

z/OS Communications Server



Quick Reference

Version 2 Release 1

Note:

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 211.

This edition applies to Version 2 Release 1 of z/OS (5650-ZOS), and to subsequent releases and modifications until otherwise indicated in new editions.

IBM welcomes your comments. You can send us comments electronically by using one of the following methods:

Internet email:

comsvrcf@us.ibm.com

World Wide Web:

<http://www.ibm.com/systems/z/os/zos/webqs.html>

If you would like a reply, be sure to include your name, address, and telephone number. Make sure to include the following information in your comment or note:

- Title and order number of this document
- Page number or topic related to your comment

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© Copyright IBM Corporation 2000, 2015.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Tables	vii
About this document	ix
Summary of changes	xi
Changes made in z/OS Version 2 Release 1, as updated February 2015	xi
Summary of changes for z/OS Version 2 Release 1	xi
Chapter 1. IP commands	1
IP MVS operator commands	1
DISPLAY TCPIP	1
DISPLAY TCPIP HELP	1
DISPLAY TCPIP NETSTAT	3
DISPLAY TCPIP OMPROUTE	6
DISPLAY TCPIP OSAINFO	8
DISPLAY TCPIP STOR	8
VARY TCPIP SYNTAXCHECK	8
DISPLAY TCPIP SYSPLEX	8
DISPLAY TCPIP TELNET	9
DISPLAY TCPIP TRACE	12
EZACMD command	12
MODIFY TCPIP command	13
START TCPIP	22
STOP TCPIP	22
VARY TCPIP DATTRACE	23
VARY TCPIP DROP	23
VARY TCPIP OBEYFILE	24
VARY TCPIP OSAENTA	24
VARY TCPIP PKTTRACE	26
VARY TCPIP PURGECACHE	27
VARY TCPIP START	28
VARY TCPIP STOP	28
VARY TCPIP SYNTAXCHECK	28
VARY TCPIP SYSPLEX	28
VARY TCPIP TELNET	28
TSO commands	30
DIG command	30
FTP command	32
GDDMXD command	54
HOMETEST command	56
KDESTROY command	56
KINIT command	56
KLIST command	57
KPASSWD command	57
LPQ command	57
LPR command	57
LPRM command	59
LPRSET command	59
MAKESITE command	60
NETSTAT command	60
NSLOOKUP command	64
PING command	65
REXEC command	66
RPCINFO command	66
RSH command	66

SMSG SMTP command	66
SMTPNOTE command	67
TELNET command	67
TESTSITE command	69
TRACERTE command	69
z/OS UNIX commands	69
dig command.	69
dnsdomainname command	71
ftp command	72
host command	72
hostname command	72
ipsec command	73
mailstats command.	78
netstat command	78
nssctl command	82
nsupdate Command	82
onslookup and nslookup command	83
ping command	84
orexec and rexec commands	85
orpcinfo and rpcinfo commands	85
snmp command	85
traceroute command	87
pasearch command	88
popper command	89
pwchange command	89
pwtokey command	89
sendmail command.	90
trmdstat command	90
Other IP commands, options, and subcommands	91

Chapter 2. VTAM commands 93

Operator display commands.	93
D ADJCLUST command	93
D ADJCP command	93
D ADJSSCPS command	93
D APING command	94
D APINGDTP command	95
D APINGTP command	95
D APPLS command	95
D APPNTOSA command	96
D AUTOLOG command	96
D BFRUSE command	96
D BNCOSMAP command	97
D CDRMS command	97
D CDRSCS command	98
D CLSTRS command	98
D CNOS command.	99
D CONVID command.	99
D COS command	100
D CPCP command	100
D CSDUMP command	101
D CSM command	101
D CSMUSE command	101
D DIRECTRY command.	101
D DISK command.	102
D DLURS command	102
D EE command	102
D EEDIAG command	103
D EXIT command	105
D GRAFFIN command	106
D GROUPS command	106

D GRPREFS command	107
D ID command	107
D INOPCODE command	108
D INOPDUMP command	108
D LINES command	108
D LMTBL command	109
D LUGROUPS command	109
D MAJNODES command	111
D MODELS command	111
D NCPSTOR command	111
D NETSRVR command	111
D PATHS command	112
D PATHTAB command	112
D PENDING command	112
D ROUTE command	112
D RSCLIST command	113
D RTPS command	115
D SAMAP command	116
D SATOAPPN command	116
D SESSIONS command	116
D SNSFILTR command	117
D SRCHINFO command	117
D STATIONS command	119
D STATS command	120
D STORUSE command	121
D TABLE command	122
D TERMS command	123
D TGPS command	123
D TNSTAT command	124
D TOPO command	124
D TRACES command	127
D TRL command	128
D TSOUSER command	129
D USERVAR command	129
D VTAMOPTS command	129
D VTAMSTOR command	130
Operator halt commands	131
HALT (Z) command	131
Z CANCEL command	131
Z QUICK command	131
Operator modify commands	132
F ALSLIST command	132
F APINGDTP command	132
F APINGTP command	132
F BFRUSE command	133
F CDRM command	133
F CHKPT command	133
F CNOS command	133
F COMPRESS command	135
F CSALIMIT command	135
F CSDUMP command	135
F CSM command	136
F DEFAULTS command	136
F DEFINE command	137
F DIRECTRY command	138
F DR command	138
F DUMP command	139
F ENCR command	141
F EXIT command	141
F GR command	142
F IMR command	142

F INOPCODE command	143
F INOPDUMP command	143
F IOPD command	143
F IOPURGE command	143
F LINEDEF command	144
F LL2 command	144
F LOAD command	144
F MSGMOD command	146
F NCP command	146
F NEG POLL command	146
F NOTNSTAT command	146
F NOTRACE command	146
F POLL command	153
F PPOLOG command	153
F PROFILES command	154
F RESOURCE command	154
F RTP command	155
F SECURITY command	156
F SESSION command	156
F SUPP command	157
F TABLE command	157
F TGP command	158
F TNSTAT command	158
F TOPO command	158
F TRACE command	160
F USERVAR command	166
F VTAMOPTS command	167
Starting VTAM	175
START command	175
Operator VARY commands	175
V ACQ command	175
V ACT command	176
V ANS command	181
V AUTOLOG command	181
V CFS command	182
V DIAL command	182
V DRDS command	182
V HANGUP command	182
V INACT command	182
V INOP command	186
V LOGON command	186
V NOLOGON command	186
V PATH command	186
V REL command	187
V TERM command	187
Start options	188
Other VTAM codes and commands	206

Appendix. Accessibility 207

Notices 211

Policy for unsupported hardware	219
Trademarks	219

Communicating your comments to IBM 221

Tables

1. IP commands, options, and subcommands	91
2. Other VTAM codes and commands	206

About this document

This quick reference summarizes information found in:

- z/OS Communications Server: IP Configuration Guide
- z/OS Communications Server: IP User's Guide and Commands
- z/OS Communications Server: IP System Administrator's Commands
- z/OS Communications Server: SNA Operation
- z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures

The information in this document includes descriptions of support for both IPv4 and IPv6 networking protocols. Unless explicitly noted, descriptions of IP protocol support concern IPv4. IPv6 support is qualified within the text.

This document is provided as a source of commonly used operation information for experienced system programmers and operators, and it contains information on:

- IP MVS™ Operator commands
- VTAM® commands
- VTAM start options

Use the table of contents to locate the reference information you need. For more detailed information, refer to the document listed at the start of each section.

Summary of changes

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Changes made in z/OS Version 2 Release 1, as updated February 2015

This document contains information previously presented in z/OS® Communications Server: Quick Reference, SC27-3665-00, which supported z/OS Version 2 Release 1.

Changed information

- Shared Memory Communications over RDMA adapter (RoCE) virtualization, see the following topics:
 - “F CSDUMP command” on page 135
 - “Start options” on page 188

Summary of changes for z/OS Version 2 Release 1

For specifics on the enhancements for z/OS Version 2, Release 1, see the following publications:

- z/OS Summary of Message and Interface Changes
- z/OS Introduction and Release Guide
- z/OS Planning for Installation
- z/OS Migration

Chapter 1. IP commands

In this section, commands are listed alphabetically.

For more information on these commands, see *z/OS Communications Server: IP Configuration Guide* and *z/OS Communications Server: IP System Administrator's Commands*.

IP MVS operator commands

DISPLAY TCPIP

Display the status of the current TCP/IP images:

This is the general format of the DISPLAY command used to display the status of the current TCP/IP images.

►► Display—TCPIP—

This is the format of DISPLAY command used to display information about TCP/IP applications.

►► Display—TCPIP,—,APPL=*applid*,CMD=CLIENT—

└─*procname*─┘

DISPLAY TCPIP HELP

Display the syntax of MVS operator commands for TCP/IP:

►► Display —TCPIP—,—,HELp

└─ <i>tcpproc</i> ─┘	,HELp
	,DATtrace
	,Display
	,DRop
	Netstat Display command
	,Obeyfile
	Omproute Display command
	,OSAENTA
	,OSAinfo
	,DATtrace
	,PKTtrace
	,PURGECache
	,STArt
	,STOp
	,STOR
	,SYNTAXCHECK
	Sysplex Display command
	Sysplex Vary command
	,TRACE
	,Vary

Netstat Display command:

,Netstat
,ACcEss
,ALL
,ALLConn
,ARp
,BYTEinfo
,CACHinfo
,CONFIG
,COnn
,DEFADDRt
,DEvlinks
,DRop
,H0me
,IDS
,ND
,PORTList
,RESCache
,ROUTe
,SOCKets
,SRCIP
,STATS
,TTLS
,VCRT
,VDPT
,VIPADCFG
,VIPADyn

Omproute Display command:

,OMProute
,OSPF
,RIP
,GENERIC
,RTTABLE
,IPV6OSPF
,IPV6RIP
,GENERIC6
,RT6TABLE

Sysplex Display command:

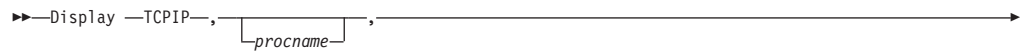
,SYSp1ex
,GR0UP
,PORTS
,VIPADyn

Sysplex Vary command:

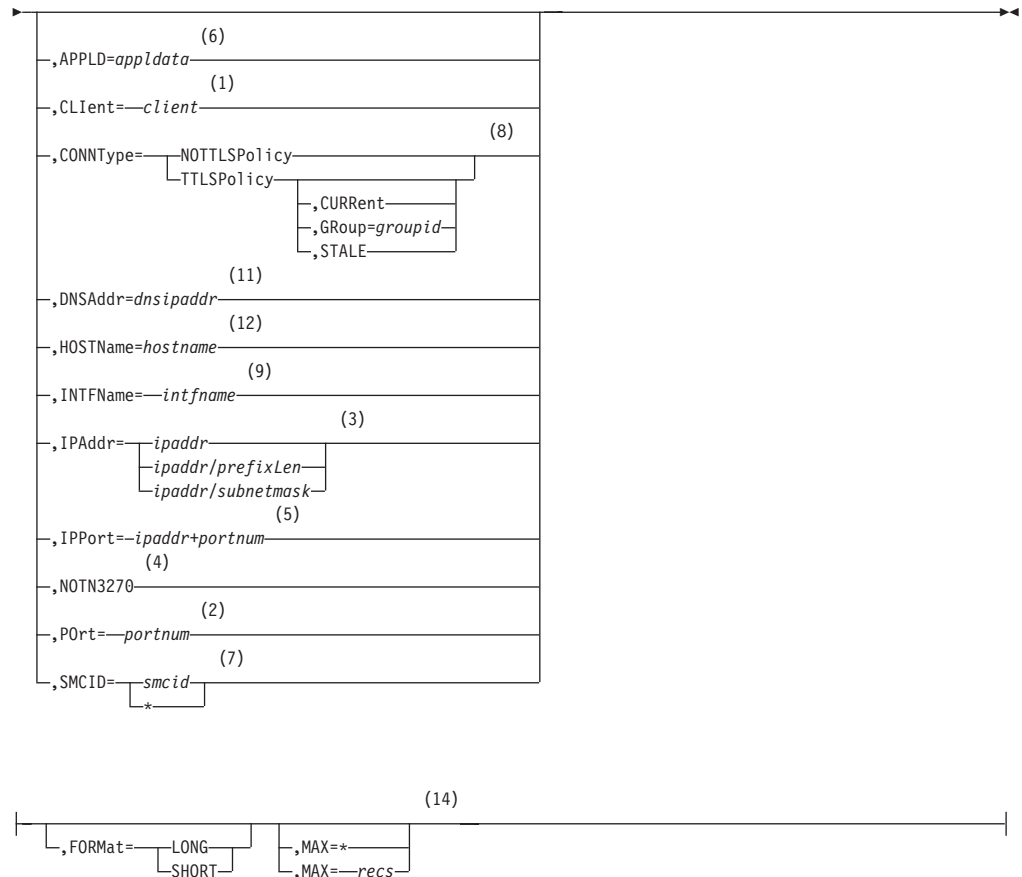


DISPLAY TCPIP NETSTAT

Request NETSTAT information:



Netstat	Access, Network └─, ipaddr─┘ (1) (2) (3) (4) (5) (6) (7)
ALL	└─SERVER─┘ (1) (2) (3) (4) (5) (6) (7) (8)
ALLConn	└─APPLDATA─┘
ARp	└─, netaddr─┘ (1) (3) (4)
BYTEinfo	└─, IDLETIME─┘
CACHinfo	
CONFIG	
COnn	(1) (2) (3) (4) (5) (6) (7) (8)
DEFADDRT	└─APPLDATA─┘ └─, SERVER─┘ (7) (9)
DEvlinks	└─, SMC─┘ (9)
H0me	(10)
IDS	└─, SUMmary─┘ └─, PROTOcol=─protocol─┘ (3)
ND	(2)
PORTList	(3) (11) (12)
RESCache	└─, SUMmary─┘ └─, DETAIL─┘ └─, NEGative─┘ └─, SUMmary─┘ └─, DNS─┘
ROUTE	(3) └─, ADDRTYPE=─IPV4─┘ └─, ADDRTYPE=─IPV6─┘ └─, DETAIL─┘ └─, IQDIO─┘ └─, PR=─ALL─┘ └─, PR=─prname─┘ └─, QDIOACCEL─┘ └─, RADV─┘ └─, RSTAT─┘ (1) (2) (3) (4) (5)
SOCKets	
SRCIP	(13)
STATS	└─, PROTOcol=─protocol─┘
TTLS	└─, GRoup─┘ └─, COnn=connid─┘ └─, DETAIL─┘ └─, GRoup─┘ └─, DETAIL─┘ (2) (3) (5)
VCRT	└─, DETAIL─┘ (2) (3) (5)
VDPT	└─, DETAIL─┘ (3)
VIPADCFG	└─, DETAIL─┘
VIPADyn	└─, DVIPA─┘ └─, VIPAROUTE─┘



Notes:

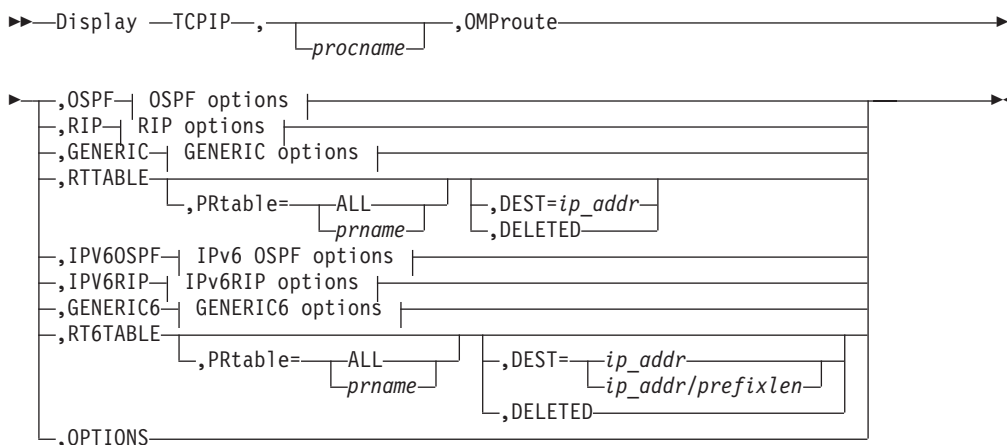
- 1 The CLient filter is valid only with ALL, ALLConn, BYTEinfo, CONn, and SOCKets.
- 2 The Port filter is valid only with ALL, ALLConn, CONn, PORTList, SOCKets, VCRT, and VDPT.
- 3 The IPAddr filter is valid only with ALL, ALLConn, BYTEinfo, CONn, ND, RESCachE, ROUTE, SOCKets, VCRT, VDPT, and VIPADCFG.
- 4 The NOTN3270 filter is valid only with ALL, ALLConn, BYTEinfo, CONn, and SOCKets.
- 5 The IPPort filter is valid only with ALL, ALLConn, CONn, SOCKets, VCRT, and VDPT.
- 6 The APPLD filter is valid only with ALL, ALLConn, and CONn.
- 7 The SMCID filter is valid only with ALL, ALLConn, CONn, and DEvlinks.
- 8 The CONNType filter is valid only with ALLConn and CONn.
- 9 The INTFName filter is valid only with DEvlinks and HOME.
- 10 The valid protocol values are TCP and UDP.
- 11 The DNSAddr select string is valid only with RESCachE.
- 12 The HOSTName select string is valid only with RESCachE.
- 13 The valid protocol values are IP, ICMP, TCP, and UDP.

- 14 If the MAX parameter is not specified on the command, the default value for the MAX parameter is the value of the MAXRECS parameter on the GLOBALCONFIG profile statement.

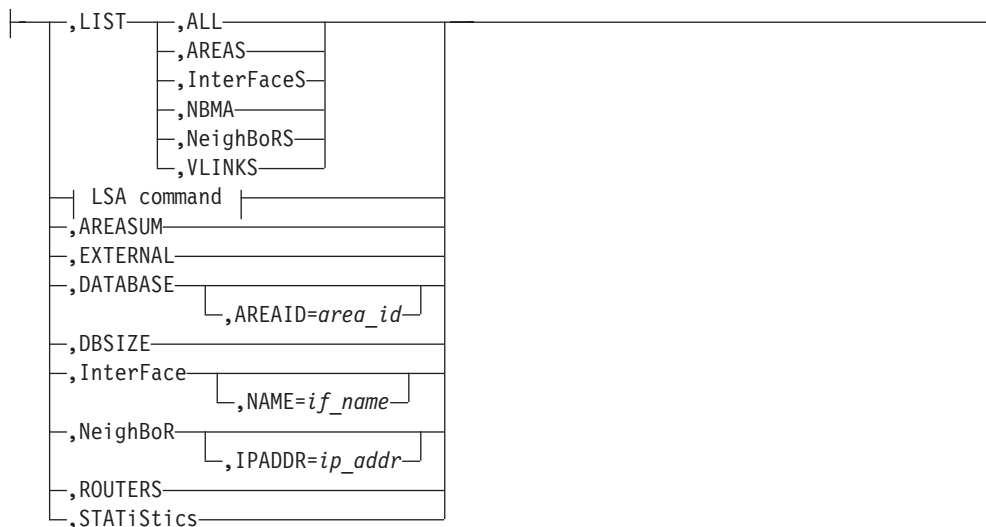
Note: The minimum abbreviation for each parameter is shown in uppercase letters.

DISPLAY TCP/IP OMROUTE

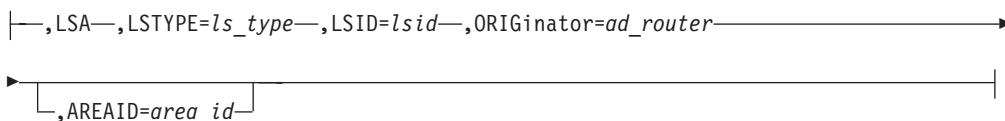
Display OMROUTE configuration and state information:



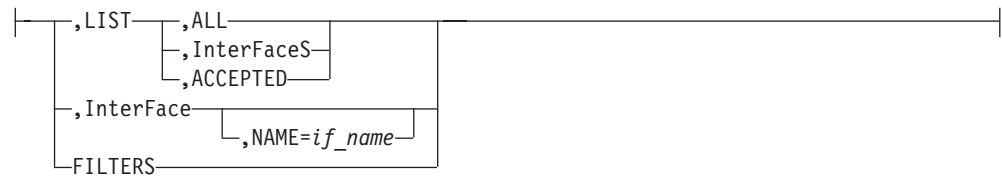
OSPF options:



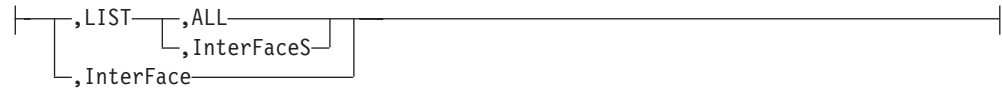
LSA command:



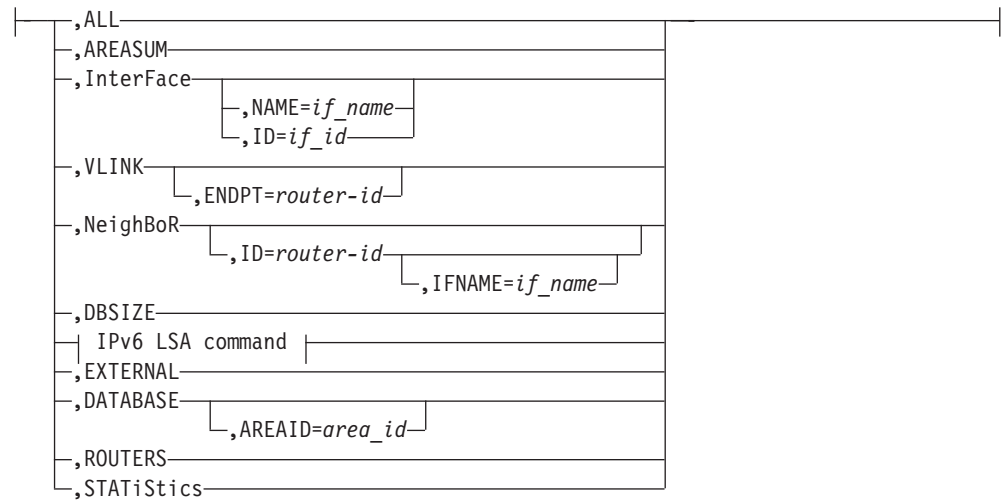
RIP options:



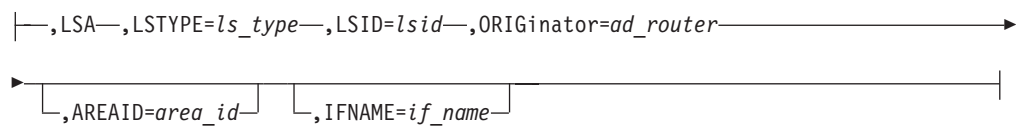
GENERIC options:



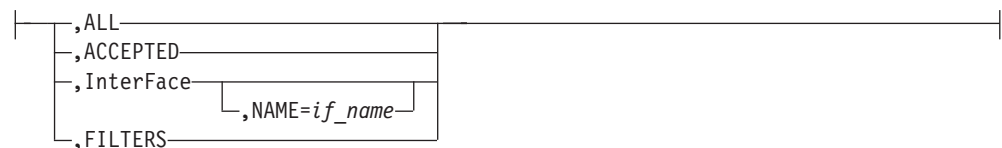
IPv6 OSPF options:



IPv6 LSA command:



IPv6RIP options:

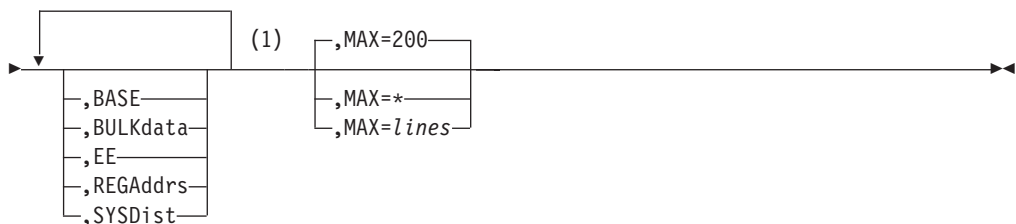
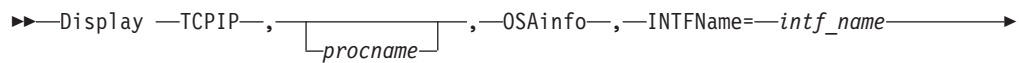


GENERIC6 options:



DISPLAY TCPIP OSAINFO

Request OSA information:



Notes:

- 1 If no modifiers are specified, all sections for which information exists are displayed.

Rule: You must specify the parameters in the order shown in the syntax diagram.

DISPLAY TCPIP STOR

Display TCP/IP storage usage information or the service level of a TCP/IP module:



VARY TCPIP SYNTAXCHECK

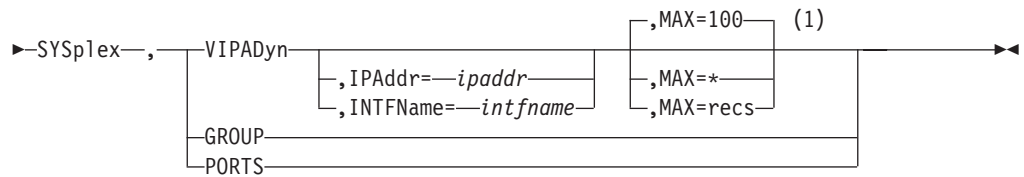
Check the syntax of TCP/IP configuration statements.



DISPLAY TCPIP SYSPLEX

Request SYSPLEX information:





Notes:

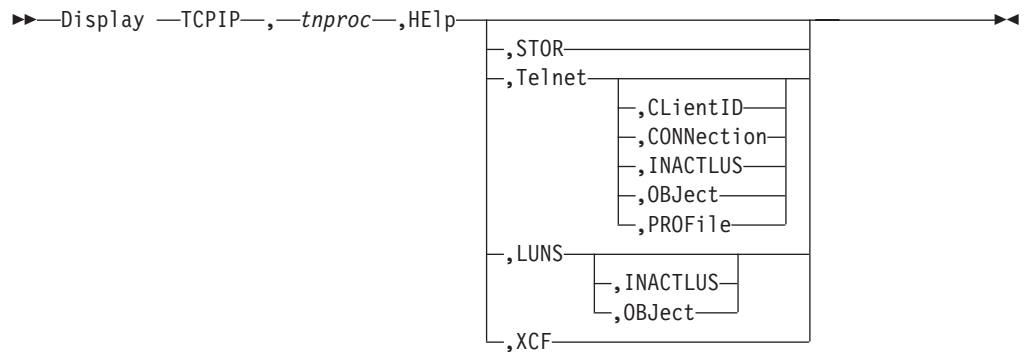
- 1 MAX limits the number of records displayed to the MVS operator's console.

DISPLAY TCPIP TELNET

This is the format of the DISPLAY command used to display the status of the current TN3270E Telnet server images.



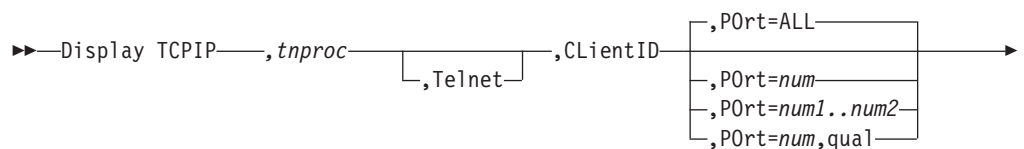
HELP display command:

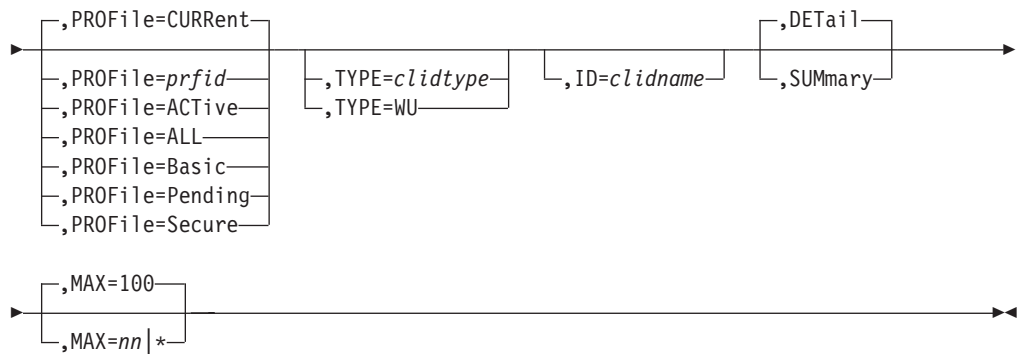


STOR display command:

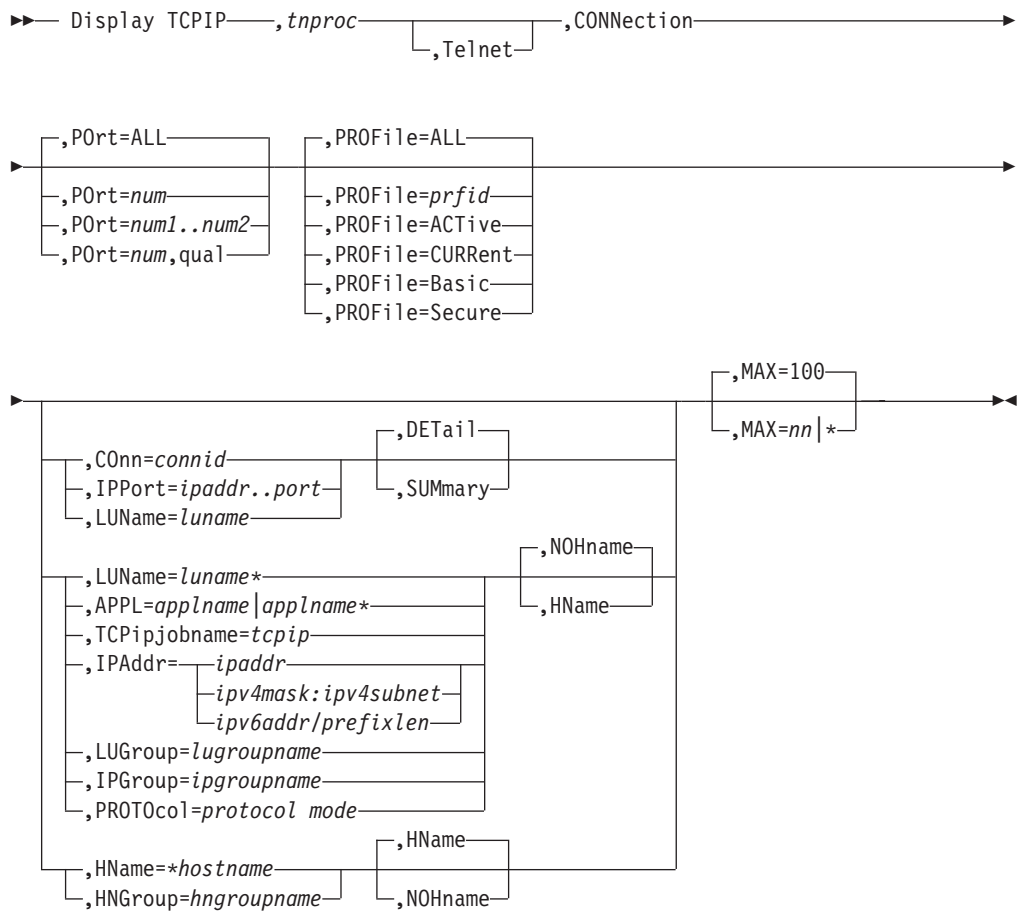


CLIENTID display command:

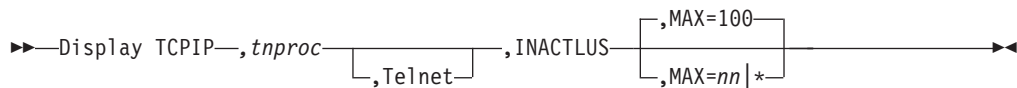




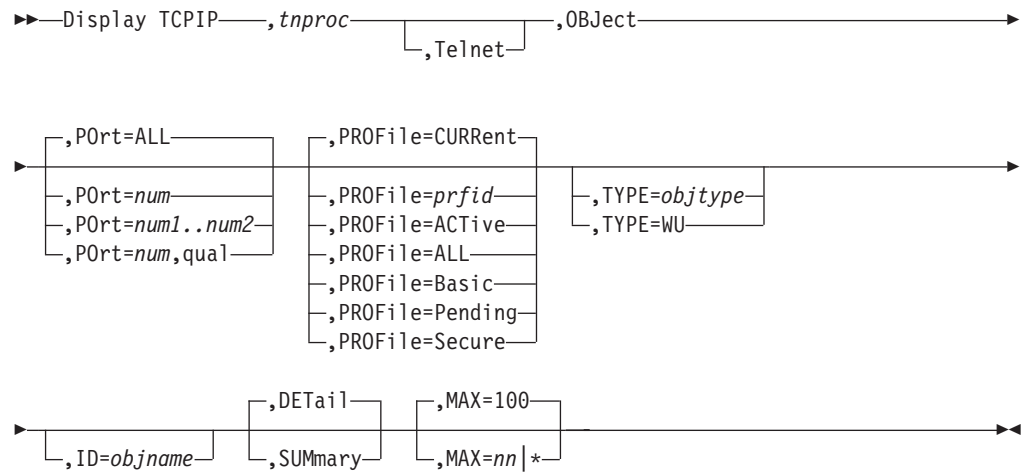
CONNECTION display command:



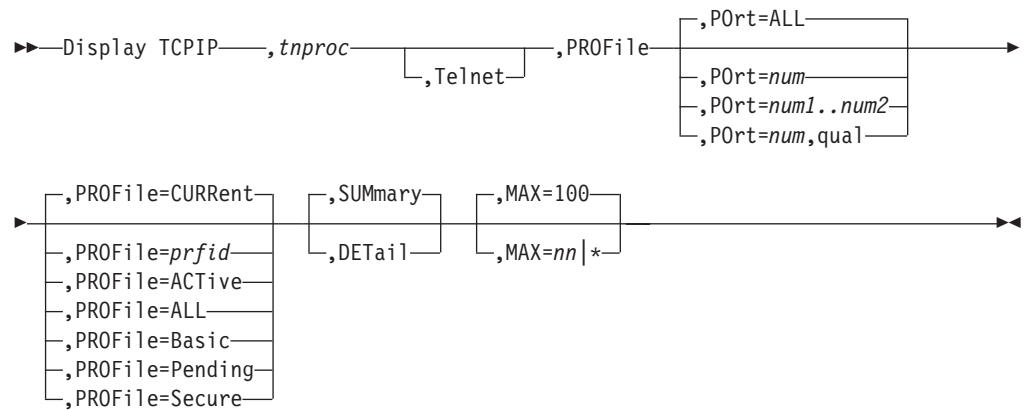
INACTLUS display command:



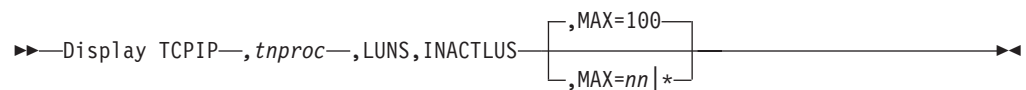
OBJECT display command:



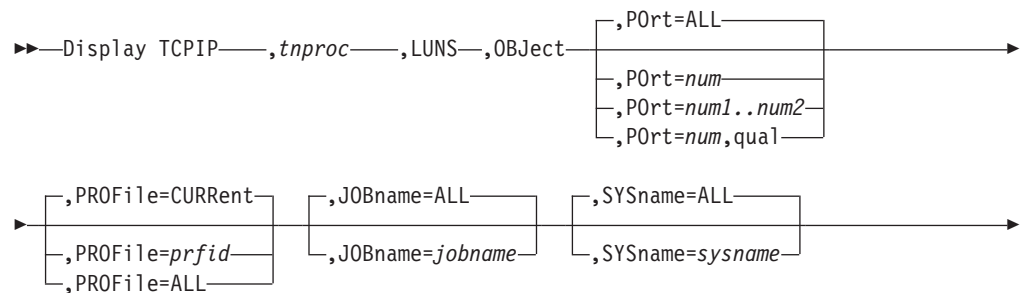
PROFILE display command:

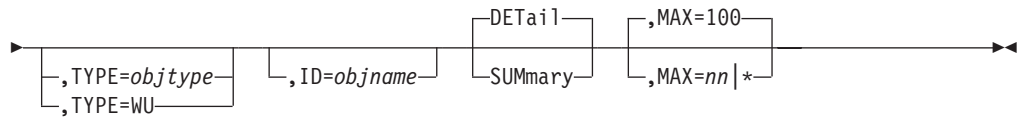


LUNS INACTLUS display command:

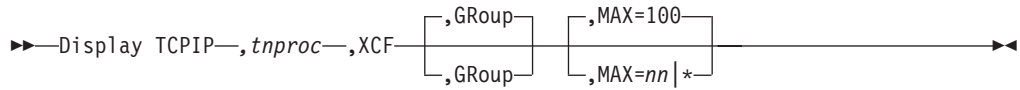


LUNS OBJECT display command:

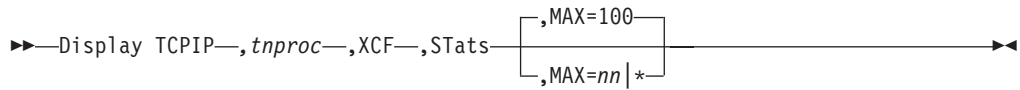




XCF GGroup display command:

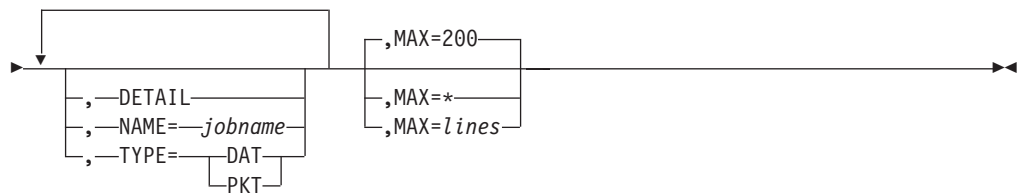
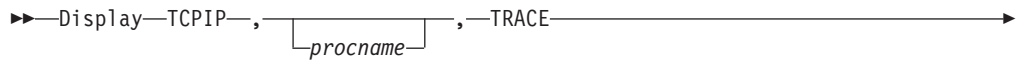


XCF STats display command:



DISPLAY TCPIP TRACE

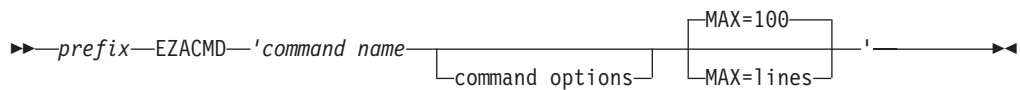
Display information about network management applications that are using the real-time application-controlled TCP/IP trace network management interface (NMI) to obtain real-time network management data from the TCP/IP stack. See Real-time application-controlled TCP/IP trace NMI in the z/OS Communications Server: IP Programmer's Guide and Reference for more information about this NMI.



