCHX event tracing and *local* data block logging (disables DBK) for the MCHXs identified by the command modifiers.

- Enter **TRCMCHX DBK [ON]** to enable *local* data block logging for the MCHXs identified by the command modifiers.
- Enter **TRCMCHX DBK OFF** to disable *local* data block logging for the MCHXs identified by the command modifiers.
- Enter **TRCMCHX ALLON** to start *global* MCHX event tracing and *local* data block logging (enables DBK) for all defined MCHXs (equivalent to the TRCMCHX start parameter).
- Enter **TRCMCHX ALLOFF** to stop *global* MCHX event tracing and *local* data block logging (disables DBK) for all defined MCHXs.
- To summarize, you may enter a TRCMCHX parameter that requests a specific action to be performed as follows:

TRCMCHX Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> MCHX event tracing for the MCHXs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers or the LUNM= modifier.
OFF	Deactivate <i>local</i> MCHX event tracing and <i>local</i> data block logging for the MCHXs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers or the LUNM= modifier.
DBK ON or omitted	Enable <i>local</i> data block logging for the MCHXs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers or the LUNM= modifier.
DBK OFF	Disable <i>local</i> data block logging for the MCHXs identified by the ID=, IFN= and LUN= modifiers or the RNM= and LUN= modifiers or the LUNM= modifier.
ALLON	Activate <i>global</i> MCHX event tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> MCHX event tracing (system wide).

Example #1: To start *global* MCHX event tracing for all LUs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
TRCMCHX ALLON       <- start global MCHX event tracing
```

Example #2: To start *local* MCHX event tracing for a specific LU when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
LUNM=sluname       <- identify MCHX LU (CTCP SLU)
```

Console Commands

TRCMCHX [ON] <- start *local* event tracing for MCHX LU *sluname*

Example #3: To start *local* MCHX event tracing for all the MCHXs associated with a TYPE=MCH|XTP REMOTE when you are not sure of the current state of tracing within HNAS, enter

TRCALL STOP <- stop all tracing
RNM=*rmtname* <- identify REMOTE
LUN=0 <- operate on all MCHXs
TRCMCHX [ON] <- start *local* event tracing for MCHXs on *rmtname*

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS MCH event trace entries (ID=RTMC|RTCR|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCMCHX:

- 1) HNAS activates with **TRCMCHX ON** set in the absence of the **TRCMCHX** start parameter.
- 2) The **TRCMCHX [ON]** and **TRCMCHX OFF** start parameters perform the same functions as the **TRCMCHX ALLON** and **TRCMCHX ALLOFF** console commands, respectively, for *global* MCHX event tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCPCE Command - PCE Trace Control (Privileged)

(added for V2R3M0)
(changed for V2R4M0)

for a specific PCE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCPCE	[{ <i>pcestatic</i> <i>pcename</i> }]	A	240
		[{ <u>ON</u> OFF}]	C	230

or for a specific REMOTE

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>rmtname</i>]	TRCPCE	[<i>rmtname</i>]	A	230
		[{ <u>ON</u> OFF}]	A	230

or for a collection of PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCPCE	[{ <u>ON</u> OFF}]	A	230

or for all PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCPCE	[{ <u>ALLON</u> <u>ALLOFF</u> }]	A	230

This command is used to start (**ON**) or stop (**OFF**) *local* PCE event tracing (includes I/O tracing, I/O buffer tracing, I/O data tracing and dispatcher tracing) for the PCEs identified by the command modifiers (ID= or RNM=) or to start (**ALLON**) or stop (**ALLOFF**) *global* PCE event tracing.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When the *pcestatic* (LCLCONS|NASUTIL|PING|TIMER|XOTUTIL|XTPUTIL) or *pcename* argument is provided, it directs TRCPCE processing to the identified PCE. For more information on *pcestatic*/*pcename* processing, please refer to section entitled 'PCE name as a Suffix Command Modifier' on page CONS-10.
- When **RNM=*rmtname*** is specified, it overrides the **ID=** value currently in effect restricting TRCPCE ON|OFF processing to the named REMOTE only.
- When **ID=*minid*[-*maxid*]** is specified, TRCPCE ON|OFF processing is restricted to the selected PCEs. If **ID=0** is specified, TRCPCE ON|OFF processing is for all PCEs. The ID=

Console Commands

modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCPCE Parameter Processing Matrix

PARAMETER	CONFLICT	COMPONENT AFFECTED	ORDER
ON	OFF	<i>pcestatic pcename RNM= ID=</i>	1
OFF	ON	<i>pcestatic pcename RNM= ID=</i>	2
ALLON	ALLOFF	system wide	3
ALLOFF	ALLON	system wide	4

- Enter **TRCPCE [ON]** to start *local* PCE event tracing for the PCEs identified by the command modifiers. *Local* PCE event tracing will be activated for all PCEs if **ID=0** and **RNM=** (null) is specified.

Note: TRCPCE [ON] is treated as though TRCIO [ON], TRCBFR [ON], TRCDATA [ON] and TRCDISP [ON] were entered.

- Enter **TRCPCE OFF** to stop *local* PCE event tracing for the PCEs identified by the command modifiers. *Local* PCE event tracing will be deactivated for all PCEs if **ID=0** and **RNM=** (null) is specified.

Note: TRCPCE OFF is treated as though TRCIO OFF, TRCBFR OFF, TRCDATA OFF and TRCDISP OFF were entered.

- Enter **TRCPCE ALLON** to start *global* PCE event tracing (equivalent to the TRCBFR, TRCDATA, TRCDISP and TRCIO start parameters).

Note: TRCPCE ALLON is treated as though TRCIO ALLON, TRCIO ALLTYPES, TRCBFR ALLON, TRCBFR ALLTYPES, TRCDATA ALLON, TRCDATA ALLTYPES, TRCDISP ALLON and TRCDISP ALLTYPES were entered.

- Enter **TRCPCE ALLOFF** to stop *global* and all *local* PCE event tracing.

Note: TRCPCE ALLOFF is treated as though TRCIO ALLOFF, TRCIO NOTYPES, TRCBFR ALLOFF, TRCBFR NOTYPES, TRCDATA ALLOFF, TRCDATA NOTYPES, TRCDISP ALLOFF and TRCDISP NOTYPES were entered.

- To summarize, you may enter a TRCPCE parameter that requests a specific action to be performed as follows:

TRCPCE Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> PCE tracing for the PCEs identified by the ID= or RNM= modifiers.
OFF	Deactivate <i>local</i> PCE tracing for the PCEs identified by the ID= or RNM= modifiers.
ALLON	Activate <i>global</i> PCE tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> PCE tracing (system wide).

Example #1: To start *global* PCE event tracing for all PCEs when you are not sure of the the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
TRCPCE ALLON        <- start global event tracing
```

Example #2: To start *local* PCE event tracing for a specific PCE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
ID=pceid           <- identify PCE
TRCPCE [ON]         <- start local event tracing for PCE pceid
```

Example #3: To start *local* PCE event tracing for all the PCEs associated with a TYPE=XOT REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
RNM=rmtname        <- identify REMOTE
TRCPCE [ON]         <- start local event tracing for PCEs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS PCE trace entries (ID=1|2|3|4|5|6|7|A|B) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCPCE:

- 1) The TRCPCE ALLON|ALLOFF commands alter the PCE types that currently in effect for *global* PCE I/O, I/O buffer, I/O data and dispatcher tracing.
- 2) HNAS activates with **TRCPCE OFF** set. There is no equivalent start parameter.

Console Commands

TRCPRNT Command - SYSPRINT Trace Control (Privileged)

(changed for V2R2M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCPRNT	[{ <u>ON</u> OFF }]		

This command is used to start (**ON**) or stop (**OFF**) SYSPRINT trace logging. Trace entries are always logged in the HNAS memory resident trace table.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCPRNT Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- Enter **TRCPRNT [ON]** to force trace entries that are logged in the HNAS memory resident trace table to also be written to the SYSPRINT log (if **PRNT ON** is in effect).
- Enter **TRCPRNT OFF** to inhibit writing trace entries to the SYSPRINT log.

Caution: If the number of records written to the SYSPRINT data set reaches the limit specified by the PRTLMT operand on the BUILD definition statement, HNAS will stop logging output. The SYSPRINT data set can be the JES spool or a z/OS, OS/390 or MVS sequential data set. A message will be written to the local console each time 4096 records are lost.

General notes for TRCPRNT:

- 1) HNAS activates with **TRCPRNT OFF** set in the absence of the **TRCPRNT** start parameter.
- 2) The **TRCPRNT [ON]** and **TRCPRNT OFF** start parameters perform the same function as the **TRCPRNT [ON]** and **TRCPRNT OFF** console commands, respectively, for *global* trace print control. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 3) HNAS activates with a number default traces enabled so that potential configuration problems can be captured and reviewed should a problem occur during initial product testing. Please refer to the **TRCLU [ON]**, **TRCLU MINDATA**, **TRCVC [ON]**, **TRCVC MINDATA**, **TRCMCH [ON]** and **TRCMCHX [ON]** console commands which represent the defaults that are set during processing of the **PARM=** start parameter list. If you plan to enable **TRCPRNT ON**, please be aware that added overhead will result from the trace activity. Once your environment has completed initial testing we suggest that you disable the

default traces by specifying the following values in the **PARM=** operand: **TRCLU OFF**, **TRCVC OFF**, **TRCMCH OFF** and **TRCMCHX OFF**.

Console Commands

TRCSUBR Command - Subroutine Call Trace Control (Privileged)

(changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCSUBR	[{ <u>ON</u> OFF }] [{ ALLEVENTS NOEVENTS CONS NETV TCP TMR UTIL XOT XTP }]	A	240

This command is used to start (**ON**) or stop (**OFF**) subroutine call tracing and/or to identify the type(s) of events (**ALLEVENTS|CONS|MCH|NETV|PCE|TCP|VTAM**) for which subroutine call tracing is applicable.

Note: All TRCSUBR arguments can be entered at the same time with each one separated by space character. For example, TRCSUBR ON TCP. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCSUBR ON ON is rejected because ON is duplicated and TRCSUBR ON OFF is rejected because ON and OFF conflict.

- The event list parameters (**ALLEVENTS|CONS|MCH|NETV|PCE|TCP|VTAM**) allow you to control subroutine call tracing for **all** events that HNAS processes. They also allow you to identify specific events for which subroutine calls are to be traced. The **TRCSUBR** start parameter and console command allow an event list to be provided in addition to the normal ON|OFF arguments. Event list values are provided so that subroutine call traces can be filtered by the event currently being processed. This reduces the number of unwanted trace entries being logged.

When TRCSUBR is in effect, every subroutine within HNAS logs a number of trace entries. Some are very useful but others are not really required. What is necessary to eliminate unwanted TRCSUBR entries is the ability to filter subroutine calls based on the event(s) being processed. For example, the TRCPCE command is used to log TCP/IP related events. To coordinate TCP/IP subroutine calls with these events requires filtering TRCSUBR traces for TCP/IP related calls only. Currently, HNAS waits on the following 6 events:

TCP - TCP/IP interrupt completions
VTAM - VTAM interrupt completions
MCH - REMOTE TYPE=MCH service
NETV - NETVIEW interrupt completions
CONS - CONSOLE interrupt completions
PCE - Miscellaneous task service

The TRCSUBR start parameter and console command will accept one or more of these events to be specified so that subroutine call traces are logged only when the selected event(s) are being processed. This means that only subroutine calls associated with the selected event(s) will generate trace entries.

Note: TRCSUBR *eventlist* logic was introduced into 240 via APAR 2400108.

- Subroutine call tracing is handy when used in conjunction with PCE dispatcher and I/O tracing because you can observe the sequence of events that occur before I/O operations are started, during their execution and after their completion.
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCSUBR Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLEVENTS	NOEVENTS	3
NOEVENTS	ALLEVENTS	4
CONS	none	5
MCH	none	6
NETV	none	7
PCE	none	8
TCP	none	9
VTAM	none	10

- Enter **TRCSUBR [ON]** to start subroutine call tracing.
- Enter **TRCSUBR OFF** to stop subroutine call tracing.
- Enter **TRCSUBR ALLEVENTS** to set all events for subroutine call tracing.
- Enter **TRCSUBR NOEVENTS** to reset all events for subroutine call tracing.
- Enter **TRCSUBR {CONS|MCH|NETV|PCE|TCP|VTAM}** to set one or more specific events for subroutine call tracing.

Note: To restrict subroutine call tracing to a specific event or events, for example TCP and VTAM, enter **TRCSUBR NOEVENTS TRCSUBR TCP VTAM**.

- To summarize, you may enter a TRCSUBR parameter that requests a specific action to be performed as follows:

TRCSUBR Action Matrix

PARAMETER	ACTION
ON or omitted	Activate subroutine call tracing.

Console Commands

PARAMETER	ACTION
OFF	Deactivate subroutine call tracing.
ALLEVENTS	Allow subroutine call tracing for all events.
NOEVENTS	Inhibit subroutine call tracing for all events.
CONS	Allow subroutine call tracing for CONSOLE events.
MCH	Allow subroutine call tracing for REMOTE TYPE=MCH related events.
NETV	Allow subroutine call tracing for NETVIEW events (future support).
PCE	Allow subroutine call tracing for PCE (process control) related events.
TCP	Allow subroutine call tracing for TCP/IP events.
VTAM	Allow subroutine call tracing for VTAM events.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS subroutine call trace entries (ID=8) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCSUBR:

- 1) HNAS activates with **TRCSUBR OFF** set in the absence of the **TRCSUBR** start parameter.
- 2) The **TRCSUBR [ON]** and **TRCSUBR OFF** start parameters perform the same function as the **TRCSUBR [ON]** and **TRCSUBR OFF** console commands, respectively, for *global* subroutine call tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.
- 3) **ON** is assumed if TRCSUBR is entered with no argument.
- 4) If **NOEVENTS** is in effect when **ON** is set, **ALLEVENTS** is forced.

TRCTASK Command - Task WAIT/POST Trace Control (Privileged)

(new for V2R1M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCTASK	[{ <u>ON</u> OFF }]	N	210

This command is used to start (**ON**) or stop (**OFF**) task WAIT/POST tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCTASK Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- Task WAIT/POST tracing is handy when used in conjunction with other HNAS tracing because you can observe the frequency of HNAS main task dispatching.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS task WAIT trace entries (ID=E) and POST trace entries (ID=F) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCTASK:

- HNAS activates with **TRCTASK OFF** set in the absence of the **TRCTASK** start parameter.
- The **TRCTASK [ON]** and **TRCTASK OFF** start parameters perform the same function as the **TRCTASK [ON]** and **TRCTASK OFF** console commands, respectively, for *global* task tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

Console Commands

TRCTRAP Command - Trace Trap Suspension Control (Privileged)

(added for V2R1M0)

(changed for V2R3M0)

(changed for V2R4M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCTRAP	[{ { SUSP SUSPEND } { RSME RESUME } }]	A	240
		[{ SNAP RSMESNAP }]	A	230
		[RSMEEEXEC]	N	240
		[RSMEALL]		
		[SHOW]		
		[ALRMLIST={ ? * (id1/dat1/sod1, ..., idn/datn/sodn) }]	C	240
		[RCVLIST={ ? * (prot1 pkt1, ..., protn pktn) }]		
		[XMTLIST={ ? * (prot1 pkt1, ..., protn pktn) }]		
		[TRAPACTION={ ? * ALL NONE ({ SUSP NOSUSP }, { SNAP NOSNAP }, EXEC=ddname)]	N	240

This command is used to suspend active tracing (**SUSP|SUSPEND**), resume suspended tracing (**RSME|RESUME**), take a snapshot dump (**SNAP**), allow another snapshot dump after a trace trap 'hit' (**RSMESNAP**), allow another command list execution after a trace trap 'hit' (**RSMEEEXEC**), resume suspended tracing, allow another snapshot dump and allow another command list execution after a trace trap hit (**RSMEALL = RSME + RSMESNAP + RSMEEEXEC**), display all trace trap parameters that are currently active (**SHOW**), set or display specific trace trap parameters that will be in effect (**ALRMLIST=**, **RCVLIST=** or **XMTLIST=**) and/or set the action to be taken on a trace trap hit (**TRAPACTION=**).

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCTRAP Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ALRMLIST=*	none	1
ALRMLIST= <i>list</i>	none	2

PARAMETER	CONFLICT	ORDER
RCVLIST=*	none	3
RCVLIST= <i>list</i>	none	4
XMTLIST=*	none	5
XMTLIST= <i>list</i>	none	6
TRAPACTION=*	none	7
TRAPACTION= <i>list</i>	none	8
ALRMLIST=?	none	9
RCVLIST=?	none	10
XMTLIST=?	none	11
SUSP SUSPEND	RSME RESUME	12
RSME RESUME	SUSP SUSPEND	13
SNAP	RSMESNAP RSMEALL	14
RSMESNAP RSMEALL	SNAP	15
RSMEEXEC	none	16
RSMEALL	SNAP	17

Trap Control Commands

- Enter **TRCTRAP SUSP** to manually suspend active tracing.
- Enter **TRCTRAP RSME** to resume tracing that has been suspended.
- Enter **TRCTRAP SNAP** to manually take a snapshot dump which will be logged in SYSPRINT.
- Enter **TRCTRAP RSMESNAP** to allow another snapshot dump is to be taken after one was triggered as the result of a trace trap hit.
- Enter **TRCTRAP RSMEEXEC** to allow another command list to be executed after one was triggered as the result of a trace trap hit.
- Enter **TRCTRAP RSMEALL** to resume suspended tracing, allow another snapshot dump to be taken and allow another command list to be executed after they were triggered as the result of a trace trap hit.

Note: RSMESNAP|RSMEALL is not required after a manual SNAP dump but is required when a SNAP dump occurs as the result of a trap hit.

- Enter **TRCTRAP SHOW** to display all trace trap parameters currently in effect (treated the same as ALRMLIST=?, RCVLIST=?, XMTLIST=? and TRAPACTION=?).

Console Commands

Note: In addition to the list display produced by TRCTRAP ALRMLIST=?, TRCTRAP RCVLIST=?, TRCTRAP XMTLIST=?, TRCTRAP TRAPACTION=? or TRCTRAP SHOW, the following trace state information is displayed:

```
TRACE STATE: IDLE          <- logging inactive
              LOGGING      <- logging active
              SUSPENDED BY COMMAND <- logging suspended
              SUSPENDED BY TRAP   <- logging suspended
```

Trap Filtering Overview

The ALRMLIST=, RCVLIST= and/or XMTLIST= command parameters are used, respectively, to specify a list of alarm message identifiers and optional embedded data, a list of partial or complete receive packet data and/or a list of partial or complete transmit packet data that will be used as trapping parameters in order to automatically suspend HNAS internal tracing when any list entry is detected.

In many cases, the only way to resolve a problem is to run HNAS traces. However, sometimes it is difficult to capture the cause of a problem in the HNAS internal trace table when tracing has to be stopped manually. If a problem is intermittent, TRCPRNT (SYSPRINT trace logging) is not a viable option because it can create an inordinate amount of SYSPRINT and consume valuable CPU cycles. Internal tracing is the next best option but it must be stopped as soon as possible after the problem has occurred. This can be difficult and, in some cases, may even be impossible.