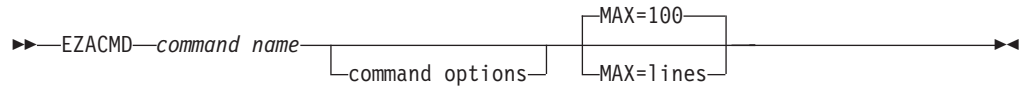
EZACMD command

Issue commands from the operator console, TSO, or IBM® Tivoli® NetView® for z/OS.

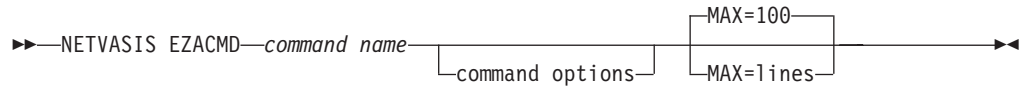
Operator console syntax



TSO syntax



NetView syntax



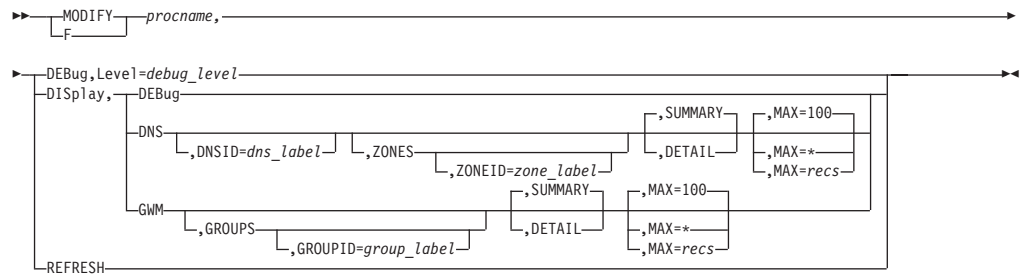
MODIFY TCPIP command

Dynamically change characteristics of an active task:



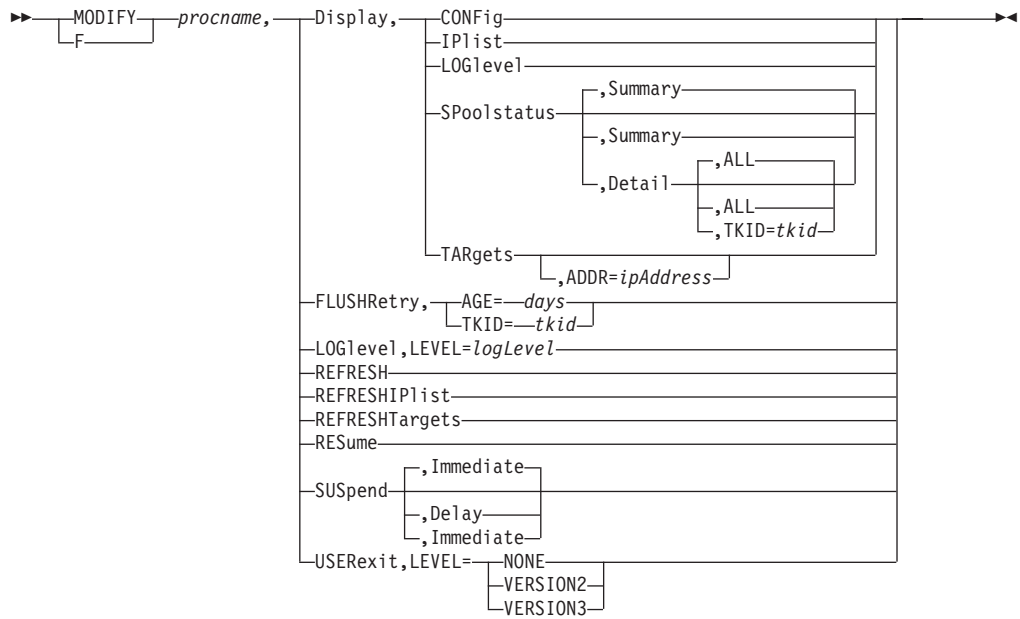
Automated domain name registration application (EZBADNR)

Control the automated domain name registration application (EZBADNR) from the operator's console using the MODIFY command:



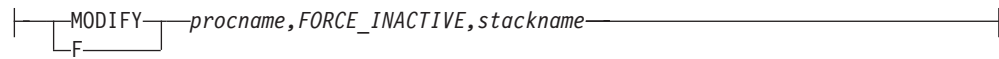
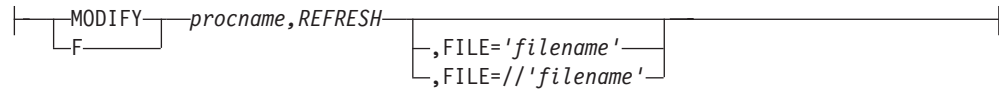
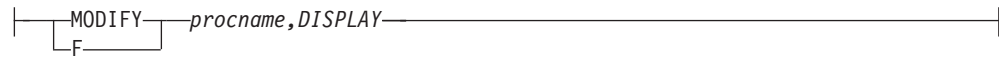
CSSMTP application

Control and monitor the Communication Server Simple Mail Transfer Protocol (CSSMTP) application:



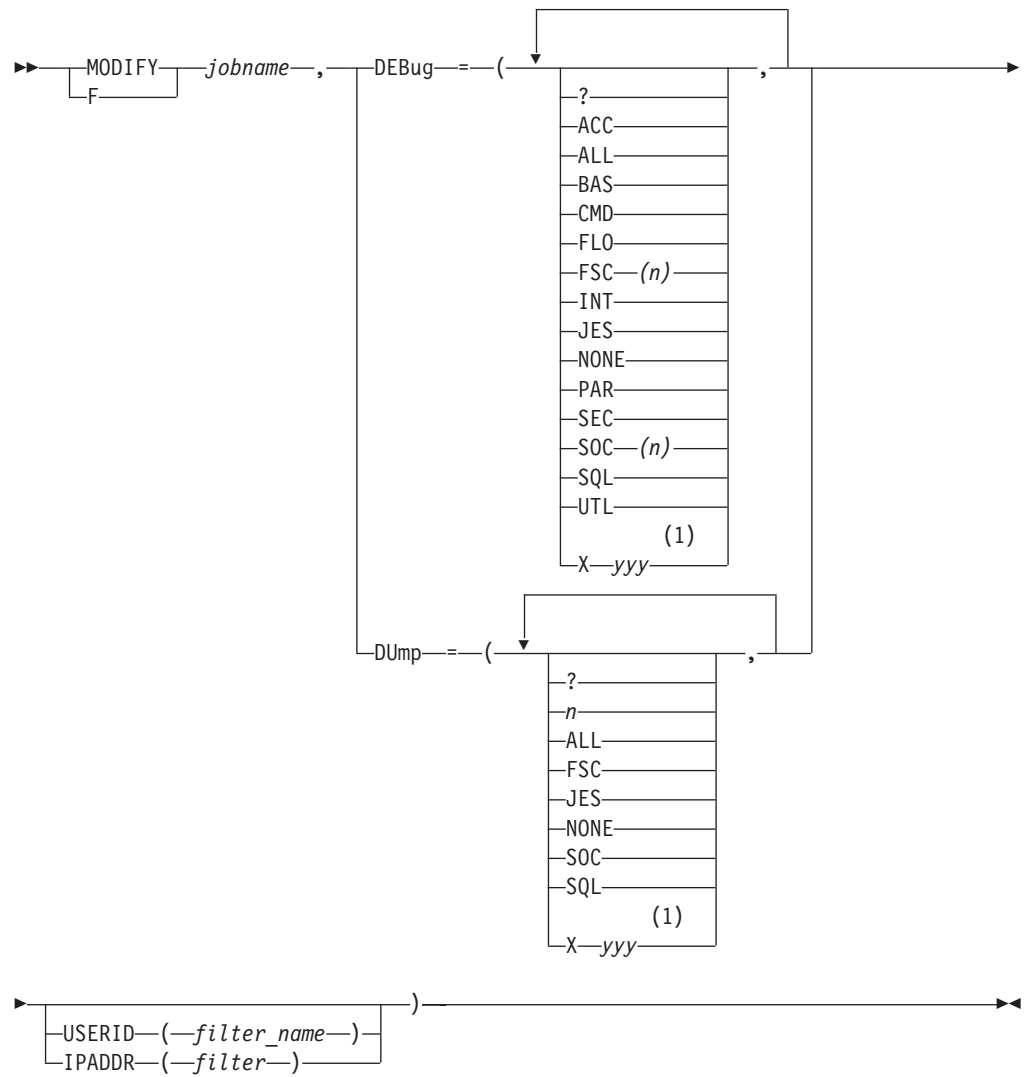
Defense Manager daemon

Control Defense Manager daemon (DMD) functions:



FTP server

Start and stop tracing after initialization is complete:

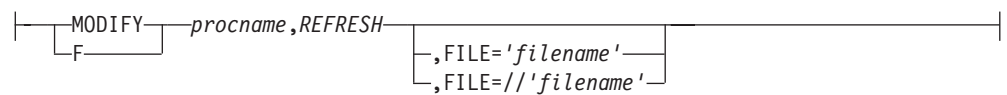


Notes:

- 1 Prepend any option *yyy* with X to turn off that trace.

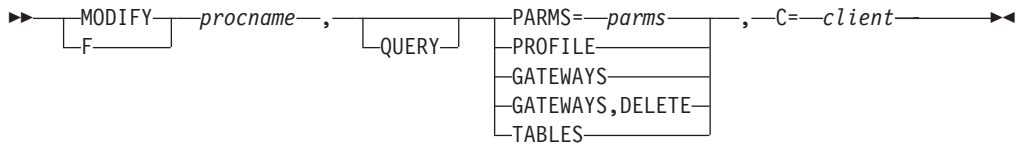
IKE server

Control IKE server functions:



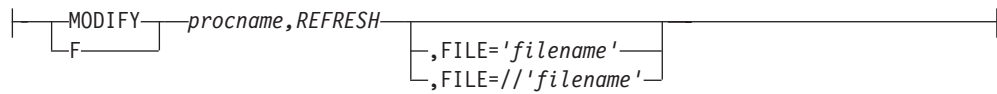
NCROUTE server

Pass parameters to the NCROUTE address space:



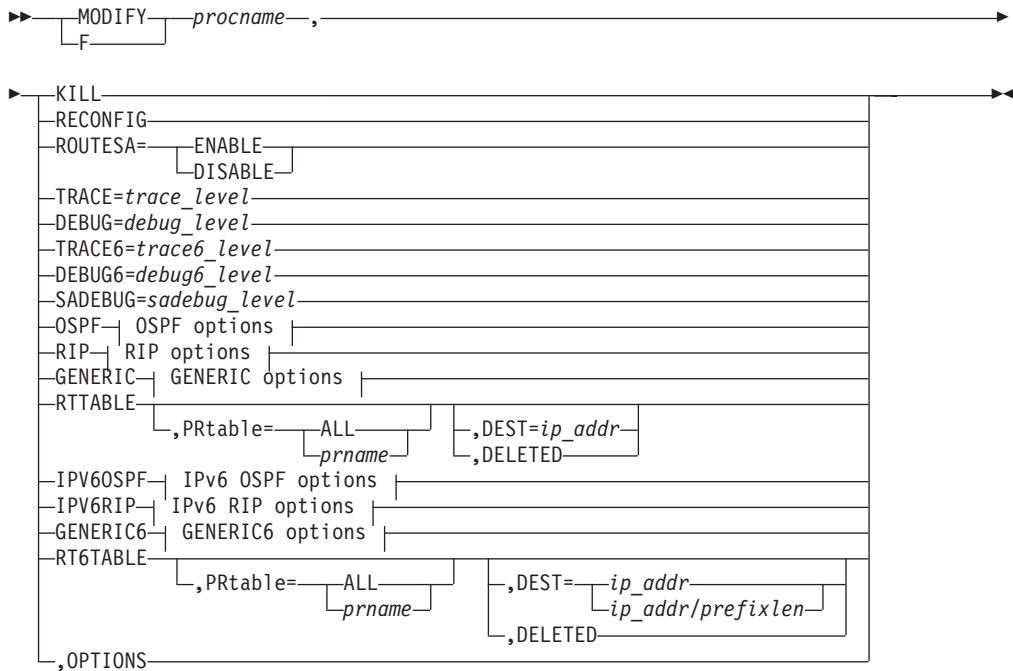
Network security services server

Control the network security services (NSS) server functions:

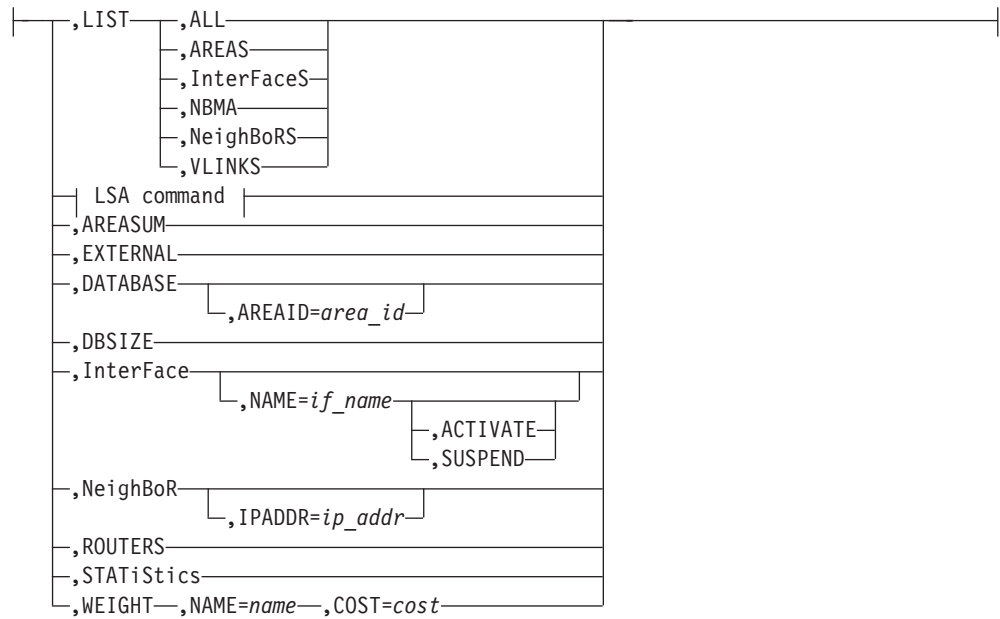


OMPROUTE

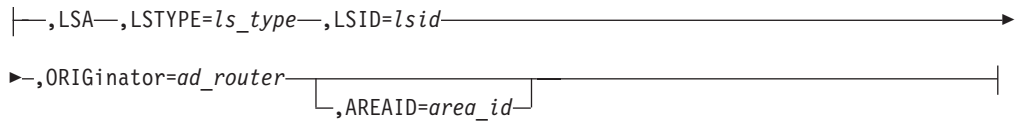
Control OMPROUTE from the operator's console:



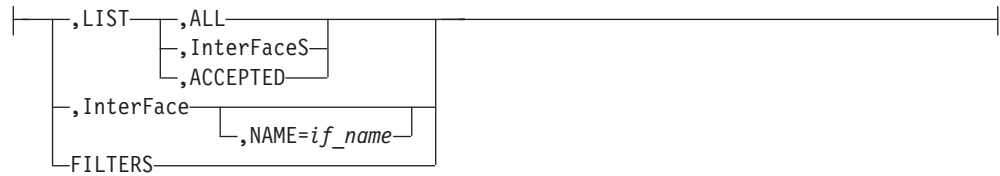
OSPF options:



LSA command:



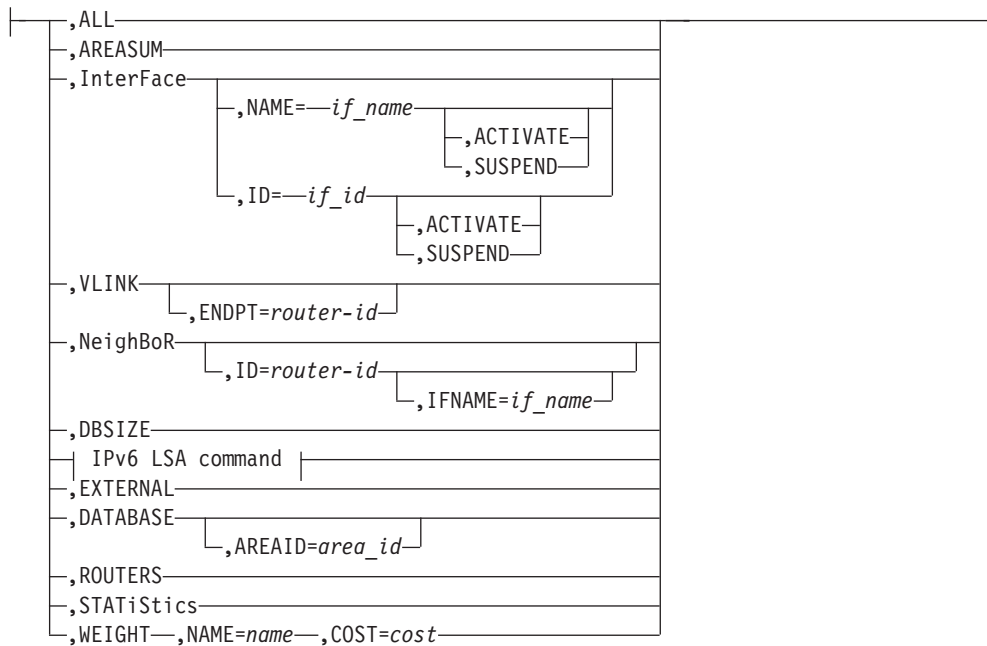
RIP options:



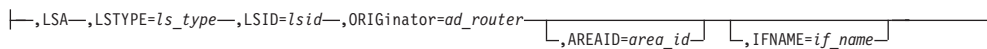
GENERIC options:



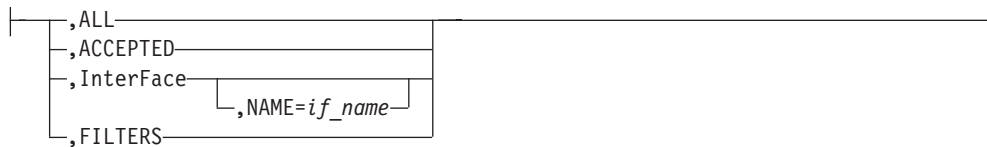
IPv6 OSPF options:



IPv6 LSA command:



IPv6 RIP options:



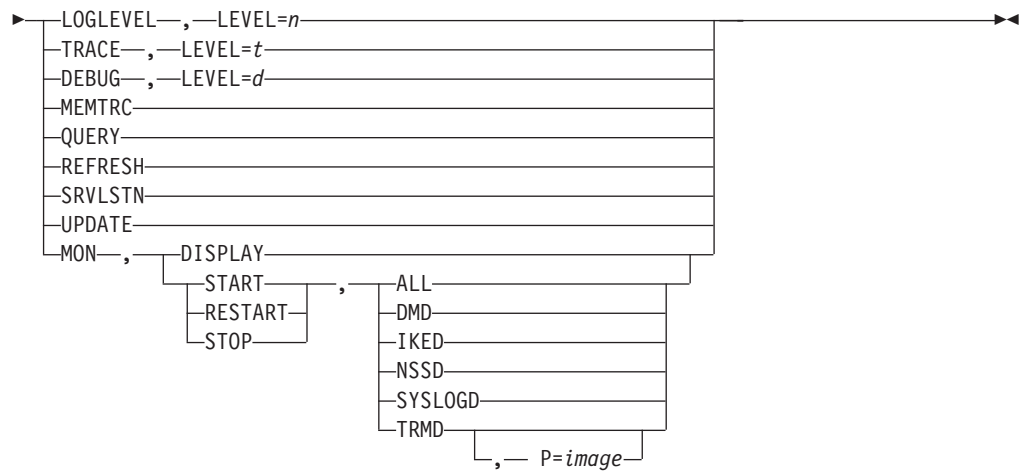
GENERIC6 options:



Policy Agent

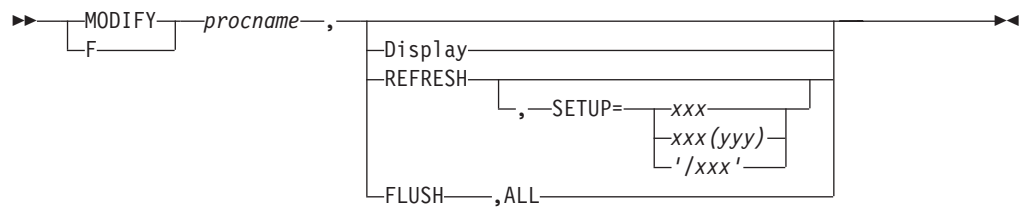
Control the Policy Agent functions from the operator's console using the MODIFY command:





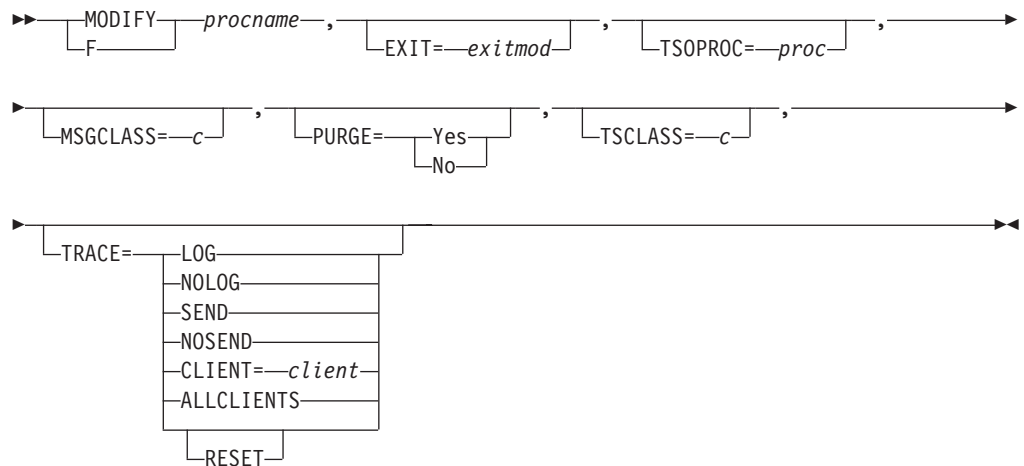
Resolver address space

Request the resolver address space to display or refresh its setup information:



REXEC server

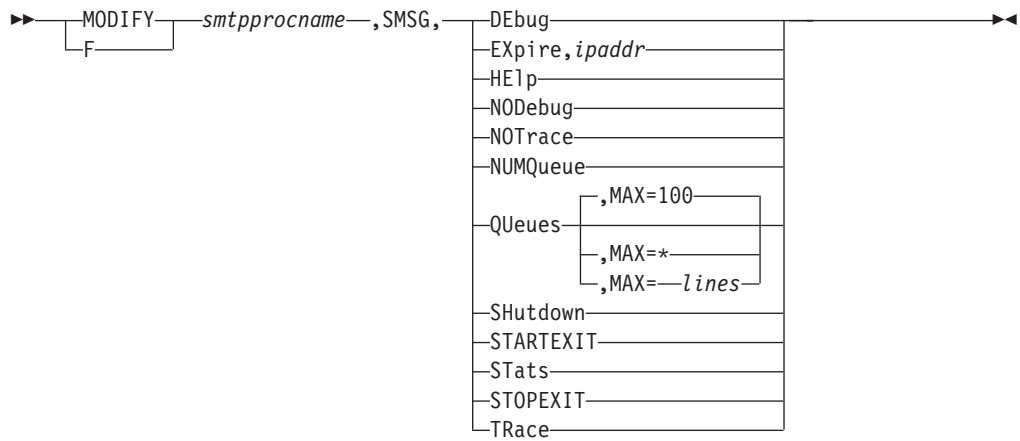
Change the parameters on the Remote Execution server:



SMTP

The MODIFY SMTP command provides an interactive interface to the SMTP server that allows you to do the following:

- Query the operating statistics of the SMTP server
- Query the SMTP mail delivery queues
- Perform privileged system administration tasks such as shutting down the SMTP server and enabling or disabling various tracing and debugging options



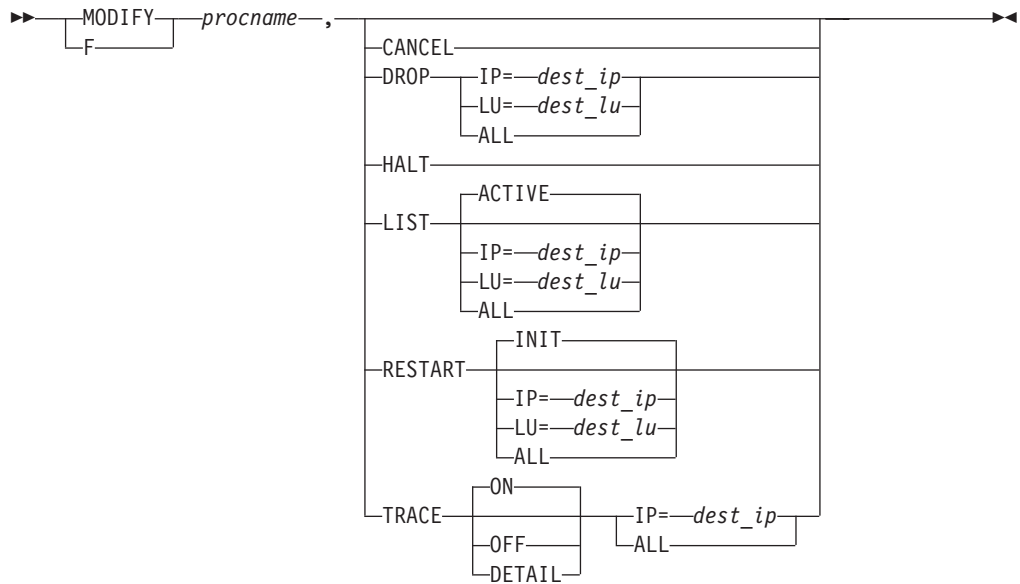
SNALINK LU0 server

Halt the SNALINK LU0 interface:



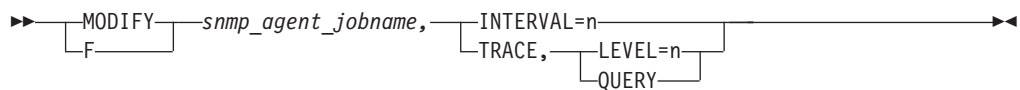
SNALINK LU6.2 server

Stop or restart the SNALINK LU6.2 interface and control tracing:



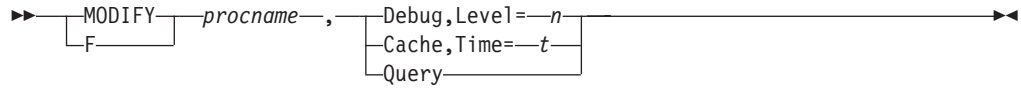
SNMP agent

Modify some SNMP agent initialization parameters:



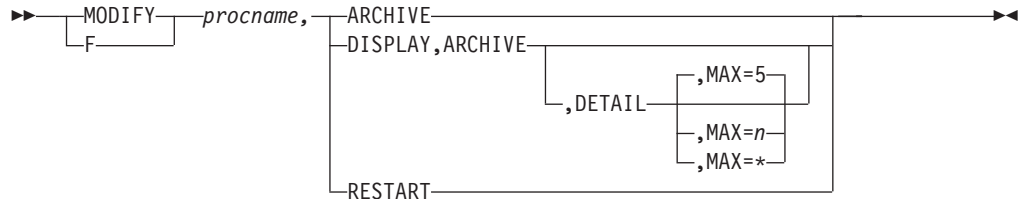
SNMP network SLAPM2 subagent

Control the Network SLAPM2 subagent functions from the operator's console using the MODIFY command:



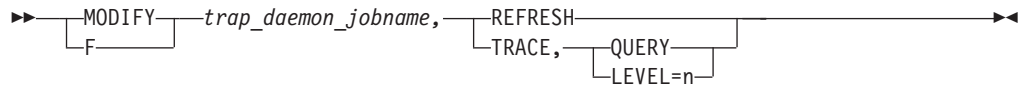
Syslog daemon

Control syslog daemon functions:



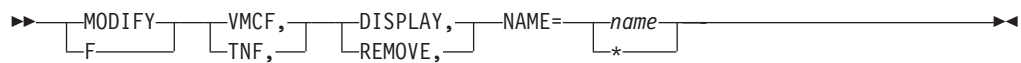
TRAPFWD

Modify the trap forwarder daemon:



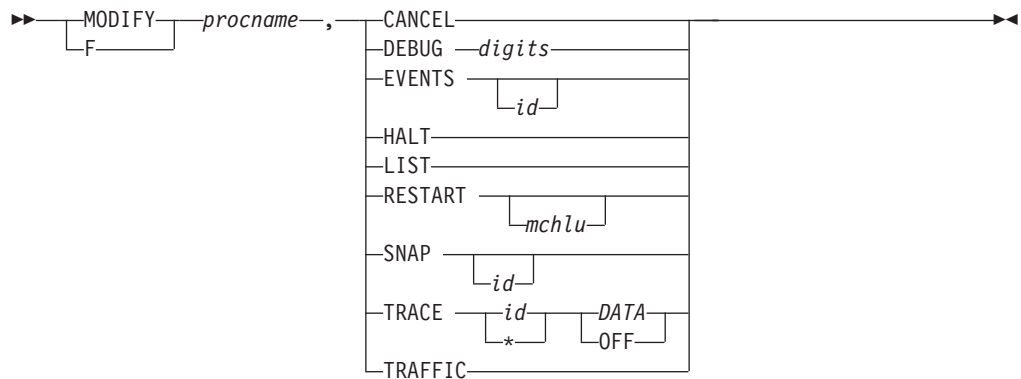
VMCF and TNF

Display the names of current users of VMCF and TNF and remove names from the name lists:



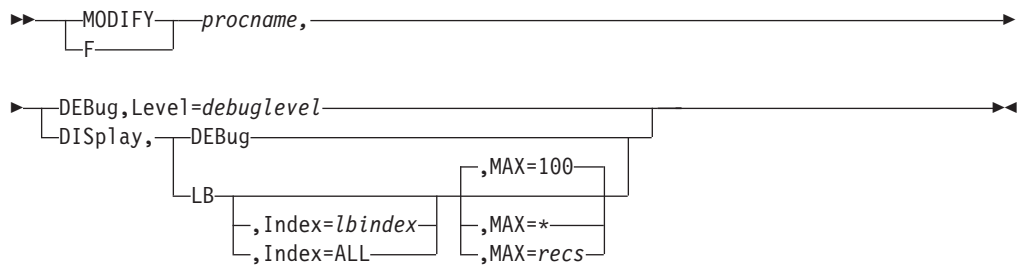
X.25 NPSI server

Pass parameters to the X.25 NPSI server:



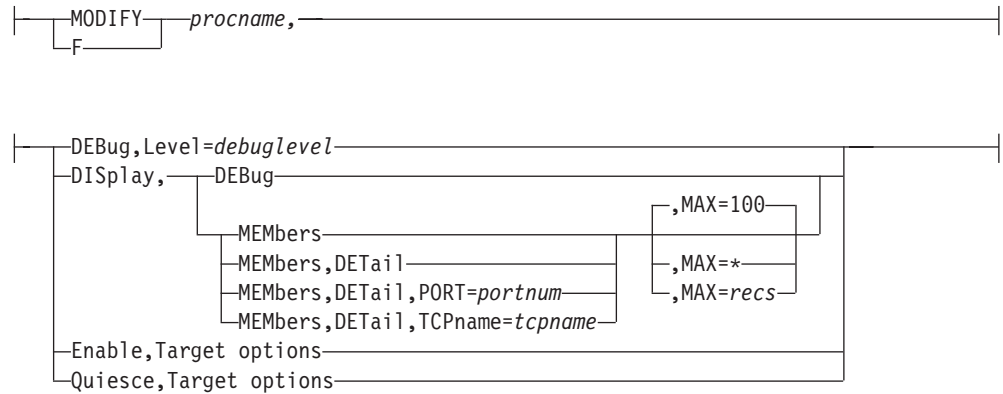
z/OS Load Balancing Advisor

Control the Load Balancing Advisor from the operator's console using the MODIFY command:

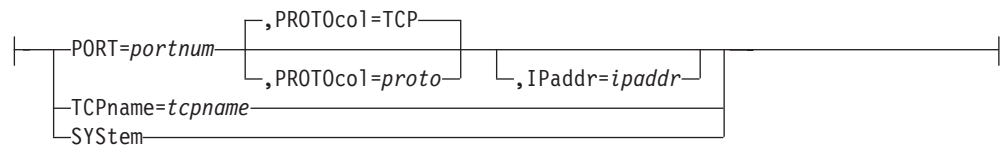


z/OS Load Balancing Agent

Control the Load Balancing Agent from the operator's console using the MODIFY command:

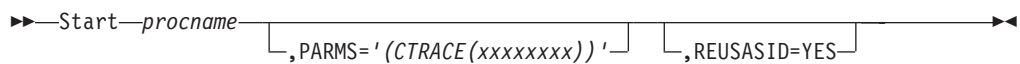


Target options:



START TCPIP

Dynamically start a TCP/IP server or address space (including the TCP/IP address space):



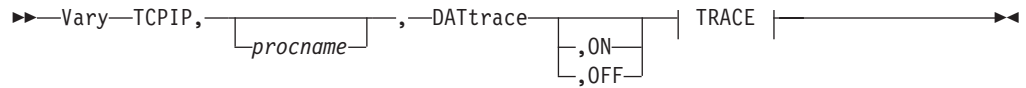
STOP TCPIP

Stop a TCP/IP server or address space (including the TCP/IP address space) that is in execution:

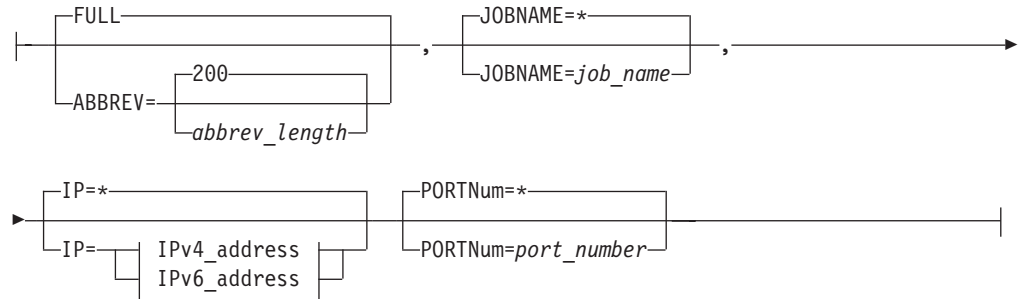


VARY TCPIP DATTRACE

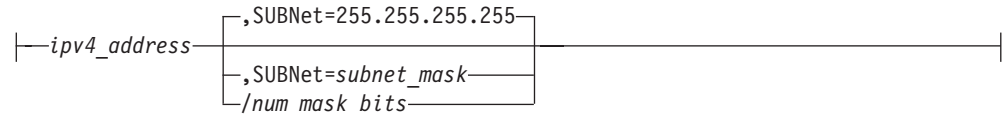
Trace socket data (transforms) into and out of the physical file structure (PFS):



TRACE:



IPv4_address:

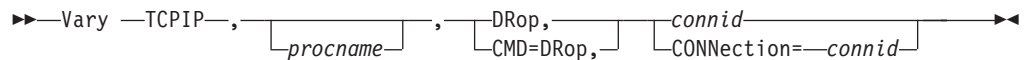


IPv6_address:

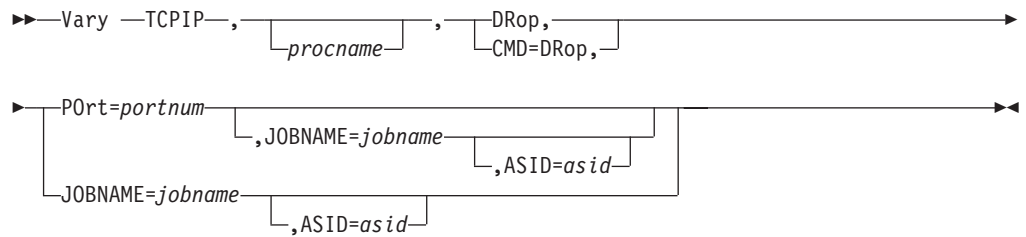


VARY TCPIP DROP

Drop a single connection:



Drop all TCP connections associated with a TCP/IP server:



VARY TCPIP OBEYFILE

Change the TCP/IP configuration:

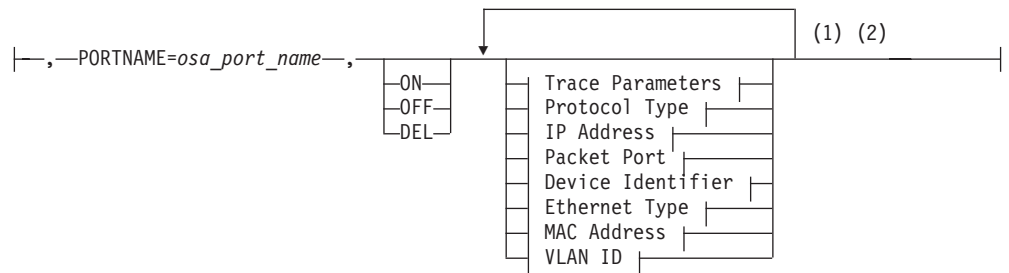
```
➤➤ Vary TCPIP, [procname], Obeysfile, [datasetname]  
                                CMD=Obeysfile, DSN=[datasetname]
```

VARY TCPIP OSAENTA

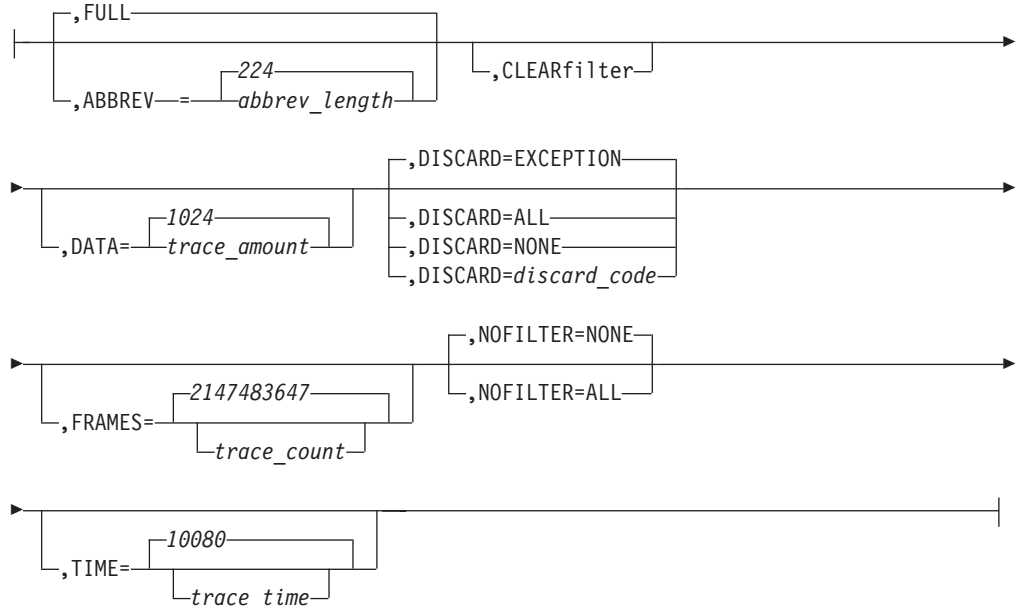
Set up OSAENTA tracing:

```
➤➤ Vary TCPIP, [procname], OSAENTA Command
```

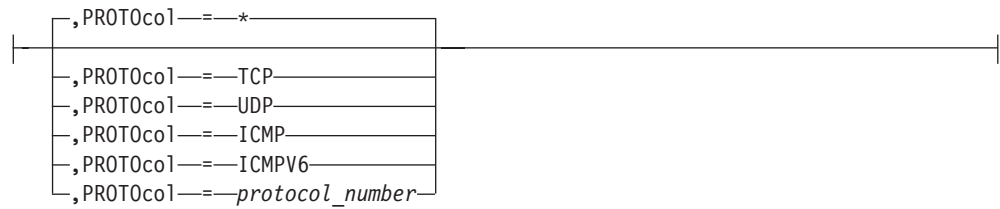
Command:



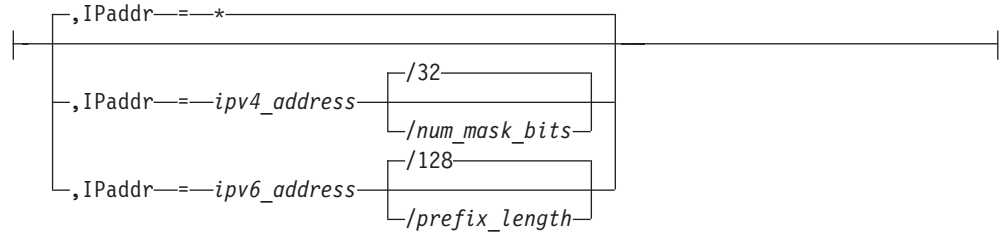
Trace Parameters:



Protocol Type:



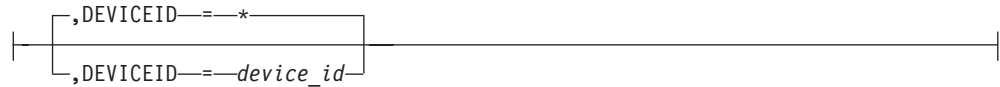
IP Address:



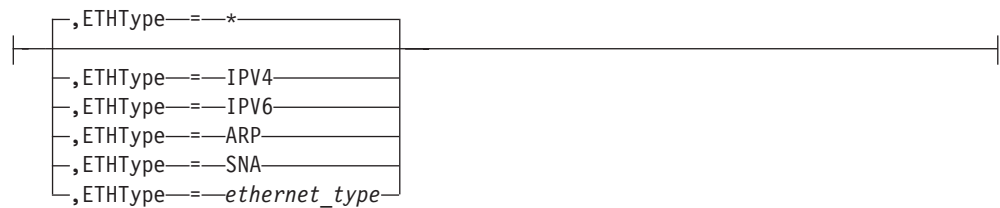
Packet Port:



Device Identifier:



Ethernet Type:



MAC Address:



VLAN ID:

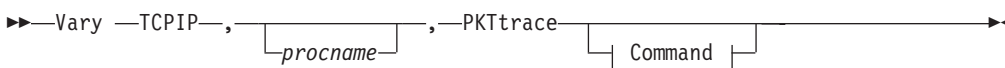


Notes:

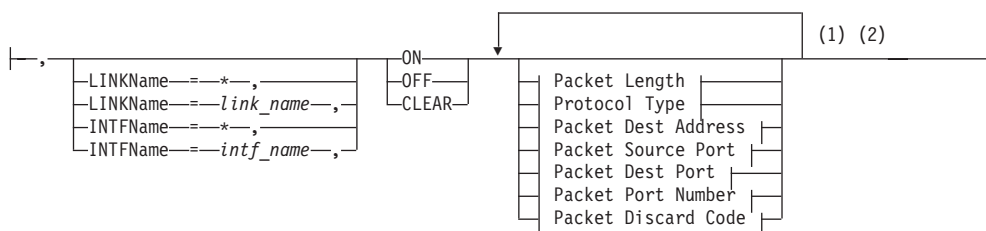
- 1 Each option can be specified only once. The order of options is not important.
- 2 You must also issue the MVS TRACE command for component SYSTCPOT to activate the OSAENTA trace. See the z/OS Communications Server: IP Diagnosis Guide for details.