To circumvent delays inherent with manual intervention, HNAS has been modified to accept the TRCTRAP= configuration operand and TRCTRAP console command. These facilities provide the ability to suspend internal tracing (and TRCPRNT) based on an alarm message ID match (refined by optional embedded data matching), an input packet match or an output packet match. Multiple alarm IDs and packets may be specified so that a collection of values may be monitored (trapped).

Once internal trace and TRCPRNT activity is suspended (the NAS0050A message generated), HNAS must be shutdown with **QY/password** so that the internal trace table can be formatted. When SUSP is specified as one of the TRAPACTIONs, the trace is suspended (frozen) when the trap is triggered so HNAS need not be shutdown immediately but can be shutdown at your convenience.

If the trap was performed with TRCPRNT enabled and SYSPRINT is the JES spool (SYSOUT=* for example), you can use SDSF to save the SYSPRINT to a dataset so that it can be sent to us for analysis. When saving SYSPRINT to a dataset, DCB parameters of RECFM=FBA, LRECEL=133 and BLKSIZE=3990 should be used.

If the trap was performed with TRCPRNT enabled and SYSPRINT is already a dataset, the SYSPRINT file can be manually switched so that the current captured trace can be sent to us for analysis (see **PRNT CLOSE|OPEN ddname** or **PRNT CLSOPN ddname** console command for additional information on HNAS SYSPRINT dataset switching). This will allow you to send us the closed SYSPRINT file without having to shutdown HNAS. If multiple

SYSPRINT datasets are used, make sure that DISP=SHR is specified for all so that they can be accessed by ISPF or another program (like IEBCOPY or IEBGENER). As with the JES spool, SYSPRINT datasets should use DCB parameters of RECFM=FBA, LRECEL=133 and BLKSIZE=3990.

Trap Alarm Filtering Commands

Enter TRCTRAP ALRMLIST=(*id1/dat1/sod1*,...,*idn/dan/sodn*) to set trap alarm filter IDs with optional embedded data.

ALRMLIST=(*list*) specifies a list of trap alarm filter IDs that when detected will cause the TRAPCTIONS to be automatically executed. If optional embedded data is supplied, an alarm ID match will not invoke the TRAPCTIONS unless there is also a match on the supplied data.

You may specify from 1 to 16 *idi* values (e.g, NAS1001I). Wildcard characters (*) are also accepted. Any character in a wildcard position is considered a matched character.

If embedded data (*dati*) is supplied, **it must be enclosed in quotes if it contains spaces or forward slashes (/)**. The specified data, which can be from 1 to 70 characters in length, is used to further restrict the message search to specific data content. For example, if *idi*=NAS7707W and *dati*=STATUS=0C are given, the TRAPCTIONS will not be invoked unless the alarm ID is NAS7707W and the message contains the text string STATUS=0C. This message is issued when PVC Setup fails. For these *idi* and *dati* values, The ALRMLIST syntax would be ALRMLIST=(NAS7707W/STATUS=0C).

Note: If *dati* does not contain spaces or forward slashes, it does not have to be specified within quotes, but can be if you wish. ABCDEF and 'ABCDEF' are treated the same.

Note: *dati* may not include embedded quotes. For example, ABC'DEF or ABC"DEF or 'ABC'DEF' or 'ABC"DEF' are not permitted.

To reduce the search time for embedded data, you can also specify a start of data offset (**sodi**) which can range from 0 to 128. The start of data offset allows the embedded data search to start at a specific offset within the message which reduces CPU utilization when looking for a match. The *sodi* value is relative to the first character of the message, that is, the beginning of the message ID (NASnnnnns). If no *sodi* value is supplied, the *dati* search starts at the beginning of the message. If the *sodi* value plus the *dati* length exceeds the message length (which implies that *dati* cannot be in the message), a trap hit is assumed for the message ID only. As an example, the NAS7707W message has the following form:

```

      1           2           3           4           5           6           7           8
0123456789012345678901234567890123456789012345678901234567890123456789012345678901
NAS7707W XOT PVC SETUP FROM 010.117.056.100(29880) CAN'T START SESSION. STATUS=0C

```

To reduce the STATUS=0C search time within the NAS7707W message, a *sodi* offset value of 73 would be used: ALRMLIST=(NAS7707W/STATUS=0C/73).

Note: Logic to accept *dati* as a quoted string ('*dati*') was introduced into 240 by APAR 2400108. Prior to this APAR, quoted strings were not permitted for *dati*. If *dati* contained a

Console Commands

forward slash (/), the slash would be treated as a delimiter making the data that follows it being treated as the *sodf* suboperand. This would cause the entire ALRMLIST value to be ignored and an error condition to be set. For example, when the following TRCTRAP console command was entered:

```
TRCTRAP ALRMLIST=(NAS3799I/DIAG=000/195)
```

the following error message was issued and the request was rejected:

```
NASC532E PARAMETER DATA INVALID: IAG=000/195) . . . ,  
      TRCTRAP COMMAND ABORTED
```

This occurred because the *datf* value DIAG=000/195 contained a forward slash making the 195 that follows the slash treated as a *sodf* value. Since 195 is too large for a *sodf* value, the command was rejected.

Effective with APAR 2400108, the BUILD TRCTRAP operand processor and the TRCTRAP console command processor will now accept the *datf* suboperand of the ALRMLIST operand as a quoted string so that *all* data within the string is treated as data. This includes spaces, forward slashes and so on. For the ALRMLIST operand described above, the following is now allowed:

```
TRCTRAP ALRMLIST=(NAS3799I/'DIAG=000/195')
```

In this case, the forward slash in DIAG=000/195 is no longer treated as an suboperand separator but as part of the message data.

- Enter TRCTRAP ALRMLIST=* to force the trap alarm filter array to be cleared. The array count is set to zero and all trap alarm filter IDs are set to null values.
- Enter TRCTRAP ALRMLIST=? to display the trap alarm filter IDs that are currently in effect. The following is example of the information produced by the TRCTRAP ALRMLIST=? command.

```
ALRMLIST=NAS3 ****  
      NAS*****
```

Note: The ALRMLIST= parameter of the TRCTRAP command should not be confused with the FILTER= parameter of the ALARM command. While they both list alarm IDs in a similar fashion, their functions are completely independent.

Trap Packet Filtering Commands

- Enter TRCTRAP RCVLIST=(*prot1*||*pkt1*,...,*protn*||*pktn*) or TRCTRAP XMTLIST=(*prot1*||*pkt1*,...,*protn*||*pktn*), as appropriate, to

supply a list of trap packet data filters that when detected will cause the TRAPACTIONs to be automatically executed.

You may specify **proti**||**pkti** values in the RCVLIST= and XMTLISTS= parameters. The protocol value (**proti**) must be 00 for XTP or 04 for XOT. The packet data (**pkti**) can be from 1 to n hex bytes in length. The framing characters X" must be omitted. All ones (FF) are accepted as wildcards. Any value in a wildcard byte position is considered a match. Data is compared only for the length of the packet (n) you specify starting with the packet type byte.

A maximum of 512 bytes of protocol and packet data may be specified for the RCVLIST= and XMTLIST= suboperands which include a length byte (n) for each packet.

Note: PAD sessions operating with non-space parity will encounter data mismatches with the filter list when non-qualified data is specified. You may specify the same data with different parity settings as required.

- Enter **TRCTRAP RCVLIST=*** or **TRCTRAP XMTLIST=***, as appropriate, to force the corresponding trap packet filter array to be cleared. The corresponding array count is set to zero and all trap packet filters are set to zero values.
- Enter **TRCTRAP RCVLIST=?** or **TRCTRAP XMTLIST=?**, as appropriate, to display the trap packet filters that are currently in effect. The following is example of the information produced by the `TRCTRAP RCVLIST=?` command.

```
RCVLIST=041B0502
        041309A5
```

Note: A match on any value in the ALRMLIST=, RCVLIST= or XMTLIST= operands will cause the TRAPACTIONs to be automatically executed. The first match in any of these operands is the winner. Multiple operands with multiple values are provided to allow for the greatest flexibility.

Trap Filtering Action Commands

- Enter **TRCTRAP TRAPACTION=(ALL|NONE|{SUSP|NOSUSP},{SNAP|NOSNAP},EXEC=*ddname*)** to specify the action to be taken on a trap hit. The TRAPACTION= subparameter is very handy when you are unable to capture the cause of certain problems because systems operation is automated or unattended. Many times it is difficult and sometimes impossible to trap an error and SHUTDOWN HNAS before debugging control block information is lost. This may be the case even when operations personnel are present and is certainly the case when no one is around. The TRAPACTION= suboperand provides functionality that eliminates the need for an operator initiated SHUTDOWN or a forced ABEND in order to collect additional diagnostic information.
- **TRAPACTION=SUSP**, which is the default trace trap action, will cause HNAS tracing and SYSPRINT trace logging to be suspended when a trace trap hit occurs.
- **TRAPACTION=SNAP** will cause a snapshot of all HNAS control blocks and trace entries to be logged in SYSPRINT (SNAP dump) when a trace trap hit occurs.

Console Commands

- **TRAPACTION=EXEC=ddname** will cause the command list identified by the specified *ddname* to be executed when a trace trap hit occurs. The following is a sample command list that can be provided via **TRAPACTION=EXEC=ddname**:

```
* THIS IS A SAMPLE CONSOLE COMMAND LIST FILE. COMMENTS CAN
* BE SUPPLIED THAT START WITH '*' OR ';' IN RECORD COLUMN 1.
* COMMENTS ON INDIVIDUAL LINES CAN BE SUPPLIED THAT START
* WITH ';'. CONSOLE COMMANDS WILL BE EXTRACTED FROM EACH
* RECORD FROM THE FIRST NON-BLANK CHARACTER TO THE LAST
* NON-BLANK CHARACTER ON EACH LINE. THE SEARCH FOR THE
* FIRST NON-BLANK CHARACTER IS EXECUTED FOR NON-COMMENT
* RECORDS ONLY (*|; IS NOT IN CC1). THE SEARCH FOR THE
* LAST NON-BLANK CHARACTER IS AFFECTED AFTER THE LINE
* COMMENT STARTING DELIMITER (;) IS FOUND.
* |<-- FIRST NON-BLANK
* |
* |           |<----- LAST NON-BLANK
* |           |
* V           V
TRCTRAP SUSP      ; 1ST QUEUED COMMAND TO SUSPEND TRACING
TRCTRAP SNAP      ; 2ND QUEUED COMMAND TO TAKE A SNAP DUMP
TRCTRAP RSMEALL   ; 3RD QUEUED COMMAND TO RESUME TRACE TRAPPING
```

The SYSPRINT log now contains the trapped event and a new trap has been started. For more information on command list processing, see Input Rules, Command Lists on page CONS-9 and the EXEC command description on page CONS-139.

- **TRAPACTION=NONE** prevents any action from being taken when a trace trap hit occurs. This effectively disables the trap function until a real trap action is provided. **TRAPACTION=NONE** is the same as **TRAPACTION=(NOSUSP,NOSNAP,EXEC=)**.
- **TRAPACTION=ALL** will cause tracing and SYSPRINT logging to be suspended and a SNAP dump to be taken when a trace trap hit occurs. **TRAPACTION=ALL** is the same as **TRAPACTION=(SUSP,SNAP)**. **TRAPACTION=ALL** does not also include EXEC because a *ddname* argument is required for EXEC.

Note: If multiple actions are required when a trap hit occurs, all must be specified in the **TRAPACTION=** operand. For example, if tracing and SYSPRINT logging are to be suspended and a SNAP dump is to be taken on a trap hit, specify **TRCTRAP TRAPACTION=ALL** or **TRCTRAP TRAPACTION=(SUSP,SNAP)**. If a single action is to be performed when a trap hit occurs, specify only that action for the **TRAPACTION=** operand.

Note: If a trace trap hit occurs and the specified action(s) are taken, a subsequent trace trap hit will not repeat the action(s) until the associated resume function is performed, that is, until the **TRCTRAP RSME**, **TRCTRAP RSMESNAP**, **TRCTRAP RSMEEEXEC** or **TRCTRAP RSMEALL** command is entered.

Note: When multiple trap actions are specified, they are processed in the following order:

- 1) SUSP
- 2) SNAP

3) EXEC *ddname*

- Enter **TRCTRAP TRAPACTION=*** to set the trace trap actions to be set to their off state. Specifying TRAPACTION=* is the same as specifying TRAPACTION=(NOSUSP,NOSNAP,EXEC=) or TRAPACTION=NONE.
- Enter **TRCTRAP TRAPACTION=?** to display the trap actions that are currently in effect. The following is example of the information produced by the TRCTRAP TRAPACTION=? command.

```
TRAPACTION=SUSP
      NOSNAP
      EXEC=CMDLIST1
```

Example #1: Trap multiple events:

```
TRCTRAP ALRMLIST=(NAS3701W, <- LU ACB open failed issued
                  NAS3798I) <- LU starting session issued
RCVLIST=(041B0502, <- Reset 05/02 received
          041309A5, <- Clear 09/A5 received
          04F1FFFF) <- any Diag packet received
XMTLIST=(041BFFFF, <- any Reset packet sent
          0413FFFF) <- any Clear packet sent
```

Example #2: Trap PAD logon request:

```
TRCTRAP RCVLIST=(04FF6CA063F0, <- 1 cp (LC even)
                 04FFEC20E370, <- 1 cp (LC odd)
                 04FF6C206370, <- 1 cp (LC none)
                 04FFCCA0C350, <- L CP (UC even)
                 04FF4C2043D0, <- L CP (UC odd)
                 04FF4C204350) <- L CP (UC none)
```

Example #3: Trap QLLC Terminate-Self PIU:

```
TRCTRAP RCVLIST=(04FF2C0000FFFFFFFF0B8000010683) <- TERM-SELF
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

General notes for TRCTRAP:

- 1) The current tracing parameters are not altered when tracing is suspended. To restart trace logging, you need to issue the **TRCTRAP RSME** or **TRCALL RSME** console command.
- 2) When tracing is suspended, **TRCPRNT** trace entry logging in SYSPRINT is also suspended.

Console Commands

- 3) Since **TRCTRAP** processing is global (not directly associated with enabled trace options), it is important to have the appropriate traces activated so that the events leading up to the suspended trace will be captured in the internal trace table. For example, if a RCVLIST= or XMTLIST= is provided, TRCVC MAXDATA or TRCVC MINDATA should be active.
- 4) When a **TRCTRAP** hit occurs, a NAS0050A messages is issued and the specified TRACTION is taken.
- 5) **TRCTRAP** logic was added primarily as a tool for Comm-Pro in order to provide a way of simplifying problem diagnosis. In the past, Comm-Pro had to develop custom modifications to trap certain events. The TRCTRAP logic now standardizes this processing. In most cases, Comm-Pro will be advising customers on what to enter for TRCTRAP parameters rather than giving them a custom trap modification. This description is intended to provide some information about the TRCTRAP function. We do not, however, expect customers to use TRCTRAP functions without Comm-Pro involvement.

TRCVC Command - VC Trace Control (Privileged)

(changed for V2R2M0)

for the VCs on a specific MCH,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM=mchname]	TRCVC	[mchname]	C	230
[VCN=minvcn [-maxvcn]]		[{ON OFF} [DBK {ON OFF} [{MAXDATA MINDATA NODATA}]]	C C A	220 240 220

or for a collection of VCs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID=minid [-maxid]]	TRCVC	[{ON OFF}] [DBK {ON OFF}] [{MAXDATA MINDATA NODATA}]	C C A	220 240 220
[IFN=minifn [-maxifn]]				
[VCN=minvcn [-maxvcn]]				

or for all VCs,

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCVC	[{ALLON ALLOFF}] [{MAXDATA MINDATA NODATA}]	C A	220 220

This command is used to start (**ON**) or stop (**OFF**) *local* VC event tracing or to enable *local* data block logging (**DBK**) for the VCs identified by the command modifiers (ID=, IFN=, VCN=, RNM=), to start (**ALLON**) or stop (**ALLOFF**) *global* VC event tracing or to control the amount of data (**MAXDATA**|**MINDATA**|**NODATA**) that is logged for the VCs currently being traced.

Note: All TRCVC arguments can be entered at the same time with each one separated by space character. For example, TRCVC ON MAXDATA. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCVC ON ON is rejected because ON is duplicated and TRCVC ON OFF is rejected because ON and OFF conflict.

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **RNM=mchname** is specified, it overrides the **ID=** and **IFN=** values restricting TRCVC ON|OFF|DBK processing to the named MCH only for the specified **VCN=** values. TRCVC ON|OFF|DBK processing will affect the VCs on the named MCH only.
- When **VCN=minvcn[-maxvcn]** is specified, TRCVC ON|OFF|DBK processing is restricted to the selected VCs on the selected MCHs. If **VCN=0** is specified, TRCVC ON|OFF|DBK pro-

Console Commands

cessing is for all VCs on the selected MCHs.

- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCVC ON|OFF|DBK processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCVC ON|OFF|DBK processing is for all MCHs on the selected PCEs.
- When **ID=*minid*[-*maxid*]** is specified, TRCVC ON|OFF|DBK processing is restricted to the selected PCEs. If **ID=0** is specified, TRCVC ON|OFF|DBK processing is for all PCEs. *The ID= modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCVC Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
DBK ON	DBK OFF	5
DBK OFF	DBK ON	6
MAXDATA	MINDATA NODATA	7
MINDATA	MAXDATA NODATA	8
NODATA	MINDATA MAXDATA	9

- Enter **TRCVC [ON]** to start *local* VC event tracing for the VCs identified by the command modifiers.
- Enter **TRCVC OFF** to stop *local* VC event tracing and *local* data block logging (disables DBK) for the VCs identified by the command modifiers.
- Enter **TRCVC DBK [ON]** to enable *local* data block logging for the VCs identified by the command modifiers. This is equivalent to MAXDATA on a VC basis rather than a system wide basis.
- Enter **TRCVC DBK OFF** to disable *local* data block logging for the VCs identified by the command modifiers. This is equivalent to MAXDATA on a VC basis rather than a system wide basis.
- Enter **TRCVC ALLON** to start *global* VC event tracing (equivalent to the TRCVC start parameter).

- Enter **TRCVC ALLOFF** to stop *global* and *local* VC event tracing and *local* data block logging (disables DBK) for all defined VCs.
- Enter **TRCVC MAXDATA** to enable *global* data block logging with a maximum amount of data being logged for the VCs currently being traced.
- Enter **TRCVC MINDATA** to enable *global* data block logging with a minimum amount of data being logged for the VCs currently being traced.
- Enter **TRCVC NODATA** to disable *global* data block logging for the VCs currently being traced. This prevents any additional data being logged when a VC event trace entry is recorded.

Note: For HNAS release V2R2M0, the MAXDATA, MINDATA and NODATA parameters also started event tracing for all VCs defined to HNAS. This precluded their use to control data logging for a single VC. For this reason, the VC event start function has been removed from these parameters. Global VC event tracing must now be started and stopped using the ALLON and ALLOFF parameters, respectively.

- To summarize, you may enter a TRCVC parameter that requests a specific action to be performed as follows:

TRCVC Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> VC event tracing for the VCs identified by the ID=, IFN= and VCN= modifiers or the RNM= and VCN= modifiers.
OFF	Deactivate <i>local</i> VC event tracing and <i>local</i> data block logging for the VCs identified by the ID=, IFN= and VCN= modifiers or the RNM= and VCN= modifiers.
DBK or omitted	Enable <i>local</i> data block logging for the VCs identified by the ID=, IFN= and VCN= modifiers or the RNM= and VCN= modifiers.
DBK OFF	Disable <i>local</i> data block logging for the VCs identified by the ID=, IFN= and VCN= modifiers or the RNM= and VCN= modifiers.
ALLON	Activate <i>global</i> VC event tracing (system wide).
ALLOFF	Deactivate <i>global</i> and all <i>local</i> VC event tracing (system wide).
MAXDATA	Activate <i>global</i> data block logging with a maximum amount of data being logged for the VCs currently being traced.
MINDATA	Activate <i>global</i> data block logging with a minimum amount of data being logged for the VCs currently being traced.
NODATA	Deactivate <i>global</i> data block logging for the VCs currently being traced.

Example #1: To start *global* VC event tracing for all VCs when you are not sure of the current state of tracing within HNAS, enter

Console Commands

```
TRCALL STOP          <- stop all tracing
TRCVC ALLON          <- start global VC event tracing
```

Example #2: To start *local* VC event tracing for a specific VC when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
VCN=vcn             <- identify VC
TRCVC [ON]           <- start local event tracing for VC vcn
```

Example #3: To start *local* VC event tracing for all the VCs associated with a TYPE=MCH|XTP REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
RNM=rmtname         <- identify REMOTE
VCN=0                <- operate on all VCs
TRCVC [ON]           <- start local event tracing for VCs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS VC event trace entries (ID=LSRS|LSCL|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCVC:

- 1) Entering **TRCVC OFF** will terminate *local* event tracing and *local* data block (**DBK**) logging.
- 2) Entering **TRCVC ON|OFF|DBK|ALLON|ALLOFF** will not alter the global data block logging state (**MAXNDATA|MINDATA|NODATA**).
- 3) HNAS activates with **TRCVC ON** and **TRCVC MINDATA** set in the absence of the **TRCVC** start parameter.
- 4) The **TRCVC [ON]**, **TRCVC OFF**, **TRCVC MAXDATA**, **TRCVC MINDATA** and **TRCVC NODATA** start parameters perform the same functions as the **TRCVC ALLON**, **TRCVC ALLOFF**, **TRCVC MAXDATA**, **TRCVC MINDATA** and **TRCVC NODATA** console commands, respectively, for *global* VC event tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

TRCVCQ Command - MCH VC Queue Trace Control (Privileged)

for the VCQ on a specific MCH

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[RNM= <i>mchname</i>]	TRCVCQ	[<i>mchname</i>]	c	230
		[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	c	240

or for a collection of VCQs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID= <i>minid</i> [- <i>maxid</i>]]	TRCVCQ	[{ <u>ON</u> OFF}] [DBK { <u>ON</u> OFF}]	c	240
[IFN= <i>minifn</i> [- <i>maxifn</i>]]				

or for all VCQs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCVCQ	[{ <u>ALLON</u> <u>ALLOFF</u> }]	c	230

This command is used to start (**ON**) or stop (**OFF**) *local* VC event tracing or to initiate *local* data block logging (**DBK**) as new VC connections are established for the MCHs identified by the command modifiers (ID=, IFN=, RNM=). *Local* VC event tracing and *local* data block logging for **all** VCQs can be started (**ALLON**) and stopped (**ALLOFF**). This command is provided so that VC tracing can be initiated as soon as a VCB is added to its active VC queue.

Note: All TRCVCQ arguments can be entered at the same time with each one separated by space character. For example, TRCVCQ ON DBK ON. An error message will be generated if duplicate or conflicting arguments are entered. For example, TRCVCQ ON ON is rejected because ON is duplicated and TRCVCQ ON OFF is rejected because ON and OFF conflict.

Note: VCQ=MCHVCQ for all LLC types (contained in MCH).

Note: For additional information on the meaning of *local* and *global*, please refer to the Terminology section located on page CONS-3 of this document.

- When **RNM=*mchname*** is specified, it overrides the **ID=** and **IFN=** values restricting TRCVCQ processing to the named MCH only. TRCVCQ processing will affect the VCQ on the named MCH only.
- When **IFN=*minifn*[-*maxifn*]** is specified (XTP only), TRCVCQ processing is restricted to the selected MCHs on the selected PCEs. If **IFN=0** is specified, TRCVCQ processing is for all MCHs on the selected PCEs.

Console Commands

- When **ID=*minid*[-*maxid*]** is specified, TRCVCC processing is restricted to the selected PCEs. If **ID=0** is specified, TRCVCC processing is for all PCEs. *The ID= modifier is only used if the RNM= modifier is not set. If ID= is also null, the command is rejected.*
- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCVCC Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2
ALLON	ALLOFF	3
ALLOFF	ALLON	4
DBK ON	DBK OFF	5
DBK OFF	DBK ON	6

- Enter **TRCVCC [ON]** to start *local* VCQ event tracing for the VCQs identified by the command modifiers.
- Enter **TRCVCC OFF** to stop *local* VCQ event tracing and *local* data block logging (disables DBK) for the VCQs identified by the command modifiers.
- Enter **TRCVCC DBK [ON]** to enable *local* data block logging for the VCQs identified by the command modifiers.
- Enter **TRCVCC DBK OFF** to disable *local* data block logging for the VCQs identified by the command modifiers.
- Enter **TRCVCC ALLON** to start *local* VCQ event tracing and *local* data block logging (enables DBK) for **all** VCQs.
- Enter **TRCVCC ALLOFF** to stop *local* VCQ event tracing and *local* data block logging (disables DBK) for **all** VCQs.
- To summarize, you may enter a TRCVCC parameter that requests a specific action to be performed as follows:

TRCVCC Action Matrix

PARAMETER	ACTION
ON or omitted	Activate <i>local</i> VCQ event tracing for the VCQs identified by the ID= and IFN= modifiers or the RNM= modifier.

PARAMETER	ACTION
OFF	Deactivate <i>local</i> VCQ event tracing and <i>local</i> data block logging for the VCQs identified by the ID= and IFN= modifiers or the RNM= modifier.
DBK or omitted	Enable <i>local</i> data block logging for the VCQs identified by the ID= and IFN= modifiers or the RNM= modifier.
DBK OFF	Disable <i>local</i> data block logging for the VCQs identified by the ID= and IFN= modifiers or the RNM= modifier.
ALLON	Activate all <i>local</i> VCQ event tracing and <i>local</i> data block logging (system wide).
ALLOFF	Deactivate all <i>local</i> VCQ event tracing and <i>local</i> data block logging (system wide).

Example #1: To start *local* VCQ event tracing for all VCQs when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
ID=0 IFN=0          <- force all VCQs to be referenced
TRCVCQ [ON]         <- start local event tracing for all VCQs
```

Example #2: To start *local* VCQ event tracing for all the VCQs associated with a TYPE=MCH|XTP REMOTE when you are not sure of the current state of tracing within HNAS, enter

```
TRCALL STOP          <- stop all tracing
RNM=rmtname         <- identify REMOTE
TRCVCQ [ON]         <- start local event tracing for VCQs on rmtname
```

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS VC event trace entries (ID=LSRS|LSCL|...) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCVCQ:

1) HNAS activates with **TRCVCQ OFF** set. There is no equivalent start parameter.

Console Commands

TRCWTO Command - XFWTO Call Trace Control (Privileged)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	TRCWTO	[{ <u>ON</u> OFF }]		

This command is used to start (**ON**) or stop (**OFF**) XFWTO subroutine call tracing.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

TRCWTO Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON	OFF	1
OFF	ON	2

- XFWTO subroutine call tracing allows alert message requests to be logged in the HNAS internal trace table. This functionality is valuable for remote problem diagnosis when the trace table can be examined by a remote console operator.

Warning: HNAS tracing requires additional computing cycles which can influence HNAS performance.

A description of HNAS subroutine call trace entries (ID=80) can be found in the Trace Table Entries section of this product documentation.

General notes for TRCWTO:

- HNAS activates with **TRCWTO OFF** set in the absence of the **TRCWTO** start parameter.
- The **TRCWTO [ON]** and **TRCWTO OFF** start parameters perform the same function as the **TRCWTO [ON]** and **TRCWTO OFF** console commands, respectively, for *global* WTO request tracing. For more information on HNAS start parameters, refer to Chapter 2 of the HNAS Guide and Reference documentation.

V or VARY Command - Vary Resource State (Privileged)

(changed for V2R2M0)

(changed for V2R3M0)

(changed for V2R4M0)

for a specific SLU resource

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LUNM=sluname	V [ARY]	[sluname]	N	240
		[LU]	N	240
		[{ON <u>ACT</u> <u>ACTIVE</u> } {OFF INACT INACTIVE}]	N	112
		[{FORCE}]	A	230

or for the PCEs associated with a specific REMOTE resource

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
RNM=rmtname	V [ARY]	[rmtname]	C	220
		[RMT]	C	230
		[{ON <u>ACT</u> <u>ACTIVE</u> } {OFF INACT INACTIVE}]	N	112
		[{FORCE}]	A	230

or for the PCEs associated with a specific LOCAL resource

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
LNm=lclname	V [ARY]	[lclname]	C	230
		[LCL]	C	230
		[{ON <u>ACT</u> <u>ACTIVE</u> } {OFF INACT INACTIVE}]	N	112
		[{FORCE}]	A	230

or for a collection of resource PCEs

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
[ID=minid[-maxid]]	V [ARY]	[{ON <u>ACT</u> <u>ACTIVE</u> } {OFF INACT INACTIVE}]	N	112
		[{FORCE}]	A	230

Console Commands

This command is used to activate (**ON|ACT|ACTIVE**), deactivate (**OFF|INACT|INACTIVE**) or deactivate **all** (**FORCE**) the HNAS resources (PCEs or LUs) identified by the command modifiers (RNM=, LNM= and LUNM= **are required** for the **RMT**, **LCL** and **LU** parameters, respectively).

Note: The **ON**, **ACT** and **ACTIVE** verbs are equivalents and are interchangeable as are the **OFF**, **INACT** and **INACTIVE** verbs.

Note: The **FORCE** verb implies an unconditional **OFF**. The **OFF** verb may be specified with **FORCE** but is not required.

- When **LUNM=sluname** is specified, it overrides the **ID=** values when the LU argument is entered restricting VARY processing to the named SLU only.
- When **RNM=rmtname** is specified, it overrides the **ID=** values when the RMT argument is entered (or is defaulted to) restricting VARY processing to the named REMOTE only.
- When **LNM=lclname** is specified, it overrides the **ID=** values when the LCL argument is entered restricting VARY processing to the named LOCAL only.
- When **ID=minid[-maxid]** is specified, VARY processing is restricted to the selected PCEs. A non-zero **ID=** range is required when RNM= and LNM= are omitted. *The ID= modifier is only used if the RNM= and LNM= modifiers are not set. If ID= is also null, the command is rejected.*

Note: If a resource name (*rmtname*, *lclname* or *sluname*) is supplied as a right side modifier, the corresponding RMT, LCL or LU type argument need not be specified since HNAS can tell by the resource name what type of resource it is. The case when the RMT, LCL or LU argument is required is when permanent modifier values are set so the HNAS knows which one to use for the VARY command. If a right side modifier is supplied with a type argument, an error message will be generate if the resource type does not match the specified type argument. For example, *V sluname RMT* will be rejected.

- Parameters are decoded and remembered and then processed in the **order** listed in the following table.

VARY Parameter Processing Matrix

PARAMETER	CONFLICT	ORDER
ON ACT ACTIVE	OFF INACT INACTIVE FORCE	1
OFF INACT INACTIVE FORCE	ON ACT ACTIVE	2

- Enter **V [ON]** to activate resources identified by the given command modifiers if they are currently inactive (offline). No action is taken for resources already in the active state.

- Enter **V OFF** to deactivate resources identified by the given command modifiers if they are currently active (online). No action is taken for resources already in the inactive state.
- Enter **V FORCE** to deactivate resources identified by the given command modifiers if they are currently active and to close all active client sockets associated with these resources. No action is taken for resources already in the inactive state.
- When **V [ON]** is issued for an inactive **TYPE=XOT|XTP LOCAL**, the LOCAL PCE is marked active and the TCP/IP server socket is conditioned to accept inbound connections and allow outbound connections.
- When **V OFF** is issued for an active **TYPE=XOT|XTP LOCAL**, the LOCAL PCE is marked inactive and the TCP/IP server socket is closed. No additional router connections directed at the LOCAL IP address can be accepted, however, existing client connections will remain active until cleared by HNAS or the remote DTE.
- When **V FORCE** is issued for an active **TYPE=XOT|XTP LOCAL**, the LOCAL PCE is marked inactive, the TCP/IP server socket is closed and all active client sockets for which the LOCAL is HOME are also closed. No additional router connections directed at the LOCAL IP address can be accepted.
- When **V [ON]** is issued for an inactive **TYPE=XOT|XTP REMOTE**, the REMOTE PCEs are marked active and all associated TCP/IP client sockets are conditioned to accept inbound connections and allow outbound connections. Outbound connections are allowed only when valid IPADDR= and PORT= operand values are specified.
- When **V OFF** is issued for an active **TYPE=XOT|XTP REMOTE**, the REMOTE PCEs are marked inactive. Active client sockets remain active until cleared by HNAS or the remote DTE.
- When **V FORCE** is issued for an active **TYPE=XOT|XTP REMOTE**, the REMOTE PCEs are marked inactive and all associated TCP/IP client sockets are closed and all VC and LU connections are deactivated. This will result in an UNBIND PIU being passed to the VTAM application and the LU ACB being closed.
- When **V [ON]** is issued for an inactive **TYPE=MCH REMOTE**, the MCH is marked active and all associated SLUs are conditioned to accept inbound connections and allow outbound connections.
- When **V OFF** is issued for an active **TYPE=MCH REMOTE**, the MCH is marked inactive. Active LU/VC sessions remain active until cleared by HNAS or the remote DTE.
- When **V FORCE** is issued for an active **TYPE=MCH REMOTE**, the MCH is marked inactive and all associated LU/VC connections are deactivated. This will result in an UNBIND PIU being passed to the VTAM application and the LU ACB being closed. For **SVCs**, the allocated VC and LU control blocks are released. For **PVCs**, the VC session with the remote remains active (PVC SETUP exchange not required) and the associated LU remains inactive (ACB closed).

Console Commands

- When **V *spuname* [ON]** is issued for an inactive **TYPE=SPU REMOTE** with **OPTIONS=CLOTINITYP=BIND|TIMER|CONSOLE** specified, an outbound QLLC call is initiated. If **OPTIONS=CLOTINITYP=NONE** is in effect, the V ACT command is rejected.
- When **V *spuname* OFF** is issued for an active **TYPE=SPU REMOTE**, the command performs no function. To deactivate an active SPU, you must issue V INACT for the connected **TYPE=XOT REMOTE**. This can be found using the DPCE command with **RNM=*spuname***.
- When **V *sluname* [ON]** is issued for an inactive **SLU**, the SLU is marked active and is conditioned to accept inbound connections and allow outbound connections. If the SLU is associated with a **PVC** session the LU ACB is opened only if the PVC session with the router has been created by XOT PVC Setup packets. The **status** of a PVC LU or VC can be displayed with the HNAS **DLU** or **DVC** console commands. The **LUOPT** column shows if the LU ACB is open, the **VCOPT** column shows if the VC has a network connection (PVC SETUP sequence complete).
- When **V *sluname* OFF** is issued for an active **SLU**, the SLU is marked inactive. An active LU/VC session remains active until cleared by HNAS or the remote DTE. The VC control block is left intact (socket not closed, TCP/IP VC session not torn town). For a PVC, a SETUP exchange is not required because the setup state is still active.
- When **V *sluname* OFF FORCE** is issued for an inactive **SLU**, the SLU is marked inactive and the TCP/IP socket is closed for the SLU if a socket is active (normally, only a PVC can be in this state). This logic was implemented by APAR 2400098. Prior to APAR 2400098, the **VARY *sluname* FORCE** command would have been rejected when issued to an already inactive SLU. The new logic ensures that the TCP/IP socket connection is torn down regardless of the state of the SLU.

Note that this new logic eliminates the two step process of first finding the PID for the VC socket (using the DLU command) and then issuing the **VARY ID=*pid* FORCE** command to close the VC socket. This new support allows customers to work with an *sluname* which is useful for installations that employ automated console command processes.

PVC SETUP note: Closure of the socket causes the XOT PVC to re-enter PVC SETUP pending state which will cause the PVC SETUP to be sent from the appropriate initiator once the retry timer expires.

- When **V *sluname* OFF FORCE** is issued for an active **SVC SLU**, the SLU is marked inactive and any associated LU/VC connection is deactivated. This will result in an UNBIND PIU being passed to the VTAM application and the LU ACB being closed. The allocated VC and LU control blocks are released and the associated TCP/IP socket is closed for the SLU.
- When **V *sluname* OFF FORCE** is issued for an active **PVC SLU**, the associated LU connection is deactivated and the associated LU/VC connection is deactivated. An UNBIND PIU is passed to the PLU and the LU's ACB is closed and the associated TCP/IP socket is closed for the SLU.
- When **V ID=*pid* FORCE** is issued for an active **PVC PCE** (the ID=*pid* value is displayed under the RPID column of the DVC display), the associated LU/VC connection is deactivated. This will result in an UNBIND PIU being passed to the VTAM application and the LU ACB

being closed. The allocated VC and LU control blocks are then refreshed. This also conditions the **PVC** to either send or await a PVC SETUP from the remote router.

Note: When a resource (REMOTE, LOCAL or SLU) is varied offline via a V OFF [FORCE] command, it will remain unavailable for subsequent use until it is varied back online via the V ON command.

Note: The FORCE parameter is only used in conjunction with the OFF (=INACT) parameter and only for TYPE=XOT|XTP|MCH REMOTE resources, TYPE=XOT|XTP LOCAL resources or SLUs. The FORCE parameter is ignored when ON (=ACT) is specified or when a TYPE=SPU REMOTE is specified. If FORCE is entered without OFF or INACT, OFF is assumed.

Note: HNAS activates with the REMOTE and LOCAL resource state set based on the INIT= operand of the REMOTE and LOCAL definition statements. If INIT=IDLE is specified, the resource is left in the inactive (offline) state when HNAS starts. The **V ON** console command is then required to activate the resource. If INIT=ACTIVE is specified or if the INIT= parameter is omitted (ACTIVE is the default), the resource is automatically activated (brought online). For more information on the INIT= operand of the REMOTE and LOCAL definition statements, refer to Chapter 4 of the HNAS Guide and Reference documentation.

Note: Varying a LOCAL resource OFF and then ON again in rapid succession can cause a TCPIP BIND request to fail and the following alarm message to be displayed:

```
NAS2321W BIND REQUEST FAILED RC=FFFFFFFF 00000030
```

The ERNO=30 at the end of the RC indicates that LOCAL 'IP address is in a timed wait because of a LINGER delay from a previous close or another process is using the address'. When this event occurs, HNAS enforces the DELAYTIME= value and will not retry the BIND until the delay timeout expires. At this time, HNAS will also reset the LINGER timeout that the stack is enforcing thus allowing the BIND to complete. If the DELAYTIME= value is too high, it can take a long time for a BIND retry. To avoid long delays, we recommend that you specify DELAYTIME=1 in the CDF or modify the DELAYTIME= value using the MLCL INIT=DELAYTIME=1 console command.

Console Commands

VCN= Modifier - Set VCB Identifier

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
VCN= <i>minvcn</i> [- <i>maxvcn</i>] VCN=?	<i>command</i>	[VCN= <i>minvcn</i> [- <i>maxvcn</i>]]	C	240

This modifier is used to select specific VCB(s) for the commands that follow. HNAS allocates a VCB for each REMOTE SVC and PVC connection. The **VCN=** value serves as an identifier for the VC resource. For more information on VCB identifiers, refer to page CONS-37 of this document.

Note: The VCN= modifier is used by the DVC and TRCVC commands.

- If VCN= (null) is specified, the command operates on all VCBs unless noted otherwise.
- If VCN=0 is specified (VCN=0-0 is not permitted), the command also operates on all VCBs unless noted otherwise. For all commands, VCN= (null) and VCN=0 are treated identically.
- If a VCN= value is specified as a range (e.g., VCN=3-10), the command operates on the selected VCBs.
- If a VCN= value is specified as a single element (e.g., VCN=3) or as a range where the extents are the same (e.g., VCN=3-3), the command operates on the selected single VCB.
- If an invalid VCN= value is specified, the balance of the command line is ignored.
- If a VCN= value is specified, it must be entered as a decimal number.

VCN=*minvcn*[-*maxvcn*] values can range from 1 to 4095.

- Enter VCN=? to display the permanent VCN= value.

WRU Command - Display NASNAME= Operand (Who Are You)

(new for V2R3M0)

Prefix Modifiers	Command	Suffix Modifiers, Parameters	CC	VRM
	WRU		N	230

This command will display the value specified for the NASNAME= operand on the BUILD definition statement.

The following display is produced when WRU is entered.

I AM nasname

Console Commands

Console Command Error Messages

The HNAS console subsystem produces diagnostic error messages during processing of some console commands. The message identifier for each message begins with the string "NASC". The error messages are generated for the local SYSCONS (master operator console) as well as remote consoles. All messages have the following basic format:

NAS	<i>cdrms</i>		Description
NAS			is the Host NAS console message identifier.
	<i>c</i>		is a component identifier.
		C	indicates a console related message.
	<i>d</i>		is a definition statement identifier.
		0	indicates a problem unrelated to the type of resource.
		1	indicates a problem while processing a BUILD resource.
		2	indicates a problem while processing a LOCAL resource.
		3	indicates a problem while processing a REMOTE resource.
		4	indicates a problem while processing an SLU resource.
		5	indicates a problem while processing a command argument.
	<i>r</i>		is a reason code.
		0	indicates that an operand value was omitted.
		1	indicates that an operand value was invalid or in conflict.
		2	indicates that an operand value was in error.
		>2	indicates a miscellaneous error or informational message.
	<i>m</i>		is a message number.
	<i>s</i>		is a severity code.
		I	indicates information only.
		D	indicates a default action was taken.
		W	indicates a warning.
		E	indicates an error.

HNAS console error messages maintain the same format as HNAS configuration and alert messages. However, unlike HNAS configuration and alert messages, console error mes-

Host NAS Console Command Error Messages

sages will not affect HNAS operation. Console error messages are generated solely to indicate why a command cannot be completely or partially executed.

NASC002E *cmdname* COMMAND REJECTED, PRIVILEGED

EXPLANATION:

The *cmdname* console command cannot be executed because it is a privileged command and the remote console operator does not have privileged status.

OPERATOR ACTION:

Logoff (Quit) the remote console session then logon again entering the console password *backwards* to obtain privileged status.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC003E DECODE FAILURE: *badcmd...*, RE-ENTER

EXPLANATION:

The console command *badcmd* contains a spelling or syntax error. This can also occur if a non-printable character was inadvertently entered.

OPERATOR ACTION:

Correct the error then re-enter the command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Note: Many commands accept a resource name following the command. For example, DRMT *rmtname* SVC0. If *rmtname* is spelled incorrectly or if it is not defined in CDF on a REMOTE definition statement, the command may be rejected for the lack of a valid RNM= or ID= modifier which will cause the *rmtname* to be processed as the *badcmd*. This is because commands that are rejected for a missing or erroneous LUNM=, LNM= RNM=, or ID= modifier, return control to the console input parser which will continue processing the current input record from the end of the rejected command. In the example above, this would be after DRMT which means that *rmtname* would be processed as if it were a new command resulting in the NASC003E message above.

Host NAS Console Command Error Messages

NASC005W *cmdname* ABORTED DUE TO OPERATOR INPUT

(new for V2R4M0)

EXPLANATION:

During the execution of the console command *cmdname*, input was entered that terminated the current command. Input entered during any command is interpreted as an attention signal that pre-empts the current command thus allowing a new command to be executed.

OPERATOR ACTION:

None.

SYSTEM ACTION:

The input is processed as a new command.

NASC006W *cmdlist* COMMAND LIST INTERRUPTED

(new for V2R4M0)

EXPLANATION:

During the execution of the console command list *cmdlist* (e.g. **EXEC** *ddname*), input was entered that terminated the current command within the *cmdlist*. Input entered during any command is interpreted as an attention signal that pre-empts the current command thus allowing a new command to be executed.

OPERATOR ACTION:

None.

SYSTEM ACTION:

The input is processed as a new command which interrupts but does not abort the current *cmdlist*.

NASC013E UNSUPPORTED FUNCTION, *cmdname* COMMAND ABORTED

EXPLANATION:

The *cmdname* console command requested an operation that could not be performed or is not supported.

OPERATOR ACTION:

Correct the error then re-enter the command.

SYSTEM ACTION:

Host NAS Console Command Error Messages

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC014E FUNCTION ALREADY ACTIVE, *cmdname* COMMAND ABORTED

EXPLANATION:

The ***cmdname*** console command requested an operation that is supposed to activate a component but the component was already active when the command was issued.

OPERATOR ACTION:

None. The request is ignored.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC015E FUNCTION ALREADY INACTIVE, *cmdname* COMMAND ABORTED

EXPLANATION:

The ***cmdname*** console command requested an operation that is supposed to deactivate a component but the component was already inactive when the command was issued.

OPERATOR ACTION:

None. The request is ignored.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC020W RESOURCE BUSY, RETRY *cmdname* COMMAND LATER

EXPLANATION:

The ***cmdname*** console command was issued by two (2) different console operators and both reference the same resource (e.g., **MRMT *mchname* LUNAME=*sluname*...**). Only one ***cmdname*** command at a time is allowed to operate on a resource (first come, first served).

OPERATOR ACTION:

Wait a moment then re-enter the ***cmdname*** command.

Host NAS Console Command Error Messages

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC021W RESOURCE UNAVAILABLE, RETRY *cmdname* COMMAND LATER

EXPLANATION:

The ***cmdname*** console command requires a resource such as a buffer or TCP/IP PCE for its execution (e.g., **PING *ipaddr***) but none were available.

OPERATOR ACTION:

Wait a moment then re-enter the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC022W RESOURCE ONLINE, VARY OFFLINE THEN RETRY
cmdname COMMAND**

(new for V2R4M0)

EXPLANATION:

The ***cmdname*** console command requires a resource such as TYPE=XOT REMOTE to be offline for its execution (e.g., **MRMT *rmtname* IPADDR=*ipaddr***) but the REMOTE was currently online.

OPERATOR ACTION:

Issue the **VARY *rmtname* FORCE** command to force the REMOTE offline then retry the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

NASC023W RESOURCE OFFLINE, VARY ONLINE THEN RETRY
cmdname COMMAND

(new for V2R4M0)

EXPLANATION:

The *cmdname* console command requires a resource such as TYPE=XOT REMOTE to be online for its execution but the REMOTE was currently offline.

OPERATOR ACTION:

Issue the **VARY *rmtname* ON** command to force the REMOTE online then retry the *cmdname* command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC030E *opname opval* HAS INVALID FORMAT, *cmdname* COMMAND ABORTED
(apar/new for V2R4M0)

EXPLANATION:

The *cmdname* console command specified an operand *opname* whose value *opval* has an invalid format or is inconsistent for the *opname* operand. For example, if **MRMT *rmtname* LOGTAB=ISTINCDT** is entered, this message will be issued because ISTINCDT is a standard USSTAB not a LOGATB.

OPERATOR ACTION:

Re-enter the *cmdname* command with a valid *opval* for the *opname*.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC031E *opname opval* IS CURRENTLY IN USE,
RETRY *cmdname* COMMAND LATER

(apar/new for V2R4M0)

EXPLANATION:

The *cmdname* console command specified an operand *opname* whose value *opval* is currently being used so it cannot be changed or update. For example, if **MRMT *rmtname* USSTAB=ISTINCDT-R** is entered to force ISTINCDT to be reloaded, this message

Host NAS Console Command Error Messages

will be if a USSMSG within ISTINCDT is currently being transmitted. The USSTAB cannot be reloaded if a USSMSG transmission is in progress because this could cause an addressing exception ABEND if establish USSMSG addresses are changed during the transmission.

OPERATOR ACTION:

Wait a moment then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC050E EXEC ddname INVALID, CANNOT POINT AT ITSELF,
EXEC COMMAND ABORTED**

(new for V2R4M0)

EXPLANATION:

The **ddname** specified for the EXEC console command identifies a file that contains the same **EXEC ddname** specification. This would create an infinite command loop which is not permitted.

OPERATOR ACTION:

Remove the **EXEC ddname** statement from the specified file then re-enter the command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC051E cmdname ddname INVALID, CANNOT BE OPENED,
cmdname COMMAND ABORTED**

(new for V2R4M0)

EXPLANATION:

The **ddname** specified for the **cmdname** console command (EXEC or ECHEDULE) identifies a DDNAME that does not exist in the HNAS start JCL which prevents the associated DCB from being opened. This is most likely due to a spelling error.

OPERATOR ACTION:

Enter a valid **ddname** that exists in the HNAS start JCL for the **cmdname** command.

Host NAS Console Command Error Messages

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Note: This console warning message was changed after the initial 240 release by APAR 2400064.

NASC052W EXEC COMMAND LIST WAS NOT PROVIDED, EXEC COMMAND ABORTED
(apar/new for V2R4M0)

EXPLANATION:

The **ddname** was omitted for the EXEC LIST console command which means there is no command list to display.

OPERATOR ACTION:

Enter a valid **ddname** that exists in the HNAS start JCL for the EXEC LIST command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Note: This console warning message was changed after the initial 240 release by APAR 2400064.

NASC053E EXEC ddname FILE IS NULL, EXEC COMMAND ABORTED
(apar/new for V2R4M0)

EXPLANATION:

A **ddname** was specified for the EXEC console command but the referenced command list file is empty (contains no commands or display comments (# text) but may contain non-display comments (* text')).

OPERATOR ACTION:

Enter a valid **ddname** that identifies a non-empty command list file for the EXEC command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

NASC054E *cmdname ddname* COMMAND QUEUE LIMIT *count/limit*
EXCEEDED, cmdname COMMAND ABORTED

(new for V2R4M0)

EXPLANATION:

The **ddname** specified for the **cmdname** console command (EXEC or ECHEDULE) identifies a file that contains more command data than can be queued for execution. Currently **limit** is set to 512 bytes. **count** is the number of bytes that is required to hold the **cmdname** file data.

For the **EXEC** command, assume **ddname** identifies a file containing the following statements:

```
DNAS APAR          <- 9 characters
DPCE TYPE=CONS    <- 14 characters
DVC                <- 3 characters
```

For this file, the internal console command queue would look as follows:

```
001D              <- 29 total bytes
09                <- first command length
C4D5C1E240C1D7C1D9 <- DNAS APAR
0E                <- second command length
C4D7C3C540E3E8D7C57EC3D6D5E2 <- DPCE TYPE=CONS
03                <- third command length
C4E5C3            <- DVC
```

For the **SCHEDULE** command, assume **ddname** identifies a file containing the following statements:

```
(12:00:00,ALARM LOG=?) <- time=6, command=11 characters
(06:00:00,TRCPCE ALLON) <- time=6, command=12 characters
(07:00:00,TRCPCE ALLOFF) <- time=6, command=13 characters
```

For this file, the internal console command queue would look as follows:

```
0039              <- 57 total bytes
120000120005      <- first command time
0B                <- first command length
C1D3C1D9D440D3D6C77E6F <- ALARM LOG=?
060000060005      <- second command time
0C                <- second command length
E3D9C3D7C3C540C1D3D3D6D5 <- TRCPCE ALLON
070000070005      <- third command time
0D                <- third command length
E3D9C3D7C3C540C1D3D3D6C6C6 <- TRCPCE ALLOFF
```

OPERATOR ACTION:

Host NAS Console Command Error Messages

The **cmdname** command list cannot be executed. Reduce the number of commands in the command list file then re-enter the command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Note: This console warning message was changed after the initial 240 release by APAR 2400064.

NASC055I *cmdname ddname* COMMAND LIST HAS BEEN PROCESSED,
IT WILL NOW BE *action*

(new for V2R4M0)

EXPLANATION:

The **ddname** specified for the **cmdname** console command (EXEC or ECHEDULE) identifies a valid command list file. The file has been read and the specified **action** (EXECUTED or LISTED) will be taken.

OPERATOR ACTION:

None.

SYSTEM ACTION:

The **cmdname** command list will now run.

Note: This console warning message was changed after the initial 240 release by APAR 2400064.

NASC090E NEWDEFN ARRAY IS FULL, MAXIMUM RECORD COUNT OF
dddd HAS BEEN REACHED

EXPLANATION:

The console command (e.g., **MLCL** or **MRMT**) attempted to update the NEWDEFN array because of an addition to a LOCAL or REMOTE operand but no available NEWDEFN records were available. HNAS allocates the NEWDEFN array after the CDF is scanned based on the number of records in the CDF. Currently, the NEWDEFN record count is fixed at 3 times the number of records in the CDF (**dddd**).

OPERATOR ACTION:

None. Contact Comm-Pro for assistance.

Host NAS Console Command Error Messages

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC091E NEWDEFN ARRAY LOOKUP FAILED, PARMLIST FOLLOWS
REMOTE *rmtname opname xx...xx*

EXPLANATION:

The console command (e.g., **MLCL** or **MRMT**) attempted to update the NEWDEFN array because of an addition, deletion or change to a LOCAL or REMOTE operand but the NEWDEFN update routine could not resolve the operand in the CDF. This is a severe error.

OPERATOR ACTION:

None. Contact Comm-Pro for assistance.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC092E SEARCH LIST OMITTED, REQUIRED FOR *cmdname* EXECUTION

EXPLANATION:

The ***cmdname*** console command (e.g., **DNWDF**) requires a search list but none was generated during configuration processing.

OPERATOR ACTION:

The ***cmdname*** command cannot be executed.

For DNWDF processing, stop then restart HNAS with GENNWDF specified as a start parameter and //NEWDEFN as a DDNAME.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC093E SEARCH ARGUMENT NOT FOUND, *cmdname* COMMAND ABORTED

EXPLANATION:

Host NAS Console Command Error Messages

The **cmdname** console command processor was given a lookup argument (e.g., **DNAS APAR *aparid***) but the argument could not be found.

OPERATOR ACTION:

Enter a valid search argument then retry the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC100E ID= OMITTED, REQUIRED FOR *cmdname* EXECUTION

(added for V2R3M0)

EXPLANATION:

The **cmdname** console command (e.g., **TRCLU**) requires the LUNM=, RNM= or ID= modifier but all were omitted. The ID= modifier is only used for TRCLU when LUNM= and RNM= are not set. If ID= is also omitted, the command cannot be executed.

OPERATOR ACTION:

Supply a valid LUNM=, RNM=, LNM= or ID= value (as appropriate) then re-enter the **cmdname** command.

Note: For most commands, ID= omitted and ID=0 are treated identically. Exceptions are for TRCLUQ, TRCMCH, TRCPCE, TRCVC, TRCVCQ, VARY RMT and MON TAP where an ID= value must be supplied when RNM= is omitted, for TRCLU and TRCMCHX where an ID= value must be supplied when RNM= and LUNM= are omitted and for VARY LCL where an ID= value must be supplied when LNM= is omitted.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC100E ID= AND OTHER MODIFIERS OMITTED, REQUIRED FOR *cmdname* EXECUTION

NASC100E ID= IS REQUIRED WHEN NO OTHER RESOURCE IDENTIFICATION IS SPECIFIED

NASC100E IF COMMAND OPERATES ON LNM=, RNM= OR LUNM=, ENSURE THAT RESOURCE NAME

**NASC100E IS SPECIFIED BEFORE ANY COMMAND OPERANDS
(EXAMPLE: V LUNM=*sluname* OFF)**

(apar/change for V2R4M0)

EXPLANATION:

Host NAS Console Command Error Messages

The **cmdname** console command (e.g., **VARY**) requires the LUNM=, RNM=, LNM= or ID= modifier but all were omitted. The ID= modifier is only used for VARY when LUNM=, RNM= and LNM= are not set. If ID= is also omitted, the command cannot be executed.

OPERATOR ACTION:

Supply a valid LUNM=, RNM=, LNM= or ID= value (as appropriate) then re-enter the **cmdname** command.

Note: For most commands, ID= omitted and ID=0 are treated identically. Exceptions are for TRCLUQ, TRCMCH, TRCPCE, TRCVC, TRCVCQ, VARY RMT and MON TAP where an ID= value must be supplied when RNM= is omitted, for TRCLU and TRCMCHX where an ID= value must be supplied when RNM= and LUNM= are omitted and for VARY LCL where an ID= value must be supplied when LNM= is omitted.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC110E ID=lo-hi INVALID, cmdname COMMAND ABORTED

(added for V2R4M0)

EXPLANATION:

The **cmdname** console command requires an ID= value but the specified value is not valid because it exceeds the maximum configured PCEID value or the given *lo-hi* range identifies PCEs that are invalid for the given command.

OPERATOR ACTION:

Supply a valid ID= value then re-enter the **cmdname** command.

Note: For most commands, ID= omitted and ID=0 are treated identically. Exceptions are for TRCLUQ, TRCMCH, TRCPCE, TRCVC, TRCVCQ, VARY RMT and MON TAP where an ID= value must be supplied when RNM= is omitted, for TRCLU and TRCMCHX where an ID= value must be supplied when RNM= and LUNM= are omitted and for VARY LCL where an ID= value must be supplied when LNM= is omitted.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC121E DDNAME ddname CANNOT BE OPENED, CHECK HNAS START JCL

EXPLANATION:

Host NAS Console Command Error Messages

The TRCTRAP console command processor was given a TRAPACTION argument of **EXEC=ddname** but the specified **ddname** could not be opened.

OPERATOR ACTION:

Enter a valid **ddname** that exists in the HNAS start JCL for the EXEC command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC200E LNM= OMITTED, REQUIRED FOR cmdname EXECUTION

EXPLANATION:

A LOCAL definition statement name is required for the **cmdname** console command (e.g., **MLCL**) but none was not provided.

OPERATOR ACTION:

Supply a valid LOCAL definition statement name using the LNM= modifier then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC204E ddname ABEND PARMLIST=xxxxxxxx . . . xxxxxxxx (new for V2R4M0)

EXPLANATION:

The **ddname** specified for the EXEC console command or TRAPACTION=EXEC= operand identifies a file that cannot be read. For example, it points at a member of a partitioned dataset that does not exist. The PARMLIST value provides the ABEND code and reason.

OPERATOR ACTION:

The EXEC command list cannot be executed. Correct the error then re-enter the command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

NASC210E LNM=*lclname* INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

The *lclname* specified for the LNM= modifier for the *cmdname* console command does not identify a LOCAL definition statement. This is most likely due to a spelling error.

OPERATOR ACTION:

Supply a valid LOCAL definition statement name using the LNM= modifier then re-enter the *cmdname* command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC211E LNM=*lclname* TYPE=*type* INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid LOCAL definition statement name was provided for the *cmdname* console command (e.g., **MLCL**) but it identifies a LOCAL having the wrong *type* (e.g., TYPE=XTP when TYPE=XOT is required).

OPERATOR ACTION:

Supply a LOCAL definition statement name having the correct *type* using the LNM= modifier then re-enter the *cmdname* command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC212E LNM=*lclname* CONFIG INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid LOCAL definition statement name was provided for the *cmdname* console command (e.g., **MLCL**) but it identifies a LOCAL having a configuration error (e.g., RTE-OUT= operand is required but was not specified).

OPERATOR ACTION:

Supply a LOCAL definition statement name that has the correct configuration operands using the LNM= modifier then re-enter the *cmdname* command.

Host NAS Console Command Error Messages

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC300E RNM= OMITTED, REQUIRED FOR *cmdname* EXECUTION

EXPLANATION:

A REMOTE definition statement name is required for the ***cmdname*** console command (e.g., **MRMT**) but none was not provided.

OPERATOR ACTION:

Supply a valid REMOTE definition statement name using the RNM= modifier then re-enter the ***cmdname*** command.

Note: Console commands that require RNM= have always been rejected with the NASC300E message. This message will now also be issued for a command that requires either RNM= or ID= and both are omitted. For example, MON TAP requires either RNM=*rmtname* or ID=*lo[-hi]* to be provided. If both RNM= and ID= are omitted (not initialized), the command will be rejected and the NASC300E message will be issued.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC310E RNM=*rmtname* INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

The ***rmtname*** specified for the RNM= modifier for the ***cmdname*** console command does not identify a REMOTE definition statement. This is most likely due to a spelling error.

OPERATOR ACTION:

Supply a valid REMOTE definition statement name using the RNM= modifier then re-enter the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

NASC311E RNM=*rmtname* TYPE=*type* INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid REMOTE definition statement name was provided for the ***cmdname*** console command (e.g., **MRMT**) but it identifies a REMOTE having the wrong ***type*** (e.g., TYPE=XTP when TYPE=MCH is required).

OPERATOR ACTION:

Supply a REMOTE definition statement name having the correct ***type*** using the RNM= modifier then re-enter the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC312E RNM=*rmtname* CONFIG INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid REMOTE definition statement name was provided for the ***cmdname*** console command (e.g., **MRMT**) but it identifies a REMOTE having a configuration error (e.g., SVC5= is operand required but was not specified).

OPERATOR ACTION:

Supply a REMOTE definition statement name that has the correct configuration operands using the RNM= modifier then re-enter the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC313W REMOTE *rmtname* NOT FOUND, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid REMOTE definition statement name was specified for an operand entry (LUNAME=, SVC0=, SVC3= or SVC5=) but the corresponding REMOTE definition statement named ***rmtname*** could not be found in the CDF.

OPERATOR ACTION:

Host NAS Console Command Error Messages

Supply a REMOTE definition statement name that represents an MXT then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC313W REMOTE *rmtname* IS NOT TYPE=MXT, *cmdname* COMMAND ABORTED

EXPLANATION:

A valid REMOTE definition statement name was specified for an operand entry (LUNAME=, SVC0=, SVC3= or SVC5=) but the corresponding REMOTE definition statement named **rmtname** was not TYPE=MXT.

OPERATOR ACTION:

Supply a REMOTE definition statement name that represents an MXT then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC400E LUNM= OMITTED, REQUIRED FOR *cmdname* EXECUTION

EXPLANATION:

An LU name is required for the **cmdname** console command (e.g., **MRMT**) but one was not provided.

OPERATOR ACTION:

Supply a valid LU name using the LUNM= modifier then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC410E LUNM=*sluname* INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

Host NAS Console Command Error Messages

The **sluname** specified for the LUNM= modifier for the **cmdname** console command does not identify an LU resource. This is most likely due to a spelling error.

OPERATOR ACTION:

Supply a valid LU name using the LUNM= modifier then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC421E REMOTE SLU *sluname* IS NOT IDLE, MRMT COMMAND ABORTED

EXPLANATION:

An **MRMT** request to modify an operand entry (LUNAME=, SVC0=, SVC4= or SVC5=) of a TYPE=MCH|XTP|SPU REMOTE definition statement referenced an SLU named **slu-name** that was active which precludes changing its configuration at the current time. The SLU must be inactive in order for it to be removed or renamed.

OPERATOR ACTION:

Force the SLU inactive using the VTAM **VARY NET,INACT,ID=*sluname*** command then retry the **MRMT** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC422E REMOTE SLU *sluname* ALREADY EXISTS, MRMT COMMAND ABORTED

EXPLANATION:

An **MRMT** request to add an operand entry (LUNAME=, SVC0=, SVC4= or SVC5=) of a TYPE=MCH|XTP|SPU REMOTE definition statement referenced an SLU named **slu-name** that already exists and thus cannot be added again. The new SLU name must be unique.

OPERATOR ACTION:

Supply a unique SLU name then re-enter the **MRMT** command.

SYSTEM ACTION:

Host NAS Console Command Error Messages

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC423E REMOTE SLU *sluname* COULD NOT BE ALLOCATED,
MRMT COMMAND ABORTED**

EXPLANATION:

An **MRMT** request to add an operand entry (LUNAME=, SVC0=, SVC4= or SVC5=) of a TYPE=MCH|XTP|SPU REMOTE definition statement could not be satisfied because all SLUs in the LU Dynamic Reconfiguration Pool (LUDRPOOL) were already allocated.

OPERATOR ACTION:

None. The command cannot be executed.

Increase the number of free SLUs in the LUDRPOOL using the LUDRPOOLCNT= suboperand of the OPTIONS operand on the BUILD definition statement. This will require that HNAS be shutdown and restarted.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC500E DEFAULT PARAMETER OMITTED, REQUIRED FOR *cmdname* EXECUTION

EXPLANATION:

The ***cmdname*** console command (e.g., **PING**) requires default parameter value(s) when no arguments are specified but none were provided using the command modifiers.

OPERATOR ACTION:

Enter default values using the command modifiers or as arguments for the ***cmdname*** command then re-enter the ***cmdname*** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC511E PARAMETERS CONFLICT, *cmdname* COMMAND ABORTED

EXPLANATION:

Host NAS Console Command Error Messages

The **cmdname** console command requested an operation that could not be performed based on the current resource configuration (e.g., **VARY spuname ACT** issued but **OPTIONS=CLOTINITYP=NONE** is in affect for the named SPU) or conflicting or mutually exclusive arguments were specified (e.g., **PRNT ON OFF**).

OPERATOR ACTION:

Ensure that the **cmdname** command is correct for the configuration (set **OPTIONS=CLOTINITYP=CONSOLE** using the **MRMT** command for the **VARY** command) and ensure that mutually exclusive arguments are not specified then retry the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC512E PARAMETERS DUPLICATED, **cmdname** COMMAND ABORTED

(new for V2R4M0)

EXPLANATION:

The **cmdname** console command argument has been specified more than once for the command (e.g., **PRNT ON ON**).

OPERATOR ACTION:

Re-enter the **cmdname** command with the correct arguments specified.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC513E PARAMETER LIMIT EXCEEDED, **cmdname** COMMAND ABORTED

(new for V2R4M0)

EXPLANATION:

The **cmdname** console command list argument has been specified that causes an array to reach it's limit which cannot be allowed (e.g., **PRNT SWITCH=(ddnmlist)**).

OPERATOR ACTION:

Re-enter the **cmdname** command with fewer elements specified or reset the array then re-enter the list (e.g., **PRNT SWITCH=* PRNT SWITCH=(ddnmlist)**).

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

NASC515E STATE CONFLICT, ISSUE THE RESUME FUNCTION THEN
RETRY THE *cmdname* COMMAND

(new for V2R4M0)

EXPLANATION:

The *cmdname* console command action could not be performed due to the state of the target resource or configuration parameter (e.g., **PRNT NEXTPRSW** was specified when the PRTSWLST= operand on the BUILD definition statement was in the STOPped state (last DDNAME had been used)).

OPERATOR ACTION:

Enter the resume function for the *cmdname* command that issued this message (e.g., enter **PRNT RSMEPRSW**).

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC520E LIST ENTRY NAME INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

The *cmdname* console command list form argument specifies a resource name (e.g., **MRMT SVC0=*sluname***) that contains a spelling, syntax or length error. This could also occur if a non-printable character was inadvertently entered.

OPERATOR ACTION:

Supply a valid resource name then re-enter the *cmdname* command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC521E LIST ENTRY INDEX INVALID, *cmdname* COMMAND ABORTED

EXPLANATION:

The *cmdname* console command list form argument specifies an entry index (e.g., **MRMT *rmtname* LUNAME=(*locaddr*,...)**) that is invalid or too large for the list form configuration operand.

Host NAS Console Command Error Messages

OPERATOR ACTION:

Supply a valid list from operand index then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC531E PARAMETER DATA OMITTED, REQUIRED FOR
cmdname COMMAND EXECUTION

(new for V2R4M0)

EXPLANATION:

The **cmdname** console command argument is required but was not provided.

OPERATOR ACTION:

Re-enter the **cmdname** command with the required argument.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC532E PARAMETER DATA INVALID: **baddata**, **cmdname** COMMAND ABORTED

(changed for V2R4M0)

EXPLANATION:

The **cmdname** console command specifies a parameter that is invalid due to a spelling, value or syntax error. **baddata** represents up to 8 bytes before and after the parameter data that is in error.