VARY TCPIP PKTTRACE

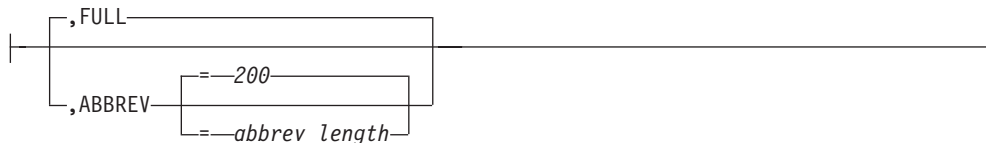
Set up packet tracing:



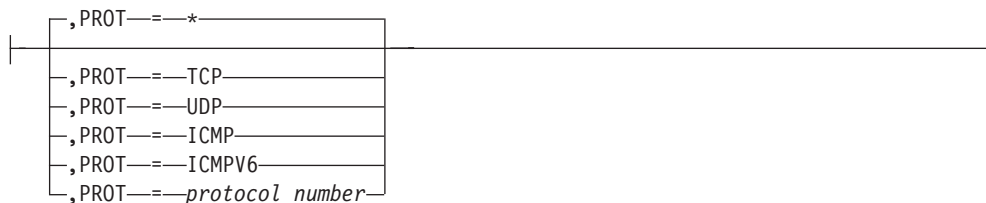
Command:



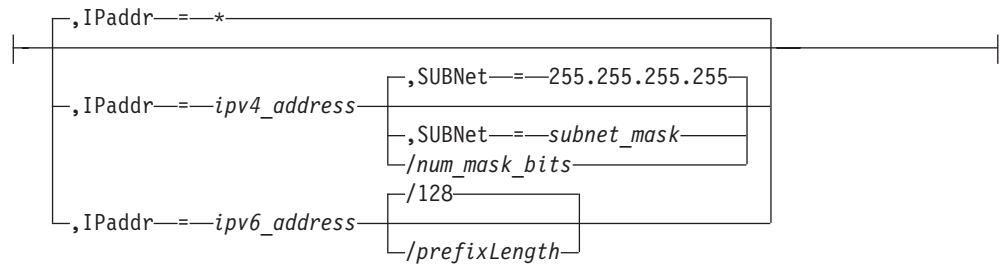
Packet Length:



Protocol Type:



Packet Dest Address:



Packet Source Port:



Packet Dest Port:



Packet Port Number:



Packet Discard Code:



Notes:

- 1 Each option can be specified only once. The order of options is not important.
- 2 The MVS TRACE command must also be issued for component SYSTCPDA to activate the packet trace. See the z/OS Communications Server: IP Diagnosis Guide for details.

VARY TCPIP PURGECACHE

Delete the ARP cache entries for a link or neighbor cache entries for an interface:



VARY TCPIP START

Start a TCP/IP device or interface:

```
►► Vary TCPIP, [procname], START [, device_name  
                                [, interface_name]
```

VARY TCPIP STOP

Stop a TCP/IP device or interface:

```
►► Vary TCPIP, [procname], STOP [, device_name  
                                [, interface_name]
```

VARY TCPIP SYNTAXCHECK

Check the syntax of TCP/IP configuration statements:

```
►► Vary TCPIP, [procname], SYNTAXCHECK, [, datasetname]
```

VARY TCPIP SYSPLEX

Change the TCP/IP stack's sysplex configuration:

```
►► Vary TCPIP, [procname],  
  
► SYSPlex, LEAVEgroup  
            JOINgroup  
            DEACTivate, DVIPA=dvipa  
            REACTivate, DVIPA=dvipa  
            QUIesce, PORT=portnum [, JOBNAME=jobname [, ASID=asid]  
            QUIesce, JOBNAME=jobname [, ASID=asid]  
            QUIesce, TARGET  
            RESUME, PORT=portnum [, JOBNAME=jobname [, ASID=asid]  
            RESUME, JOBNAME=jobname [, ASID=asid]  
            RESUME, TARGET
```

VARY TCPIP TELNET

Obtain abend dumps based on a return code being set in a given module:

```
►► Vary TCPIP, tnproc [, Telnet], ABENDTRAP, modname  
  
[rcode  
  [instance]
```


Disable Telnet traces:

```
►► Vary TCPIP,tnproc [Telnet],DEBUg,OFF
```

Activate a Telnet LU:

```
►► Vary TCPIP,tnproc [Telnet],ACT,luname
```

Deactivate a Telnet LU:

```
►► Vary TCPIP,tnproc [Telnet],INACT,luname
```

Quiesce a Telnet port:

```
►► Vary TCPIP,tnproc [Telnet],QUIESce [Port=ALL,Port=num,Port=num1..num2,Port=Basic,Port=Secure]
```

Resume a Telnet port:

```
►► Vary TCPIP,tnproc [Telnet],RESUME [Port=ALL,Port=num,Port=num1..num2,Port=Secure,Port=Basic]
```

Stop a Telnet port:

```
►► Vary TCPIP,tnproc [Telnet],STOP [Port=ALL,Port=num,Port=num1..num2,Port=Secure,Port=Basic]
```

Activate a LUNS LU:

```
►► Vary TCPIP,tnproc,LUNS,ACT,luname
```

Deactivate a LUNS LU:

►►—Vary TCPIP—, *tnproc*—, LUNS—, INACT—, *luname*—►►

Quiesce a LUNS:

►►—Vary TCPIP—, *tnproc*—, LUNS—, QUIESCE—►►

Resume a LUNS:

►►—Vary TCPIP—, *tnproc*—, LUNS—, RESUME—►►

Start a LUNS:

►►—Vary TCPIP—, *tnproc*—, LUNS—, START—►►

TSO commands

DIG command

Query name servers

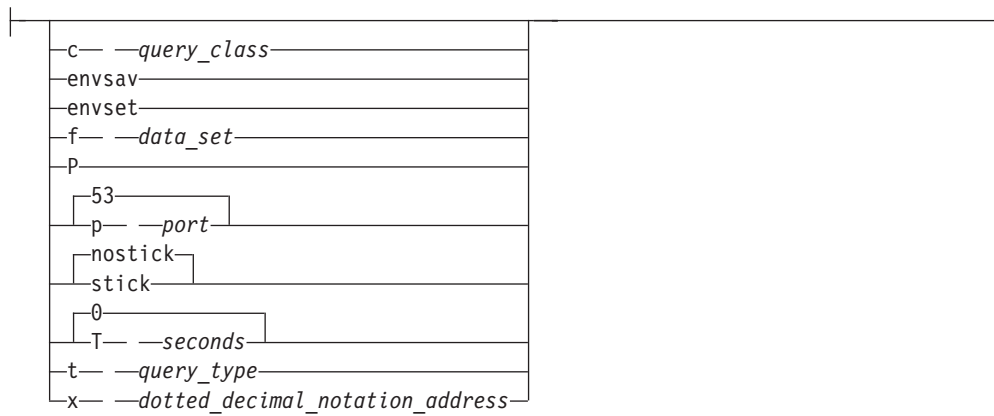
►►—DIG—
 └─*@server*—┘ └─*domain_name*—┘ └─*qtype*—┘ └─*qclass*—┘ └─*%comment*—┘

 ┌──────────────────┘ ┌──────────────────┘
 └─*+queryoption*—┘ └─*-digoption*—┘

+queryoption:

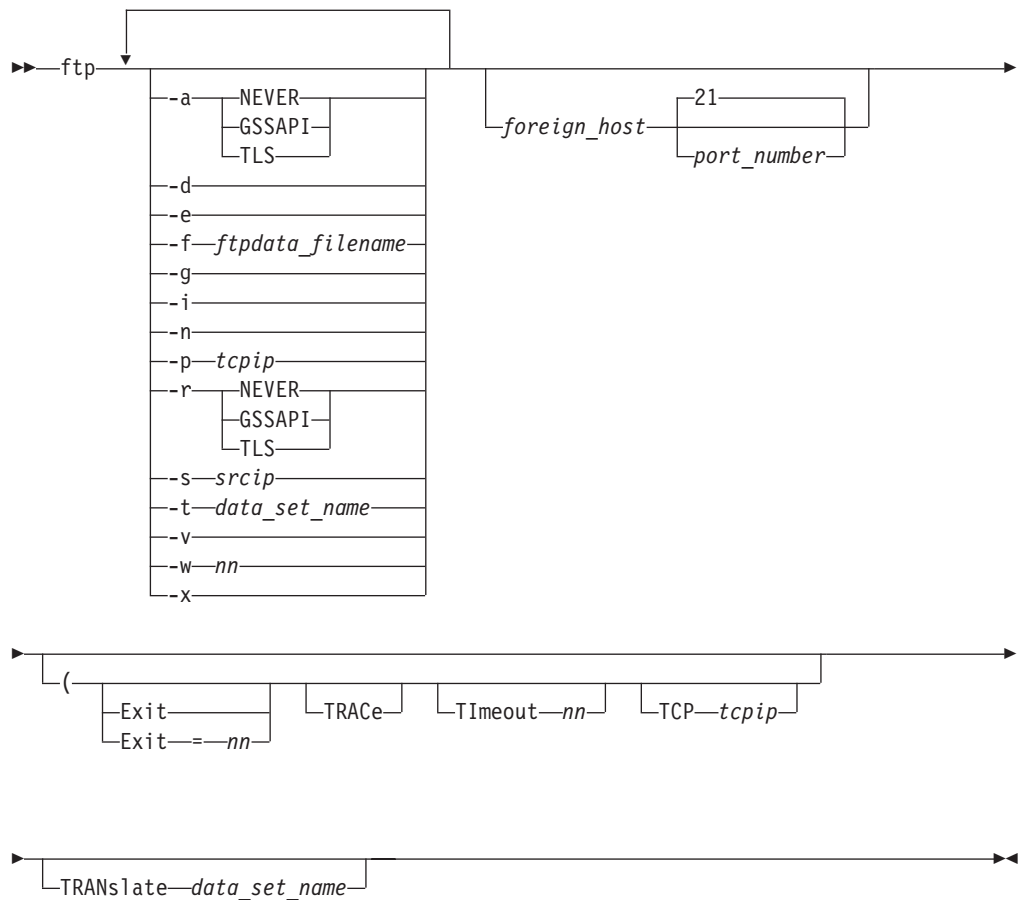
noaaonly
aaonly
addit
noaddit
answer
noanswer
author
noauthor
nocl
cl
cmd
nocmd
nod2
d2
debug
nodebug
defname
nodefname
domain <i>== name</i>
Header
noHeader
header
noheader
noignore
ignore
noko
ko
pfand <i>== number</i>
pfdef
pfmin
pfor <i>== number</i>
pfset <i>== number</i>
noprimary
primary
noqr
qr
ques
noques
recurse
norecurse
reply
noreply
retry <i>== limit</i>
nosort
sort
stats
nostats
timeout <i>== time_out_value</i>
ttlid
nottlid
novc
vc

-digoption:



FTP command

Enter the FTP environment



The following sections describe the syntax for FTP subcommands. You must be in the FTP environment to use the FTP subcommands.

ACCT subcommand

Supply account information

▶▶—ACct—*account_information*—————▶▶

APPEND subcommand

Append a local data set

▶▶—Append—*local_data_set*—*destination_file*—————▶▶

ASCII subcommand

Change the data transfer type to ASCII

▶▶—AScii—————▶▶

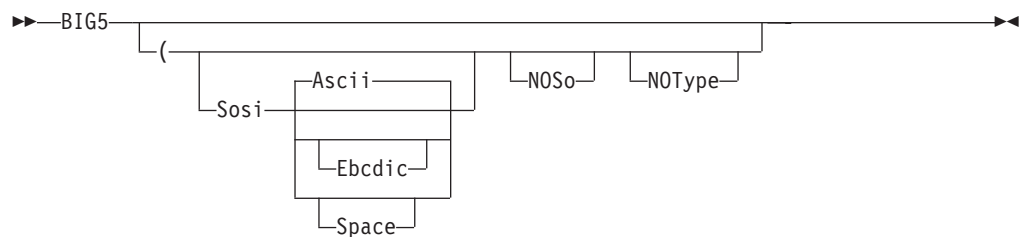
AUth subcommand

Negotiate a security mechanism for the session

▶▶—AUth—*security_mechanism*—————▶▶

BIG5 subcommand

Change the data transfer type to BIG5:



BINARY subcommand

Change the data transfer type to Image

▶▶—BINary—————▶▶

BLOCK subcommand

Set the block data transfer mode

▶▶—Block—————▶▶

CCC subcommand

Change control connection protection to clear

▶▶—CCc—————▶▶

CD subcommand

Change the directory on the remote host:

▶▶—*CD—directory*—————▶▶

CDUP subcommand

Change to the parent of the working directory:

▶▶—*CDUp*—————▶▶

CLEAR subcommand

Change control connection protection to clear:

▶▶—*CLear*—————▶▶

CLOSE subcommand

Disconnect from a remote host:

▶▶—*CLose*—————▶▶

COMPRESS subcommand

Set the compressed data transfer mode:

▶▶—*COMpress*—————▶▶

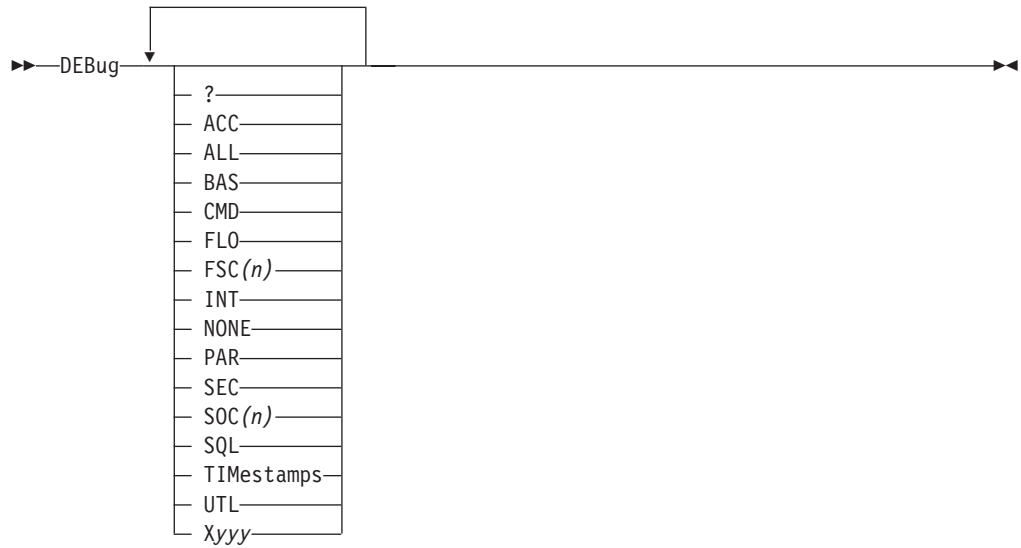
CPROTECT subcommand

Change or display control connection protection:

▶▶—*CProtect—[protection-level]*—————▶▶

DEBUG subcommand

Set internal debug options:



DELETE subcommand

Delete files:



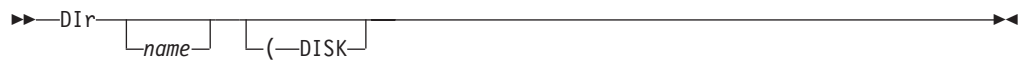
DELIMIT subcommand

Display the file name delimiter:



DIR subcommand

Obtain a list of directory entries:



DUMP subcommand

Sets the internal extended trace options:



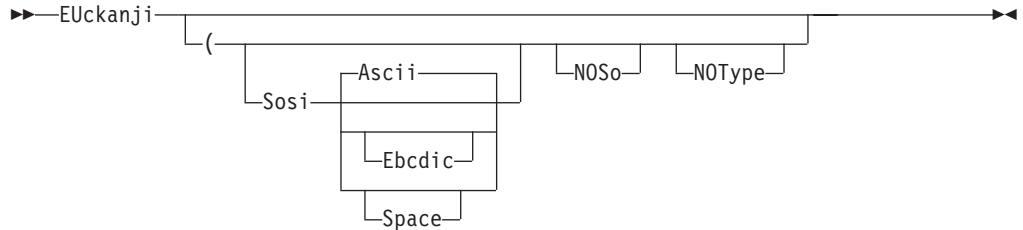
EBCDIC subcommand

Change the data transfer type to EBCDIC:

▶▶—EBcdic—▶▶

EUCKANJI subcommand

Change the data transfer type to EUCKANJI:



FEATURE subcommand

Ask the server which features and extensions it supports:

▶▶—FEature—▶▶

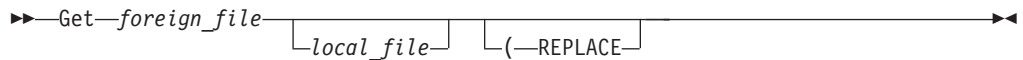
FILE subcommand

Set the file structure to file

▶▶—FIle—▶▶

GET subcommand

Copy files:



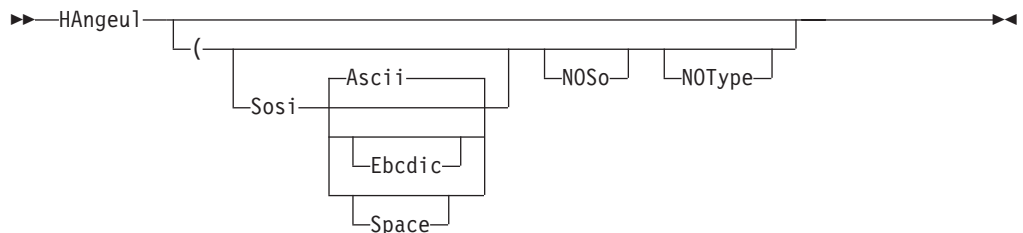
GLOB subcommand

Toggle expansion of metacharacters

▶▶—GLob—▶▶

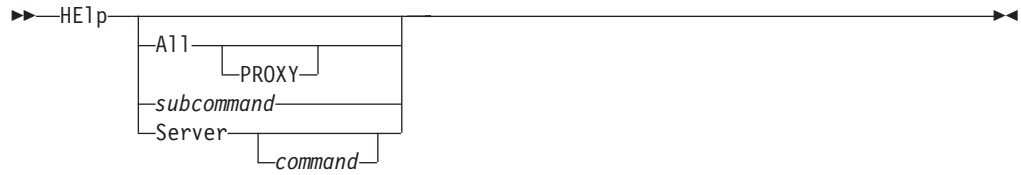
HANGEUL subcommand

Change the data transfer type to HANGEUL:



HELP and ? subcommands

Display help information:



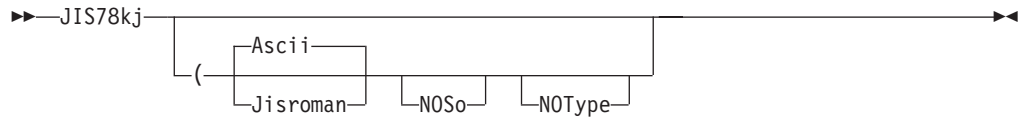
IBMKANJI subcommand

Change the data transfer type to IBMKANJI:



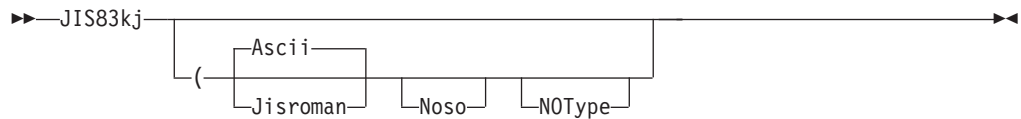
JIS78KJ subcommand

Change the data transfer type to JIS78KJ:



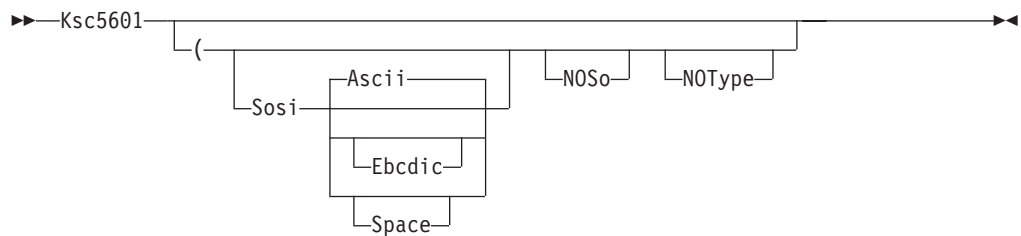
JIS83KJ subcommand

Change the data transfer type to JIS83KJ:



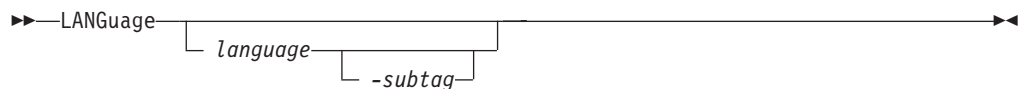
KSC5601 subcommand

Change the data transfer type to KSC-5601:



LANGUage subcommand

Request server replies in another language, or reset language to the default:



LCD subcommand

Change the local working directory

▶▶—LCD—*qualifier*—————▶▶

LMKDIR subcommand

Create a directory on the local host

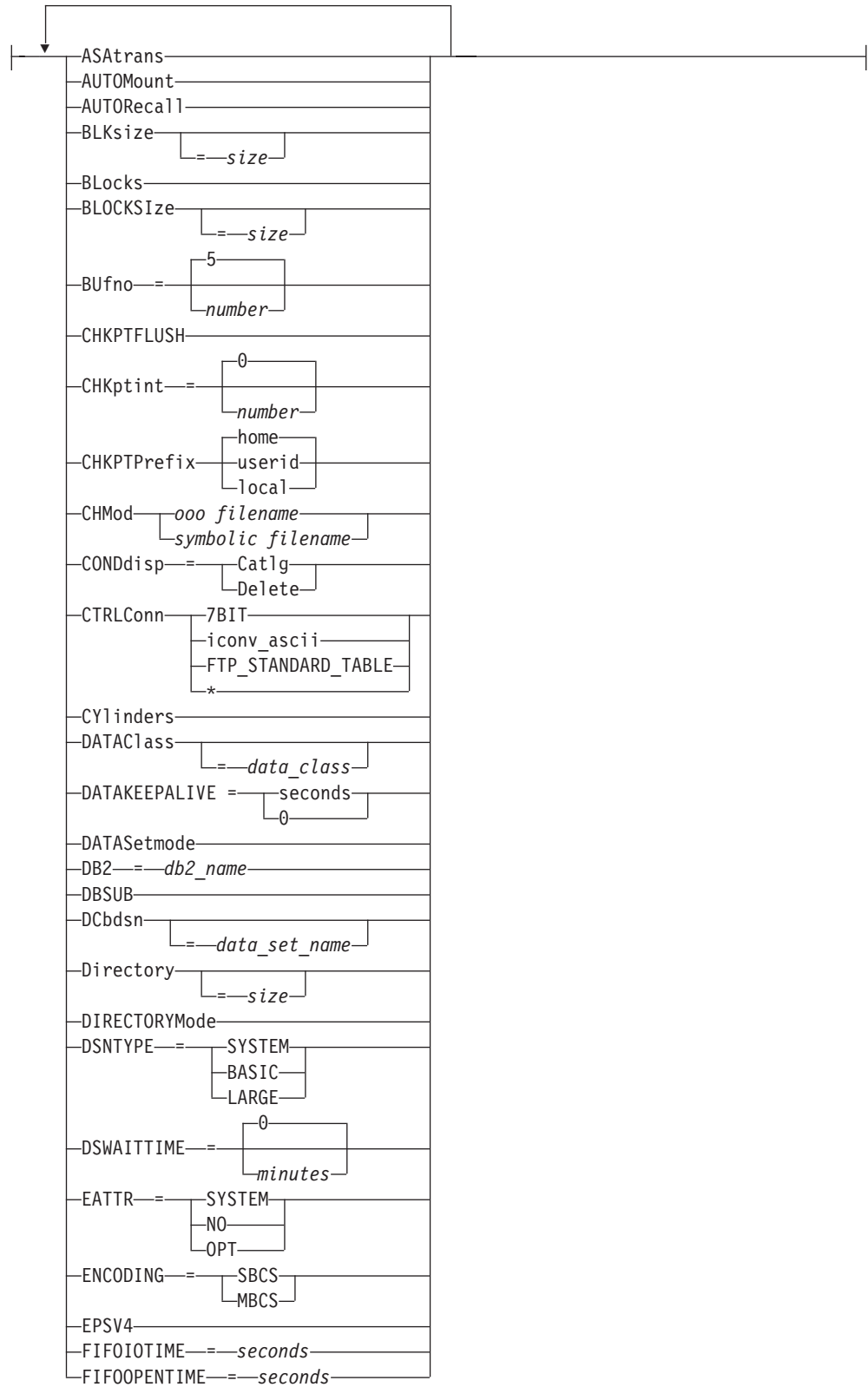
▶▶—LMkdir—*directory*—————▶▶
└—(—like—*remote_directory*—)——┘

LOCSITE subcommand

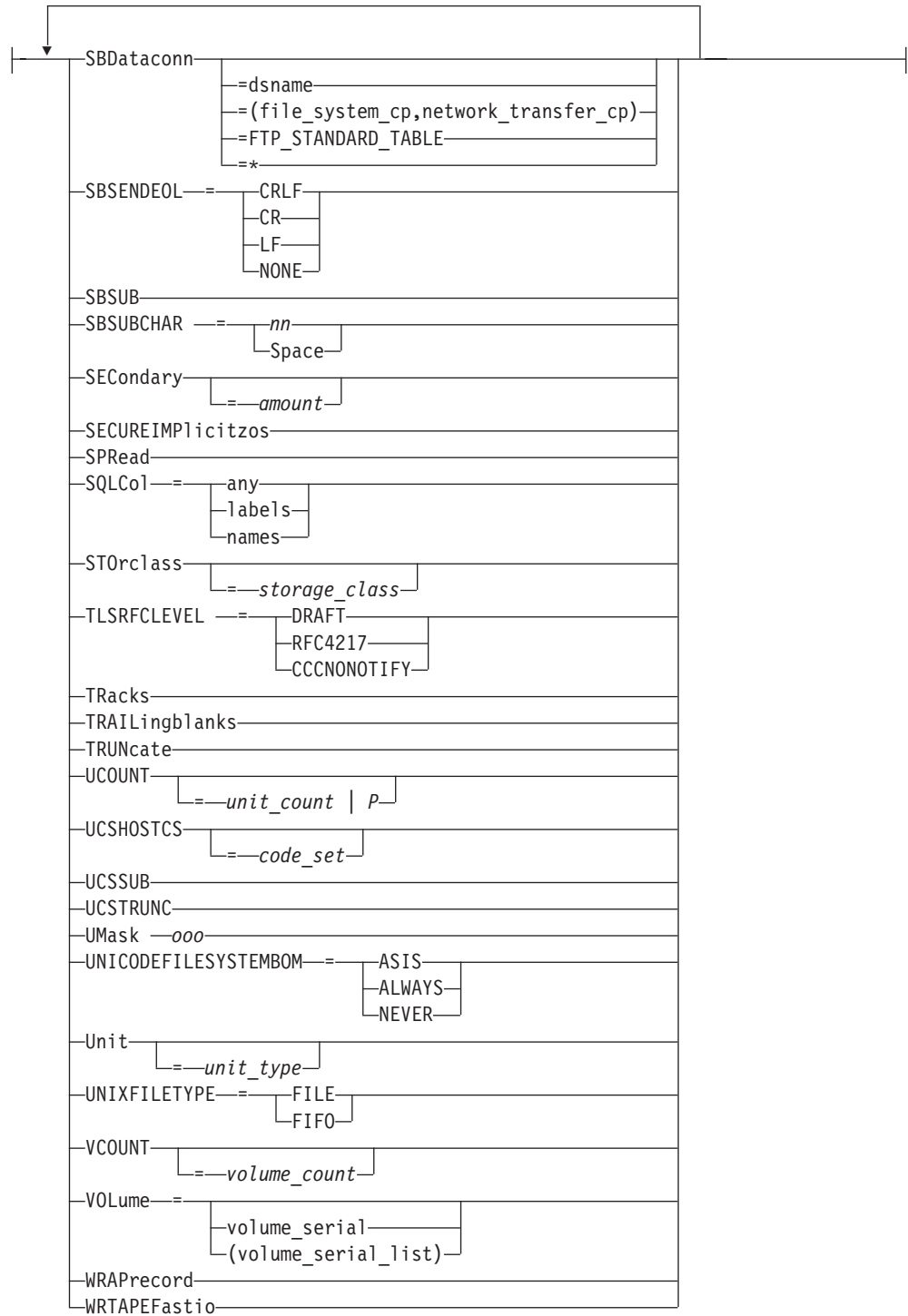
Specify site information to the local host:

▶▶—LOCSite—| option |—————▶▶

options:



FILEtype	=	<i>type</i>				
FWfriendly						
ISPFSTATS						
LISTSUBdir						
LRec1						
		[= <i>length</i>]				
MBDATACONN	=	(<i>file_system_codepage, network_transfer_codepage</i>)				
MBREQUIRELASTEOL						
MSENDEOL	=	<table border="1"> <tr> <td>CRLF</td> </tr> <tr> <td>CR</td> </tr> <tr> <td>LF</td> </tr> <tr> <td>NONE</td> </tr> </table>	CRLF	CR	LF	NONE
CRLF						
CR						
LF						
NONE						
MGmtclass		[= <i>mgmtclass</i>]				
MIGratevol		[= <i>volume_ID</i>]				
NOASAtans						
NOAUTOMount						
NOAUTOREcall						
NOCHKPTFLUSH						
NODBSUB						
NOEPSV4						
NOFWfriendly						
NOISPFSTATS						
NOLISTSUBdir						
NOMBREQUIRELASTEOL						
NOPASSIVEIGNOREADDR						
NOQUOTESoverride						
NORDW						
NOREMOVEINBEof						
NORESTGet						
NOSBSUB						
NOSECUREIMPLICITzos						
NOSPREad						
NOTRAILINGblanks						
NOTRUNcate						
NOUCSSUB						
NOUCSTRUNC						
NOWRAPrecord						
NOWRTAPEFastio						
PASSIVEIGNOREADDR						
PDSTYPE	=	<table border="1"> <tr> <td>PDS</td> </tr> <tr> <td>PDSE</td> </tr> </table>	PDS	PDSE		
PDS						
PDSE						
PRImary		[= <i>amount</i>]				
PROGRESS	=	<table border="1"> <tr> <td>10</td> </tr> <tr> <td>number</td> </tr> </table>	10	number		
10						
number						
Qdisk		[= <i>volume_serial</i>]				
QUOTESoverride						
RDW						
READTAPEFormat		[= <i>tape_format</i>]				
RECFm		[= <i>format</i>]				
REMOVEINBEof						
RESTGet						
RETpd		[= <i>days</i>]				



LOCSTAT subcommand

Display local status information:

►► LOCStat | option | ◀◀

options:

ASAtans
AUTOMount
AUTORECALL
BLOCKS
BLOCKSIZE
BUfno
CConntime
CHKptint
CHKPTPrefix
CONDdisp
CYLinders
DATAclass
DATACTtime
DATAKEEPALIVE
DATASetmode
DB2
DBSUB
DCbdsn
DCOnntime
Directory
DIRECTORYMode
DSNTYPE
DSWAITTIME
EATTR
ENcoding
EPSV4
FIFOIOTIME
FIFOPENTIME
FILEtype
FTpkeepalive
FWfriendly
INacttime
ISPFStats
LISTSUBdir
LRecl
MBdataconn
MBREQUIRELASTEOL
MBSENDEOL
MGmtclass
MIGratevol
MYopentime
PASSIVEIGNOREADDR
PDSTYPE
PRImary
QUotesoverride
RDw
READTAPEFormat
RECFm
RESTGet
RETPd
SBDataconn
SBSSENDEOL
SBSUB
SBSUBChar
SECondary
SECUREIMPLICITZOS
SPRead
SQLCol
STOrclass
TLSRFCLEVEL

TRacks
TRAILingblanks
TRUNcate
UCOUNT
UCSHostcs
UCSSub
UCSTrunc
UMask
UNICODEFILESYSTEMBOM
Unit
UNIXFILETYPE
VCOUNT
VOLume
WRAPrecord
WRTAPEFastio

LPWD subcommand

Display the current working-level qualifier:

▶▶ LPwd

LS subcommand

Obtain a list of file names:

▶▶ LS *name* [(-Disk)]

MDELETE subcommand

Delete multiple files:

▶▶ MDelete *foreign_file*

MGET subcommand

Copy multiple files:

▶▶ MGet *foreign_file* [(-REPLACE)]

MKDIR subcommand

Create a directory on the remote host:

▶▶ MKdir *directory* [(-like *local_directory*)]

MKFIFO subcommand

Create a named pipe on the remote host:

▶▶ MKFifo *pathname* ▶▶

MODE subcommand

Set the data transfer mode:

▶▶ Mode

B
C
S

 ▶▶

MPUT subcommand

Copy multiple data sets to the remote host:

▶▶ MPut

<i>local_data_set</i>

 ▶▶

MVSGET subcommand

Copy remote data set into local data set with remote data set attributes.

▶▶ MVSGet *remote_mvs_dataset*

<i>local_mvs_dataset</i>

(REAllocate)

 ▶▶

MVSPUT subcommand

Copy local data set into remote data set with local data set attributes.