OPERATOR ACTION:

Correct the parameter in error then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

NASC533E **ddname** FILE DATA INVALID: **baddata**, **cmdname** COMMAND ABORTED

(added for V2R4M0)

EXPLANATION:

Host NAS Console Command Error Messages

The **ddname** file specified for the **cmdname** console command (EXEC or SCHEDULE) identifies a file that contains a record with invalid data due to a spelling, value or syntax error. **baddata** represents up to 8 bytes before and after the parameter data that is in error.

OPERATOR ACTION:

Correct the **ddname** file parameter data in error then re-enter the **cmdname** command.

SYSTEM ACTION:

Additional parsing of the current **ddname** file is terminated and the console input prompt message is issued to solicit a new command.

**NASC611W DISPLAY MEMORY ADDRESSING EXCEPTION,
DMEM COMMAND ABORTED**

EXPLANATION:

The **DMEM** console command referenced an address that HNAS is not authorized to display (address is invalid for machine configuration).

OPERATOR ACTION:

Correct the memory address argument and re-enter the **DMEM** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC611W FIND MEMORY ADDRESSING EXCEPTION,
FIND COMMAND ABORTED**

EXPLANATION:

The **FIND** console command referenced an address that HNAS is not authorized to display (address is invalid for machine configuration).

OPERATOR ACTION:

Correct the memory address argument and re-enter the **FIND** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

**NASC611W MODIFY MEMORY ADDRESSING EXCEPTION,
MMEM COMMAND ABORTED**

EXPLANATION:

The **MMEM** console command referenced an address that HNAS is not authorized to modify (address is invalid for machine configuration or address is not in the same storage key as HNAS).

OPERATOR ACTION:

Correct the memory address argument and re-enter the **MMEM** command.

SYSTEM ACTION:

Additional parsing of the current input record is terminated and the console input prompt message is issued to solicit a new command.

Host NAS Console Command Error Messages

Console Index

Symbols

Console

How To Modify

IPADDR= modifier value

IPADDR=aaa.bbb.ccc.ddd CONS-153

How To Start

PING operation using a specified IP address

PING aaa.bbb.ccc.ddd CONS-208

tracing for a specific IP address

TRCADDR IPADDR=aaa.bbb.ccc.ddd CONS-247

How To Stop

tracing for a specific IP address

TRCADDR IPADDR=aaa.bbb.ccc.ddd CONS-247

Numerics

2400nnn DocOverview-1

A

ABEND Codes, System DocOverview-3

ABENDs Relating to HNAS Events DocOverview-3

ABENDs Relating to HNAS HALT or NASHALT Messages DocOverview-3

ADD CONS-247

Alert Messages DocOverview-3

ALRMFLTR=/SHOWERR interaction CONS-44, CONS-236

ALRMSGTXT=SHORT CONS-285, CONS-289, CONS-290

APAR

Maintenance Summaries DocOverview-2

APAR Maintenance Level included in this HNAS Documentation DocOverview-1

APAR maintenance level reference for documentation. DocOverview-1

APAR reference DocOverview-1

APAR, DNAS reference CONS-80

ASMDATE=, DNAS reference CONS-80

ASMHOST=, DNAS reference CONS-80

AUTH=, DNAS reference CONS-80

B

BIND Failure User Sense Codes DocOverview-3

Biography reference DocOverview-1

Biography, Comm-Pro preface-iii

C

Call Request Packet logging CONS-287, CONS-288

CC - Change Control Identifier CONS-21

CC VRM - Change Control / Version, Release, Modification Identifier CONS-21

CC/VRM - Change Control / Version, Release, Modification Identifier CONS-21

CC/VRM - Change Control Version, Release, Modification Identifier CONS-40

Change Control - Version, Release, Modification Identifier CONS-21, CONS-40

- Changes & New Features DocOverview-2
- Cisco Messages Relating to HNAS Events DocOverview-3
- Cisco router reference preface-v
- Cisco Systems preface-v
 - Documentation References preface-v
- Cisco Systems, Inc. preface-iii
- Clear Request Packet event logging CONS-288
- Comm-Pro Biography preface-iii
- Comm-Pro Contact Information preface-ii
- Comm-Pro General Information preface-ii
- Configuration Examples DocOverview-2
- Configuration Guide DocOverview-2
- Configuration Messages DocOverview-2
- Configuration Reference DocOverview-2
- Console CONS-1
 - Command Action Matrix
 - DADDR CONS-53
 - DLCL CONS-56
 - DNWDF CONS-92
 - DPARM CONS-100
 - DRMT CONS-115
 - ECHOXEQ CONS-136
 - MLCL CONS-161
 - MONITOR CONS-172
 - MRMT CONS-181
 - PRNT CONS-216
 - SHOW CONS-238
 - STATS CONS-245
 - TRCALL CONS-249
 - TRCBFR CONS-253
 - TRCCONS CONS-260
 - TRCDATA CONS-264
 - TRCDISP CONS-270
 - TRCIO CONS-275
 - TRCLU CONS-279
 - TRCLUQ CONS-284
 - TRCMCH CONS-290
 - TRCMCHX CONS-295
 - TRCPCE CONS-299
 - TRCSUBR CONS-303
 - TRCVC CONS-317
 - TRCVCQ CONS-320
 - Command and Command Modifier Overview CONS-29
 - Command Modifier Hierarchy Matrix by Command CONS-31
 - Command Modifier Hierarchy Matrix by Resource CONS-32
 - Command Modifier Summary CONS-30

- Command Modifier/Control Block Relationship CONS-33
- Command Description Rules CONS-20, CONS-22
- Command Descriptions CONS-40
- Command Modifier/Control Block Relationship CONS-33
- Command Overview CONS-23
- Command Summaries
 - Change and Modify Commands CONS-25
 - Display Commands CONS-23
 - Statistics Commands CONS-28
 - Trace Commands CONS-27
- Command Template Rules
 - braces CONS-20
 - brackets CONS-20
 - capital letters CONS-20
 - double verticle bar CONS-20
 - ellipsis CONS-20
 - single verticle bar CONS-20
 - small italicized letters CONS-20
- How To Abort
 - shutdown initiation
 - QN CONS-220
- How To Add
 - a second entry for an existing MCH in an RTEIN operand for a LOCAL resource
 - MLCL lclname RTEIN=mchname-2/dteaddr{T|S} CONS-167
 - message IDs to alarm filter list
 - ALARM FILTER=(A|S|P,id1(A|S|P|FC|FU),...) CONS-43
 - message IDs to trap alarm filter list
 - TRCTRAP ALRMLIST=(id1/dat1/sod1,...) CONS-309
 - packets to trap receive filter list
 - TRCTRAP RCVLIST=(prot1|pkt1,...) CONS-310
 - packets to trap transmit filter list
 - TRCTRAP XMTLIST=(prot1|pkt1,...) CONS-310
- How To Allow
 - all trap actions (execpt EXEC) to be performed due to trapped event
 - TRCTRAP TRAPACTION=ALL CONS-312
 - buffer tracing for all PCE types
 - TRCBFR ALLTYPES CONS-253
 - buffer tracing for specific PCE types
 - TRCBFR CONS|NETV|TCP|TMR|UTIL|XOT|XTP CONS-253
 - console command list to be EXECuted due to trapped event
 - TRCTRAP TRAPACTION=EXEC=ddname CONS-311
 - data tracing for all PCE types
 - TRCDATA ALLTYPES CONS-264
 - data tracing for specific PCE types
 - TRCDATA CONS|NETV|TCP|TMR|UTIL|XOT|XTP CONS-264
 - dispatcher tracing for all PCE types

TRCDISP ALLTYPES CONS-270
 dispatcher tracing for specific PCE types
 TRCDISP CONS|NETV|TCP|TMR|UTIL|XOT|XTP CONS-270
 I/O tracing for all PCE types
 TRCIO ALLTYPES CONS-275
 I/O tracing for specific PCE types
 TRCIO CONS|NETV|TCP|TMR|UTIL|XOT|XTP CONS-275
 remote console access
 RMTCONS ON CONS-223
 remote console privileged access
 RMTCONS PRIV CONS-223
 snapshot dump to be taken due to trapped event
 TRCTRAP TRAPACTION=SNAP CONS-311
 statistics collection for all PCE types
 STATS ALLTYPES CONS-244
 statistics collection for specific PCE types
 STATS CONS|NETV|TCP|TMR|UTIL|XOT|XTP CONS-245
 subroutine call tracing for all events
 TRCSUBR ALLEVENTS CONS-303
 subroutine call tracing for specific events
 TRCSUBR CONS|MCH|NETV|PCE|TCP|VTAM CONS-303
 tracing to be suspended due to trapped event
 TRCTRAP TRAPACTION=SUSP CONS-311

How To Change

- an RTEIN operand entry for a LOCAL resource
 MLCL lclname RTEIN=mchname/dteaddr{T|S} CONS-163
- an RTEOUT operand entry for a LOCAL resource
 MLCL lclname RTEOUT=rmtname/dteaddr{T|S}/desctext CONS-165
- the amount of command input that is echoed back
 ECHOXEQ NO|MIN|MAX CONS-136
- the Called DTE Address for a REMOTE resource
 MRMT rmtname DTEADDR=NULL|NONE|dd...dd CONS-184
- the Calling DTE Address for a REMOTE resource
 MRMT rmtname DCEADDR=NULL|NONE|dd...dd CONS-184
- the CTCP PLU name for a GATE control SLU defined on an XTP|MCH REMOTE resource
 MRMT rmtname LUNAME=sluname/pluname CONS-186
- the DTE address for the first occurrence of an MCH in an RTEIN operand for a LOCAL resource
 MLCL lclname RTEIN=mchname/dteaddr{T|S} CONS-167
- the DTE address for the second occurrence of an MCH in an RTEIN operand for a LOCAL resource
 MLCL lclname RTEIN=mchname-2/dteaddr{T|S} CONS-167
- the ID block value for an SPU REMOTE resource
 MRMT rmtname IDBLK=xxx CONS-185
- the ID number value for an SPU REMOTE resource

MRMT rmtname IDNUM=xxxxx CONS-185
the inactivity timeout value for a REMOTE resource
MRMT rmtname IDLETO=seconds CONS-186
the IP address value for a DMY REMOTE resource
MRMT rmtname IPADDR=aaa.bbb.ccc.ddd.(port) CONS-186
the Logon Table for a REMOTE resource
MRMT rmtname LOGTAB=lgtname CONS-186
the state for a LOCAL resource
MLCL lclname INIT={ACTIVE|IDLE} CONS-162
the state for a REMOTE resource
MRMT rmtname INIT={ACTIVE|IDLE} CONS-186
the state of a GATE control SLU defined on an XTP|MCH REMOTE resource
MRMT rmtname LUNAME=sluname-{A|I} CONS-186

How To Clear
alarm logging table
ALARM LOG=CLEAR CONS-47

How To Delete
the active schedule list
SCHEDULE PRG CONS-230
the CTCPLU name for a GATE control SLU defined on an XTP|MCH REMOTE resource
MRMT rmtname LUNAME=sluname/* CONS-186

How To Display
a dataset command list
EXEC LIST ddname CONS-143
a dataset schedule list
SCHEDULE LIST ddname CONS-230
address, APAR and trace identifiers for a specific module
DMAP modname CONS-70, CONS-72
alarm filter list
ALARM FILTER=? CONS-45
alarm limit values
ALARM LIMITS=? CONS-46
alarm logging table
ALARM LOG=? CONS-47, CONS-49
alarm parameters in effect
ALARM SHOW CONS-43
alarm pulse parameters
ALARM PULSE=? CONS-50
all CDF definitions and parameters
DNWDF ALL CONS-95
all command modifiers in effect
DPARM MODIFIERS CONS-101
all configuration information for a specific LOCAL definition
DLCL lclname CONS-57
all configuration information for a specific REMOTE definition

DRMT rmtname CONS-118
 all EXEC parameters and command modifiers in effect
 DPARM ALL CONS-101
 all EXEC parameters in effect
 DPARM EXEC CONS-101
 all help information for a specific command
 HELP command CONS-148
 all LOCAL definition names
 DLCL LNM= CONS-57
 all parameters for a specific LOCAL definition
 DNWDF lclname LOCAL CONS-97
 all parameters for a specific REMOTE definition
 DNWDF rmtname REMOTE CONS-98
 all parameters for BUILD definition
 DNWDF BUILD CONS-96
 all REMOTE definition names
 DRMT RNM= CONS-117
 all trace trap parameters
 TRCTRAP SHOW CONS-307
 all trap actions
 TRCTRAP TRAPACTION=? CONS-313
 APAR and trace identifiers for all modules
 DMAP ALL CONS-71
 APAR identifiers for all modules
 DMAP APAR CONS-72
 APAR identifiers for all modules in APAR order
 DNAS APAR CONS-85
 APAR identifiers for all modules in module order
 DMAP APAR CONS-70
 configuration information for a specific LU on a specific REMOTE definition
 DRMT rmtname SVCi=sluname CONS-122
 data in memory
 DMEM address CONS-55
 HNAS JCL
 DNAS JCL CONS-87
 HNAS load address
 DLP CONS-59
 LU information for a specific IDand CID
 DLU ID=id CID=cid CONS-66
 LU information for a specific LU
 DLU sluname CONS-67
 LU information for all LUs
 DLU BPM CONS-66
 LU information for all LUs on a specific MCH
 DLU mchname CONS-67
 MCH information for a specific IDand LUN

DMCH ID=id LUN=lun CONS-77
 MCH information for all MCHs
 DMCH BPM CONS-77
 module list
 DMAP CONS-71, CONS-73
 partial configuration information for a specific LOCAL definition
 DLCL lclname parmname1 parmname2 ... CONS-58
 partial configuration information for a specific REMOTE definition
 DRMT rmtname parmname1 parmname2 ... CONS-122
 partial help information for all commands
 HELP CONS-149
 PCE information for a specific PCE
 DPCE ID=id CONS-110
 PCE information for all PCEs
 DPCE BPM CONS-108
 PCE information for all PCEs for a specific REMOTE definition
 DPCE RNM=rmtname CONS-110
 permanent CID= modifier value
 CID=? CONS-51
 DPARM MODIFIERS CONS-51
 permanent CLDADDR= modifier value
 CLDADDR=? CONS-52
 DPARM MODIFIERS CONS-52
 permanent CLGADDR= modifier value
 CLGADDR=? CONS-52
 DPARM MODIFIERS CONS-52
 permanent ID= modifier value
 DPARM MODIFIERS CONS-151
 ID=? CONS-151
 permanent IFN= modifier value
 DPARM MODIFIERS CONS-152
 IFN=? CONS-152
 permanent IPADDR= modifier value
 DPARM MODIFIERS CONS-153
 IPADDR=? CONS-153
 permanent LNCT= modifier value
 DPARM MODIFIERS CONS-154
 LNCT=? CONS-154
 permanent LNM= modifier value
 DPARM MODIFIERS CONS-155
 LNM=? CONS-155
 permanent LUN= modifier value
 DPARM MODIFIERS CONS-156
 LUN=? CONS-156
 permanent LUNM= modifier value
 DPARM MODIFIERS CONS-157

- LUNM=? CONS-157
- permanent RNM= modifier value
 - DPARM MODIFIERS CONS-225
 - RNM=? CONS-225
- specific APAR identifier for all modules
 - DNAS APAR aparid CONS-87
- specific command modifiers in effect
 - DPARM CID= CLDADDR= CLGADDR= ID= ... CONS-103
- specific USERMOD identifier for all modules
 - DNAS USERMODS probid CONS-87
- statistics information for a group of PCEs
 - DSTATS ID=minid-maxid CONS-124
- statistics information for a specific PCE
 - DSTATS ID=id CONS-124
- SYSPRINT switching parameters
 - PRNT PRTSWLST=? CONS-215
- the active schedule list
 - SCHEDULE LIST CONS-230
- the most recent trace table entries
 - DTRC entrycount CONS-125
- trace identifiers for all modules in module order
 - DMAP TRACE CONS-70
- traced resource values
 - DADDR ALL|parmname CONS-53
- trap alarm filter list
 - TRCTRAP ALRMLIST=? CONS-310
- trap receive filter list
 - TRCTRAP RCVLIST=? CONS-311
- trap transmit filter list
 - TRCTRAP XMTLIST=? CONS-311
- USERMOD identifiers for all modules in USERMOD order
 - DNAS USERMODS CONS-86
- VC information for a specific IDand VCN
 - DVC ID=id VCN=vcn CONS-131
- VC information for all VCs
 - DVC BPM CONS-131
- How To Execute
 - a dataset command list
 - EXEC ddname CONS-140
 - an inline command list
 - EXEC (cmd1,...,cmdn) CONS-142
- How To Find
 - data in memory
 - FIND B=begaddr E=endaddr D=hexdata|'text' CONS-146
- How To Force
 - binding of a CTCP PLU with a GATE control SLU defined on an XTP|MCH RE-

MOTE resource
 MRMT rmtname LUNAME=sluname/pluname* CONS-186
 snapshot dump processing
 TRCTRAP SNAP CONS-307
 How To Inhibit
 any trap action from being performed due to trapped event
 TRCTRAP TRAPACTION=NONE CONS-312
 buffer tracing for all PCE types
 TRCBFR NOTYPES CONS-253
 data tracing for all PCE types
 TRCDATA NOTYPES CONS-264
 dispatcher tracing for all PCE types
 TRCDISP NOTYPES CONS-270
 I/O tracing for all PCE types
 TRCIO NOTYPES CONS-275
 remote console access
 RMTCONS OFF CONS-223
 statistics collection for all PCE types
 STATS NOTYPES CONS-244
 subroutine call tracing for all events
 TRCSUBR NOEVENTS CONS-303
 How To Insert
 a new entry in an RTEIN operand for a LOCAL resource
 MLCL lclname RTEIN=ith,mchname/dteaddr{T|S} CONS-164
 a second entry for an existing MCH in an RTEIN operand for a LOCAL resource
 MLCL lclname RTEIN=ith,mchname/dteaddr{T|S} CONS-168
 How To Maximize
 the amount of command input that is echoed back
 ECHOXEQ MAX CONS-137
 How To Minimize
 the amount of command input that is echoed back
 ECHOXEQ MIN CONS-136
 How To Modify
 alarm filter list
 ALARM FILTER=(A|S|P,id1(A|S|P|FC|FU),...) CONS-43
 alarm limit values
 ALARM LIMITS=(interval,ilmt,dlmt,almt,wlmt,elmt,slmt,mlmt) CONS-46
 CLDADDR= modifier value
 CLDADDR=ddd...ddd CONS-52
 CLGADDR modifier value
 CLGADDR=ddd...ddd CONS-52
 data in memory
 MMEM address xx...xx CONS-159
 LNCT= modifier value
 LNCT=decvalue CONS-154
 LNM= modifier value

- LNM=lcname CONS-155
- LUNM= modifier value
 - LUNM=luname CONS-157
- RNM= modifier value
 - RNM=rmtname CONS-225
- SYSPRINT switching parameters
 - PRNT PRTSWLST=(parmlist) CONS-213
- the HNAS EOMDATE
 - MMEM EOMKEY=dd...dd CONS-158
- the HNAS EOTDATE
 - MMEM EOTKEY=dd...dd CONS-159
- trap alarm filter list
 - TRCTRAP ALRMLIST=(id1/dat1/sod1,...) CONS-309
- trap receive filter list
 - TRCTRAP RCVLIST=(prot1|pkt1,...) CONS-310
- trap transmit filter list
 - TRCTRAP XMTLIST=(prot1|pkt1,...) CONS-310
- How To Provide
 - a forced delay console delay
 - PAUSE seconds CONS-204
- How To Reset
 - alarm filter list
 - ALARM FILTER=* CONS-45
 - alarm limit values
 - ALARM LIMITS=* CONS-46
 - alarm logging table
 - ALARM LOG=RESET CONS-47
 - alarm pulse parameters
 - ALARM PULSE=* CONS-50
 - all trap actions
 - TRCTRAP TRPACTION=* CONS-313
 - TRCTRAP TRPACTION=NONE CONS-312
 - specific resource trace control table
 - TRCADDR PRG CONS-247
 - SYSPRINT switching parameters
 - PRNT PRTSWLST=* CONS-215
 - trap alarm filter list
 - TRCTRAP ALRMLIST=* CONS-310
 - trap receive filter list
 - TRCTRAP RCVLIST=* CONS-311
 - trap transmit filter list
 - TRCTRAP XMTLIST=* CONS-311
- How To Resume
 - all suspended trap action processing
 - TRCTRAP RSMEALL CONS-307
 - suspended EXEC console command list processing due to trap action

- TRCTRAP RSMEEXEC CONS-307
- suspended snapshot dump processing due to trap action
- TRCTRAP RSMESNAP CONS-307
- suspended trace logging
- TRCALL RSME CONS-249
- TRCTRAP RSME CONS-307
- suspended trace logging due to trap action
- TRCTRAP RSME CONS-307
- the active schedule list
- SCHEDULE RSME CONS-230
- How To Schedule
- a dataset schedule list
- SCHEDULE ddname CONS-227
- an inline schedule list
- SCHEDULE (time1,cmd1,....,timen,cmdn) CONS-230
- How To Send
- message to all consoles
- SMSG BPM 'msgtext' CONS-240
- message to another console
- SMSG ID=id 'msgtext' CONS-240
- How To Set
- long format alarm messages
- ALARM MSGTXT=LONG CONS-49
- short format alarm messages
- ALARM MSGTXT=SHORT CONS-49
- How To Start
- alarm message compression
- SHOW CMSG ON CONS-236
- alarm mode for a remote console
- ALARM START CONS-42
- alarm pulse operation
- ALARM PULSE=(hh.mm.ss, hh.mm.ss,seconds) CONS-50
- alarm WTO prefixing with NASNAME
- PFXWTO ON CONS-205
- alarm WTO prefixing with specified text
- PFXWTO text CONS-206
- global binary search table tracing
- TRCBST ON CONS-257
- global buffer request tracing
- TRCBFRQ ON CONS-256
- global buffer tracing for all PCEs
- TRCBFR ALLON CONS-252
- global configuration call tracing
- TRCCNFG ON CONS-258
- global console event tracing for all console PCEs
- TRCCONS ALLON CONS-260

global data block tracing
TRCDBK ON CONS-267

global data tracing for all PCEs
TRCDATA ALLON CONS-263

global dispatcher tracing for all PCEs
TRCDISP ALLON CONS-270

global I/O tracing for all PCEs
TRCIO ALLON CONS-274

global LU event tracing for all LUs
TRCLU ALLON CONS-279

global LU maximum data block logging for all LUs
TRCLU MAXDATA CONS-279

global LU minimum data block logging for all LUs
TRCLU MINDATA CONS-279

global LU queue tracing for all LU queues
TRCLUQ ALLON CONS-283

global MCH event tracing for all MCHs
TRCMCH ALLON CONS-289

global MCH inbound Call Request failure logging for all MCHs
TRCMCH GBL ICRF ON CONS-288

global MCH inbound Call Request logging for all MCHs
TRCMCH GBL ICR ON CONS-288

global MCH inbound Clear Request logging for all MCHs
TRCMCH GBL ICLR ON CONS-288

global MCH outbound Call Request logging for all MCHs
TRCMCH GBL OCR ON CONS-288

global MCH outbound Clear Request logging for all MCHs
TRCMCH GBL OCLR ON CONS-288

global MCHX event tracing for all MCHXs
TRCMCHX ALLON CONS-295

global PCE event tracing for all PCEs
TRCPCE ALLON CONS-298

global TAP maximum data display for all routers
MON TAP MAXDATA CONS-171

global TAP minimum data display for all routers
MON TAP MINDATA CONS-171

global TAP packet data display for all routers
MON TAP PKTDATA CONS-171

global task WAIT/POST tracing
TRCTASK ON CONS-305

global tracing for all resources
TRCALL ON CONS-248

global VC event tracing for all VCs
TRCVC ALLON CONS-316

global VC maximum data block logging for all VCs
TRCVC MAXDATA CONS-317

global VC minimum data block logging for all VCs
 TRCVC MINDATA CONS-317
 global VC queue tracing for all VC queues
 TRVCQ ALLON CONS-320
 global WTO subroutine call tracing
 TRCWTO ON CONS-322
 local buffer tracing for a group of PCEs
 TRCBFR ID=minid-maxid ON CONS-252
 local buffer tracing for a specific PCE
 TRCBFR ID=id ON CONS-252
 local buffer tracing for all PCEs
 TRCBFR BPM ON CONS-252
 local buffer tracing for all PCEs for a REMOTE
 TRCBFR rmtname ON CONS-252
 local console event tracing for a group of console PCEs
 TRCCONS ID=minid-maxid ON CONS-260
 local console event tracing for a specific console PCE
 TRCCONS ID=id ON CONS-260
 local console event tracing for all console PCEs
 TRCCONS BPM ON CONS-260
 local console WTO prefixing with NASNAME
 PFXWTO CONS ON CONS-206
 local console WTO prefixing with specified text
 PFXWTO text PFXWTO OFF CONS ON CONS-206
 local data tracing for a group of PCEs
 TRCDATA ID=minid-maxid ON CONS-263
 local data tracing for a specific PCE
 TRCDATA ID=id ON CONS-263
 local data tracing for all PCEs
 TRCDATA BPM ON CONS-263
 local data tracing for all PCEs for a REMOTE
 TRCDATA rmtname ON CONS-263
 local dispatcher tracing for a group of PCEs
 TRCDISP ID=minid-maxid ON CONS-269
 local dispatcher tracing for a specific PCE
 TRCDISP ID=id ON CONS-269
 local dispatcher tracing for all PCEs
 TRCDISP BPM ON CONS-269
 local dispatcher tracing for all PCEs for a REMOTE
 TRCDISP rmtname ON CONS-269
 local I/O tracing for a group of PCEs
 TRCIO ID=minid-maxid ON CONS-274
 local I/O tracing for a specific PCE
 TRCIO ID=id ON CONS-274
 local I/O tracing for all PCEs
 TRCIO BPM ON CONS-274

local I/O tracing for all PCEs for a REMOTE
 TRCIO rmtname ON CONS-274
 local LU data block logging for a specific ID and CID
 TRCLU ID=id CID=cid DBK ON CONS-279
 local LU data block logging for a specific LU
 TRCLU sluname DBK ON CONS-279
 local LU data block logging for all LUs
 TRCLU BPM DBK ON CONS-279
 local LU data block logging for all LUs for a specific REMOTE
 TRCLU BPM rmtname DBK ON CONS-279
 local LU event tracing for a specific ID and CID
 TRCLU ID=id CID=cid ON CONS-278
 local LU event tracing for a specific LU
 TRCLU sluname ON CONS-278
 local LU event tracing for all LUs
 TRCLU BPM ON CONS-278
 local LU event tracing for all LUs for a specific REMOTE
 TRCLU BPM rmtname ON CONS-278
 local LU queue data block logging for a specific ID and LUN
 TRCLUQ ID=id LUN=lun DBK ON CONS-283
 local LU queue data block logging for all LU queues for a specific REMOTE
 TRCLUQ BMP rmtname DBK ON CONS-283
 local LU queue tracing for a specific ID and LUN
 TRCLUQ ID=id LUN=lun ON CONS-283
 local LU queue tracing for all LU queues for a specific REMOTE
 TRCLUQ BPM rmtname ON CONS-283
 local MCH event tracing for a specific ID
 TRCMCH ID=id ON CONS-287
 local MCH event tracing for a specific MCH REMOTE
 TRCMCH mchname ON CONS-287
 local MCH inbound Call Request failure logging for a specific ID
 TRCMCH ID=id LCL ICRF ON CONS-287
 local MCH inbound Call Request failure logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICRF ON CONS-287
 local MCH inbound Call Request logging for a specific ID
 TRCMCH ID=id LCL ICR ON CONS-287
 local MCH inbound Call Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICR ON CONS-287
 local MCH inbound Clear Request logging for a specific ID
 TRCMCH ID=id LCL ICLR ON CONS-288
 local MCH inbound Clear Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICLR ON CONS-288
 local MCH outbound Call Request logging for a specific ID
 TRCMCH ID=id LCL OCR ON CONS-287
 local MCH outbound Call Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL OCR ON CONS-287

local MCH outbound Clear Request logging for a specific ID
 TRCMCH ID=id LCL OCLR ON CONS-288

local MCH outbound Clear Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL OCLR ON CONS-288

local MCHX data block logging for a specific ID and LUN
 TRCMCHX ID=id LUN=lun DBK ON CONS-295

local MCHX data block logging for all CTCP LUs for a specific REMOTE
 TRCMCHX BMP rmtname DBK ON CONS-295

local MCHX event tracing for a specific ID and LUN
 TRCMCHX ID=id LUN=lun ON CONS-294

local MCHX event tracing for all CTCP LUs for a specific REMOTE
 TRCMCHX BMP rmtname ON CONS-294

local PCE event tracing for a specific ID
 TRCPCE ID=id ON CONS-298

local PCE event tracing for all PCEs for a specific REMOTE
 TRCPCE rmtname ON CONS-298

local VC data block logging for a specific ID and VCN
 TRCVC ID=id VCN=vcn DBK ON CONS-316

local VC data block logging for all VCs
 TRCVC BPM DBK ON CONS-316

local VC data block logging for all VCs for a specific REMOTE
 TRCVC BMP rmtname DBK ON CONS-316

local VC event tracing for a specific ID and VCN
 TRCVC ID=id VCN=vcn ON CONS-316

local VC event tracing for all VCs
 TRCVC BPM ON CONS-316

local VC event tracing for all VCs for a specific REMOTE
 TRCVC BMP rmtname ON CONS-316

local VC queue data block logging for a specific ID
 TRCVCQ ID=id DBK ON CONS-320

local VC queue data block logging for all VC queues for a specific REMOTE
 TRCVCQ rmtname DBK ON CONS-320

local VC queue tracing for a specific ID
 TRCVCQ ID=id ON CONS-320

local VC queue tracing for all VC queues for a specific REMOTE
 TRCVCQ rmtname ON CONS-320

PING operation using a pre-configured TYPE=DMY REMOTE definition
 PING dmyname CONS-208

remote console WTO prefixing with time
 PFXWTO ON CONS-206

shutdown processing after command list execution
 QE ddname|(cmdlist) CONS-221

shutdown processing no dump, immediate
 QS CONS-221

shutdown processing with ABEND dump
 QA/password CONS-221

shutdown processing with SNAP dump
 QY/password CONS-220
 shutdown processing without SNAP dump
 QQ/password CONS-220
 statistics collection for a group of PCEs
 STATS ID=minid-maxid ON CONS-244
 statistics collection for a specific PCE
 STATS ID=id ON CONS-244
 statistics collection for all PCEs
 STATS BPM ON CONS-244
 statistics collection for all PCEs for a REMOTE
 STATS rmtname ON CONS-244
 subroutine call tracing
 TRCSUBR ON CONS-303
 SYSCONS all alarm and console output display
 SHOW ALLON CONS-237
 SYSCONS all alarm display
 SHOW ON CONS-235
 SYSCONS console output display
 SHOW CONS ON CONS-237
 SYSCONS error alarm display
 SHOW ERR CONS-236
 SYSCONS verbose alarm display
 SHOW MORE CONS-237
 SYSPRINT record prefixing with time
 PRNT TIMESTAMP=time-values CONS-213
 SYSPRINT switching automatically
 PRNT PRTSWLST=(parmlist) CONS-213
 SYSPRINT trace logging
 TRCPRNT ON CONS-300
 tracing for a specific called DTE address
 TRCADDR CLDADDR=ddd...ddd ADD CONS-247
 tracing for a specific calling DTE address
 TRCADDR CLGADDR=ddd...ddd ADD CONS-247

How To Stop

a command list
 EXEC STOP CONS-143
 alarm mode for a remote console
 ALARM STOP CONS-42
 alarm pulse operation
 ALARM PULSE=* CONS-50
 alarm WTO prefixing with NASNAME
 PFXWTO OFF CONS-206
 global binary search table tracing
 TRCBST OFF CONS-257
 global buffer request tracing

TRCBFRQ OFF CONS-256
global buffer tracing for all PCEs
TRCBFR ALLOFF CONS-253
global configuration call tracing
TRCCNFG OFF CONS-258
global console event tracing for all console PCEs
TRCCONS ALLOFF CONS-260
global data block tracing
TRCDBK OFF CONS-267
global data tracing for all PCEs
TRCDATA ALLOFF CONS-264
global dispatcher tracing for all PCEs
TRCDISP ALLOFF CONS-270
global I/O tracing for all PCEs
TRCIO ALLOFF CONS-275
global LU data block logging for all LUs
TRCLU NODATA CONS-279
global LU event tracing for all LUs
TRCLU ALLOFF CONS-279
global LU queue tracing for all LU queues
TRCLUQ ALLOFF CONS-283
global MCH event tracing for all MCHs
TRCMCH ALLOFF CONS-289
global MCH inbound Call Request failure logging for all MCHs
TRCMCH GBL ICRF OFF CONS-288
global MCH inbound Call Request logging for all MCHs
TRCMCH GBL ICR OFF CONS-288
global MCH inbound Clear Request logging for all MCHs
TRCMCH GBL ICLR OFF CONS-288
global MCH outbound Call Request logging for all MCHs
TRCMCH GBL OCR OFF CONS-288
global MCH outbound Clear Request logging for all MCHs
TRCMCH GBL OCLR OFF CONS-289
global MCHX event tracing for all MCHXs
TRCMCHX ALLOFF CONS-295
global PCE event tracing for all PCEs
TRCPCE ALLOFF CONS-298
global TAP data display for all routers
MON TAP NODATA CONS-171
global task WAIT/POST tracing
TRCTASK OFF CONS-305
global tracing for all resources
TRCALL OFF CONS-249
global VC data block logging for all VCs
TRCVC NODATA CONS-317
global VC event tracing for all VCs

TRCVC ALLOFF CONS-316
 global VC queue tracing for all VC queues
 TRCVCQ ALLOFF CONS-320
 global WTO subroutine call tracing
 TRCWTO OFF CONS-322
 local buffer tracing for a group of PCEs
 TRCBFR ID=minid-maxid OFF CONS-252
 local buffer tracing for a specific PCE
 TRCBFR ID=id OFF CONS-252
 local buffer tracing for all PCEs
 TRCBFR BPM OFF CONS-252
 local buffer tracing for all PCEs for a REMOTE
 TRCBFR rmtname OFF CONS-252
 local console event tracing for a group of console PCEs
 TRCCONS ID=minid-maxid OFF CONS-260
 local console event tracing for a specific console PCE
 TRCCONS ID=id OFF CONS-260
 local console event tracing for all console PCEs
 TRCCONS BPM OFF CONS-260
 local console WTO prefixing with NASNAME
 PFXWTO CONS OFF CONS-206
 local data tracing for a group of PCEs
 TRCDATA ID=minid-maxid OFF CONS-263
 local data tracing for a specific PCE
 TRCDATA ID=id OFF CONS-263
 local data tracing for all PCEs
 TRCDATA BPM OFF CONS-263
 local data tracing for all PCEs for a REMOTE
 TRCDATA rmtname OFF CONS-263
 local dispatcher tracing for a group of PCEs
 TRCDISP ID=minid-maxid OFF CONS-269
 local dispatcher tracing for a specific PCE
 TRCDISP ID=id OFF CONS-269
 local dispatcher tracing for all PCEs
 TRCDISP BPM OFF CONS-269
 local dispatcher tracing for all PCEs for a REMOTE
 TRCDISP rmtname OFF CONS-269
 local I/O tracing for a group of PCEs
 TRCIO ID=minid-maxid OFF CONS-274
 local I/O tracing for a specific PCE
 TRCIO ID=id OFF CONS-274
 local I/O tracing for all PCEs
 TRCIO BPM OFF CONS-274
 local I/O tracing for all PCEs for a REMOTE
 TRCIO rmtname OFF CONS-274
 local LU data block logging for a specific ID and CID

TRCLU ID=id CID=cid DBK OFF CONS-279
 local LU data block logging for a specific LU
 TRCLU sluname DBK OFF CONS-279
 local LU data block logging for all LUs
 TRCLU BPM DBK OFF CONS-279
 local LU data block logging for all LUs for a specific REMOTE
 TRCLU BPM rmtname DBK OFF CONS-279
 local LU event tracing for a specific ID and CID
 TRCLU ID=id CID=cid OFF CONS-279
 local LU event tracing for a specific LU
 TRCLU sluname OFF CONS-279
 local LU event tracing for all LUs
 TRCLU BPM OFF CONS-279
 local LU event tracing for all LUs for a specific REMOTE
 TRCLU BPM rmtname OFF CONS-279
 local LU queue data block logging for a specific ID and LUN
 TRCLUQ ID=id LUN=lun DBK OFF CONS-283
 local LU queue data block logging for all LU queues for a specific REMOTE
 TRCLUQ BMP rmtname DBK OFF CONS-283
 local LU queue tracing for a specific ID and LUN
 TRCLUQ ID=id LUN=lun OFF CONS-283
 local LU queue tracing for all LU queues for a specific REMOTE
 TRCLUQ BMP rmtname OFF CONS-283
 local MCH event tracing for a specific ID
 TRCMCH ID=id OFF CONS-287
 local MCH event tracing for a specific MCH REMOTE
 TRCMCH mchname OFF CONS-287
 local MCH inbound Call Request failure logging for a specific ID
 TRCMCH ID=id LCL ICRF OFF CONS-287
 local MCH inbound Call Request failure logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICRF OFF CONS-287
 local MCH inbound Call Request logging for a specific ID
 TRCMCH ID=id LCL ICR OFF CONS-287
 local MCH inbound Call Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICR OFF CONS-287
 local MCH inbound Clear Request logging for a specific ID
 TRCMCH ID=id LCL ICLR OFF CONS-288
 local MCH inbound Clear Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL ICLR OFF CONS-288
 local MCH outbound Call Request logging for a specific ID
 TRCMCH ID=id LCL OCR OFF CONS-288
 local MCH outbound Call Request logging for a specific MCH REMOTE
 TRCMCH mchname LCL OCR OFF CONS-288
 local MCH outbound Clear Request logging for a specific ID
 TRCMCH ID=id LCL OCLR OFF CONS-288
 local MCH outbound Clear Request logging for a specific MCH REMOTE

TRCMCH mchname LCL OCLR OFF CONS-288
 local MCHX data block logging for a specific ID and LUN
 TRCMCHX ID=id LUN=lun DBK OFF CONS-295
 local MCHX data block logging for all CTCP LUs for a specific REMOTE
 TRCMCHX BMP rmtname DBK OFF CONS-295
 local MCHX event tracing for a specific ID and LUN
 TRCMCHX ID=id LUN=lun OFF CONS-294
 local MCHX event tracing for all CTCP LUs for a specific REMOTE
 TRCMCHX BMP rmtname OFF CONS-294
 local PCE event tracing for a specific ID
 TRCPCE ID=id OFF CONS-298
 local PCE event tracing for all PCEs for a specific REMOTE
 TRCPCE rmtname OFF CONS-298
 local VC data block logging for a specific ID and VCN
 TRCVC ID=id VCN=vcn DBK OFF CONS-316
 local VC data block logging for all VCs
 TRCVC BPM DBK OFF CONS-316
 local VC data block logging for all VCs for a specific REMOTE
 TRCVC BMP rmtname DBK OFF CONS-316
 local VC event tracing for a specific ID and VCN
 TRCVC ID=id VCN=vcn OFF CONS-316
 local VC event tracing for all VCs
 TRCVC BPM OFF CONS-316
 local VC event tracing for all VCs for a specific REMOTE
 TRCVC BMP rmtname OFF CONS-316
 local VC queue data block logging for a specific ID
 TRCVCQ ID=id DBK OFF CONS-320
 local VC queue data block logging for all VC queues for a specific REMOTE
 TRCVCQ rmtname DBK OFF CONS-320
 local VC queue tracing for a specific ID
 TRCVCQ ID=id OFF CONS-320
 local VC queue tracing for all VC queues for a specific REMOTE
 TRCVCQ rmtname OFF CONS-320
 remote console WTO prefixing with time
 PFXWTO OFF CONS-206
 statistics collection for a group of PCEs
 STATS ID=minid-maxid OFF CONS-244
 statistics collection for a specific PCE
 STATS ID=id OFF CONS-244
 statistics collection for all PCEs
 STATS BPM OFF CONS-244
 statistics collection for all PCEs for a REMOTE
 STATS rmtname OFF CONS-244
 subroutine call tracing
 TRCSUBR OFF CONS-303
 SYSCONS all alarm and console output display

- SHOW ALLOFF CONS-237
- SYSCONS all alarm display
 - SHOW OFF CONS-236
- SYSCONS console output display
 - SHOW CONS OFF CONS-236, CONS-237
- SYSCONS verbose alarm display
 - SHOW LESS CONS-237
- SYSPRINT switching
 - PRNT PRTSWLST=* CONS-215
- SYSPRINT trace logging
 - TRCPRNT OFF CONS-300
- tracing for a specific called DTE address
 - TRCADDR CLDADDR=ddd...ddd DEL CONS-247
- tracing for a specific calling DTE address
 - TRCADDR CLGADDR=ddd...ddd DEL CONS-247
- tracing for all IP and called and calling DTE addresses
 - TRCADDR PRG CONS-247
- How To Suspend
 - the active schedule list
 - SCHEDULE SUSP CONS-230
 - trace logging
 - TRCALL SUSP CONS-249
 - TRCTRAP SUSP CONS-307
- Informational Event/Alert Messages Exceptions (NASnnnnl) CONS-14
- Input Rules CONS-6
 - blanks CONS-6
 - cancel character CONS-6
 - command decode failures CONS-12
 - command lists CONS-9
 - command modifiers CONS-10
 - command parameters CONS-8
 - command separators CONS-7
 - commas CONS-6
 - conflicting parameters CONS-8
 - delete character CONS-6
 - duplicated parameters CONS-8
 - end character CONS-6
 - input case CONS-6
 - input parsing CONS-8
 - input record length CONS-7
 - multiple command parameters CONS-9
 - multiple commands CONS-9
 - numeric input CONS-7
 - omitted suboperands CONS-7
 - omitted values CONS-7
 - parameter separators CONS-7

- parentheses CONS-6
- quotes CONS-7
- sublist CONS-7
- Miscellaneous Rules CONS-21
 - command change control/version, release, modification CONS-21
 - command parameters versus command actions CONS-21
 - command parameter action matrix keys CONS-21
 - command versus start parameter CONS-21
- Output Overview CONS-13
- Output Rules CONS-13
 - aborting output CONS-18
 - blank column in tabular display CONS-18
 - default alarm message output destination CONS-14
 - default console command output destination CONS-14
 - default console display command output CONS-14
 - echoing command execution parameters CONS-18
 - echoing command input CONS-17
 - echoing queued command input CONS-17
 - local console name in alarm messages - WACONPCE CONS-17
 - Netview alarm message output routing CONS-15
 - Netview console command output routing CONS-15
 - new definition (NEWDEFN) output CONS-19
 - numeric display CONS-18
 - Remote console name in alarm messages - RCONnnnn CONS-17
 - table display CONS-17
- Parameter Processing Matrix
 - ALARM CONS-42
 - EXEC CONS-139
 - PFXWTO CONS-205
 - PRNT CONS-212
 - RMTCONS CONS-223
 - SCHEDULE CONS-226
 - SHOW CONS-235
 - SNAP CONS-241
 - STATS CONS-244
 - TRCADDR CONS-247
 - TRCALL CONS-248
 - TRCBFR CONS-252
 - TRCBFRQ CONS-256
 - TRCBST CONS-257
 - TRCCNFG CONS-258
 - TRCCONS CONS-260
 - TRCDATA CONS-263
 - TRCDBK CONS-267
 - TRCDISP CONS-269
 - TRCIO CONS-274

TRCLU CONS-278
 TRCLUQ CONS-283
 TRCMCH CONS-286
 TRCMCHX CONS-294
 TRCPCE CONS-298
 TRCPRNT CONS-300