▶▶ MVSPut *local_mvs_dataset*

<i>remote_mvs_dataset</i>

(REAllocate)

 ▶▶

NOOP subcommand

Test the connection:

▶▶ NOop ▶▶

OPEN subcommand

Connect to the FTP server:

▶▶ Open *host_name*

21
<i>port_number</i>

 ▶▶

PASS subcommand

Supply a password:

▶▶ PAss *password*

<i>/newpass/newpass</i>

<i>:userdata</i>

 ▶▶

▶ `account_information` ▶▶

PRIVATE subcommand

Change data connection protection to private:

▶▶ `PRIVate` ▶▶

PROMPT subcommand

Toggle interactive prompting for M* commands:

▶▶ `PROMpt` ▶▶

PROTECT subcommand

Change or display data connection protection:

▶▶ `PROTect` `CLEAR`
`PRIVATE`
`SAFE` ▶▶

PROXY subcommand

Execute FTP subcommand on secondary control connections:

▶▶ `PROXy` `subcommand` ▶▶

PUT subcommand

Copy data sets to the remote host:

▶▶ `PUT` `local_file` `foreign_file` ▶▶

PWD subcommand

Display the current working directory:

▶▶ `PWd` ▶▶

QUIT subcommand

Leave the FTP environment:

▶▶ `QUIT` ▶▶

QUOTE subcommand

Send an uninterpreted string of data:

▶▶ `QUOTE` `string` ▶▶

RECORD subcommand

Set the file structure to record:

▶▶—RECORD—▶▶

RENAME subcommand

Rename files:

▶▶—RENAME—*original_name*—*new_name*—▶▶

RESTART subcommand

Restart a checkpointed data transfer:

▶▶—RESTART—▶▶

RMDIR subcommand

Remove a directory on the remote host:

▶▶—RMDIR—*directory*—▶▶

SAFE subcommand

Change data connection protection to safe:

▶▶—SAFE—▶▶

SCHINESE subcommand

Change the data transfer type to SCHINESE:

▶▶—Schinese—▶▶

```
graph TD
    Root[ ] --- L1[ ]
    L1 --- L2[ ]
    L2 --- Sosi[Sosi]
    L2 --- L3[ ]
    L3 --- Ascii[Ascii]
    L3 --- Ebcdic[Ebcdic]
    L3 --- Space[Space]
    L1 --- NOSo[NOSo]
    L1 --- NOType[NOType]
```

SENDPORT subcommand

Toggle the sending of port information:

▶▶—SENDPORT—▶▶

SENDSITE subcommand

Toggle the sending of site information:

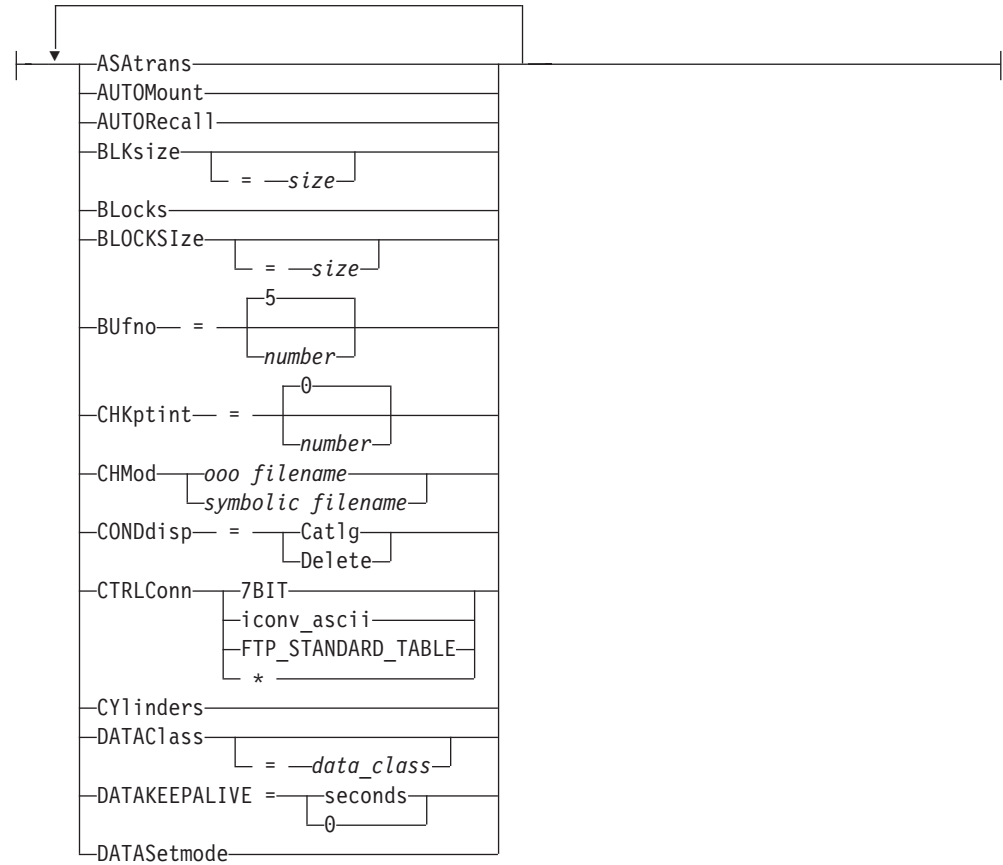
▶▶—SENDSITE—▶▶

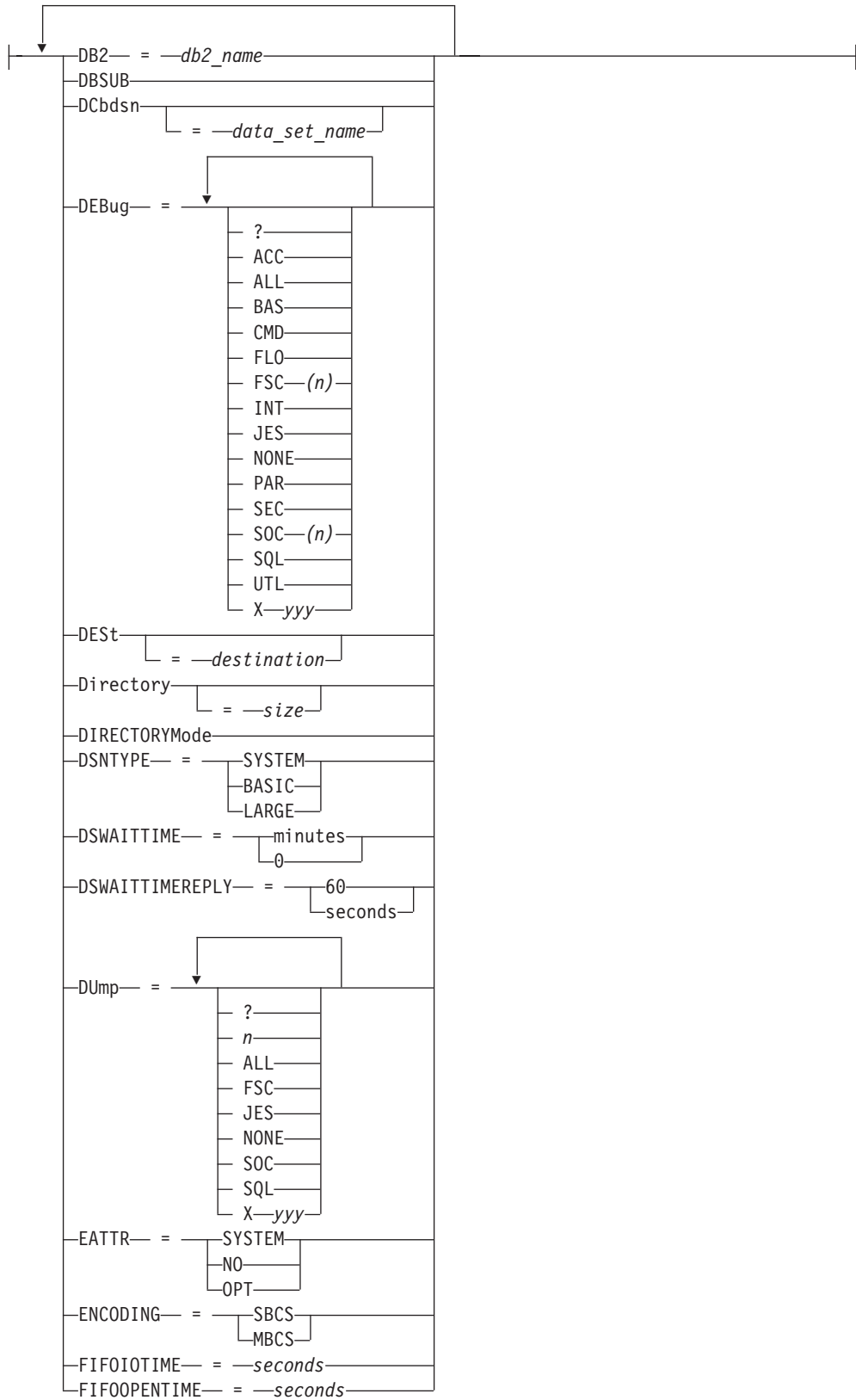
SITE subcommand

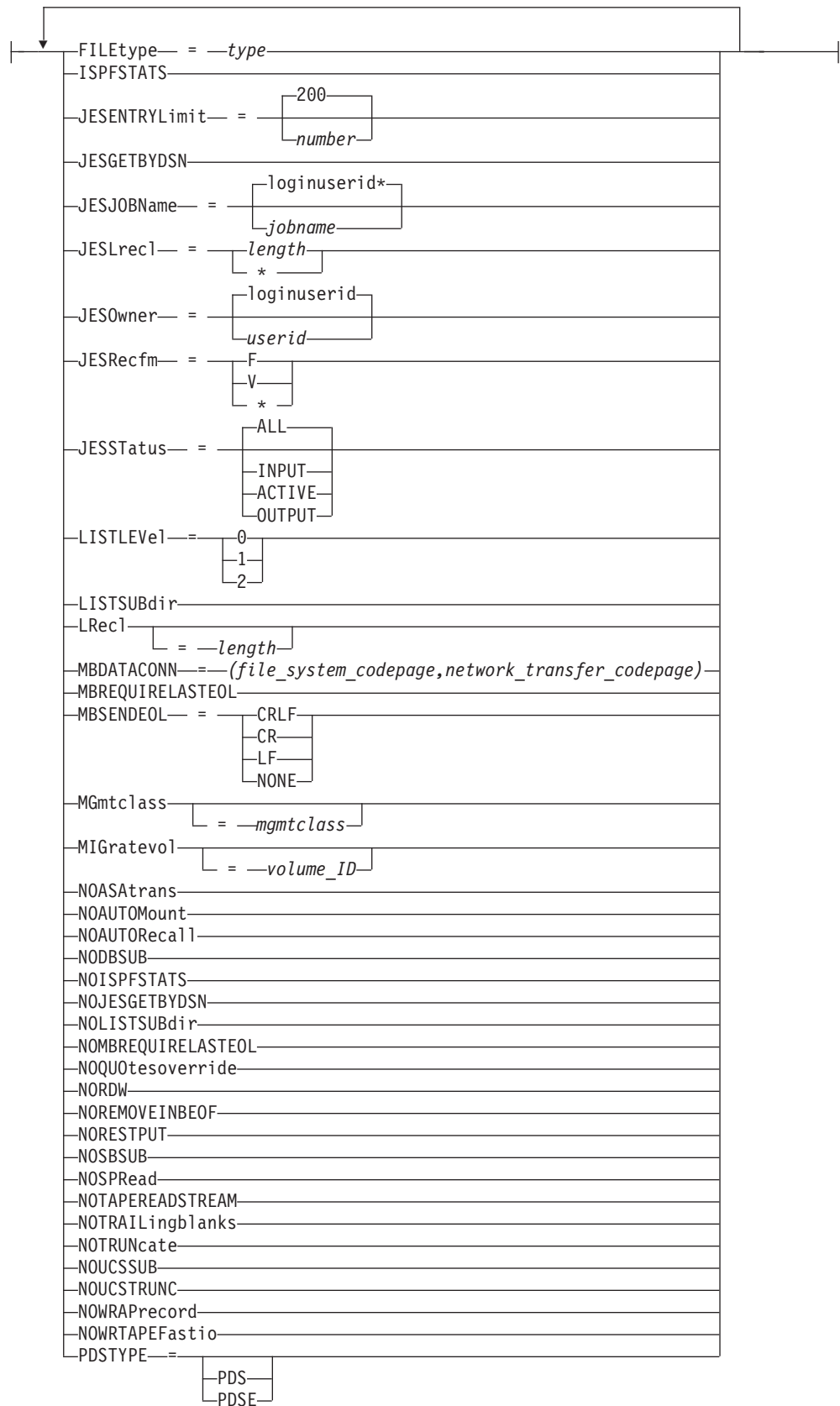
Send site specific information to a host:

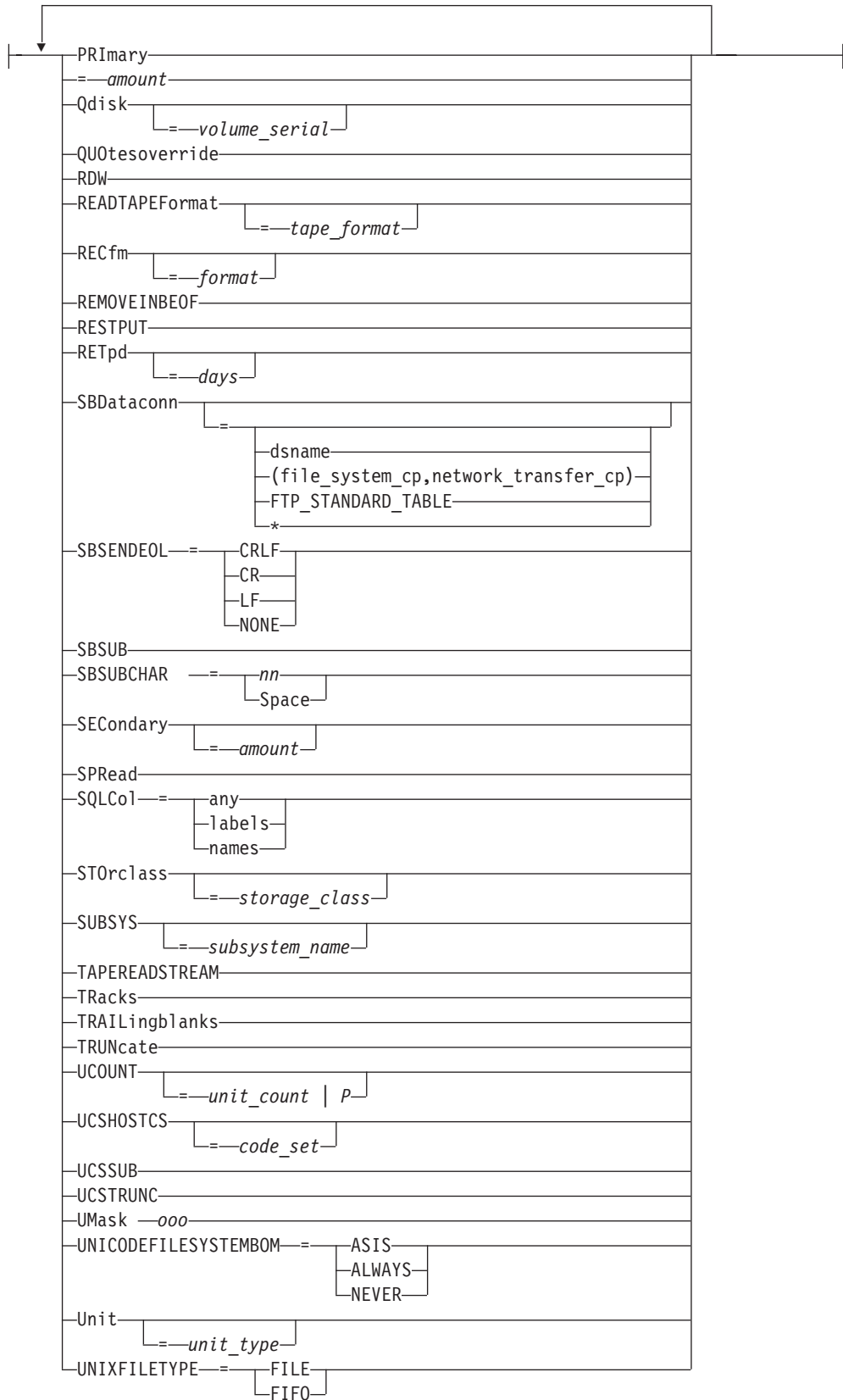
►► Site | options | ◀◀

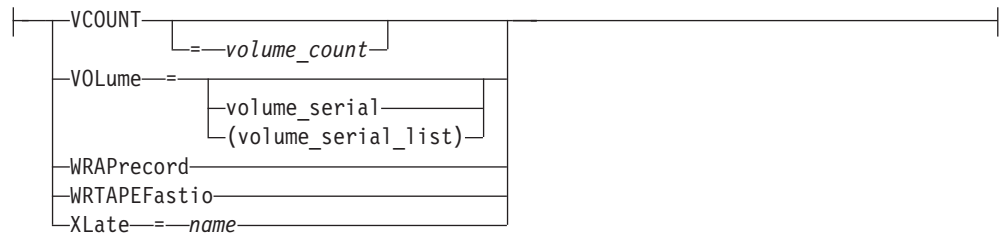
options:





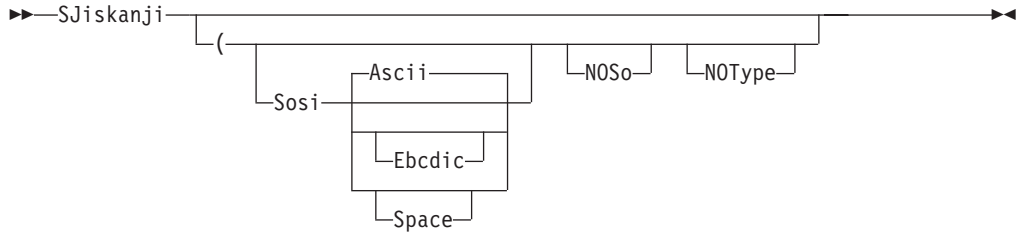






SJISKANJI subcommand

Change the data transfer type to SJISKANJI:



STATUS subcommand

Retrieve status information from a remote host:



options:

ASAtans
AUTOMount
AUTOREcall
BLKsize
BLOCKS
BLOCKSize
Bufno
CHKptint
CONDisp
CYLinders
DATAclass
DATAKEEPALIVE
DATASetmode
DB2
DBSUB
DCbdsn
DEST
Directory
DIRECTORYMode
DSNTYPE
DSWAITTIME
EATTR
ENCoding
FIFOTIME
FIFOOPENIME
FILEtype
FTPkeepalive
INactivetime
ISPFStats
JESENTRYLimit
JESGETBYDSN
JESJOBName
JESLrecl
JESOwner
JESRecfm
JESStatus
LISTLEvel
LISTSUBdir
LRecl
MBDATACONN
MBREQUIRELASTEOL
MBSSENDEOL
MGmtclass
MIGratevol
PDSTYPE
PRImary
QUotesoverride
RDw
READTAPEFormat
RECFm
RETPd
SBDataconn
SBSSENDEOL
SBSUB
SBSUBChar
SECondary
SPRead
SQLCol
STOrclass
TLRSFCLEVEL
TRacks
TRAILingblanks
TRUNcate



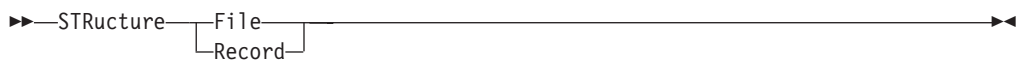
STREAM subcommand

Set the stream data transfer mode:



STRUCTURE subcommand

Set the file structure:



SUNIQUE subcommand

Toggle the storage method:



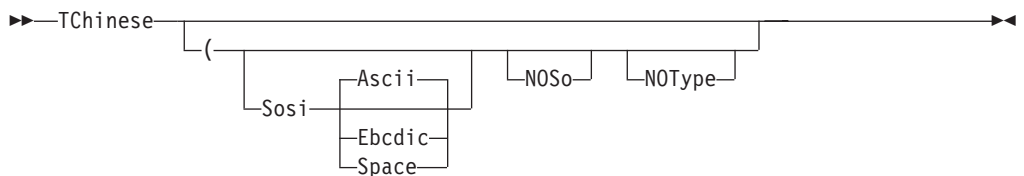
SYSTEM subcommand

Display the operating system name:



TCHINESE subcommand

Change the data transfer type to TCHINESE:



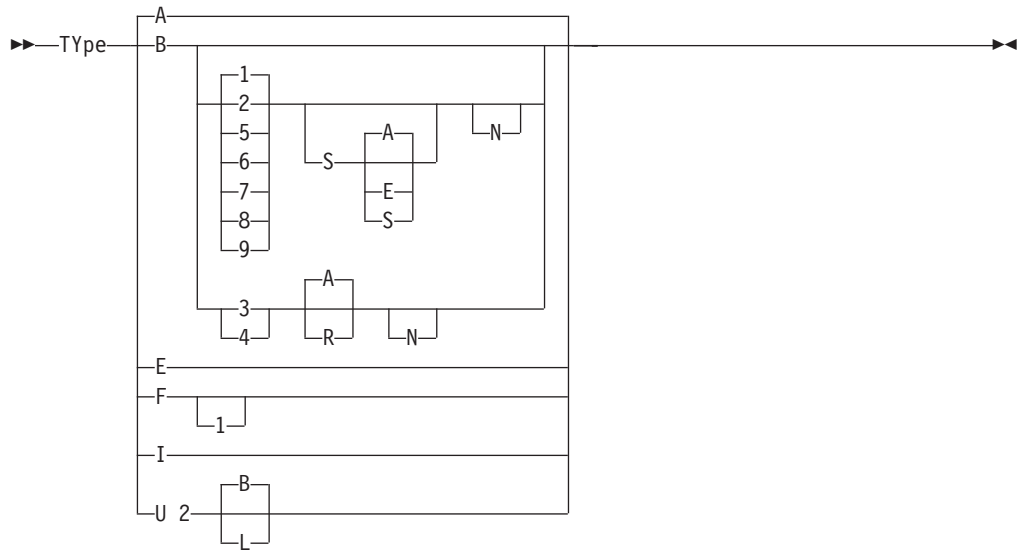
TSO subcommand

Use TSO commands:



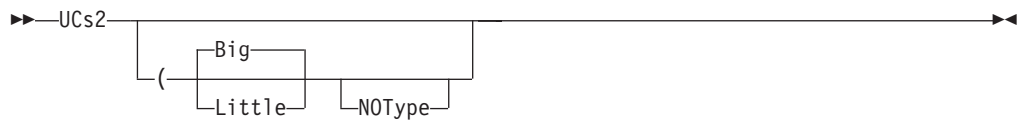
TYPE subcommand

Set the data transfer type:



UCS2 subcommand

Change data transfer type to unicode UCS-2:

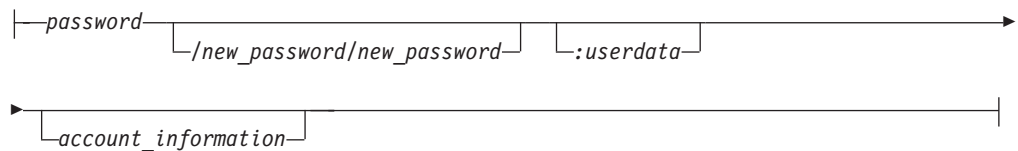


USER subcommand

Identify yourself to a host or change your TSO user ID password:



Where Password is:



GDDMXD command

Invoke the GDDMXD CLIST command:



The following sections describe the syntax for GDDMXD command options.

Identifying the target display option

▶▶ `--internet_address--:target_server` .target_screen

ANFontn option

Specify the X Window System font used for characters in the alphanumeric presentation space:

▶▶ `--gddmx*ANFont--n--:--fontname--`

CMap option

Specify whether the default color map is loaded or bypassed:

▶▶ `--gddmx*CMap--:` Y
N

Compr option

Control the technique used to compress bit-mapped data:

▶▶ `--gddmx*Compr--:` 0
A

Enter option

Override the default key mapping for enter:

▶▶ `--gddmx*Enter--:--keysym_name--`

GColornn option

Specify a color name:

▶▶ `--gddmx*GColor--nn--:--c--`

Geometry option

Specify the size and location of the initial GDDMXD graphics presentation space:

▶▶ `--gddmx*Geometry--:--width x height-- + --x_offset-- + --y_offset--`

GMCPnn option

Override GDDM[®] multicolor patterns with workstation color names:

▶▶ `--gddmx*GMCP--nn--:--c--`

HostRast option

Perform Raster image processing at the System/370 host:



NewLine option

Override the default key mapping for NewLine:



XSync option

Request that the X Window System process one request at a time:



ZWL option

Tell GDDMXD/MVS to draw all lines using 0-width lines:



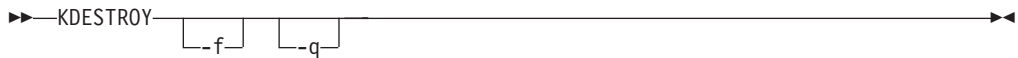
HOMETEST command

Verify your host name and address configuration:



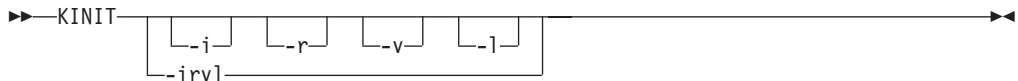
KDESTROY command

Delete Kerberos ticket data sets:



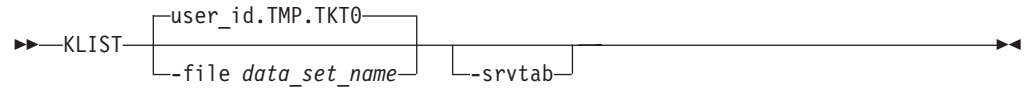
KINIT command

Connect to the Kerberos system:



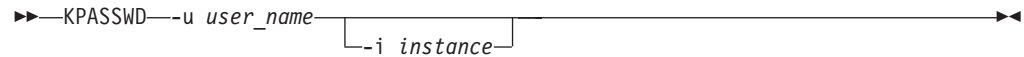
KLIST command

Display your current tickets:



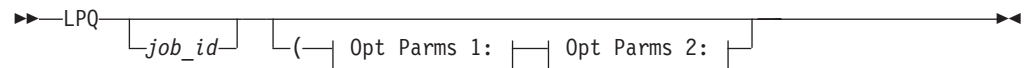
KPASSWD command

Change your password:

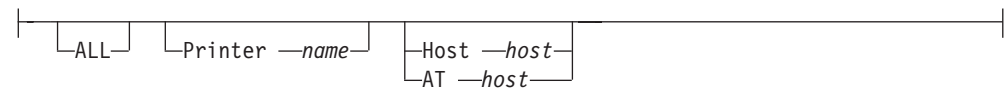


LPQ command

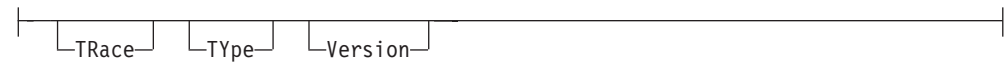
Request a list of the printer queue on a remote printer:



Opt Parm 1:

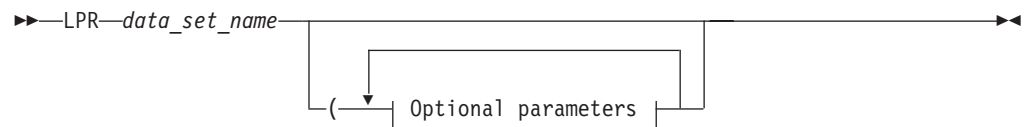


Opt Parm 2:



LPR command

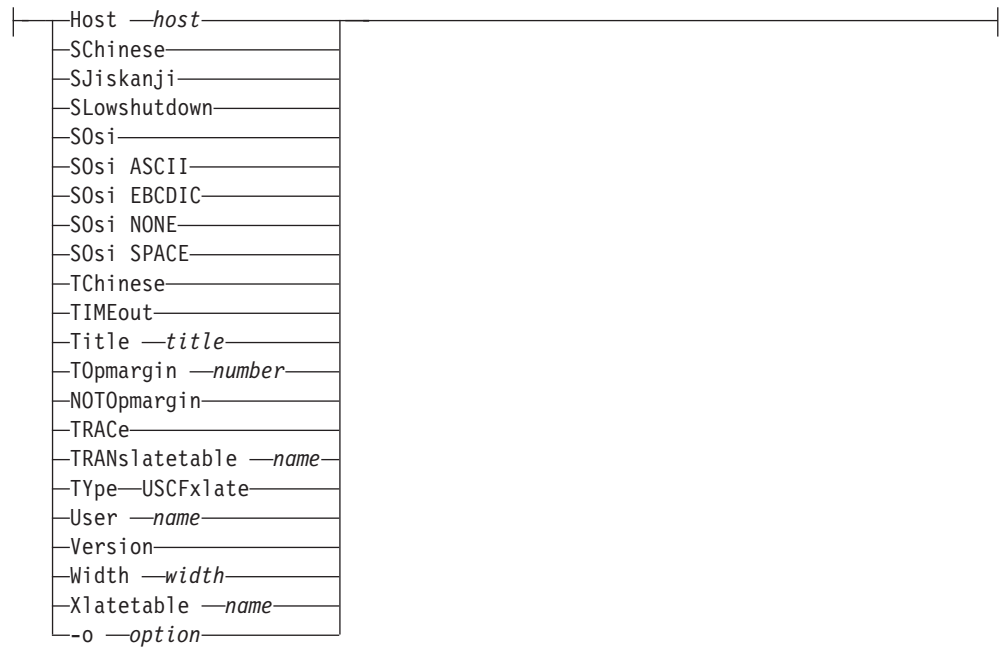
Print to a remote printer:



Optional parameters:

AT <i>host</i>
BIG5
NOBinary
BINary
BUrst
NOBUrst
CC
NOCC
CFfirst
Class <i>class</i>
1
COpies <i>copies</i>
EOF1f
NOEOF1f
Euckanji
Filter filter
HAngeul
HEader
NOHeader
IBmkanji
Indent <i>number</i>
JIS78kj
ASCII
JISROMAN
JIS83kj
ASCII
JISROMAN
JNum <i>number</i>
Job jobname
Ksc5601
LAandscape
LANDNOcz
LATEconn
LNcz
55
LIInecount <i>count</i>
NOLIncount
Mail
NAme <i>name</i>
POstscript
NOPostscript
Printer <i>name</i>

More optional parameters:

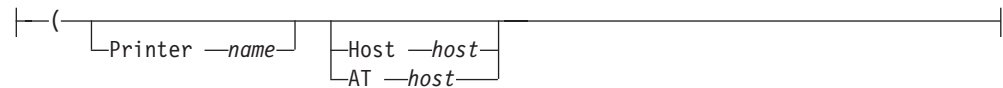


LPRM command

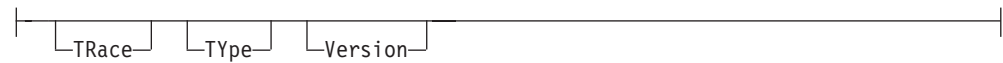
Remove a job from the printer queue on a remote host:



Opt Params 1:



Opt Params 2:

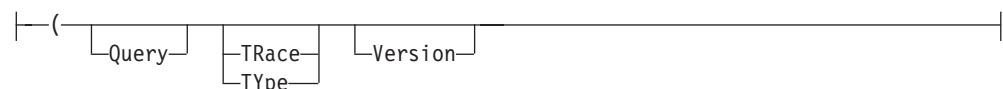


LPRSET command

Set the default printer and host name:

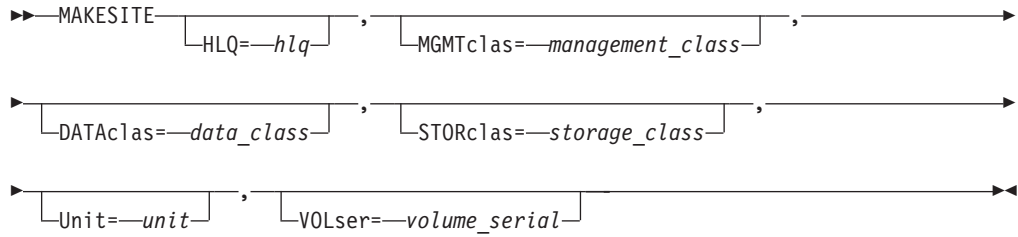


Optional Parameters:



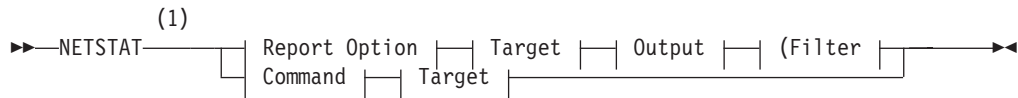
MAKESITE command

Generate new hlq.HOSTS.SITEINFO and hlq.HOSTS.ADDRINFO data sets:

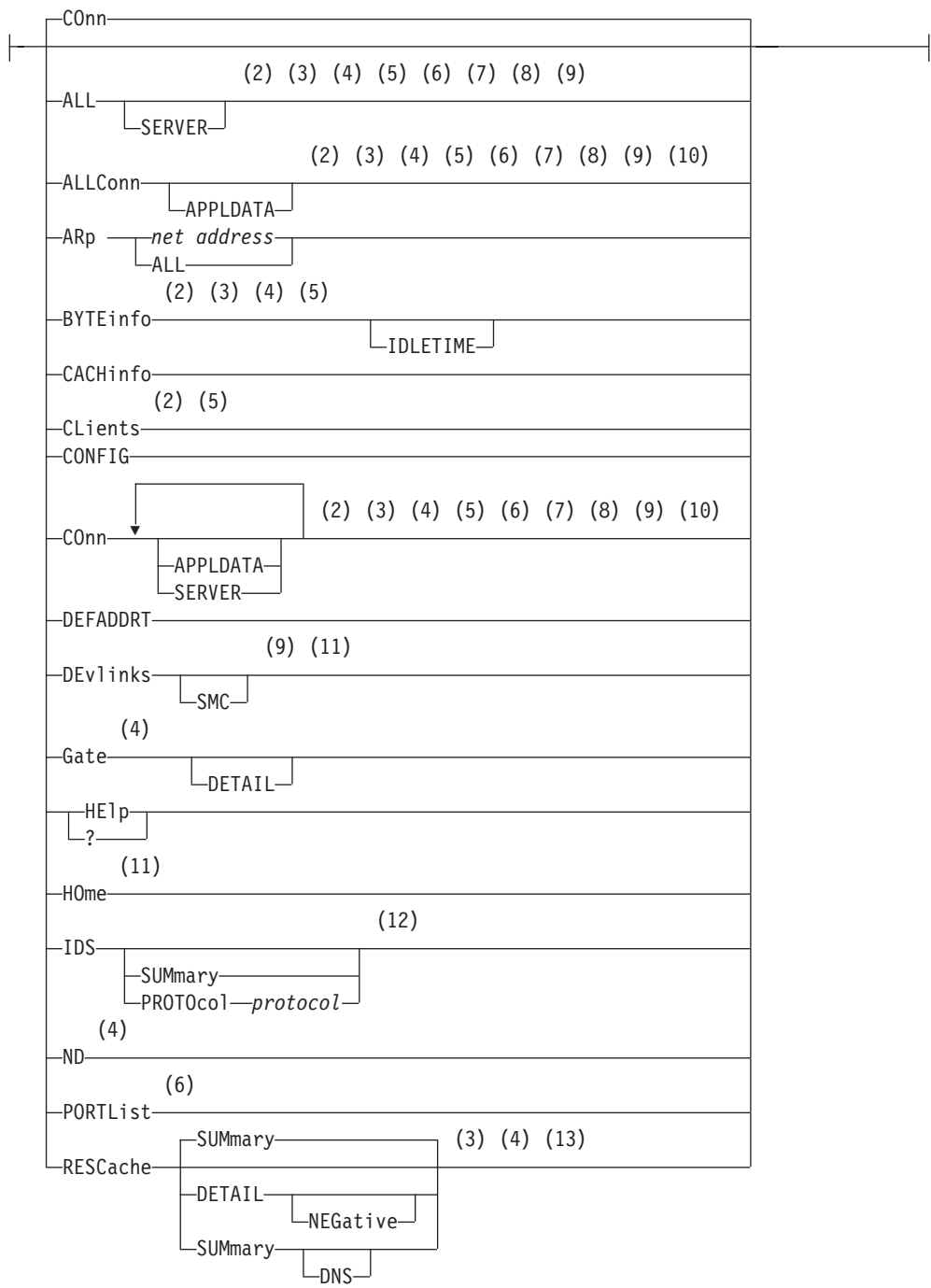


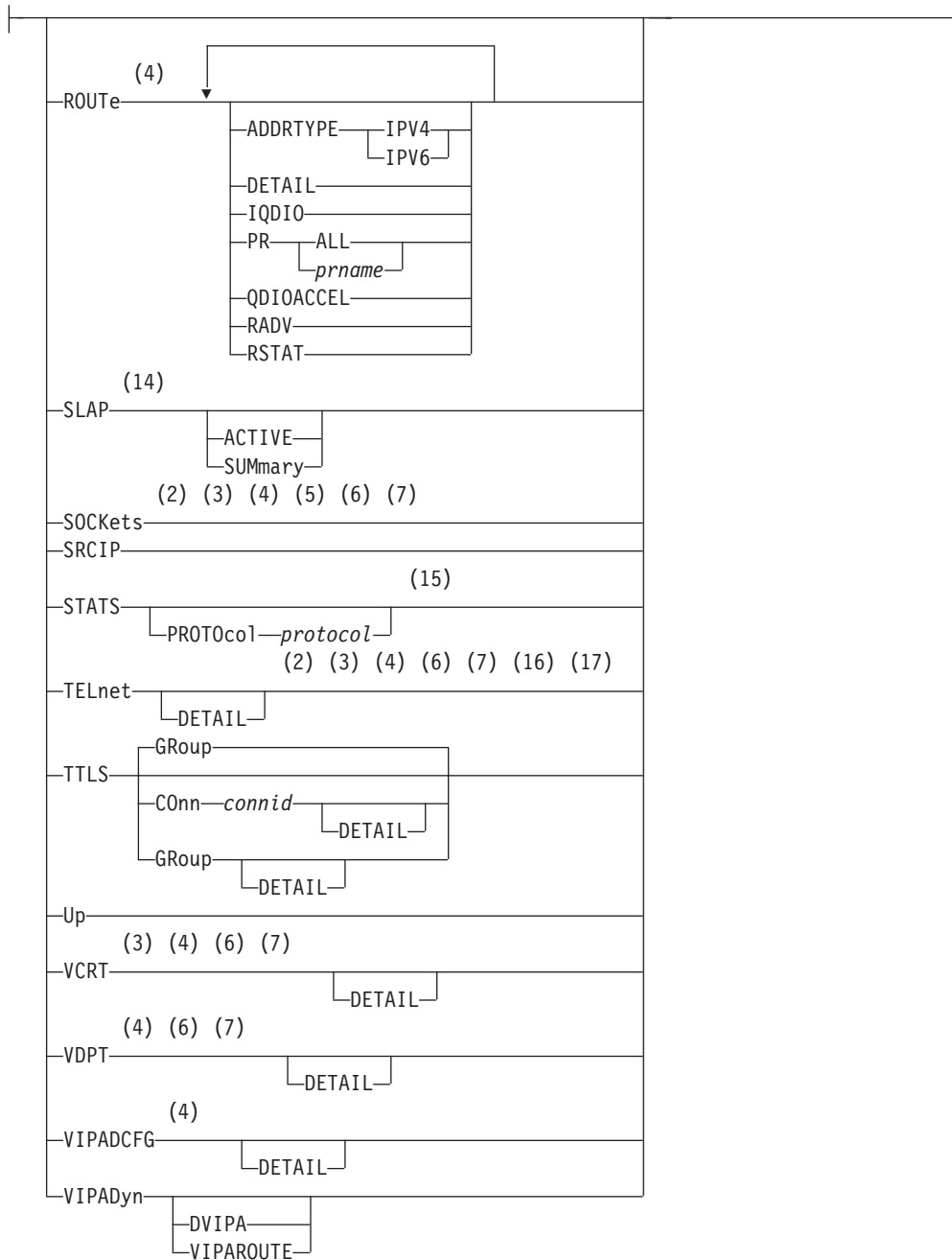
NETSTAT command

Use the TSO NETSTAT command to display the network configuration and status on a local TCP/IP stack:



Report Option:





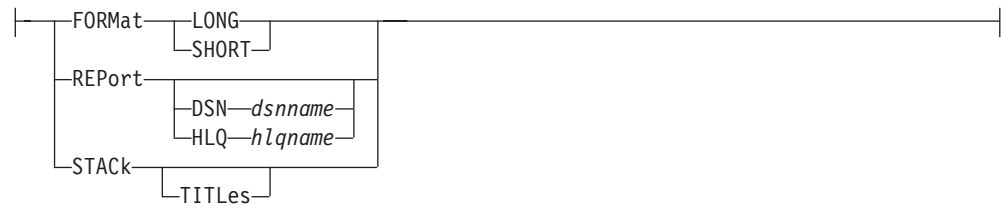
Command:

—DRop —*n*—

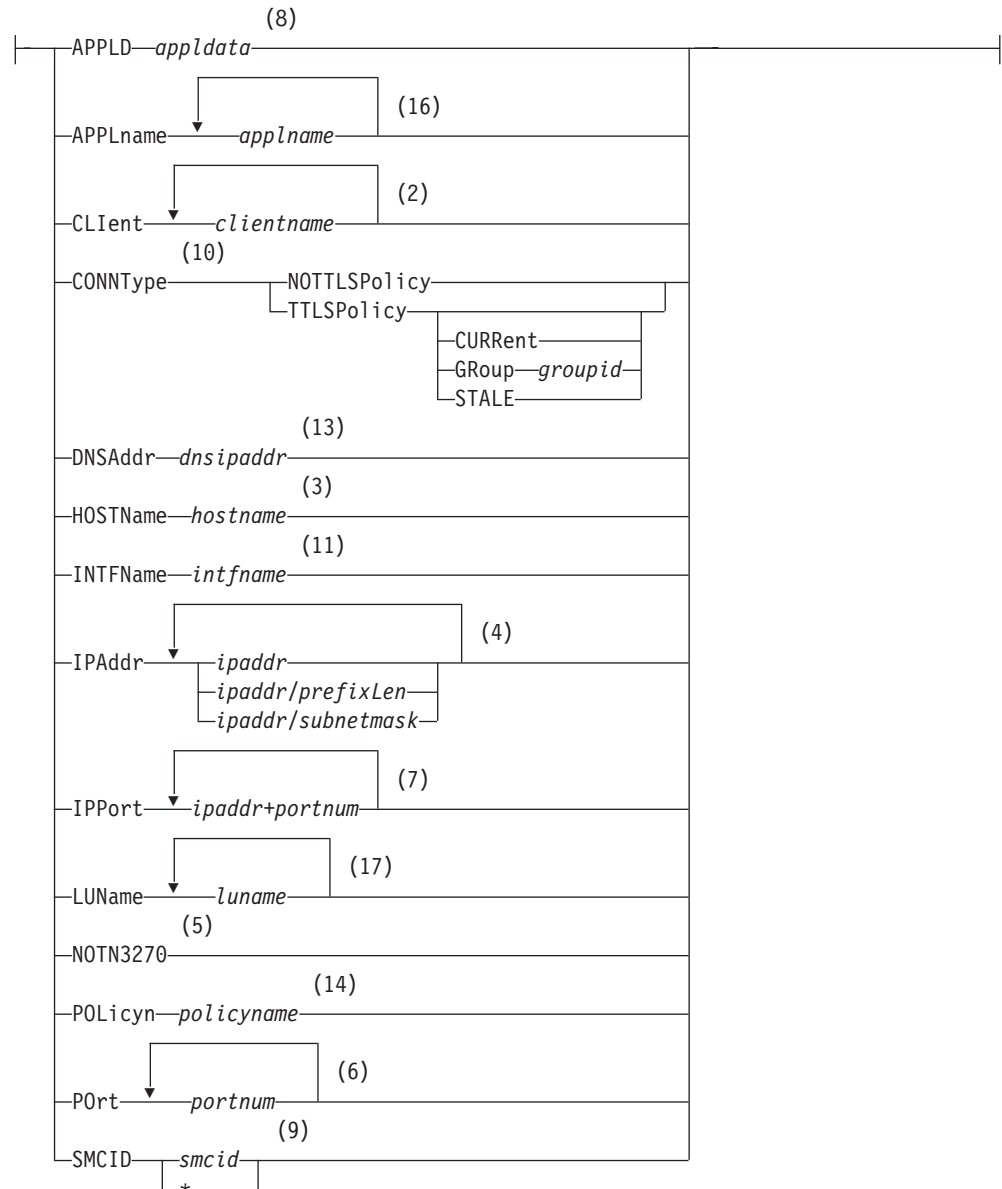
Target:

—TCp —*tcpname*—

Output:



Filter:



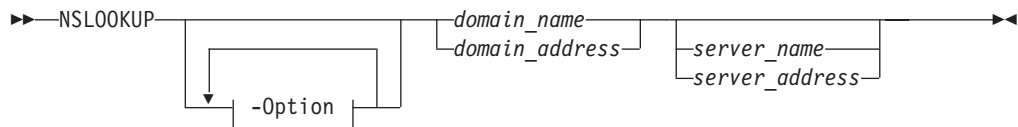
Notes:

- 1 The minimum abbreviation for each parameter is shown in uppercase letters.

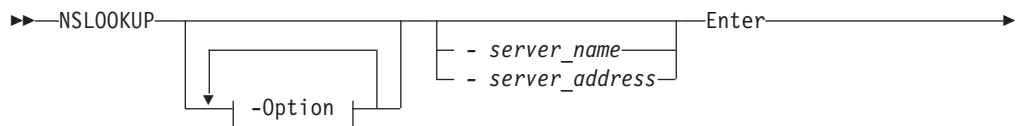
- 2 The CLient filter is valid with ALL, ALLConn, BYTEinfo, COnn, CLients, SOCKets, and TELnet.
- 3 The HOSTName filter is valid only with ALL, ALLConn, BYTEinfo, COnn, RESCache, SOCKets, TELnet, and VCRT.
- 4 The IPAddr filter is valid only with ALL, ALLConn, BYTEinfo, COnn, Gate, ND, RESCache, ROUTe, SOCKets, TELnet, VCRT, and VDPT, and VIPADCFG.
- 5 The NOTN3270 filter is valid only with ALL, ALLConn, BYTEinfo, COnn, CLients, and SOCKets.
- 6 The Port filter is valid only with ALL, ALLConn, COnn, PORTList, SOCKets, TELnet, VCRT, and VDPT.
- 7 The IPPort filter is valid only with ALL, ALLConn, COnn, SOCKets, TELnet, VCRT, and VDPT.
- 8 The APPLD filter is valid only with ALL, ALLConn, and COnn.
- 9 The SMCID filter is valid only with ALL, ALLConn, COnn, and DEvlinks.
- 10 The CONNType filter is valid only with ALLConn and COnn.
- 11 The INTFName filter is valid only with DEvlinks and HOme.
- 12 The valid protocol values are TCP and UDP.
- 13 The DNSAddr filter is valid only with RESCache.
- 14 The POLicyn filter is valid only with SLAP.
- 15 The valid protocol values are IP, ICMP, TCP, and UDP.
- 16 The APPLname filter is valid only with TELnet.
- 17 The LUName filter is valid only with TELnet.

NSLOOKUP command

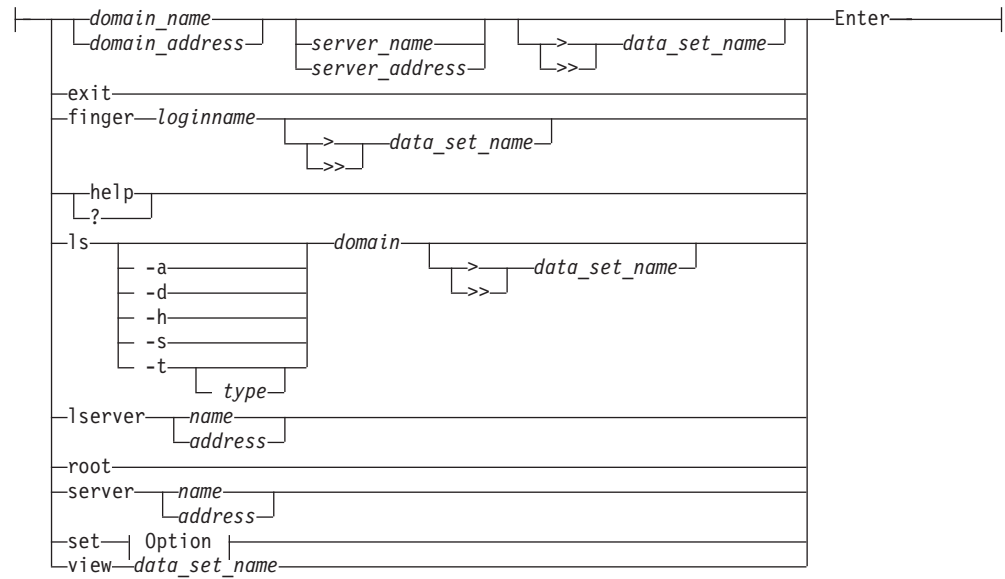
Query a name server in command mode:



Issue queries to name servers in interactive mode:

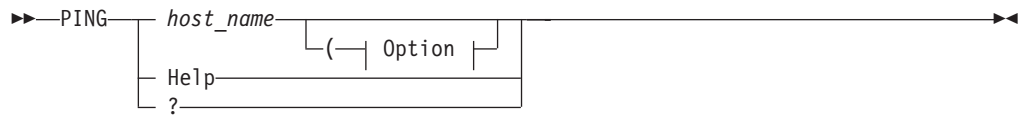


SubCommand:

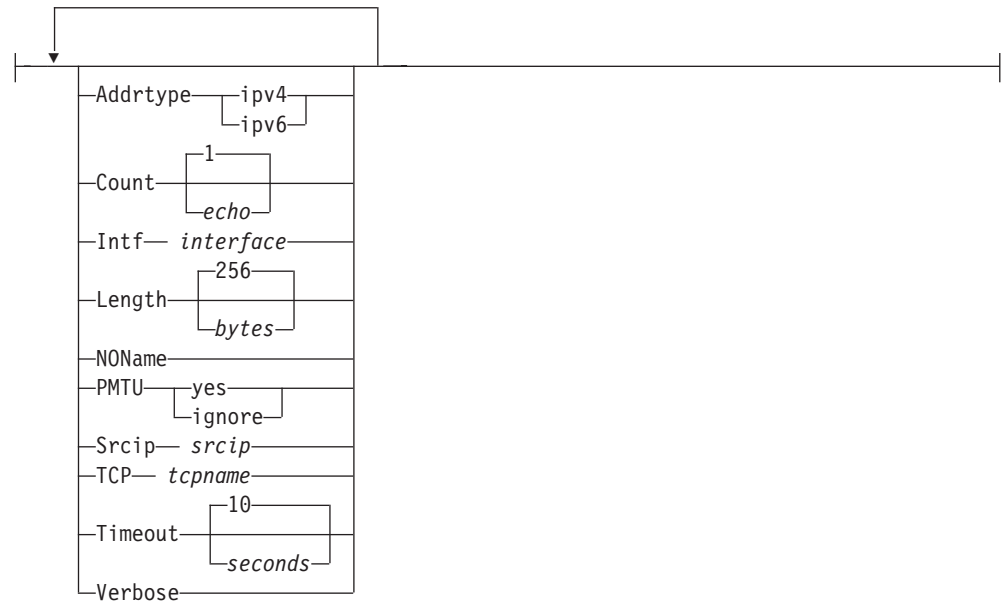


PING command

The PING command sends an echo request to a foreign node (remote host) to determine whether the node is accessible.

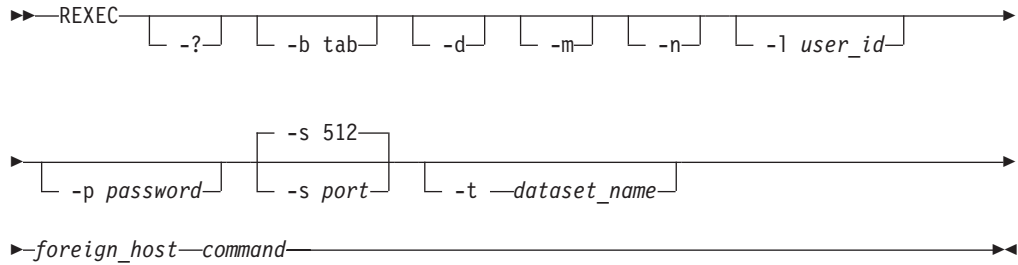


Option:



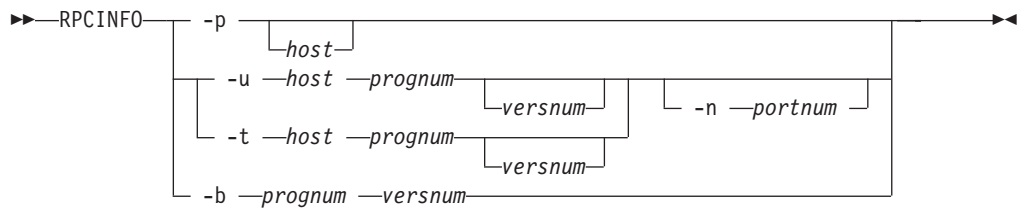
REXEC command

Send a command to the remote host and receive the results on your local host:



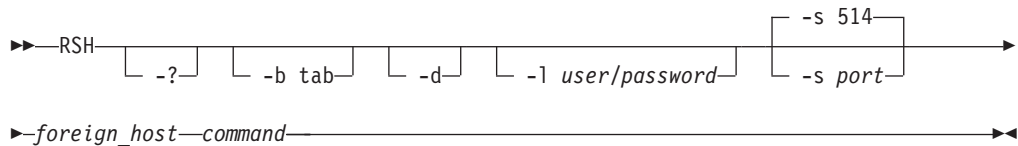
RPCINFO command

Display server information:



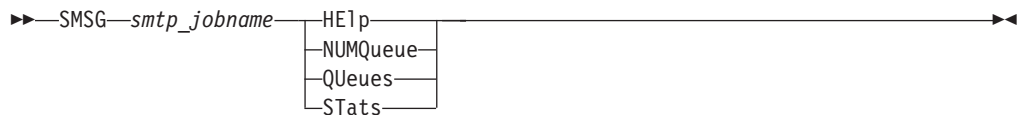
RSH command

Send a command to the remote host and receive the results on your local host:

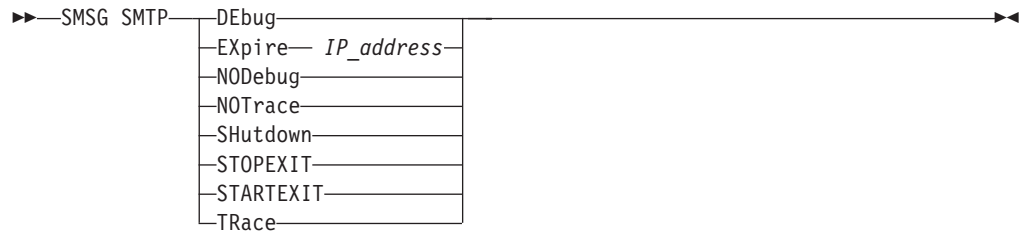


SMSG SMTP command

Command for the general user:

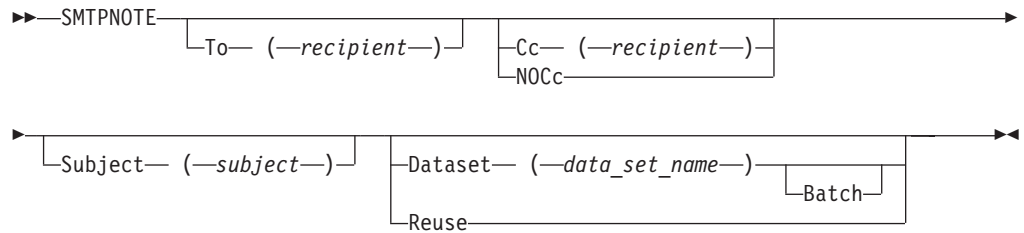


Command for the privileged user:

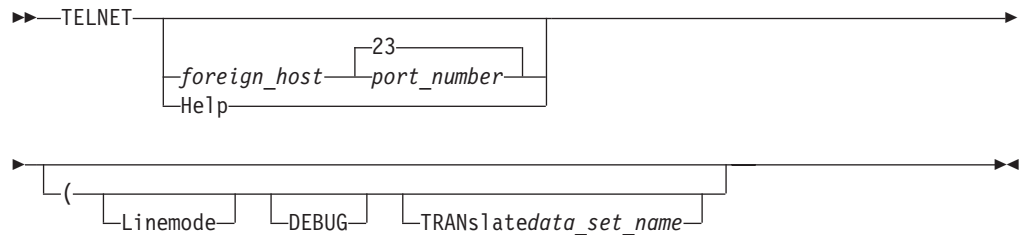


SMTPNOTE command

Send electronic mail to one or more recipients on NJE or TCP networks:



TELNET command



The following sections describe the syntax for TELNET command options:

AO option

Terminate output display:



AYT option

Query the connection:



BRK option

Send the break or attention keystroke to a host:



HELP option

Display help information:



IP option

Interrupt the process:



PA1 option

Send the PA1 keystroke to a host:



QUIT option

End the telnet session:



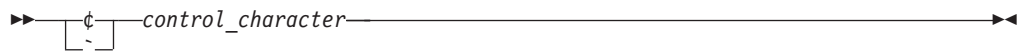
SYNCH option

Clear the data path:

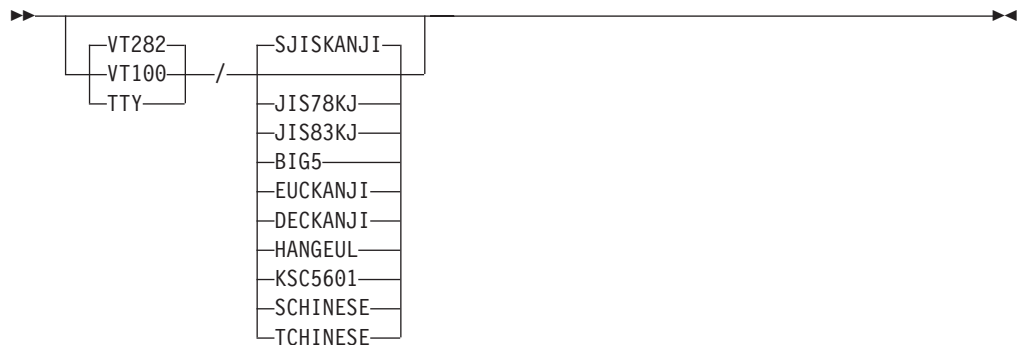


¢ and ` options

Send ASCII control characters to a host in line mode:



Terminal and conversion type option



TESTSITE command

Verify hlq.HOSTS.ADDRINFO and hlq.HOSTS.SITEINFO data sets correctly resolve the name of a host, gateway, or net:

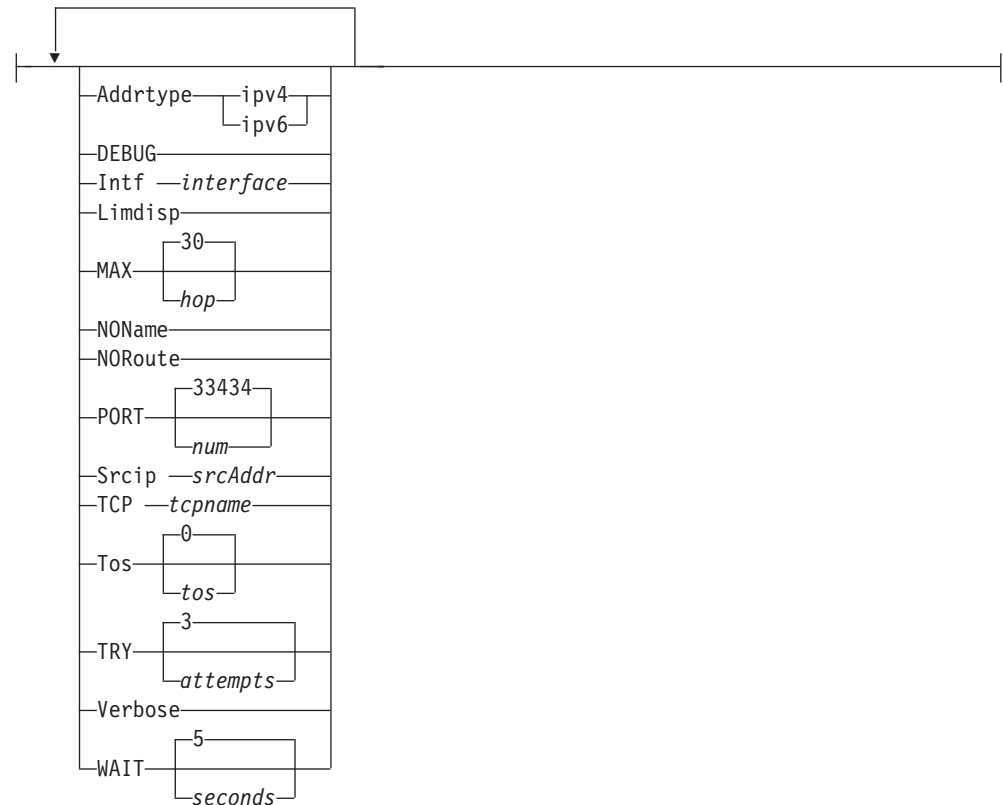
▶▶—TESTSITE—▶▶

TRACERTE command

Debug network problems:

▶▶—TRACERTE—?—▶▶
└─host_name─┬─packetSize─┬─(— Options —┬─▶▶

Options:



z/OS UNIX commands

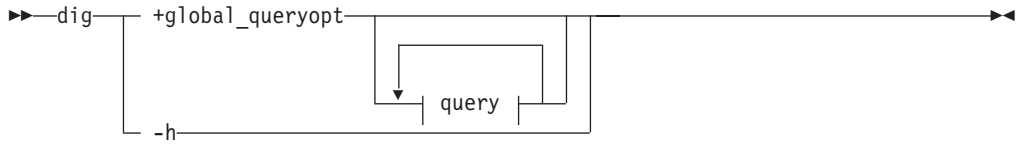
dig command

Gather information from the Domain Name System servers:

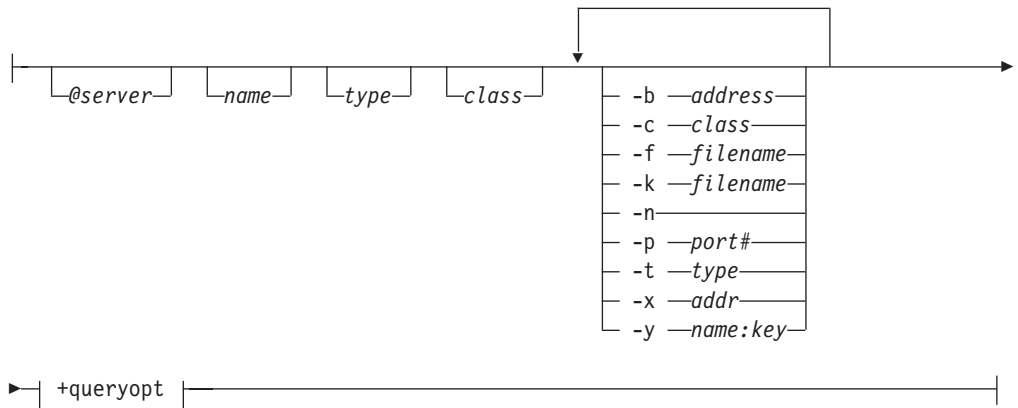
Command Line Mode



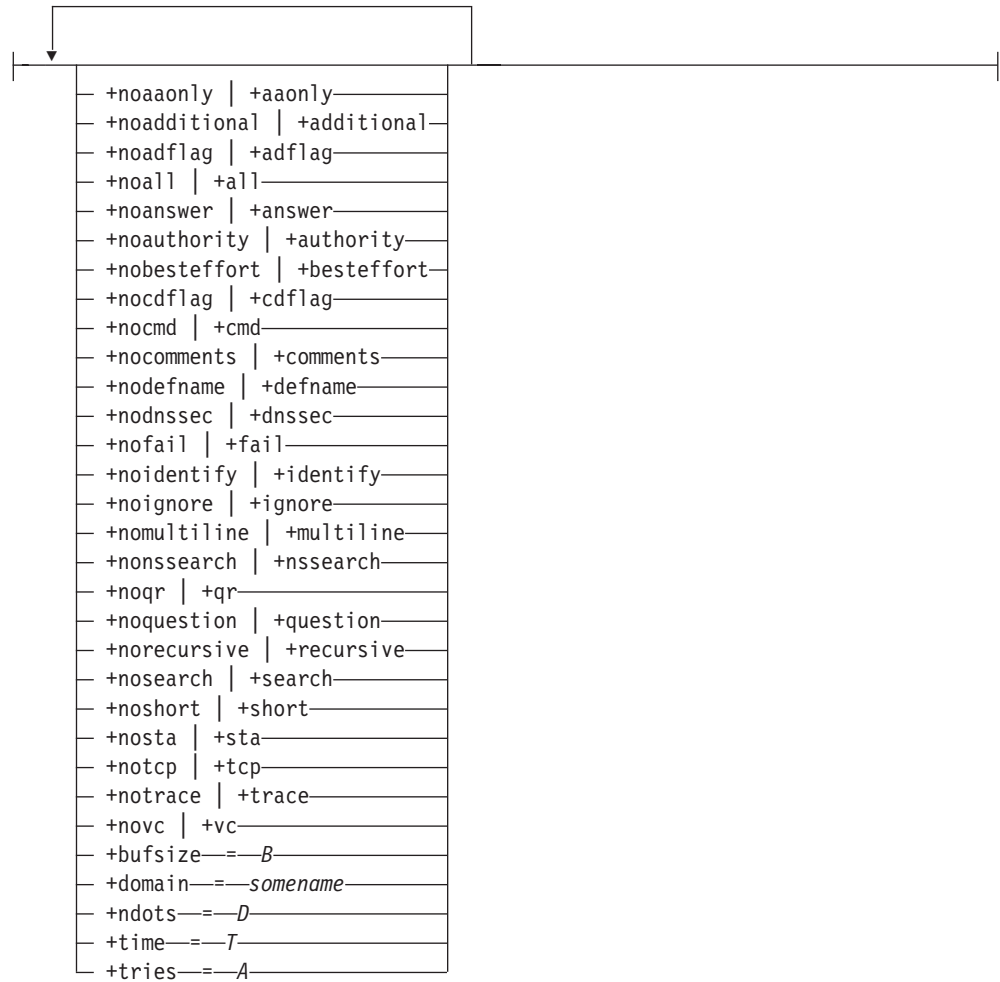
Multiple Query Mode



query:

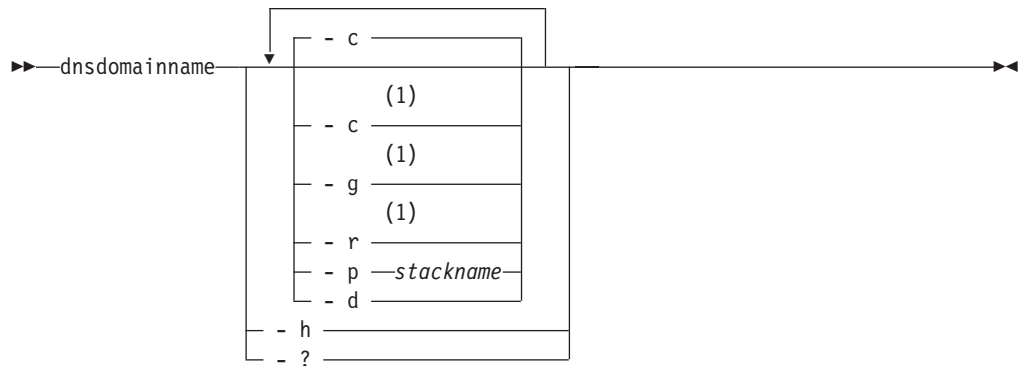


+queryopt or +global_queryopt:



dnsdomainname command

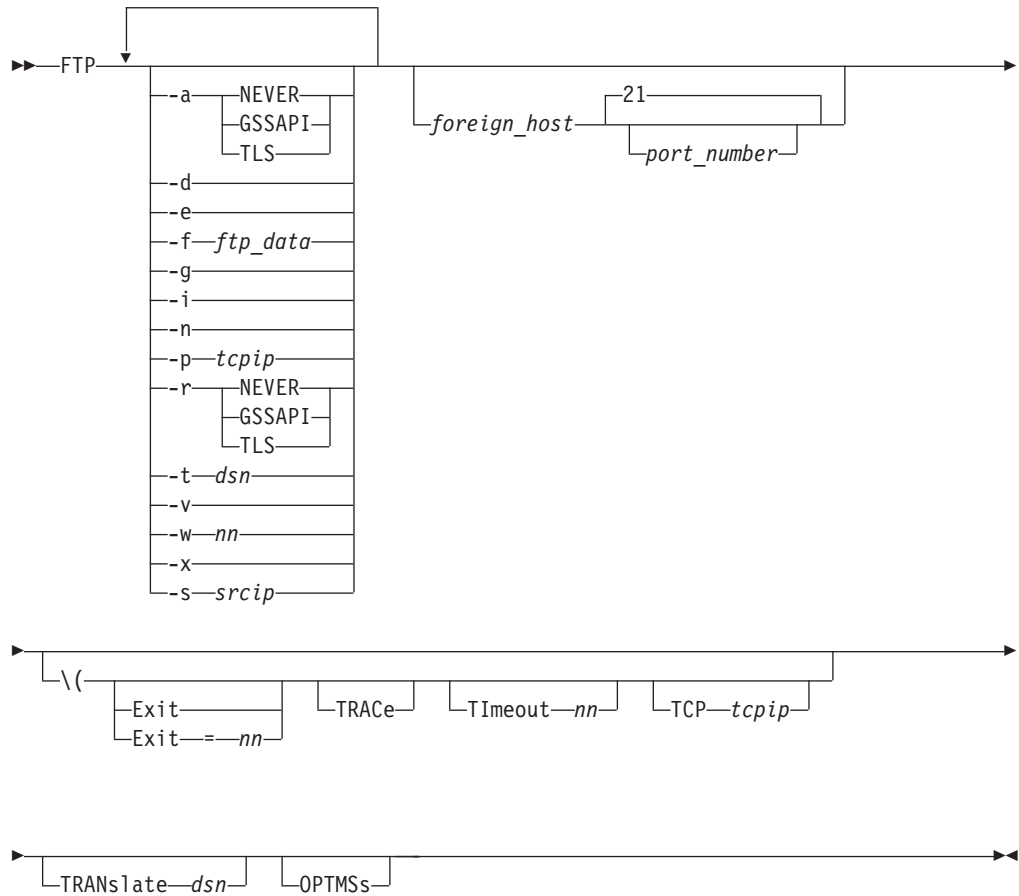
Display the DNS domain name of the system:



Notes:

- 1 Only one of the -c, -g, and -r parameters can be specified.

ftp command



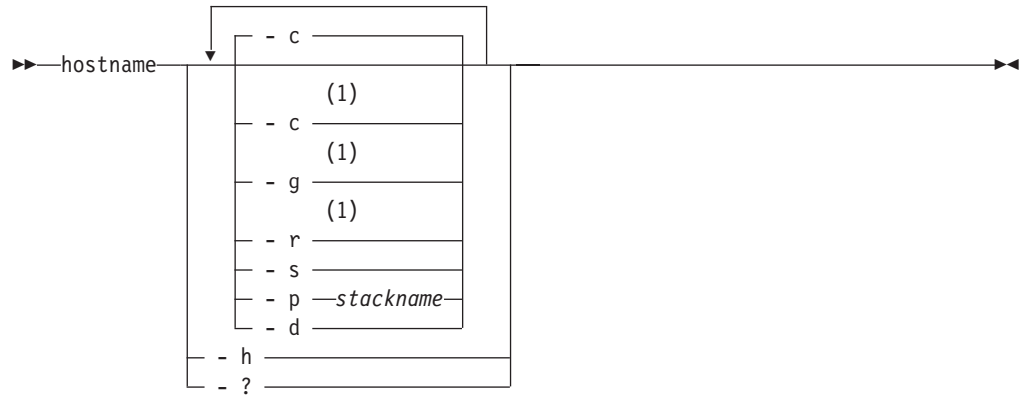
host command

Identify the IP addresses associated with a specified DNS host name or identify the DNS host names associated with a specified IP address:

`host` *host*

hostname command

Display the fully qualified DNS hostname of the local system:



Notes:

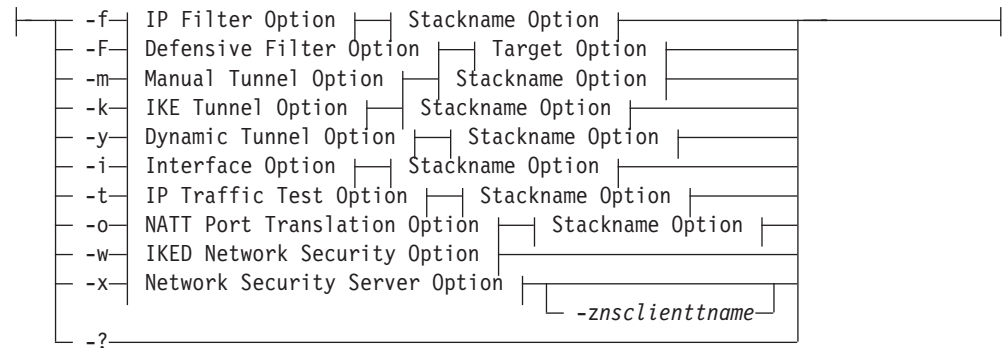
- 1 Only one of the -c, -g, and -r parameters can be specified.

ipsec command

Display and modify IP security information on the local host:



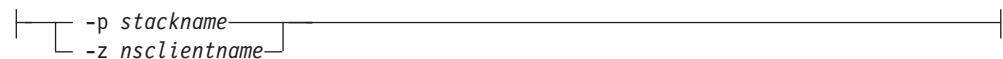
Primary Option:



Global Option:



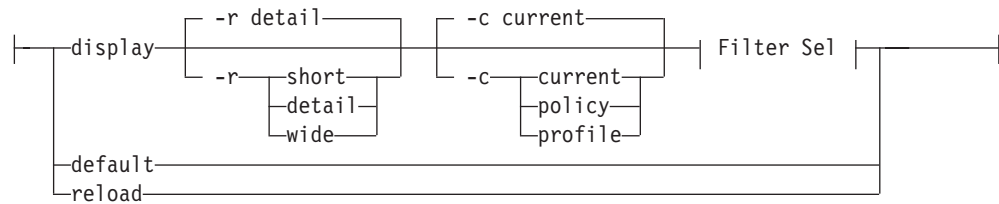
Stackname Option:



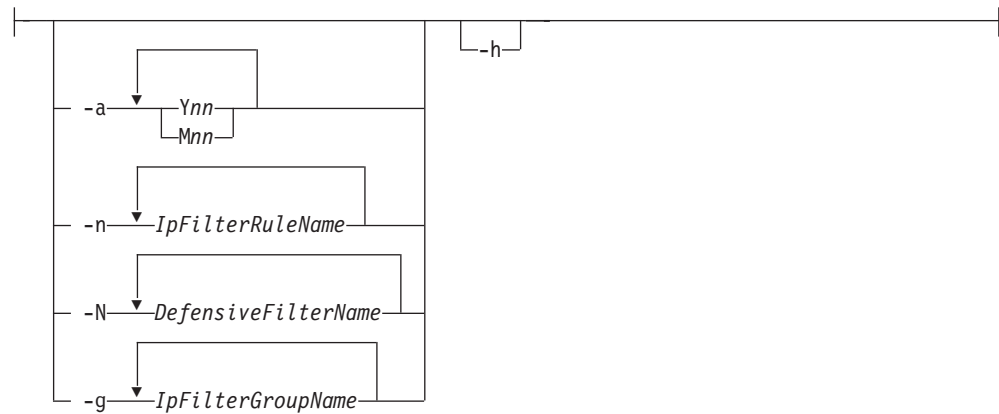
Target Option:



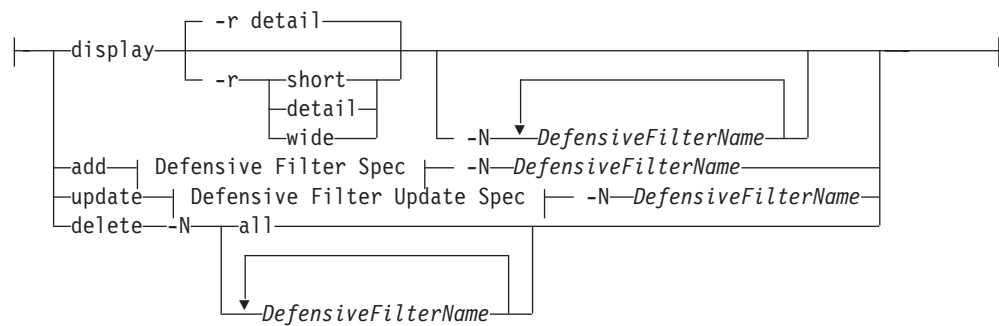
IP Filter Option:



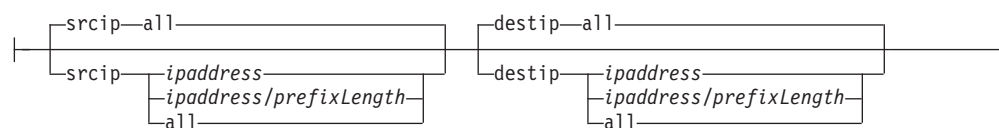
Filter Selection:

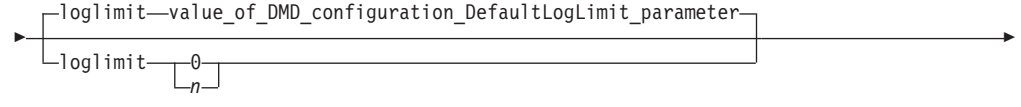
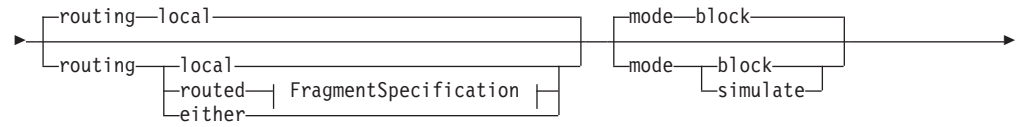
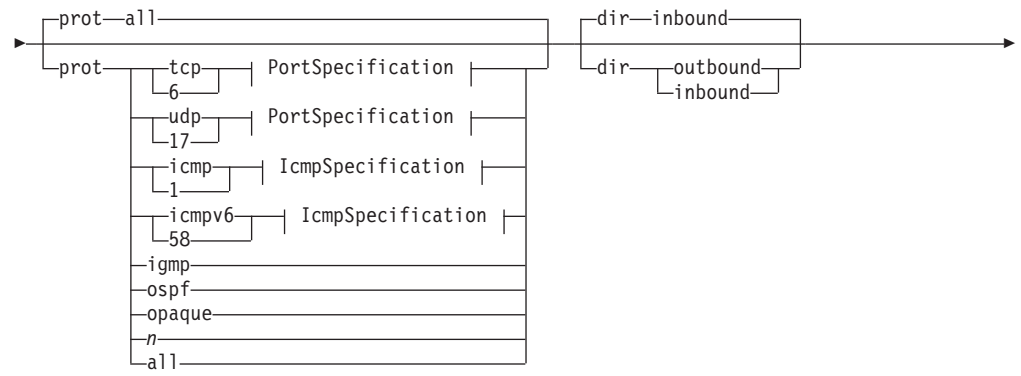


Defensive Filter Option:

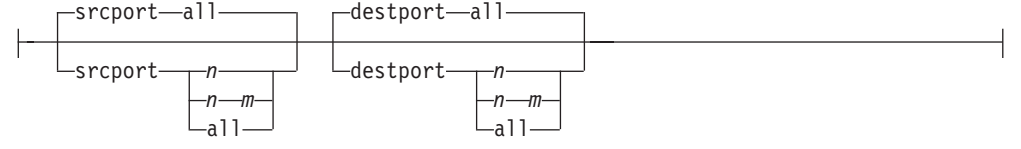


Defensive Filter Specification:

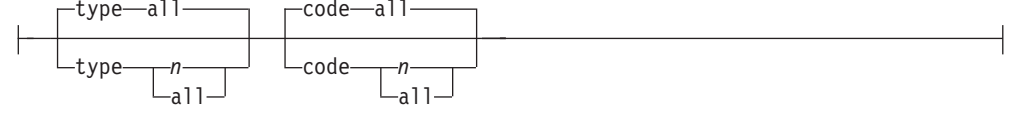




PortSpecification:



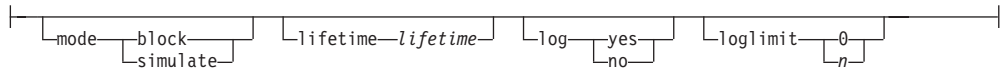
IcmpSpecification:



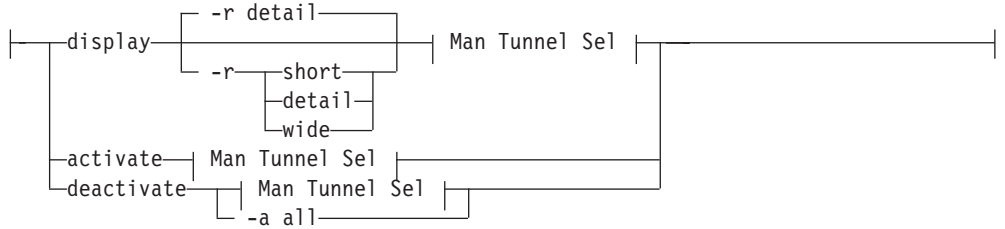
FragmentSpecification:



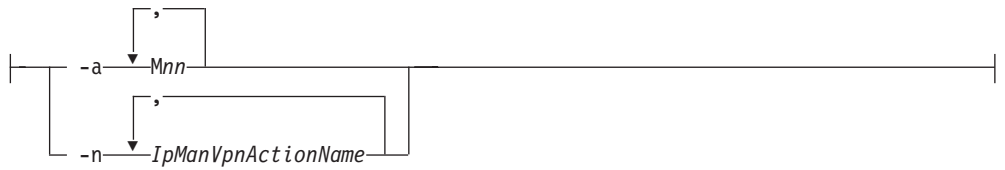
Defensive Filter Update Specification:



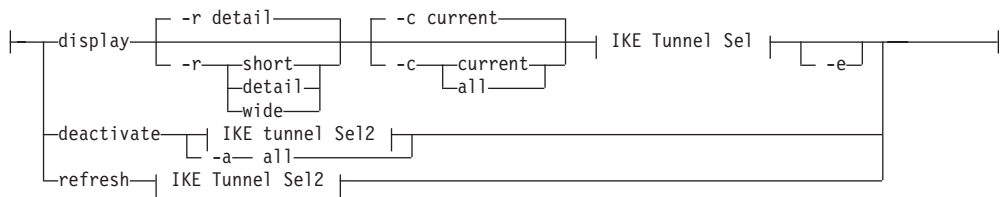
Manual Tunnel Option:



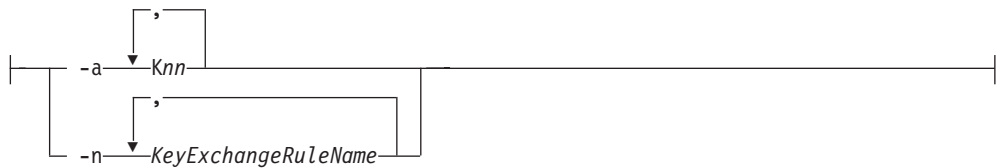
Man Tunnel Selection:



IKE Tunnel Option:



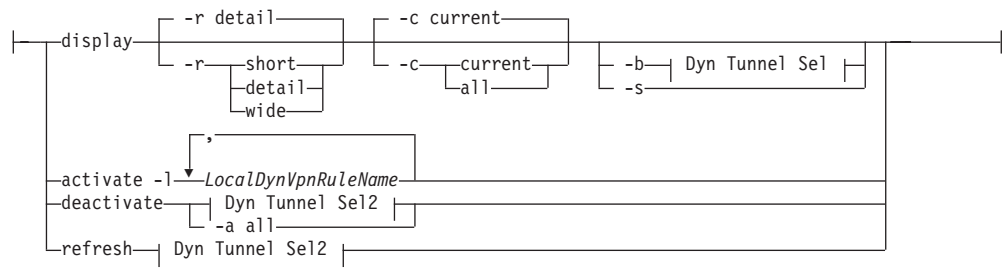
IKE Tunnel Selection:



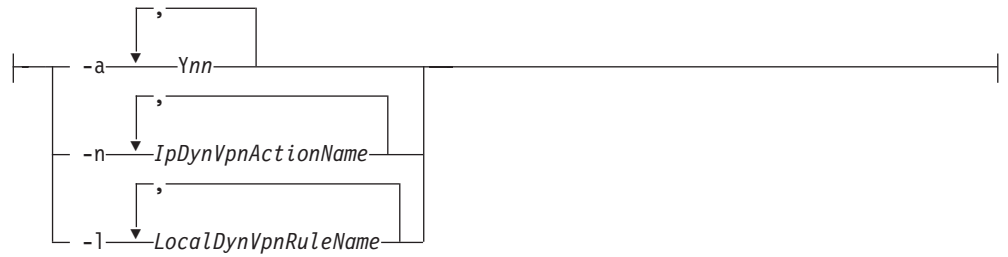
IKE Tunnel Selection2:



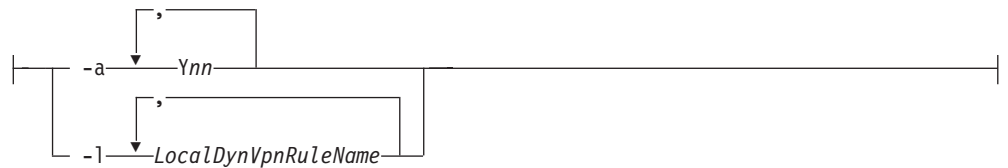
Dynamic Tunnel Option:



Dyn Tunnel Selection:



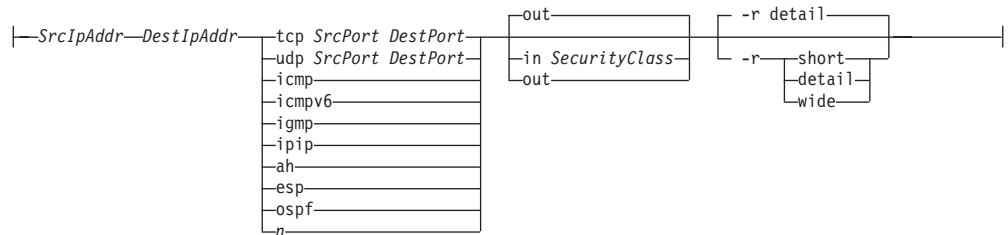
Dyn Tunnel Selection2:



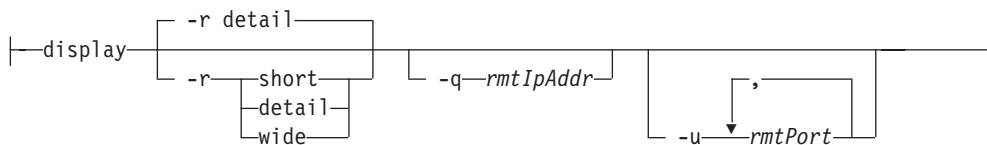
Interface Option:



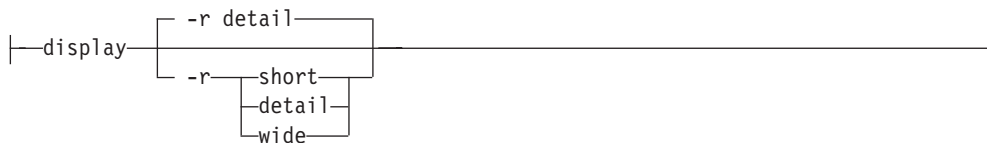
IP Traffic Test Option:



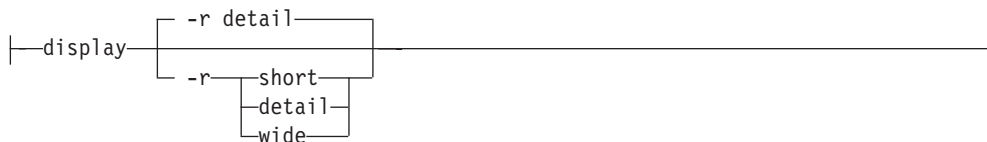
NATT Port Translation Option:



IKED Network Security Option:

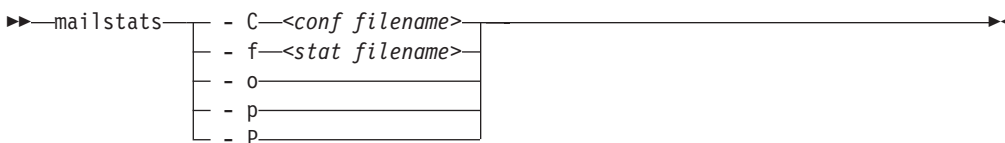


Network Security Server Option:



mailstats command

Printing statistics:



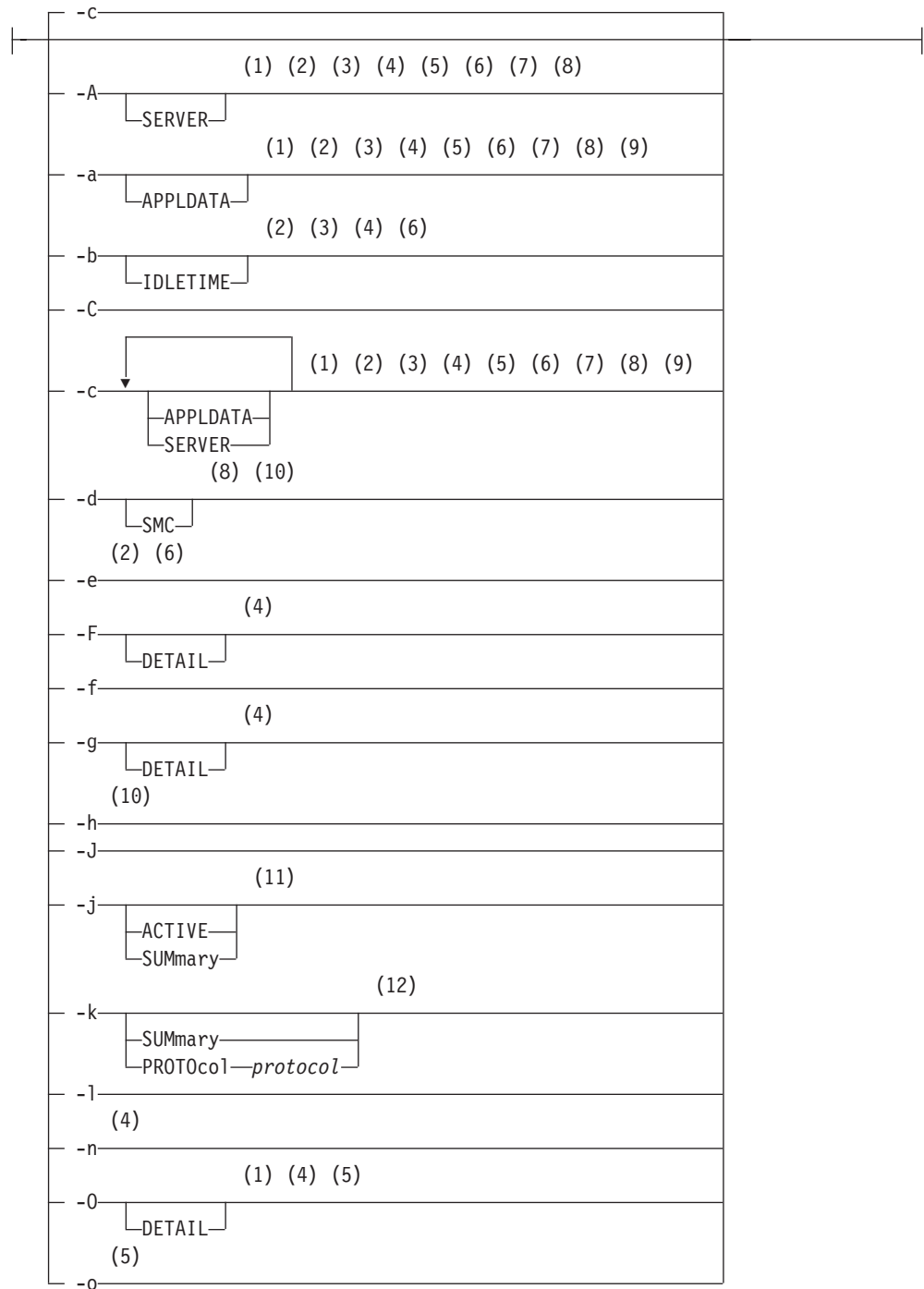
netstat command

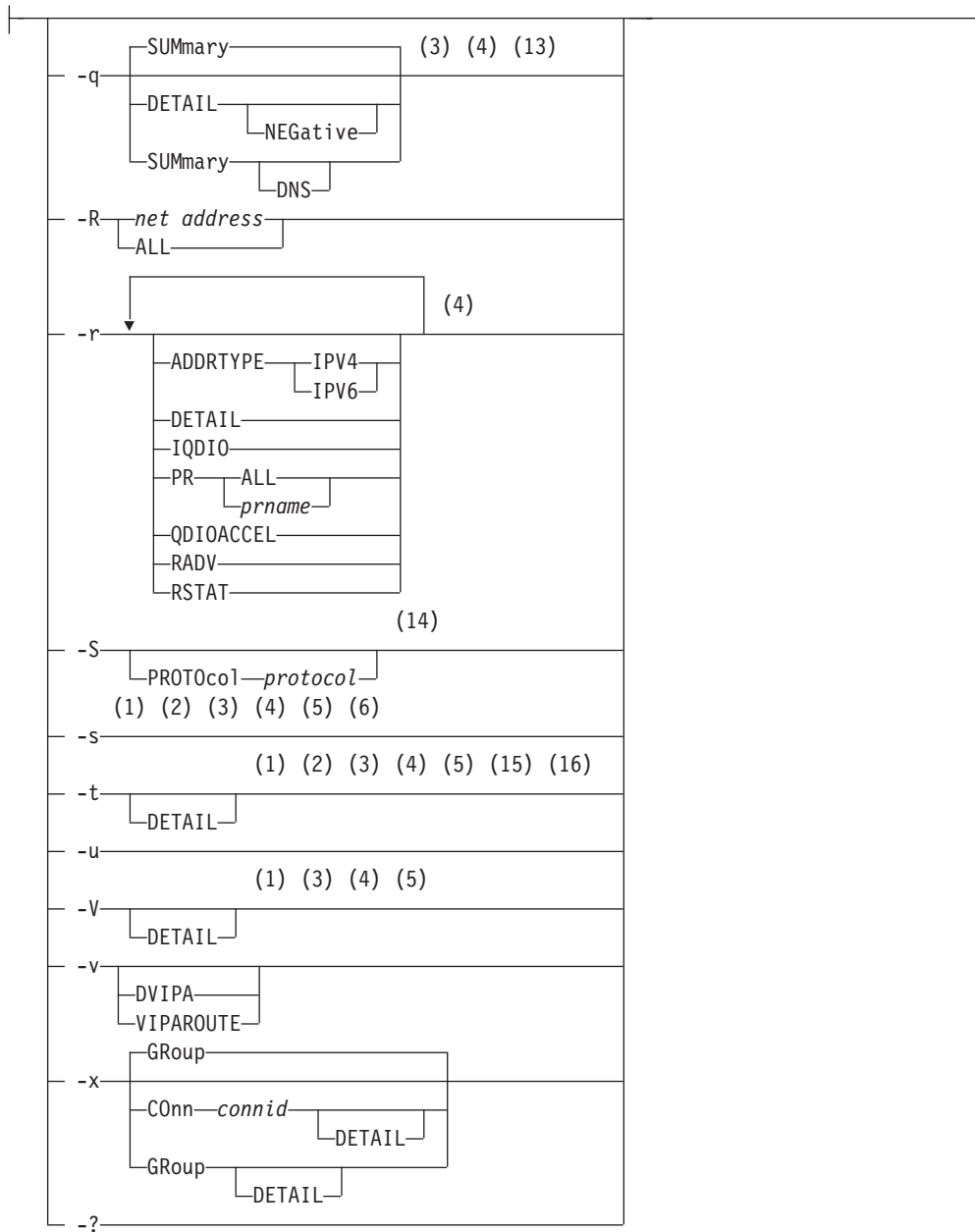
Use the z/OS UNIX **netstat** command to display the network configuration and status on a local TCP/IP stack:

Note: The synonym name for the **netstat** command in the z/OS UNIX shell is netstat. The **onetstat** command syntax is the same as that for the **onetstat** command



Report Option:





Command:

| -D n |

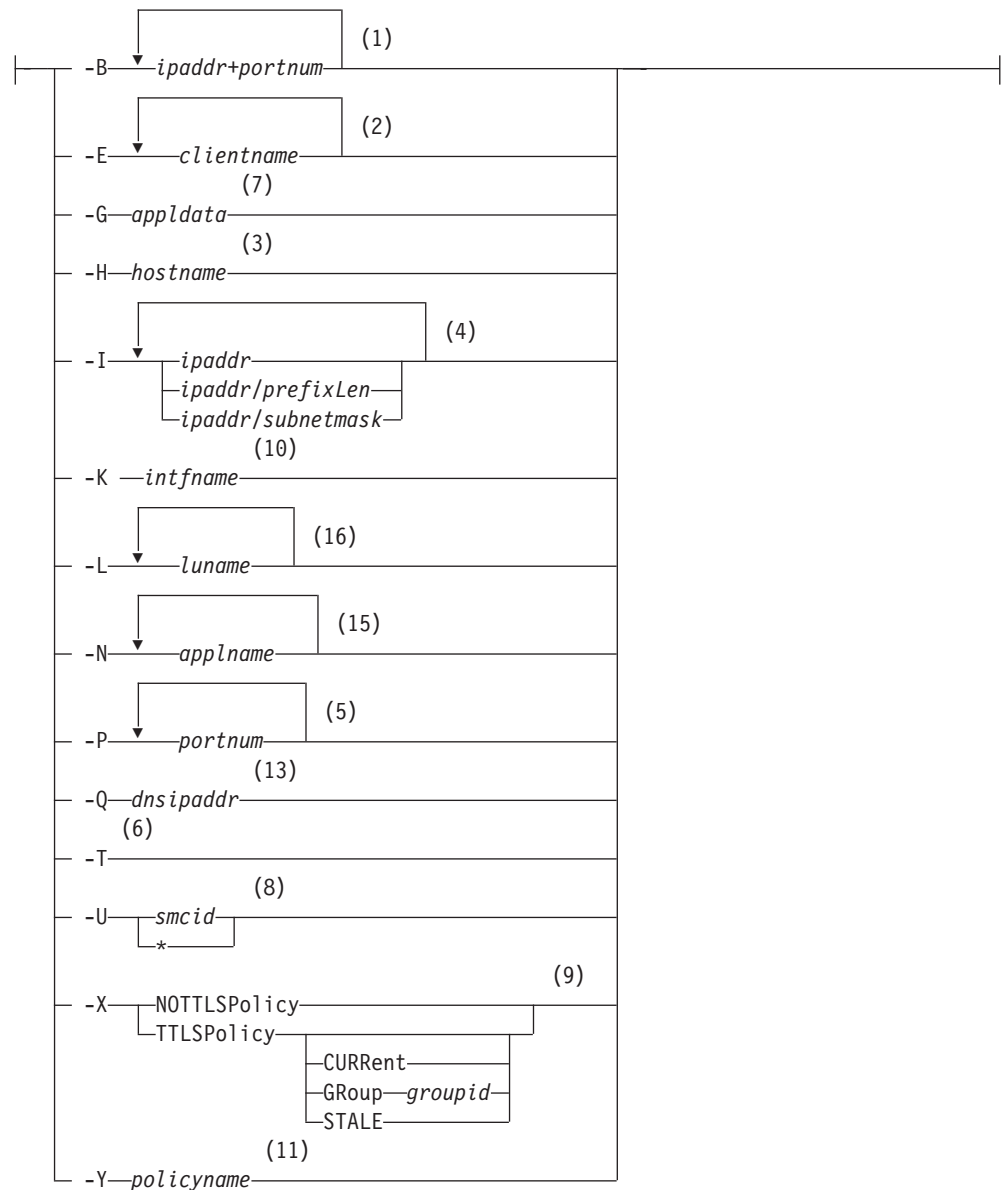
Target:

| -p tcpname |

Output:

| -M LONG
SHORT |

Filter:



Notes:

- 1 -B filter is valid only with -A, -a, -c, -s, -t, -O, and -V.
- 2 -E filter is valid only with -A, -a, -b, -c, -e, -s, and -t.
- 3 -H filter is valid only with -A, -a, -b, -c, -q, -s, -t, and -V.
- 4 -I filter is valid only with -A, -a, -b, -c, -F, -g, -n, -O, -q, -r, -s, -t, and -V.
- 5 -P filter is valid only with -A, -a, -c, -O, -o, -s, -t, and -V.
- 6 -T filter is valid only with -A, -a, -b, -c, -e, and -s.
- 7 -G filter is valid only with -A, -a, and -c.
- 8 -U filter is valid only with -A, -a, -c and -d.
- 9 -X filter is valid only with -a, and -c.

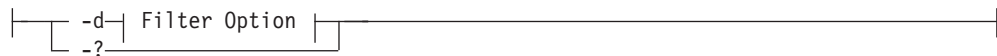
- 10 -K filter is valid only with -d and -h.
- 11 -Y filter is valid only with -j.
- 12 The valid protocol values are TCP, and UDP.
- 13 -Q filter is valid only with -q.
- 14 The valid protocol values are ICMP, IP, TCP, and UDP.
- 15 -N filter is valid only with -t.
- 16 -L filter is valid only with -t.

nssctl command

The z/OS UNIX nssctl command is used to display information for NSS clients that are currently connected to the local NSS server.



Primary Option:



Filter Option:



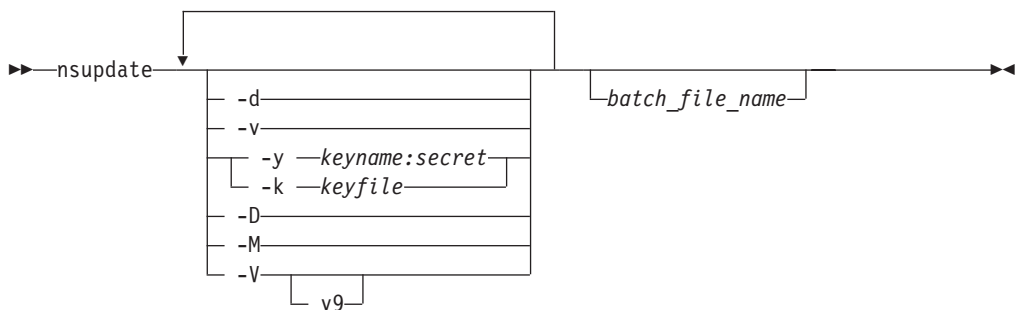
Debug Option:



nsupdate Command

Dynamically update a name server:

Command mode:

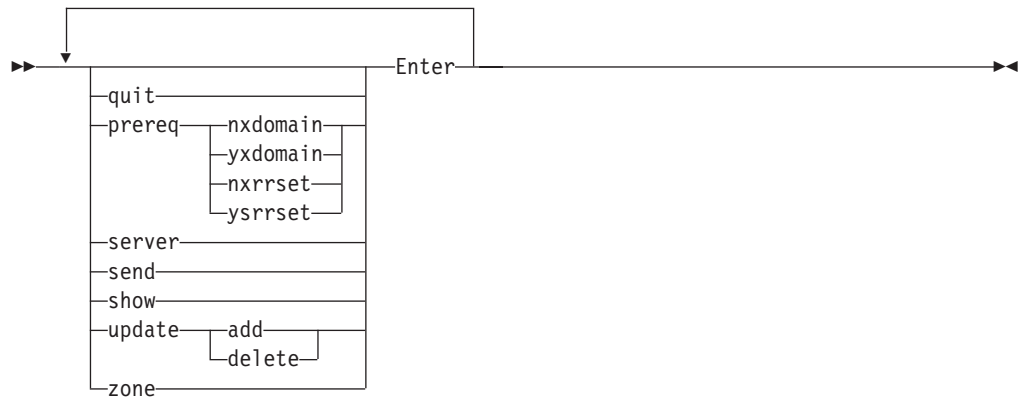


Subcommand mode:

Start nsupdate subcommand mode

►► nsupdate—Enter

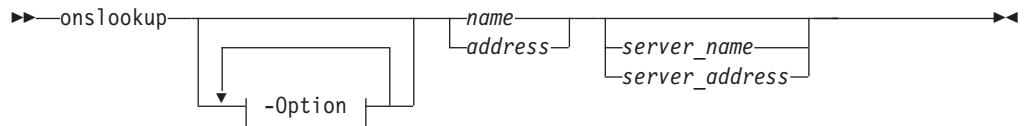
Subsequent subcommand entry (valid with version 9 of nsupdate)



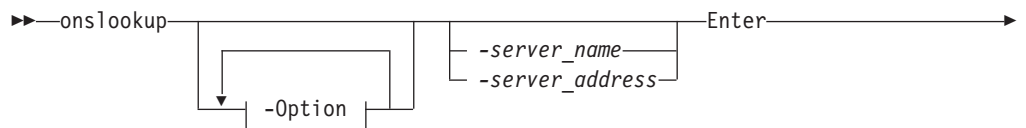
onslookup and nslookup command

Note: The synonym for the **onslookup** command in the z/OS UNIX shell is nslookup. The **nslookup** command syntax is the same as that for the **onslookup** command.

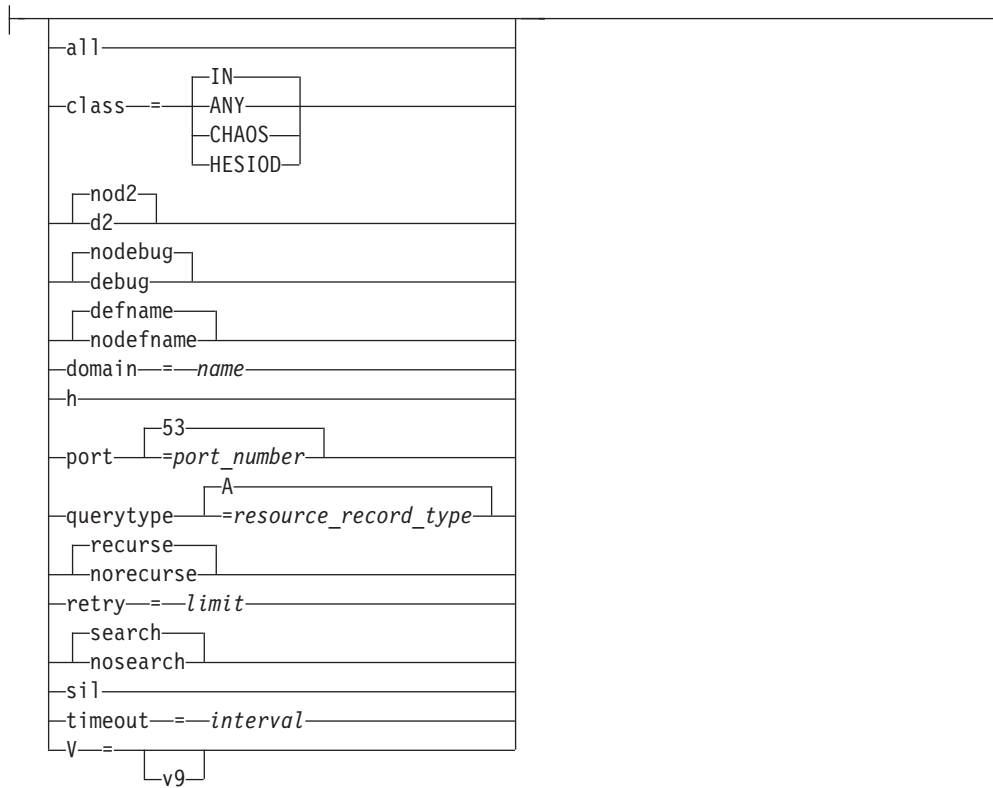
Querying a name server in command mode:



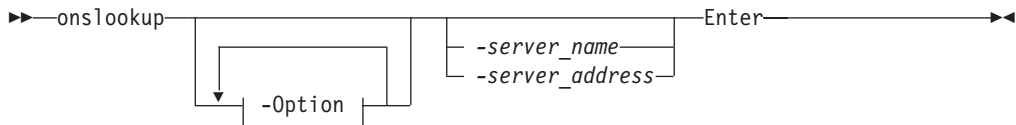
Issue multiple queries to name servers in interactive mode:



Options:



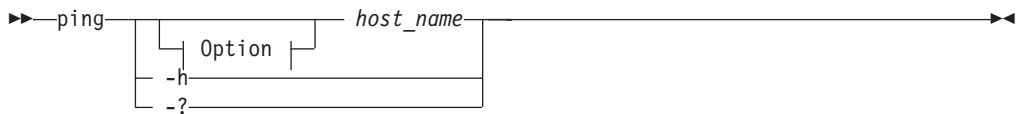
SubCommand:



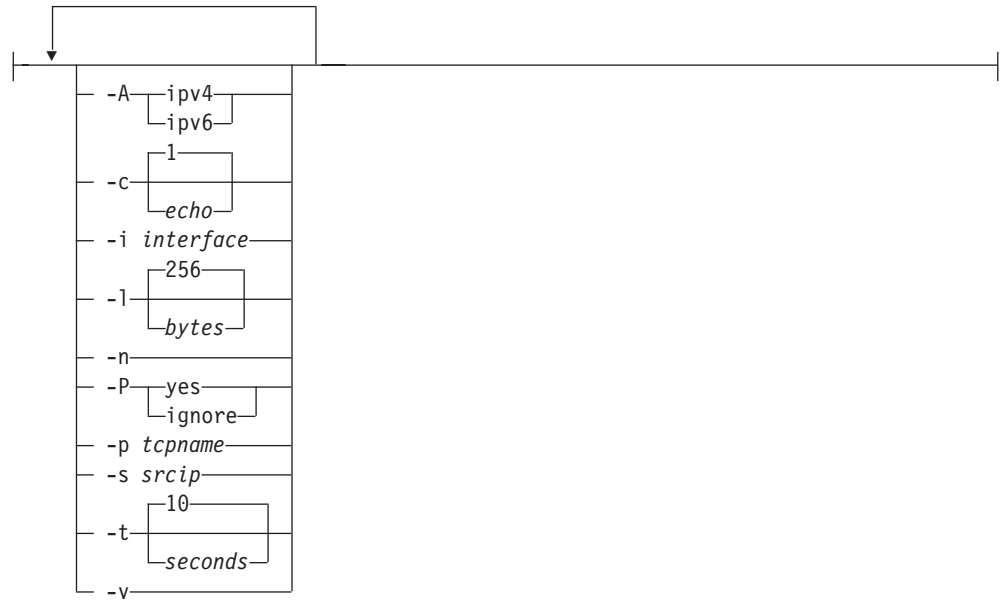
ping command

Send an echo request to a foreign node (remote host) to determine whether the node is accessible:

Note: The synonym for the **oping** command in the z/OS UNIX shell is ping. The **oping** command syntax is the same as that for the **ping** command.

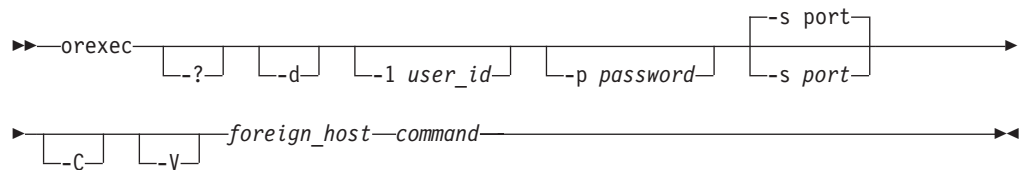


Option:



orexec and rexec commands

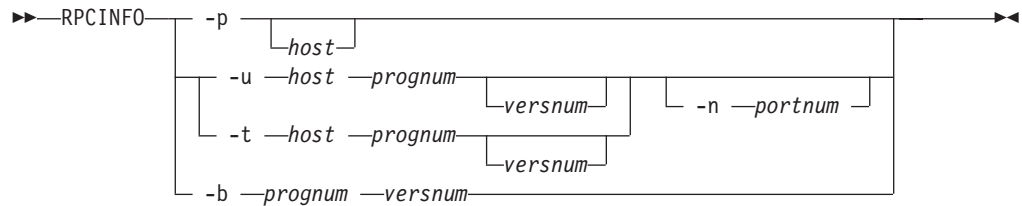
Execute a command on the remote host:



Note: The synonym for the **orexec** command in the z/OS UNIX shell is **rexec**. The **rexec** command syntax is the same as that for the **orexec** command.

orpcinfo and rpcinfo commands

Display server information:

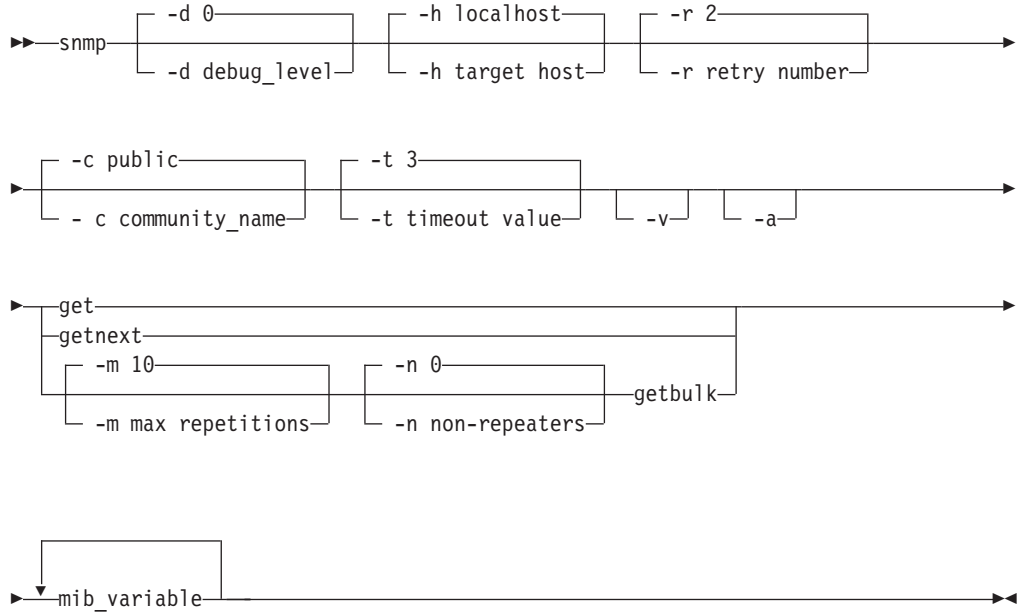


Note: The synonym for the **orpcinfo** command in the z/OS UNIX shell is **rpcinfo**. The **rpcinfo** command syntax is the same as that for the **orpcinfo** command.