 TRCSUBR CONS-303
 TRCTASK CONS-305
 TRCTRAP CONS-306
 TRCVC CONS-316
 TRCVCQ CONS-320
 TRCWTO CONS-322
 VARY CONS-324
 Terminology CONS-3
 Alert and Alarm messages CONS-3
 Console PCE name as a suffix command modifier CONS-11
 Default Suffix Command Modifiers CONS-4
 Global Actions CONS-3
 Local Actions CONS-3
 LU and SLU CONS-3
 Parameters, Arguments, Operands CONS-4
 PCE name as a suffix command modifier CONS-10
 PLU CONS-3
 Prefix Command Modifiers CONS-4
 Resource State Indications CONS-4
 Suffix Command Modifiers CONS-4
 SYSCONS CONS-3
 Console Command Error Messages DocOverview-3, DocOverview-4, CONSMSGS-1
 Console Command Response Error Messages DocOverview-3, DocOverview-4
 Console Commands CONS-1
 console commands versus start parameters CONS-21
 Console Error Messages
 NASC002E CONSMSGS-2
 NASC003E CONS-12, CONSMSGS-2
 NASC005W CONSMSGS-3
 NASC006W CONSMSGS-3
 NASC013E CONSMSGS-3
 NASC014E CONSMSGS-4
 NASC015E CONSMSGS-4
 NASC020W CONSMSGS-4
 NASC021W CONSMSGS-5
 NASC022W CONSMSGS-5
 NASC023W CONSMSGS-6
 NASC030E CONSMSGS-6
 NASC031E CONSMSGS-6
 NASC050E CONSMSGS-7

NASC051E CONSMSGS-7
NASC052W CONSMSGS-8
NASC053E CONSMSGS-8
NASC054E CONSMSGS-9
NASC055I CONSMSGS-10
NASC090E CONSMSGS-10
NASC091E CONSMSGS-11
NASC092E CONSMSGS-11
NASC093E CONSMSGS-11
NASC100E CONSMSGS-12
NASC110E CONSMSGS-13
NASC121E CONSMSGS-13
NASC200E CONSMSGS-14
NASC204E CONSMSGS-14
NASC210E CONSMSGS-15
NASC211E CONSMSGS-15
NASC212E CONSMSGS-15
NASC300E CONSMSGS-16
NASC310E CONSMSGS-16
NASC311E CONSMSGS-17
NASC312E CONSMSGS-17
NASC313W CONSMSGS-17, CONSMSGS-18
NASC400E CONSMSGS-18
NASC410E CONSMSGS-18
NASC421E CONSMSGS-19
NASC422E CONSMSGS-19
NASC423E CONSMSGS-20
NASC500E CONSMSGS-20
NASC511E CONSMSGS-20
NASC512E CONSMSGS-21
NASC513E CONSMSGS-21
NASC515E CONSMSGS-22
NASC520E CONSMSGS-22
NASC521E CONSMSGS-22
NASC531E CONSMSGS-23
NASC532E CONSMSGS-23
NASC533E CONSMSGS-23
NASC611W CONSMSGS-24, CONSMSGS-25
Console Subsystem DocOverview-3, CONS-1
Command Header Description CONS-40
Commands
 ALARM - Alarm Selection Control CONS-41
 ALARM - Parameter Processing Matrix CONS-42
 D - Display Memory CONS-55
 DADDR - Display TRCADDR Addresses CONS-53
 Action Matrix CONS-53

DLCL - Display LOCAL Configuration Parameters CONS-56
 Action Matrix CONS-56

DLP - Display HNAS Load Point CONS-59

DLU - Display Logical Unit CONS-60

DMAP - Display Module Map CONS-70

DMEM - Display Memory CONS-55

DNAS - Display HNAS Information CONS-80

DNWDF - Display NEw Definition CDF CONS-89

DNWDF - Display New Definition Parameters
 Action Matrix CONS-92

DPARM - Display Command Modifiers and Parameters
 Action Matrix CONS-100

DPCE - Display Process Control Element CONS-104

DRMT - Display REMOTE Configuration Parameters CONS-113
 Action Matrix CONS-115

DSTATS - Display Statistics CONS-123

DTRC - Display Trace Table CONS-125

DVC - Display Virtual Circuit CONS-126

ECHOXEQ - Echo Command Parameter Control
 Action Matrix CONS-136

ECHOXEQ - HNASXEQ Echo Control CONS-136

END command list CONS-138

EXEC - Execute Command List CONS-139, CONS-226

EXEC - Parameter Processing Matrix CONS-139

FIND - Find data in storage CONS-146

HELP - Display Command Help CONS-147

M - Modify Memory CONS-158

MLCL - Modify LOCAL Configuration Parameters CONS-161
 Action Matrix CONS-161

MMEM - Modify Memory CONS-158

MONITOR - Monitor HNAS Utilization CONS-169
 Action Matrix CONS-172

MRMT - Modify REMOTE Configuration Parameters CONS-177
 Action Matrix CONS-181

PAUSE - Pause Console Processing CONS-204

PFXWTO - Parameter Processing Matrix CONS-205

PFXWTO - WTO Prefix Control CONS-205

PING - Ping Remote Router and/or MCH Link CONS-207

PRNT - Console Print Control CONS-211
 Action Matrix CONS-216

PRNT - Parameter Processing Matrix CONS-212

Q - Terminate Operations CONS-220

QUIT - Terminate Operations CONS-220

RMTCONS - Parameter Processing Matrix CONS-223

RMTCONS - Remote Console Control CONS-223

SCHEDULE - Parameter Processing Matrix CONS-226

SHOW - Console Logging Control CONS-235
Action Matrix CONS-238

SHOW - Parameter Processing Matrix CONS-235

SMSG - Send Message to Another Console CONS-240

SNAP - Dump HNAS memory areas to SYSPRINT CONS-241

SNAP - Parameter Processing Matrix CONS-241

STATS - Parameter Processing Matrix CONS-244

STATS - Statistics Collection Control CONS-243
Action Matrix CONS-245

TRCADDR - Parameter Processing Matrix CONS-247

TRCADDR - Specific Resource Trace Control CONS-247

TRCALL - Parameter Processing Matrix CONS-248

TRCALL - Trace ALL Control CONS-248
Action Matrix CONS-249

TRCBFR - Parameter Processing Matrix CONS-252

TRCBFR - PCE I/O Buffer Trace Control CONS-251
Action Matrix CONS-253

TRCBFR - PCE I/O Data Trace Control CONS-262

TRCBFRQ - Parameter Processing Matrix CONS-256

TRCBFRQ - XFBFR Subroutine Call Trace Control CONS-256

TRCBST - Binary Search Trace Control CONS-257

TRCBST - Parameter Processing Matrix CONS-257

TRCCNFG - Configuration Subroutine Call Trace Control CONS-258, CONS-259

TRCCNFG - Parameter Processing Matrix CONS-258

TRCCONS - Console PCE Event Trace Control
Action Matrix CONS-260

TRCCONS - Parameter Processing Matrix CONS-260

TRCDATA - Parameter Processing Matrix CONS-263

TRCDATA - PCE I/O Data Trace Control
Action Matrix CONS-264

TRCDBK - Data Block Trace Control CONS-267

TRCDBK - Parameter Processing Matrix CONS-267

TRCDISP - Parameter Processing Matrix CONS-269

TRCDISP - PCE Dispatcher Trace Control CONS-268
Action Matrix CONS-270

TRCIO - Parameter Processing Matrix CONS-274

TRCIO - PCE I/O Trace Control CONS-273
Action Matrix CONS-275

TRCLU - LU Trace Control CONS-277
Action Matrix CONS-279

TRCLU - Parameter Processing Matrix CONS-278

TRCLUQ - MCH LU Queue Trace Control CONS-282
Action Matrix CONS-284

TRCLUQ - Parameter Processing Matrix CONS-283

TRCMCH - MCH Trace Control CONS-285
Action Matrix CONS-290

TRCMCH - Parameter Processing Matrix CONS-286
 TRCMCHX - MCH CTCP Trace Control CONS-293
 Action Matrix CONS-295
 TRCMCHX - Parameter Processing Matrix CONS-294
 TRCPCE - Parameter Processing Matrix CONS-298
 TRCPCE - PCE Trace Control CONS-297
 Action Matrix CONS-299
 TRCPRNT - Parameter Processing Matrix CONS-300
 TRCPRNT - Trace Table Print Control CONS-300
 TRCSUBR - Parameter Processing Matrix CONS-303
 TRCSUBR - Subroutine Call Trace Control CONS-302, CONS-305, CONS-306
 Action Matrix CONS-303
 TRCTASK - Parameter Processing Matrix CONS-305
 TRCTRAP - Parameter Processing Matrix CONS-306
 TRCVC - Parameter Processing Matrix CONS-316
 TRCVC - VC Trace Control CONS-315
 Action Matrix CONS-317
 TRCVCQ - MCH VC Queue Trace Control CONS-319
 Action Matrix CONS-320
 TRCVCQ - Parameter Processing Matrix CONS-320
 TRCWTO - Parameter Processing Matrix CONS-322
 TRCWTO - XFWTO Subroutine Call Trace Control CONS-322
 V - Vary Resource State CONS-323
 VARY - Parameter Processing Matrix CONS-324
 VARY - Vary Resource State CONS-323
 WRU - Display NASNAME= Operand CONS-329
 Header Layout Description CONS-40
 Modifiers
 CID= - Set LUB Identifier CONS-51
 CLDADDR= - Set Called DTE Address CONS-52
 CLGADDR= - Set Calling DTE Address CONS-52
 ID= - Set PCE Identifier CONS-151
 IFN= - Set MCH Interface Number CONS-152
 IPADDR= - Set DTE IP Address CONS-153
 LNCT= - Set Remote Console Scroll Line Count CONS-154
 LNM= - Set LOCAL Name CONS-155
 LUN= - Set MCHX (CTCP) Identifier CONS-156
 LUNM= - Set SLU Name CONS-157
 RNM= - Set REMOTE Name CONS-225
 VCN= - Set VCB Identifier CONS-328
 Modify command input CONS-1
 Process Control Element Identification (ID=) Table CONS-34
 Console Subsystem Operations Guide DocOverview-3, DocOverview-4
 Console Subsystem Operations Guide & Trace Formats DocOverview-3
 Console Users Guide DocOverview-4
 Contact Information preface-ii

D

Default Console Display Command Output CONS-14

DEL CONS-247

DIST=, DNAS reference CONS-80

DMAP APAR Default Console Display Command Output CONS-14

DMY Remote

 PING Command usage CONS-208

DNAS Default Console Display Command Output CONS-14

Documentation

 HNAS Index - Revision DocOverview-4

 HNAS Index - Standard DocOverview-4

 HNAS Master Index DocOverview-4

 Overview reference DocOverview-4

 Preface reference DocOverview-4

 Prefix reference DocOverview-4

 Table of Contents reference DocOverview-4

Documentation Overview DocOverview-1

Documentation Reference

 Cisco preface-v

 Comm-Pro preface-v

 IBM

 preface-v

Documentation APAR maintenance level reference DocOverview-1

Documentation revision date reference DocOverview-1

E

E-mail address for HNAS documentation support DocOverview-5

Emergency Support Information Support-vii

F

Facsimile, direct service no longer provided Support-viii

FAX, direct service no longer provided Support-viii

ftp

 comm-pro4ftp.com ftp server site reference DocOverview-5

FTP Server Site address for HNAS DocOverview-5

G

General Information preface-ii

General Support Information Support-vii

Glossary documentation reference DocOverview-2

H

HALT ABEND Messages DocOverview-3

Hexadecimal console display output CONS-18

Hexadecimal Console Output Rules numeric display CONS-18

HNAS

 Y2K Compliant preface-iii

HNAS Alert Messages DocOverview-3

HNAS APAR Maintenance Level included in this Documentation DocOverview-1

HNAS BIND Failure User Sense Codes DocOverview-3
 HNAS Books in Pkware ZIP Format DocOverview-4
 HNAS Changes & New Features DocOverview-2
 HNAS Cisco Messages Relating to HNAS Events DocOverview-3
 HNAS Comm-Pro Biography preface-iii
 HNAS Configuration Error Messages DocOverview-2, DocOverview-3, DocOverview-4
 HNAS Configuration Examples DocOverview-2
 HNAS Configuration Guide DocOverview-2
 HNAS Configuration Messages DocOverview-2
 HNAS Configuration Reference DocOverview-2
 HNAS Console Command Error Messages DocOverview-3, DocOverview-4
 HNAS Console Subsystem DocOverview-3
 HNAS Console Subsystem Operations Guide DocOverview-3, DocOverview-4
 HNAS Console Subsystem Operations Guide & Trace Formats DocOverview-3
 HNAS Console Users Guide DocOverview-4
 HNAS Datafono Guide
 content was merged into standard 240 documentation sections. preface-v
 HNAS Documentation Format DocOverview-5
 HNAS Documentation Locations DocOverview-5
 HNAS Documentation Maintenance DocOverview-5
 HNAS Documentation Overview DocOverview-1
 HNAS Emergency Support Information Support-vii
 HNAS General Support Information Support-vii
 HNAS Glossary DocOverview-2
 HNAS Guide and Reference manual DocOverview-1
 HNAS Halt Messages (NASHALT or User Abends) DocOverview-3
 HNAS Installation and Operation Guide DocOverview-1
 HNAS Installation, Activation and Run Time Guide DocOverview-2
 HNAS Introduction DocOverview-1
 HNAS Maintenance and APAR Summaries DocOverview-2
 HNAS Master Index DocOverview-4
 HNAS Master Index - Index Entries for All HNAS Books and Guides DocOverview-4
 HNAS Messages and Codes Debugging Guide DocOverview-2
 HNAS Migration Guide DocOverview-2
 HNAS Preface DocOverview-1
 HNAS Prefix DocOverview-1
 HNAS Related Publications preface-v
 HNAS Router Checklist Overview DocOverview-2
 HNAS Special Notices preface-iii
 HNAS TCP/IP Error Numbers (ERRNO) DocOverview-3
 HNAS Trace Entry Formats DocOverview-4
 HNAS Trace Table Entries DocOverview-4
 HNAS X.25 Clear Cause and Diagnostic Codes DocOverview-3
 HNAS X.25 Reset Cause and Diagnostic Codes DocOverview-3
 HNAS X.3 PAD Parameters DocOverview-2
 HNASBooks in Pkware ZIP Format DocOverview-4

Host NAS Console Command Error Messages CONSMSGS-1

I

IBM

Documentation References preface-v

IBM 22nn router reference preface-v

IBM Corporation preface-iii, preface-v

IBM NWAYS Multiprotocol Access Services - IBM 22nn preface-v

ID= Process Control Element Identification Table CONS-34

Important note DocOverview-2

Important Notes preface-ii

includes maintenance thru 2300nnn reference DocOverview-1

Incoming Call Request packet trace data CONS-289

Index (Standard and Revision) documentation reference DocOverview-4

Installation Using SMP/E Guide

Booklet content merged into Chapter2 (Installation) of the Host NAS Configuration Guide and Reference. DocOverview-2

Installation, Activation and Run Time Guide DocOverview-2

Introduction DocOverview-1

Console

How To Add

an RTEIN operand entry for a LOCAL resource

MLCL lclname RTEIN= CONS-163

an RTEOUT operand entry for a LOCAL resource

MLCL lclname RTEOUT= CONS-165

L

Local Console CONS-1

local console

priveleged TSO user CONS-1

system console operator CONS-1

LU Dynamic Configuration Pool (OPTIONS=LUDRPOOLCNT=) CONS-183

M

Maintenance and APAR Summaries DocOverview-2

Master Index DocOverview-4

Master Index - Index Entries for All HNAS Manuals DocOverview-4

Master Index documentation reference DocOverview-4

Master Operator Console CONS-1

Console

How To Modify

CID= modifier value

CID=mincid CONS-51

ID= modifier value

ID=minid CONS-151

IFN= modifier value

IFN=minifn CONS-152

LUN= modifier value

LUN=minlun CONS-156
mchname/dteaddr{T|S} CONS-163
Messages and Codes Debugging Guide DocOverview-2
Microsoft Corporation preface-iii
Migration Guide DocOverview-2
mm DocOverview-3, DocOverview-4

N

NAS0111W reference CONS-48
NAS251nM Monitor Entry reference CONS-176
NAS7730I CONS-285
NAS7731I CONS-285
NASC002E CONSMSGS-2
NASC003E CONS-12, CONSMSGS-2
NASC005W CONSMSGS-3
NASC006W CONSMSGS-3
NASC013E CONSMSGS-3
NASC014E CONSMSGS-4
NASC015E CONSMSGS-4
NASC020W CONSMSGS-4
NASC021W CONSMSGS-5
NASC022W CONSMSGS-5
NASC023W CONSMSGS-6
NASC030E CONSMSGS-6
NASC031E CONSMSGS-6
NASC050E CONSMSGS-7
NASC051E CONSMSGS-7
NASC052W CONSMSGS-8
NASC053E CONSMSGS-8
NASC054E CONSMSGS-9
NASC055I CONSMSGS-10
NASC090E CONSMSGS-10
NASC091E CONSMSGS-11
NASC092E CONSMSGS-11
NASC093E CONSMSGS-11
NASC100E CONSMSGS-12
NASC110E CONSMSGS-13
NASC121E CONSMSGS-13
NASC200E CONSMSGS-14
NASC204E CONSMSGS-14
NASC210E CONSMSGS-15
NASC211E CONSMSGS-15
NASC212E CONSMSGS-15
NASC300E CONSMSGS-16
NASC310E CONSMSGS-16
NASC311E CONSMSGS-17
NASC312E CONSMSGS-17

NASC313W CONSMMSGs-17, CONSMMSGs-18
 NASC400E CONSMMSGs-18
 NASC410E CONSMMSGs-18
 NASC421E CONSMMSGs-19
 NASC422E CONSMMSGs-19
 NASC423E CONSMMSGs-20
 NASC500E CONSMMSGs-20
 NASC511E CONSMMSGs-20
 NASC512E CONSMMSGs-21
 NASC513E CONSMMSGs-21
 NASC515E CONSMMSGs-22
 NASC520E CONSMMSGs-22
 NASC521E CONSMMSGs-22
 NASC531E CONSMMSGs-23
 NASC532E CONSMMSGs-23
 NASC533E CONSMMSGs-23
 NASC611W CONSMMSGs-24, CONSMMSGs-25
 NASCjmnE CONSMMSGs-1
 NASHALT ABEND Messages DocOverview-3
 NASnnnnM Monitor Entry reference CONS-176
 NASnnnnT Trace Entry reference CONS-289
 NASxxxxs message reference CONS-43
 New Definition File (NEWDEFN) CONS-19, CONS-162, CONS-183
 New Features DocOverview-2
 Console
 How To Change
 the Outbound Call User Data for a REMOTE resource
 MRMT rmtname CUD=NULL|NONE| CONS-183
 the Outbound Facilities Data for a REMOTE resource
 MRMT rmtname FAC=NULL|NONE| CONS-185
 an option for a LOCAL resource
 MLCL lclname OPTION= CONS-163
 NWAYS Multiprotocol Access Services - IBM 22nn preface-v
O
 optionname CONS-163
 Outbound Call Request packet trace data CONS-289
P
 PING Command
 DMY Remote usage CONS-208
 PING xot not affected by RTEOUT= filtering CONS-208
 Preface DocOverview-1
 Preface documentation reference DocOverview-4
 Prefix DocOverview-1
 Prefix documentation reference DocOverview-4
 Process Control Element Identification (ID=) Table CONS-34
 PTF - See APAR Maintenance Summaries DocOverview-2

PVC Hexadecimal display considerations CONS-18
PVC Setup CONS-325, CONS-326
PVC Setup Packet logging CONS-287, CONS-288
PVC Setup Status Codes (RFC-1613) DocOverview-3
PVC, force a new PVC Setup sequence CONS-327
PVC, force socket closure to facilitate a new PVC Setup sequence. CONS-327

R

Related Publications preface-v
Cisco Systems preface-v
Comm-Pro preface-v
HNAS Configuration Guide and Reference preface-v
HNAS Console Subsystem Operations Guide preface-v
HNAS Console Subsystem Operations Guide & Trace Formats preface-v
HNAS Master Index preface-v
HNAS Messages and Codes Debugging Guide preface-v
IBM Corporation preface-v
Misc preface-v
RFC1613 - XOT (X25 Over TCP) preface-v
Remote Console CONS-1
remote console
XTP|XOT end user CONS-1
Request for Comment
RFC1613 - XOT (X25 Over TCP) preface-v
Revision Index now contained in Master Index Book - Notice - preface-v
Revision to DOC
Entries moved into separate Revision Index preface-ii, CONS-1
Revision to PGM
Entries moved into separate Revision Index preface-ii, CONS-1
RFC1613 - XOT (X25 Over TCP) preface-v
rmtname/dteaddr{T|S}/desctext CONS-165
Router Checklist Overview DocOverview-2

S

SHIPID=, DNAS reference CONS-80
SHOWERR/ALRMFLTR= interaction CONS-44, CONS-236
SMP/E HNAS Product Installation Guide
content was merged into Chapter 2 of the Host NAS Guide and Reference Book preface-v
Special Notices preface-iii
start parameters versus console commands CONS-21
Support reference DocOverview-1
Support, Emergency Information Support-vii
Support, General Information Support-vii
support@comm-pro.com e-mail address reference DocOverview-5
SVC Call Request Packet logging CONS-287, CONS-288
SVC Clear Request Packet event logging CONS-288
SYSCONS

see system console CONS-1

System Abend Codes (Host System Abend) DocOverview-3

T

Table of Contents documentation reference DocOverview-4

TCP/IP Error Numbers (ERRNO) DocOverview-3

Terminology

Console Subsystem CONS-3

Trace Entry Formats DocOverview-4

Trace Table Entries DocOverview-4

TraceTable Entries section of this product documentation

Provided in CONSTRC book

Not provided in the CONSOLE only book CONS-1

Trademarks preface-iii

Trial Users Authorization Considerations

Converting a trial distribution to a permanent distribution using an EOMKEY CONS-159

V

Vendor Reference

Cisco preface-iii, preface-v

IBM preface-iii, preface-v

Microsoft preface-iii

Other preface-iii

VERSION=, DNAS reference CONS-80

VRM - Version, Release, Modification Identifier CONS-21

W

Web Site address for HNAS DocOverview-5

www.cisco.com web site reference preface-v

www.comm-pro.com/hostnas/docs/docindx.com web site reference DocOverview-5

www.networking.ibm.com/375/public.html web site reference preface-v

X

X.25 Clear Cause and Diagnostic Codes DocOverview-3

X.25 Reset Cause and Diagnostic Codes DocOverview-3

X.3 PAD Parameters DocOverview-2

xx...xx CONS-183, CONS-185

Y

Y2K Compliant preface-iii

Year 2000 Compliant preface-iii