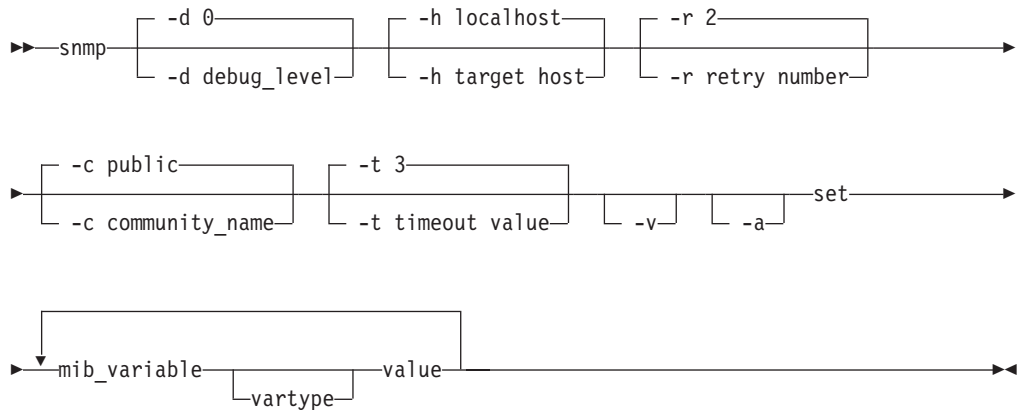
snmp command

Note: The synonym for the **osnmp** command in the z/OS UNIX shell is **snmp**. The **snmp** command syntax is the same as that for the **osnmp** command.

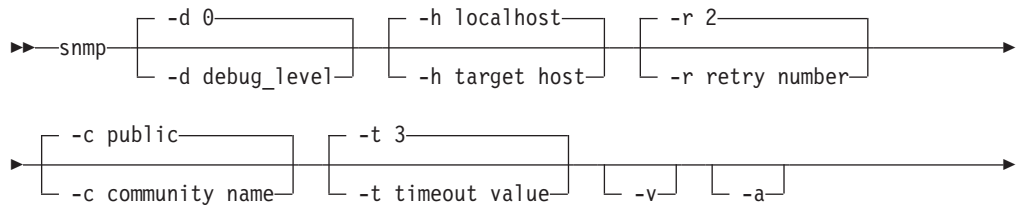
Get MIB variables:

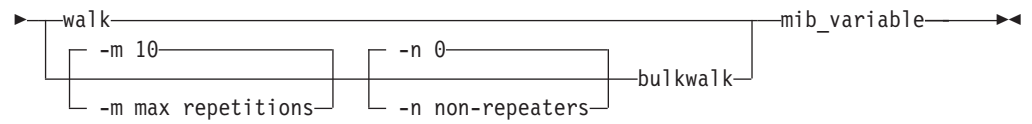


Set the MIB variables:



Walk the MIB tree:

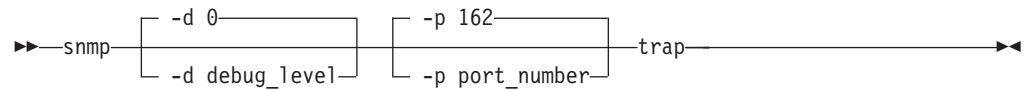




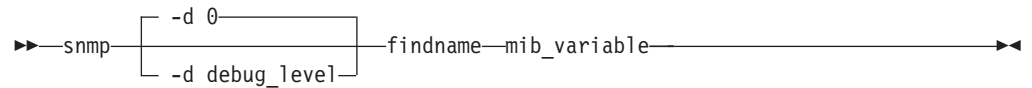
Displaying **osnmp** help:



Receive a trap:



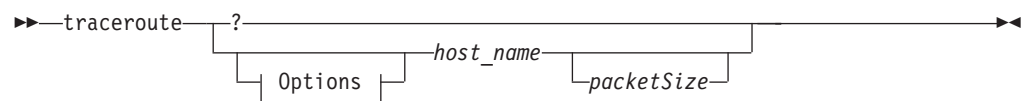
Finding a MIB variable name:



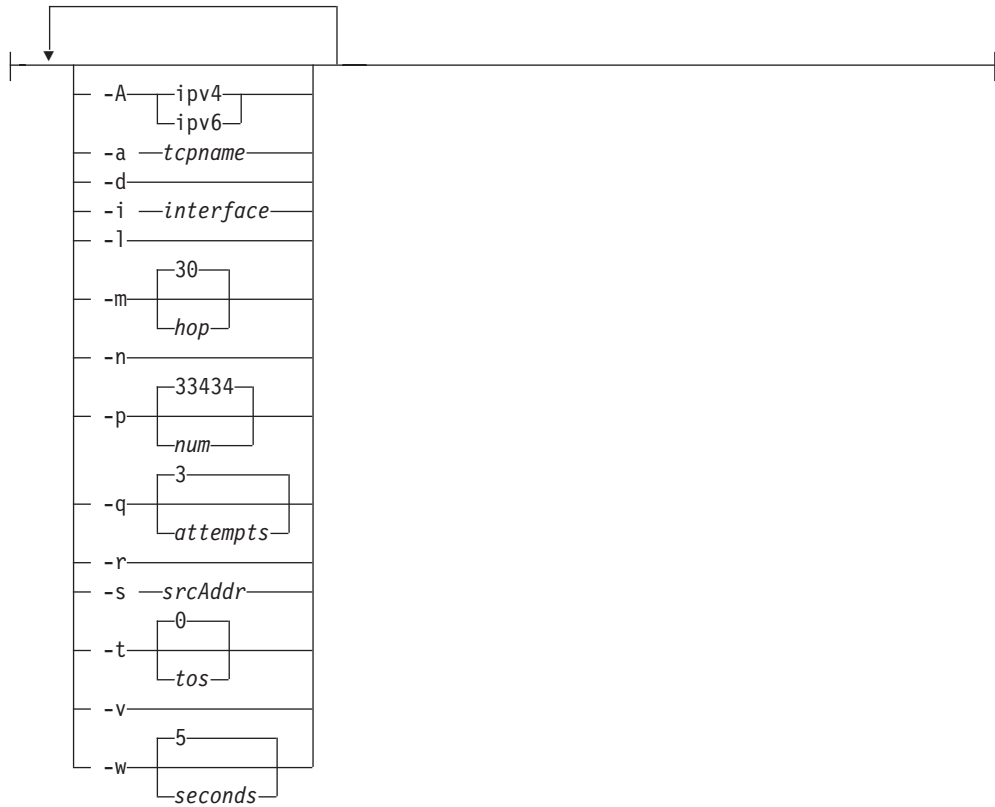
traceroute command

Debug network problems:

Note: The synonym for the **otracert** command in the z/OS UNIX shell is **traceroute**. The **traceroute** command syntax is the same as that for the **otracert** command.



Options:

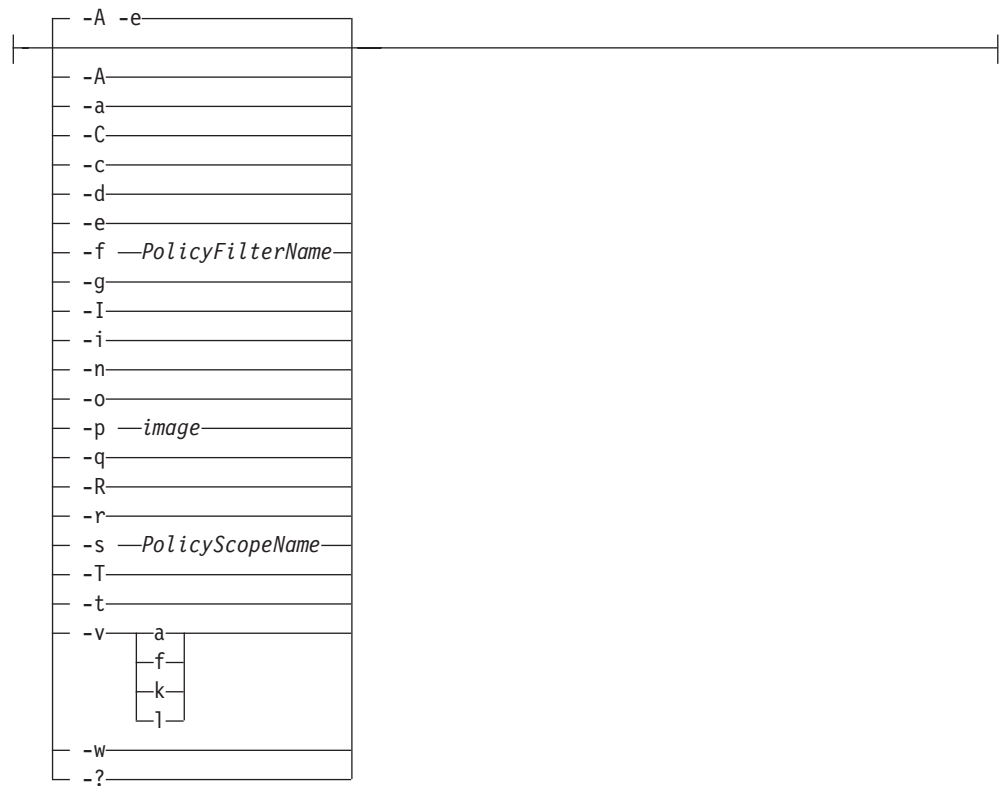


pasearch command

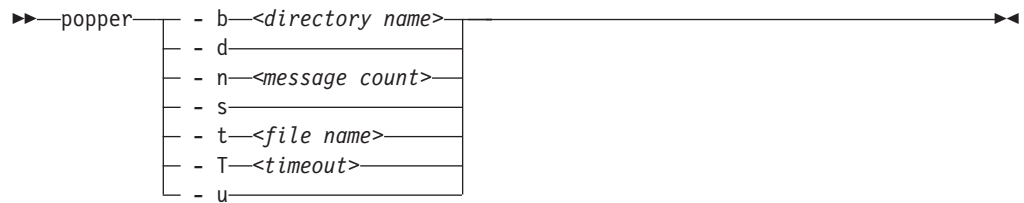
Query information from the Policy Agent (Pagent):



Option:

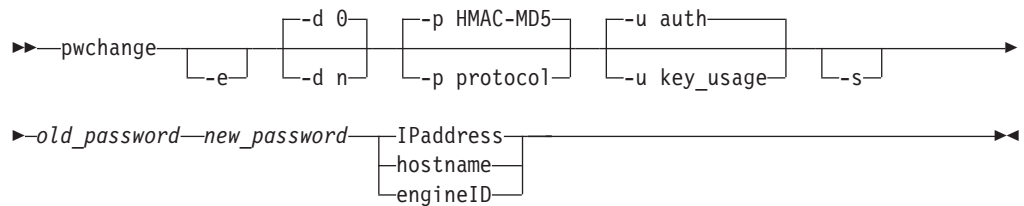


popper command



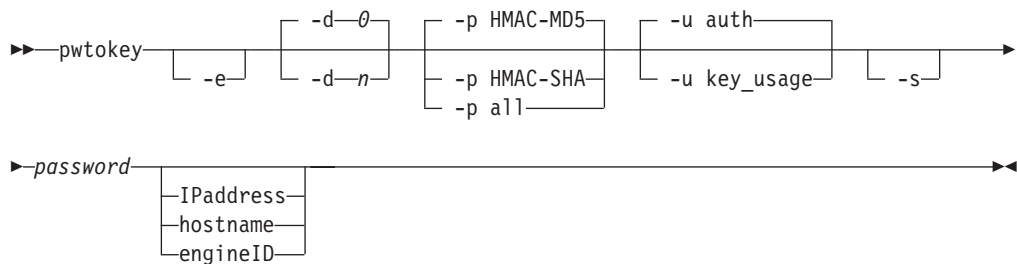
pwchange command

Generate hexadecimal encryption key to update password for SNMP use:

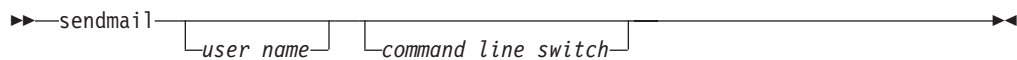


pwtokey command

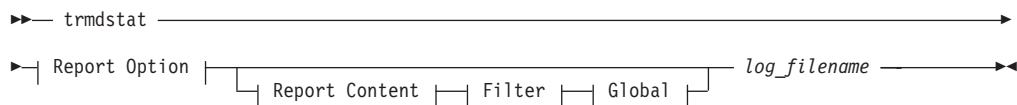
Convert password into hexadecimal encryption key for SNMP or OMPROUTE use:



sendmail command



trmdstat command



Report Option:



Report Content:



Filter:

-i <i>initial_time</i>	(4)
-f <i>final_time</i>	(4)
-p 1-65535	(5)
-p <i>port_range</i>	(6)
-h <i>ip_address</i>	(4)
-j <i>stack_name</i>	(7)
-k <i>ip_address</i>	(8)
-s <i>ip_address</i>	(9)
-t <i>ip_address</i>	(10)
-c <i>correlator</i>	(11)
-n <i>interface_name</i>	(11)

Global:

-d 0
-d <i>n</i>

Notes:

- 1 Valid only when -A/-C/-F/-G/-N/-Q/-T/-U is specified.
- 2 Valid only when -T is specified.
- 3 Valid only when -A/-F/-T/-U is specified.
- 4 Valid only when -A/-C/-F/-G/-I/-N/-Q/-T/-U is specified.
- 5 Valid only when -A/-C/-F/-G/-Q/-T/-U is specified except when -A -S or -F -S are specified.
- 6 Valid only when -A/-C/-F/-G/-N/-Q/-U is specified except when -A -S is specified.
- 7 Valid only when -T and -S is specified.
- 8 Valid only when -A/-G/-Q/-T is specified except when -A -S or -T -S are specified.
- 9 Valid only when -A/-G/-Q/-T is specified except when -A -S is specified.
- 10 Not valid when -S or -I is specified.
- 11 Valid only when -F is specified.

Other IP commands, options, and subcommands

Table 1. IP commands, options, and subcommands

Command type	Reference
NetView SNMP (SNMP) Command	See z/OS Communications Server: IP System Administrator's Commands.

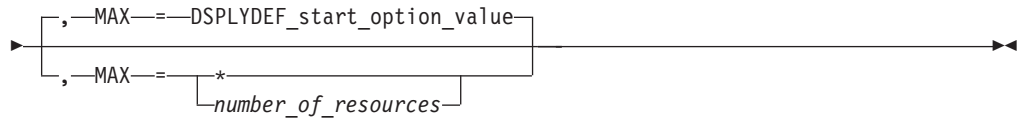
Table 1. IP commands, options, and subcommands (continued)

Command type	Reference
IPCS subcommands for TCP/IP	See z/OS Communications Server: IP Diagnosis Guide.
CTRACE command and options for TCP/IP	See z/OS Communications Server: IP Diagnosis Guide.



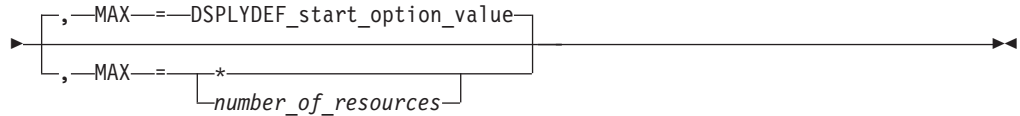
Display the adjacent SSCP table for a specific cross-domain resource:

►► DISPLAY --NET --ADJSSCPS --CDRSC --cdrsc_name



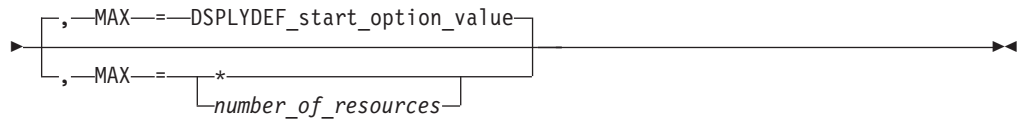
Display a specific list of adjacent CDRMs used for session requests:

►► DISPLAY --NET --ADJSSCPS --ADJLIST --list_name



Display all lists of adjacent CDRMs:

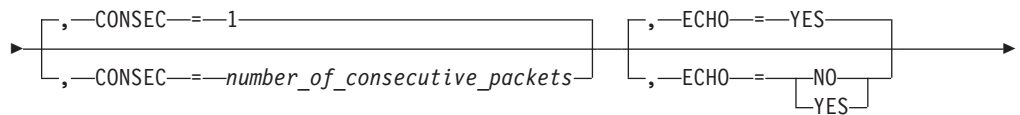
►► DISPLAY --NET --ADJSSCPS --ADJLIST *

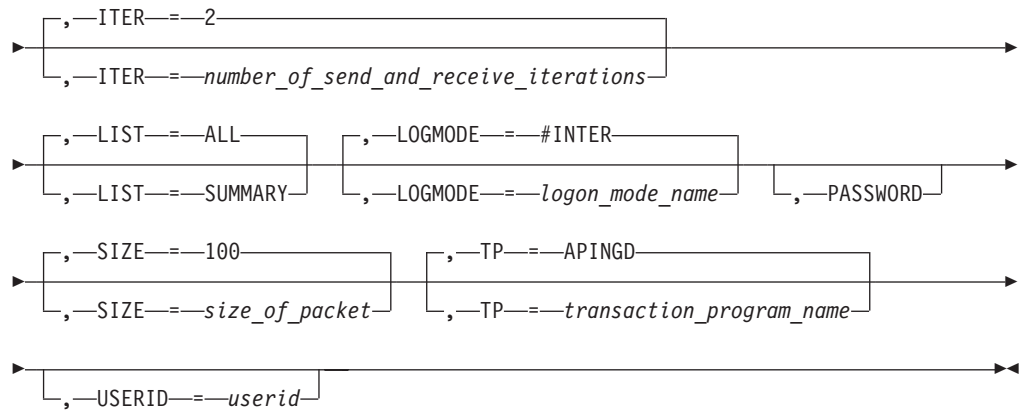


D APING command

Test whether a route to another LU 6.2 resource or control point is available and display performance information for the route if the resource supports an APING server:

►► DISPLAY --NET --APING --ID --resource_name

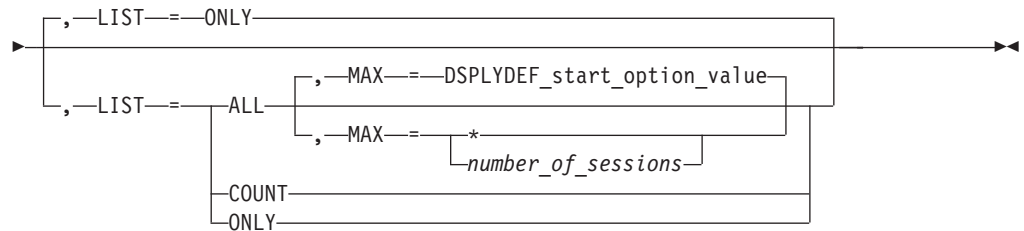




D APINGDTP command

Display the number of APINGD transaction programs permitted to run concurrently for responding to APING requests from other nodes:

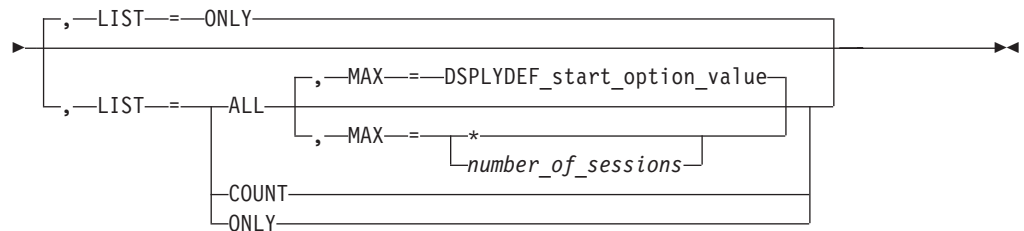
►► DISPLAY — NET —, — APINGDTP —————►



D APINGTP command

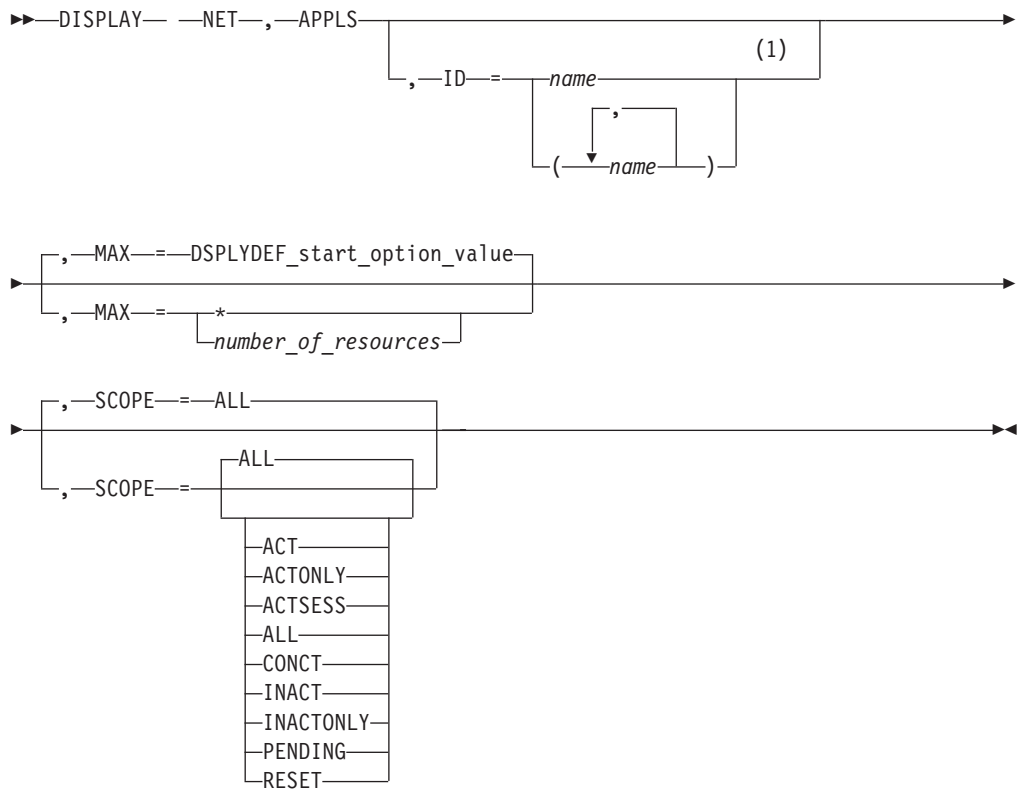
Display the number of APING transaction programs permitted to run concurrently for sending APING command requests to other node; optionally, display the number of active sessions for the APINGD TP and show information about those sessions:

►► DISPLAY — NET —, — APINGTP —————►



D APPLS command

Display the status of active application program major nodes in the domain along with their subordinate application program minor nodes:



Notes:

- 1 Depending on the value of the `DSPLYWLD` start option, wildcard values can be used for this operand.

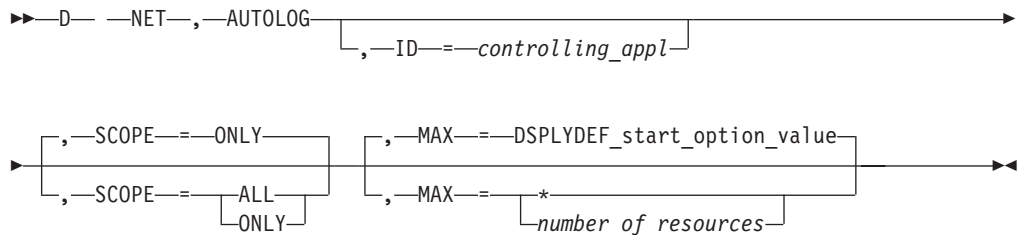
D APPNTOSA command

Display the APPN-to-subarea class-of-service mapping table:



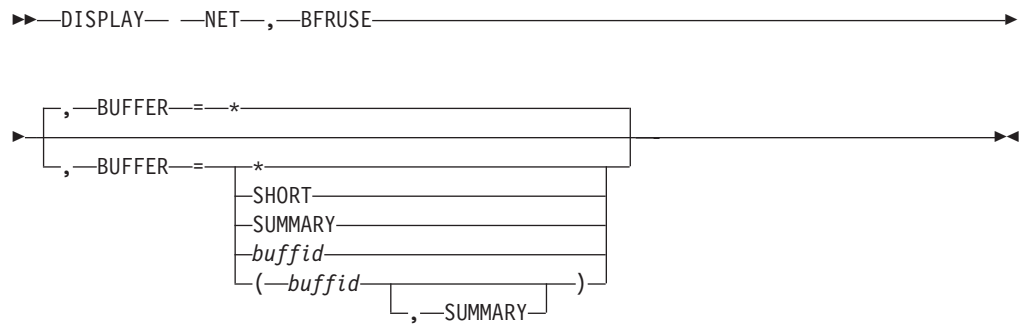
D AUTOLOG command

Display the controlling applications for which there are pending AUTOLOGON requests:



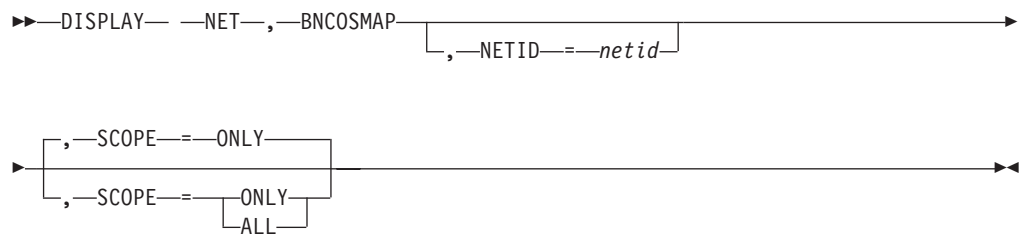
D BFRUSE command

Display information about VTAM buffer use and storage usage summary information for VTAM modules:



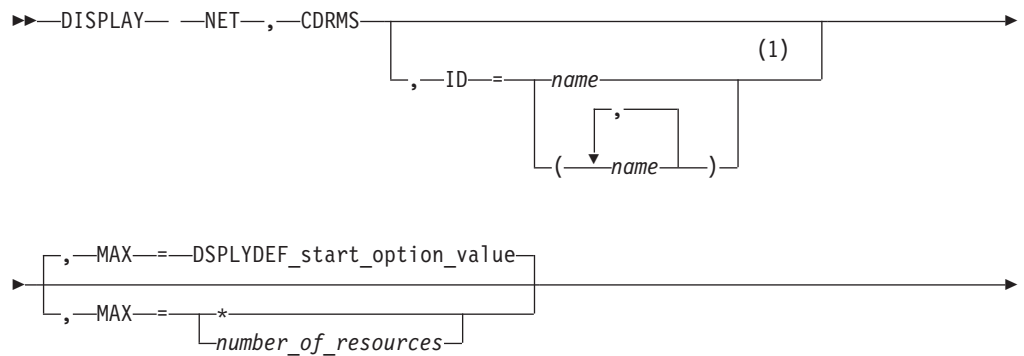
D BNCOSMAP command

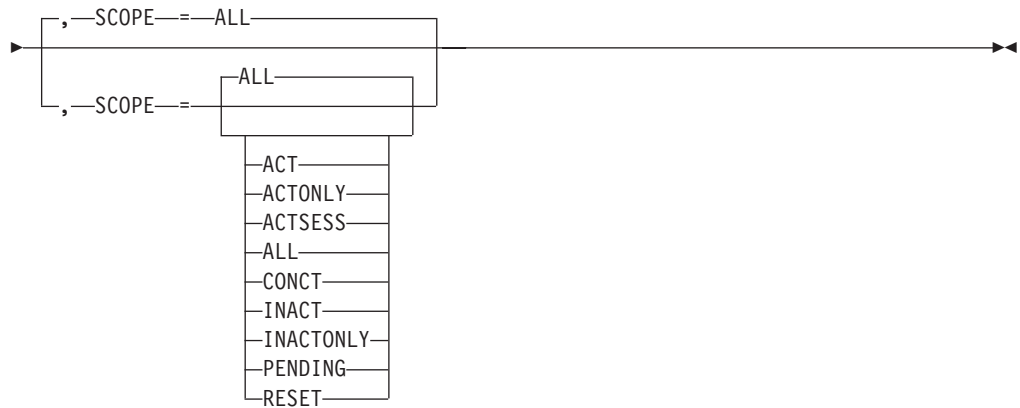
Display native and nonnative COS mappings defined for a border node:



D CDRMS command

Display the status of active cross-domain resource manager (CDRM) major nodes and their subordinate minor nodes:



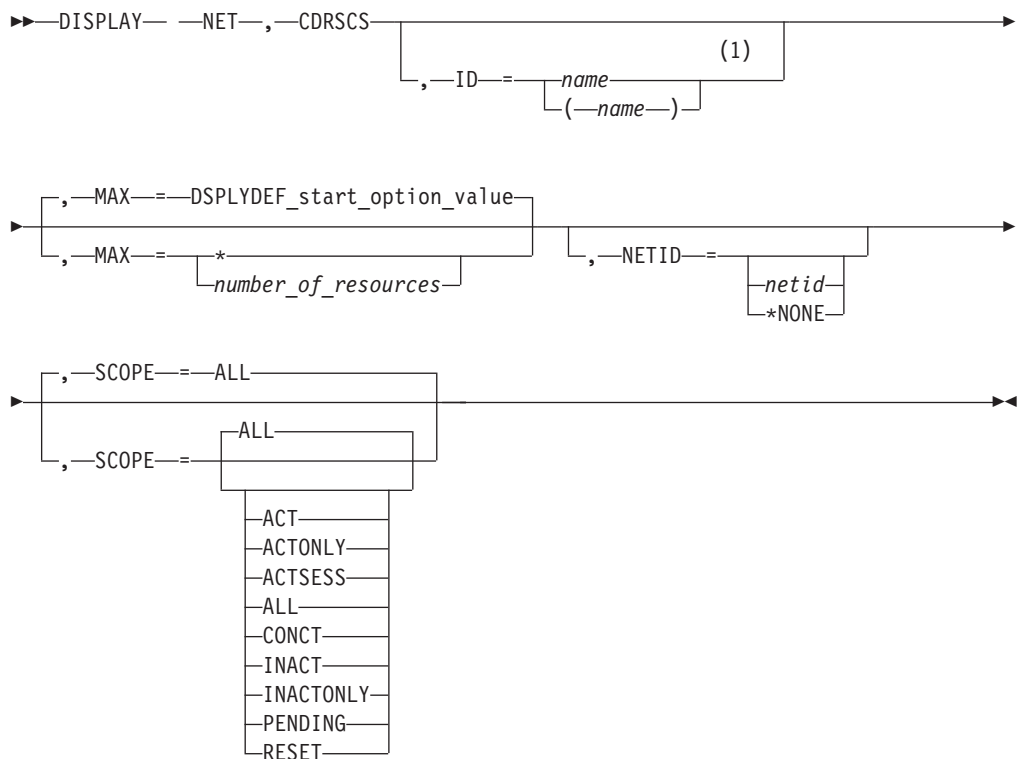


Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D CDRSCS command

Display information about cross-domain resources, including independent LUs:

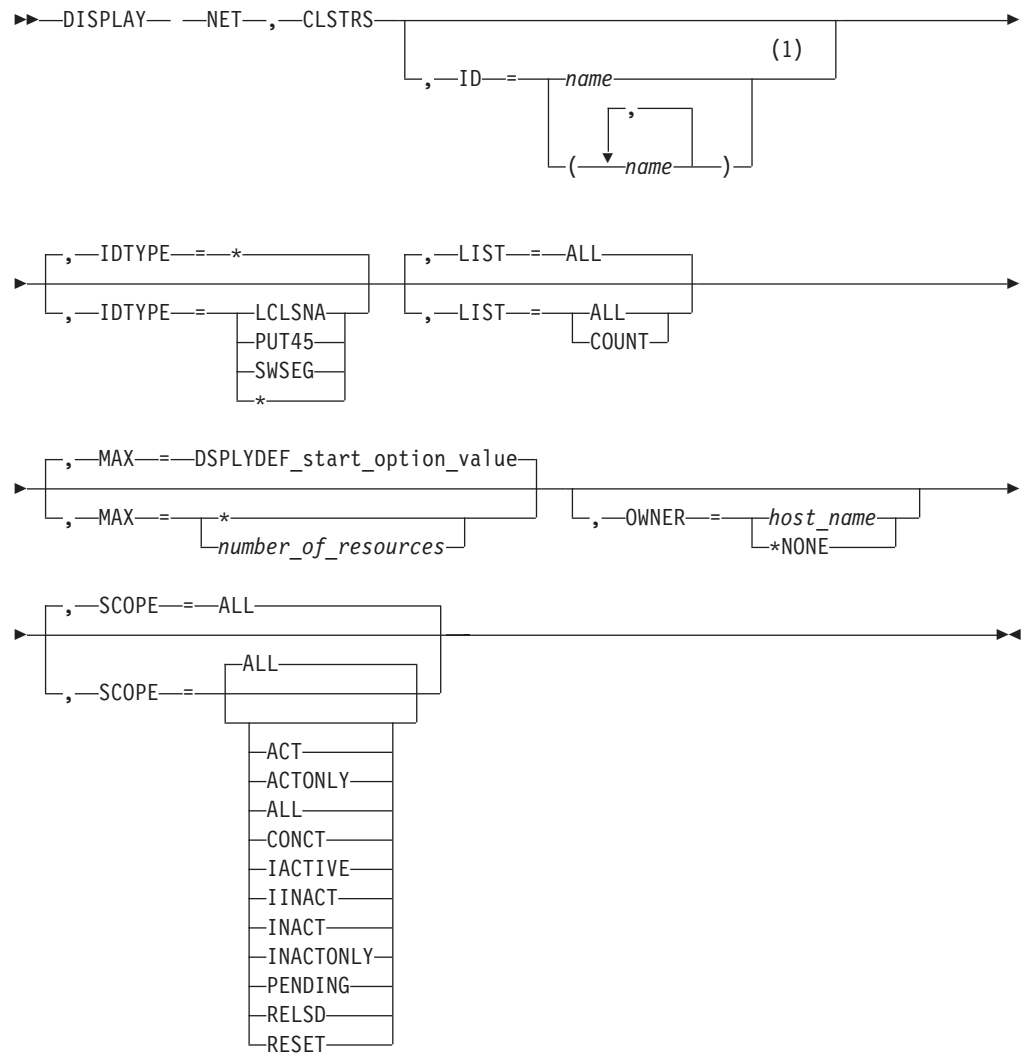


Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D CLSTRS command

Display the status of physical units (PUs) subordinate to an NCP node, a local SNA node, or a switched subarea node:

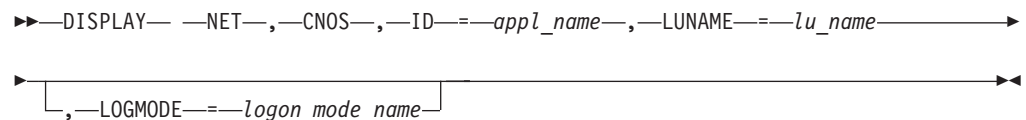


Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

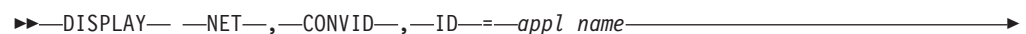
D CNOS command

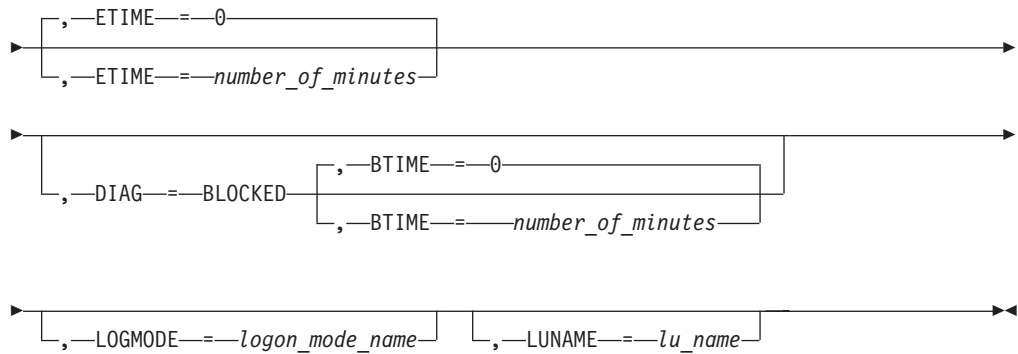
Display LU 6.2 information associated with an application program and a partner LU and logon mode:



D CONVID command

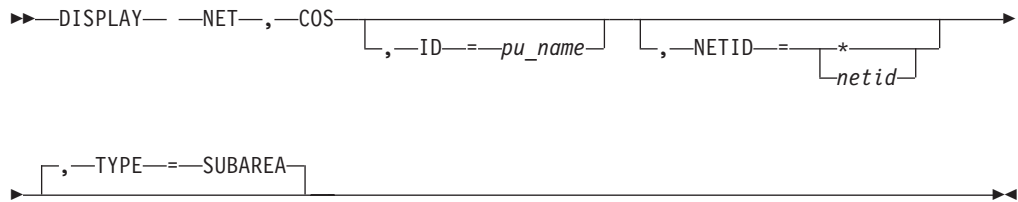
Provide information about active conversations with the specified application program:





D COS command

Display the Class of Service (CoS) table name for a particular network or all networks associated with a specified PU type 4 or 5:

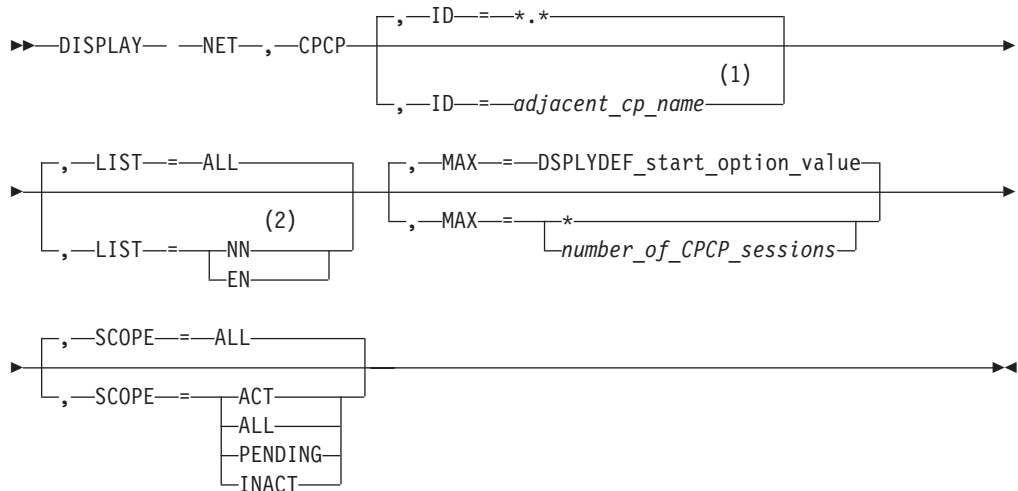


Display the APPN Class of service table entries and the APPNCOS table used to create each entry:



D CPCP command

Display detailed CP-CP session status:



Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.
- 2 Because an end node will never have CP-CP sessions with another end node, LIST=EN is not valid if this command is issued from an end node. In this case, the LIST operand is not necessary because the output for LIST=ALL and LIST=NN will be identical.

D CSDUMP command

Display the current CSDUMP triggers set earlier by the MODIFY CSDUMP command or the CSDUMP start option:

►►—DISPLAY— —NET—,—CSDUMP—►►

D CSM command

Monitor the use of storage managed by the communications storage manager (CSM):

►►—DISPLAY— —NET—,—CSM—
└─,—OWNERID—==—ALL—
└─,—ownerid—

Display the status of the CSM Monitoring:

►►—DISPLAY— —NET—,—CSM—,—MONITOR—►►

D CSMUSE command

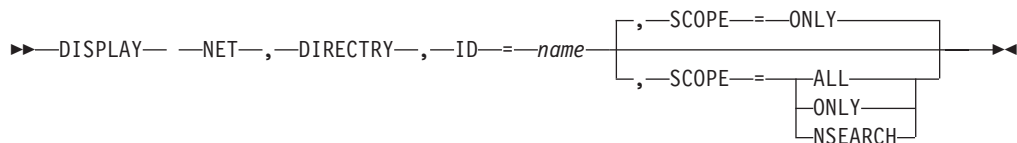
The DISPLAY CSMUSE command allows IBM service to evaluate the use of storage managed by the communications storage manager (CSM). Although this command is similar to DISPLAY CSM command, it provides a lower level of detail regarding storage usage, and therefore the output of this command is different than that of DISPLAY CSM.

►►—DISPLAY— —NET—,—CSMUSE—
└─,—POOL—==—ALL—
└─,—POOL—==—ALL—
└─,—poolname—

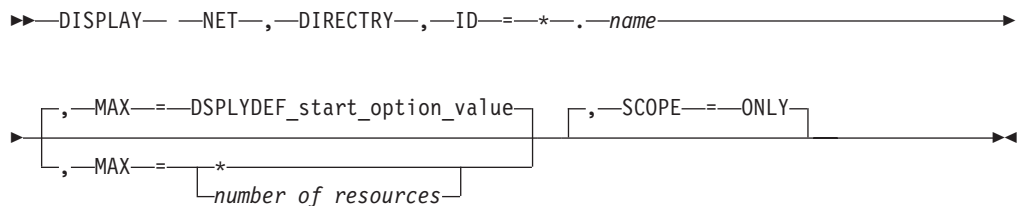
└─,—OWNERID—==—ALL—
└─,—OWNERID—==—ALL—
└─,—ownerid—

D DIRECTORY command

Display information about a resource:



Display a resource name in any network:



D DISK command

Provide information about an IBM 3720 or 3745 Communication Controller's disk contents:



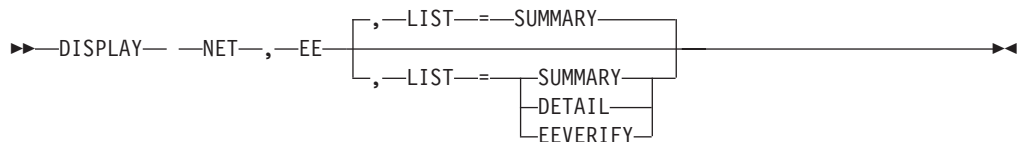
D DLURS command

Display all DLURs for which this host acts as dependent LU server (DLUS):

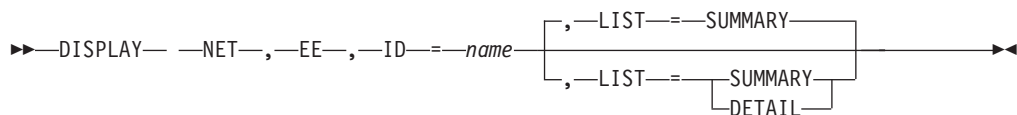


D EE command

Display general Enterprise Extender information:

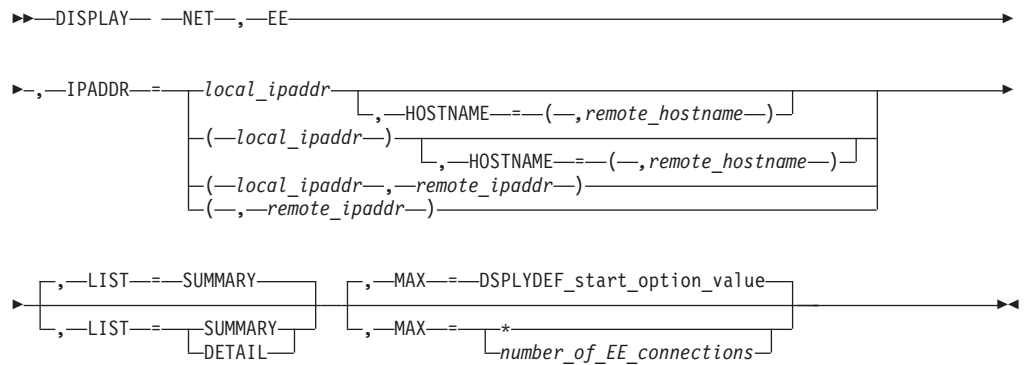


Display Enterprise Extender connection information by LINE or PU name:

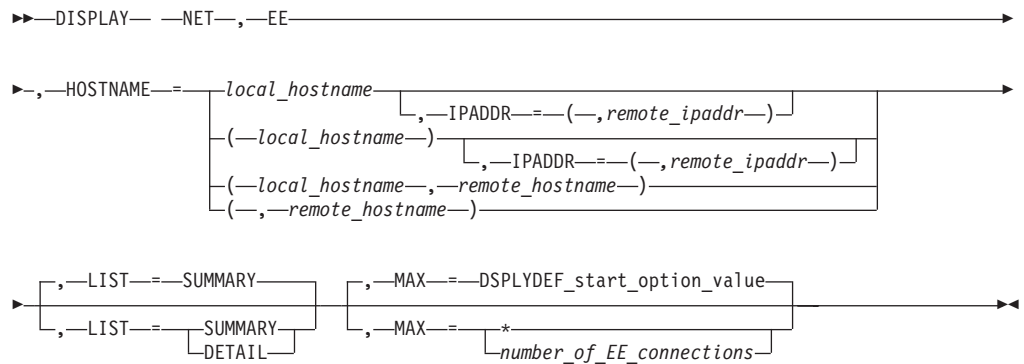


Note: The name represents either an Enterprise Extender LINE or switched PU which has an active connection.

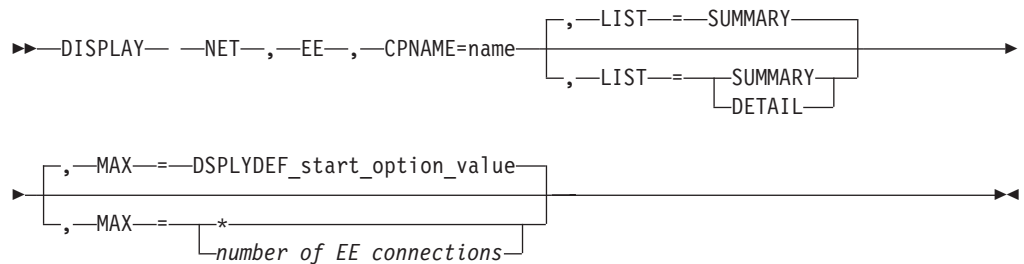
Display Enterprise Extender connection information by IPADDR:



Display Enterprise Extender connection information by HOSTNAME:

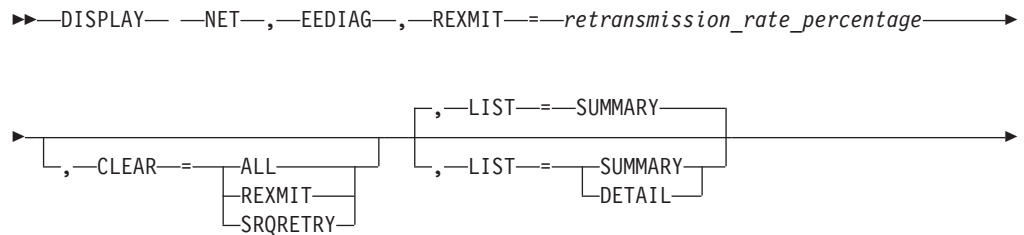


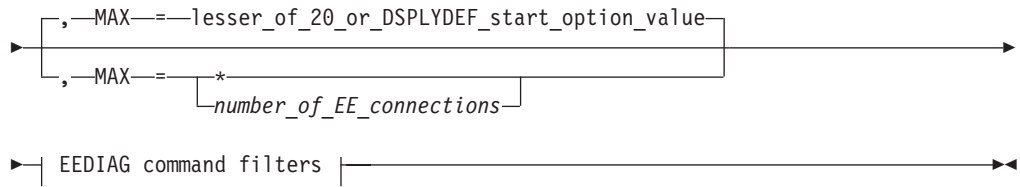
Display Enterprise Extender connection information by remote CPNAME:



D EEDIAG command

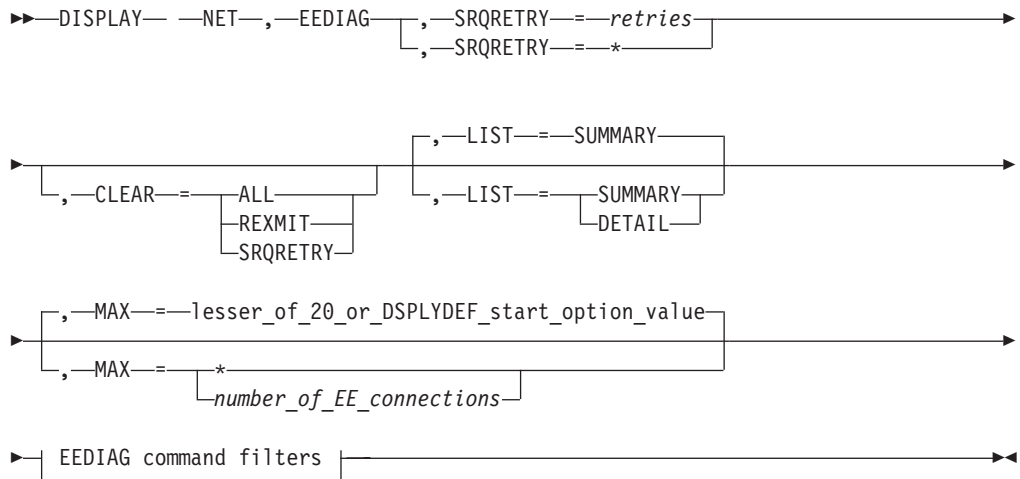
Display Enterprise Extender (EE) connections that meet or exceed a specified retransmission threshold:





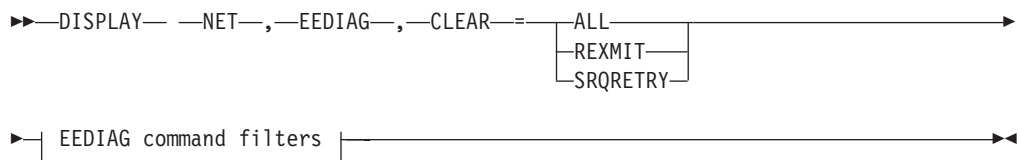
Tip: Specify the CLEAR operand on this command to clear the diagnostic counters. The REXMIT information is displayed before the diagnostic counters are cleared.

Display Enterprise Extender connections that meet or exceed a specified SRQRETRY threshold:

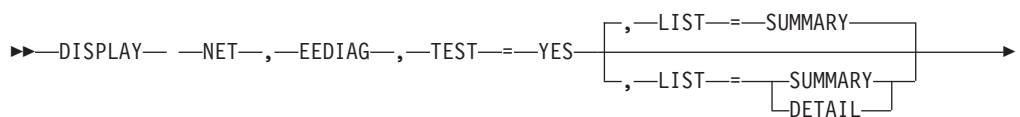


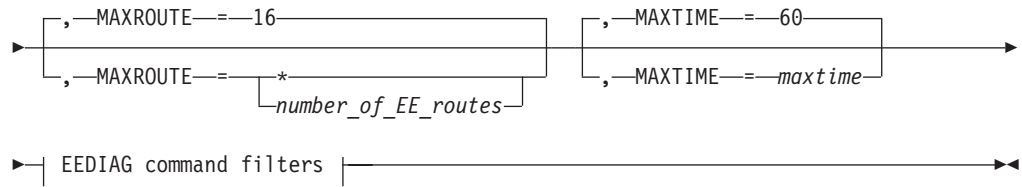
Tip: Specify the CLEAR operand on this command to clear the diagnostic counters. The SRQRETRY information is displayed before the diagnostic counters are cleared.

Clear Enterprise Extender diagnostic counters:

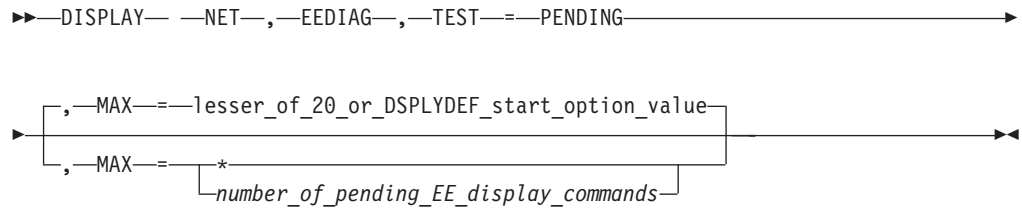


Display Enterprise Extender connectivity test information:





Query outstanding Enterprise Extender display commands:



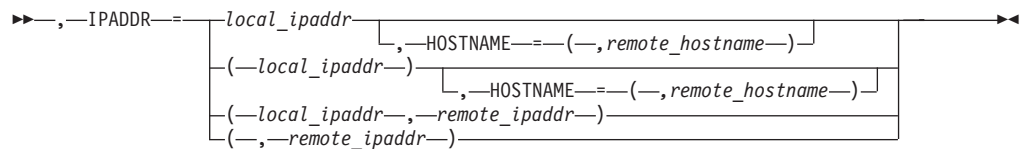
EEDIAG command filters:

Limit the DISPLAY EEDIAG command scope to one EE connection that is identified by LINE or PU name:

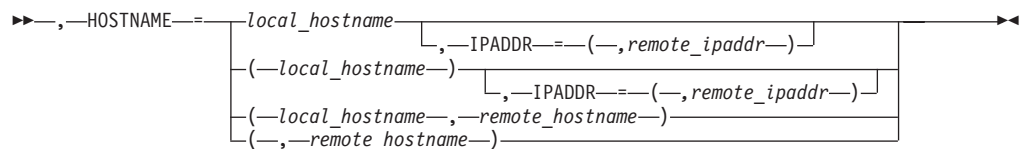


The name value represents either an Enterprise Extender LINE or a switched PU that has an active EE connection.

Limit the DISPLAY EEDIAG command scope to EE connections that are identified by an IP address (IPADDR):

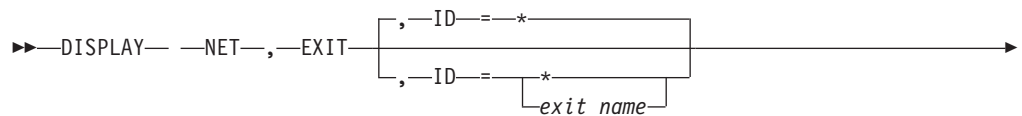


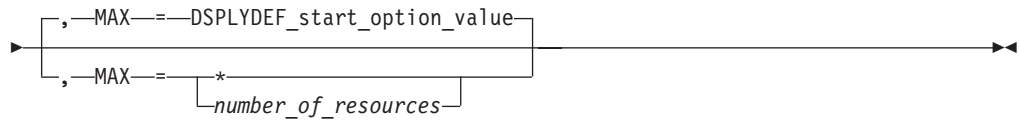
Limit the DISPLAY EEDIAG command scope to EE connections that are identified by a host name (HOSTNAME):



D EXIT command

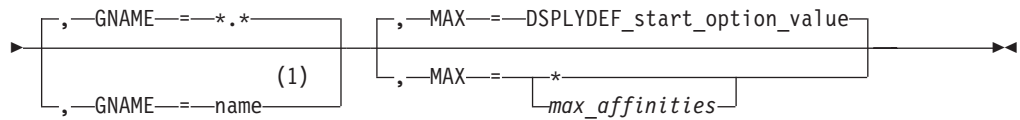
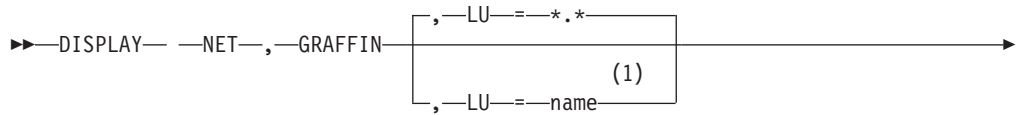
Display the name, exit level, module name, and status of installation-wide exit routines:





D GRAFFIN command

Display affinity information for generic resources:

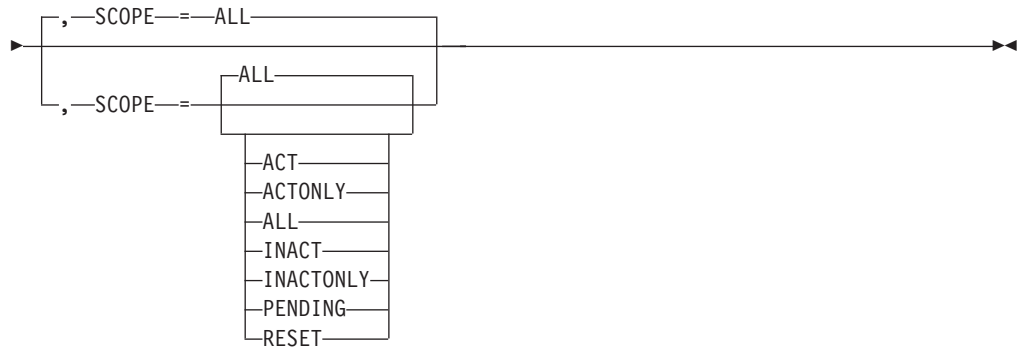
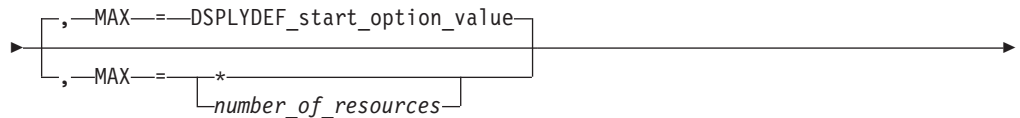
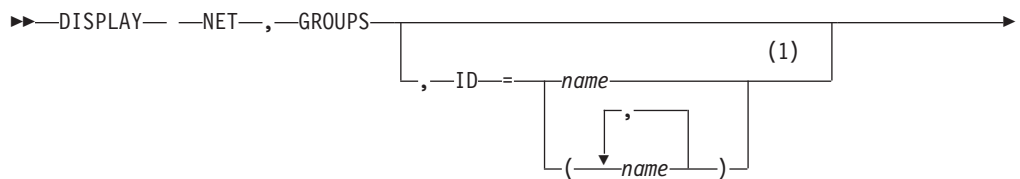


Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D GROUPS command

Provide information about line groups:



Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D GRPREFS command

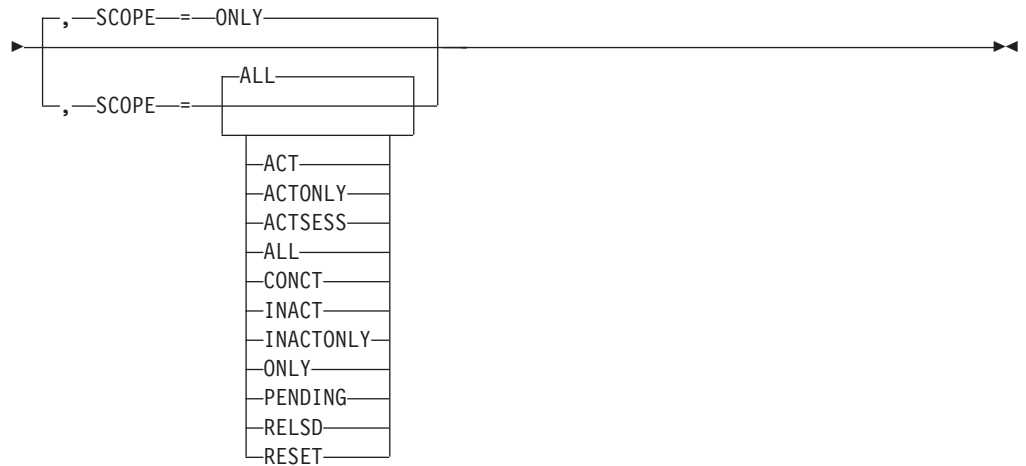
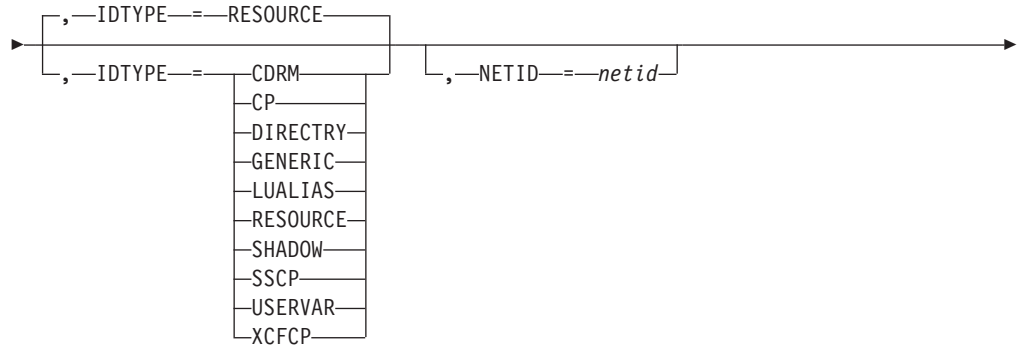
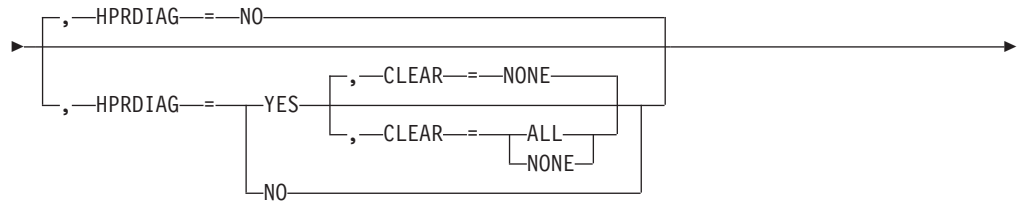
Display the generic resources preferences table:

►► DISPLAY NET, GRPREFS ◀◀

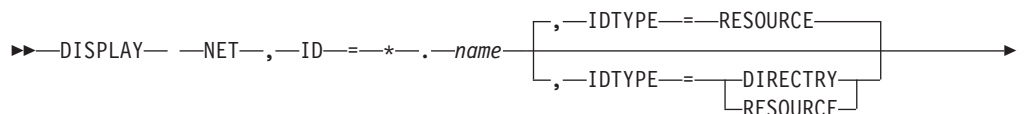
D ID command

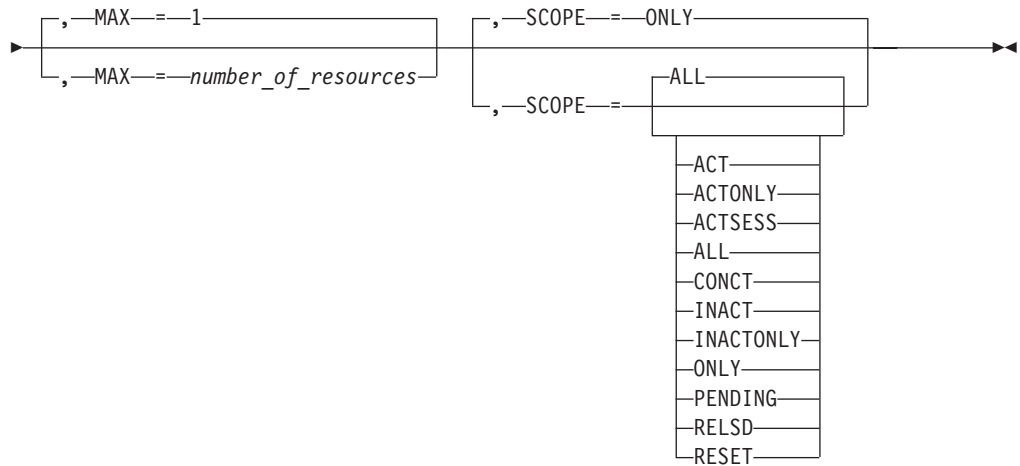
Display a resource:

►► DISPLAY — NET —, — ID — *name* ◀◀



Display a resource name in any network:





Display a resource name using an IP address:

```

    ►► DISPLAY ─ ─NET─, ─ID─=ipaddress─, ─IDTYPE─=IPADDR─►►
  
```

D INOPCODE command

Determine the dump attributes for all VTAM INOPCODE commands or all VTAM INOPCODE commands in a given VTAM module:

```

    ►► DISPLAY ─ ─NET─, ─INOPCODE─┌───────────────────────────────────┐
                                │, ─MODULE─=modulename─┘
  
```

```

    ┌─, -MAX--DSPLYDEF_start_option_value
    └─, -MAX--*
        ┌─number_of_modules─┘
  
```

D INOPDUMP command

Determine the global status for INOPDUMP:

```

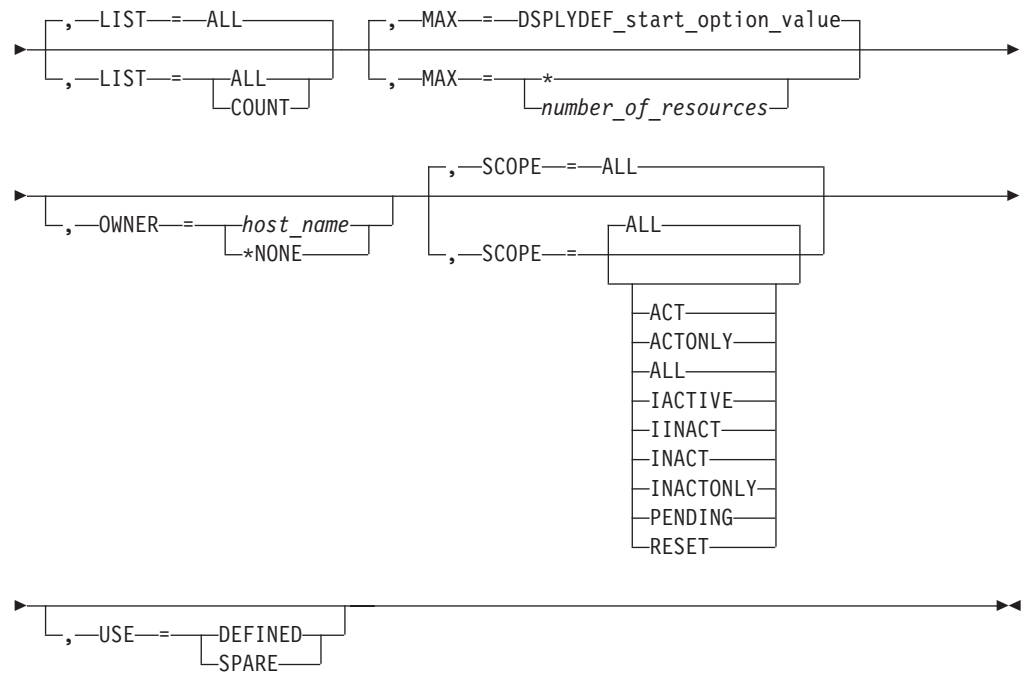
    ►► DISPLAY ─ ─NET─, ─INOPDUMP─►►
  
```

D LINES command

Display the status of lines and channel links in the domain:

```

    ►► DISPLAY ─ ─NET─, ─LINES─┌───────────────────────────────────┐
                                │, ─ID─=name─(1)─┘
                                │
                                │ ┌─, ───┘
                                │ │ ┌─name─┘
                                │ │ └─(─name─)─┘
                                └───────────────────────────────────┘
  
```

Notes:

- 1 Depending on the value of the `DSPLYWLD` start option, wildcard values can be used for this operand.

D LMTBL command

Display partner LUs in LU-mode table:

►► `DISPLAY` `--NET` `--LMTBL` `--ID` `--appl_name` `--TYPE` `--LUNAME` ►►



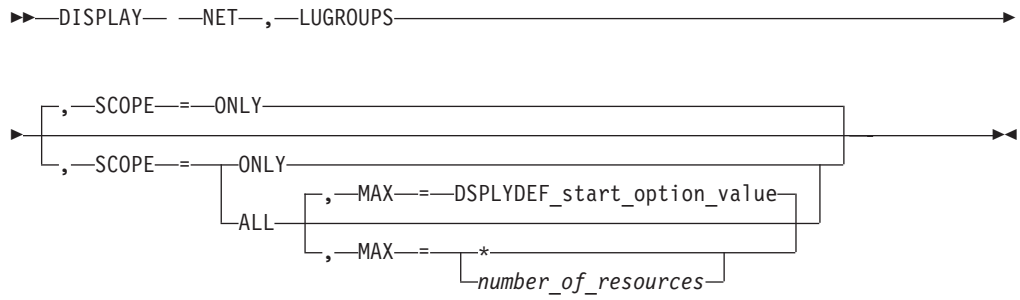
Display logon mode names in LU-mode table:

►► `DISPLAY` `--NET` `--LMTBL` `--ID` `--appl_name` `--LUNAME` `--lu_name` ►►

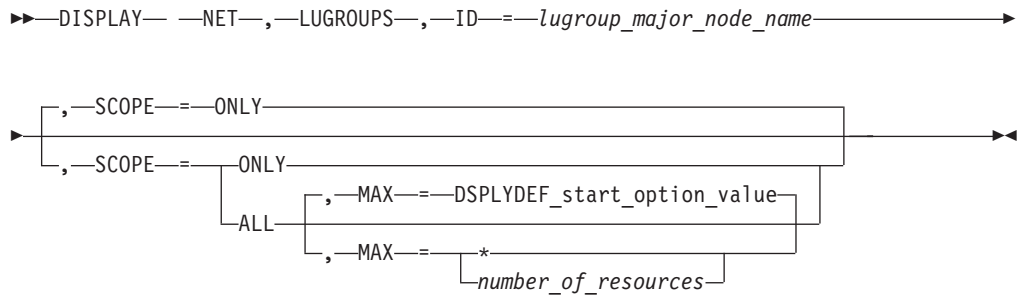
►► `--TYPE` `--LOGMODE` ►►

D LUGROUPS command

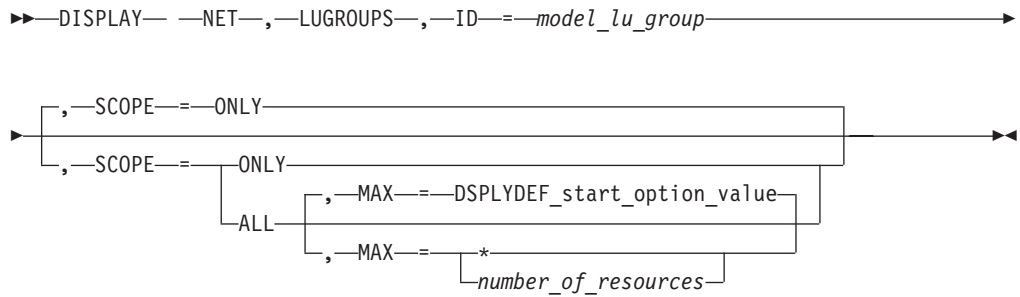
Display all LUGROUP major nodes:



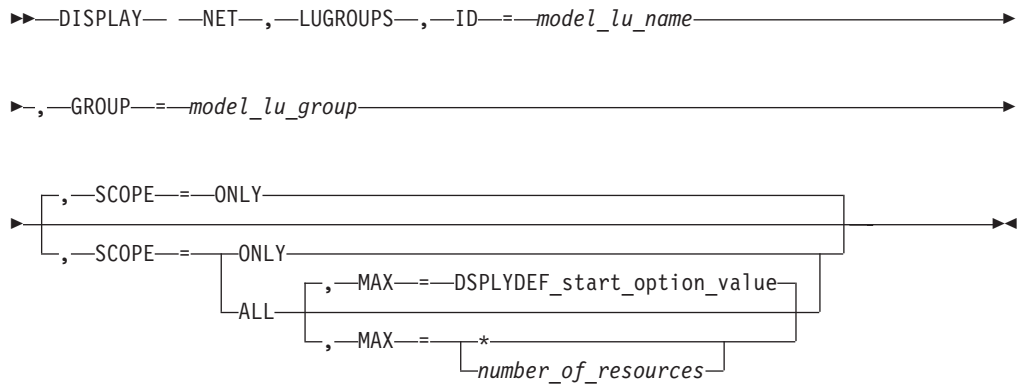
Display a specific LUGROUP major node:



Display a model LU group:

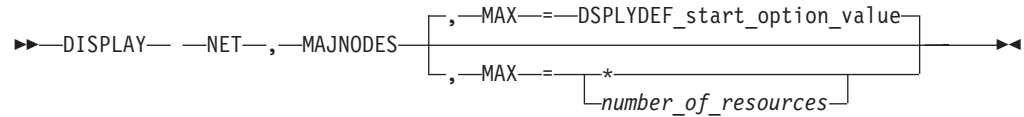


Display a model LU:



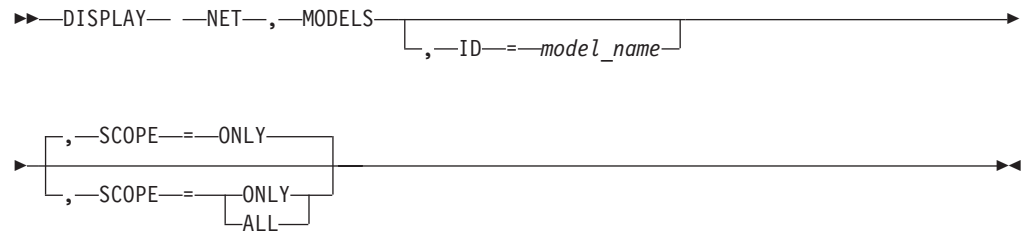
D MAJNODES command

Display the status of all active major nodes in the domain:

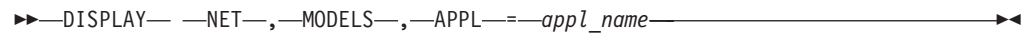


D MODELS command

Display model major nodes, model PUs, and model LUs:

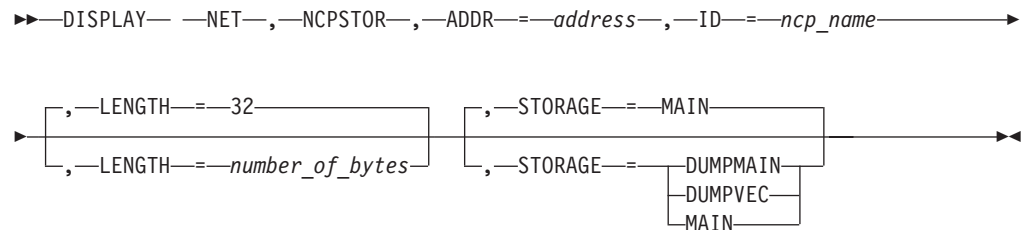


Display the best, active model application definition for a given application name:



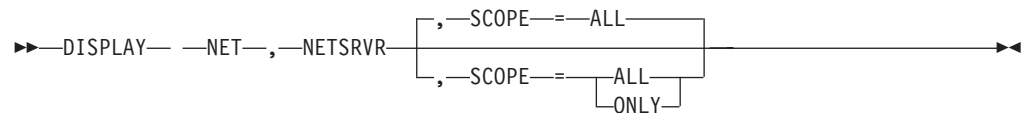
D NCPSTOR command

Display either the storage contents of a communication controller running an NCP, or an NCP dump stored in an IBM 3720 or 3745 Communication Controller:



D NETSRVR command

Display information about network node servers:



D PATHS command

Display dial-out path information about a switched physical unit:

►► DISPLAY — NET —, — PATHS —, — ID —== *switched_pu_name* —————►►

D PATHTAB command

Display the status of explicit routes and their associated virtual routes for this host:

►► DISPLAY — NET —, — PATHTAB —————►►
└─, — ADJSUB —== *subarea_number* —┘
└─, — DESTSUB —== *subarea_number* —┘

└─, — MAX —== DSPLYDEF_start_option_value —┘
└─, — MAX —== * —┘
└─ *number_of_resources* —┘

D PENDING command

Display information about resources in the domain that are in a “pending” state:

►► DISPLAY — NET —, — PENDING —————►►
└─, — ID —== *name* —┘
└─ (— *name* —) —┘

└─, — MAX —== DSPLYDEF_start_option_value —┘
└─, — MAX —== * —┘
└─ *number_of_resources* —┘

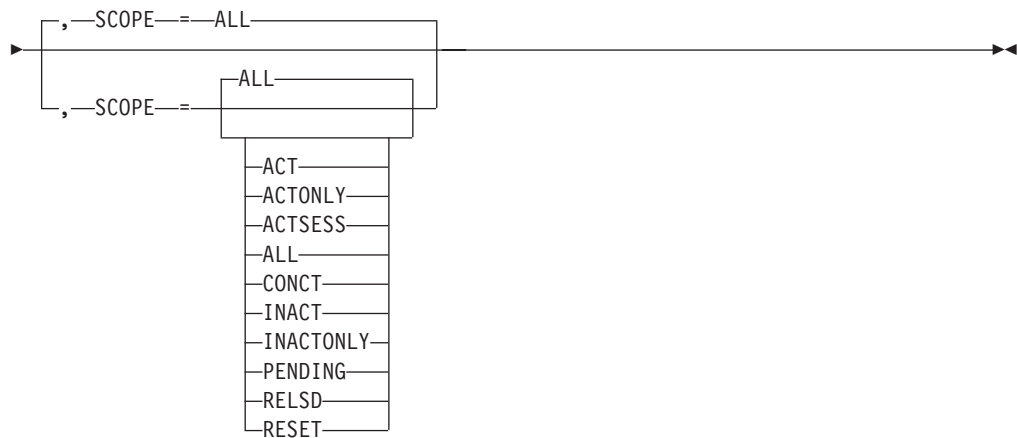
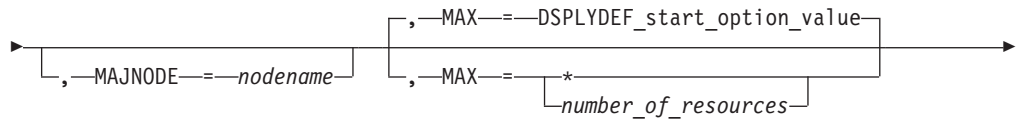
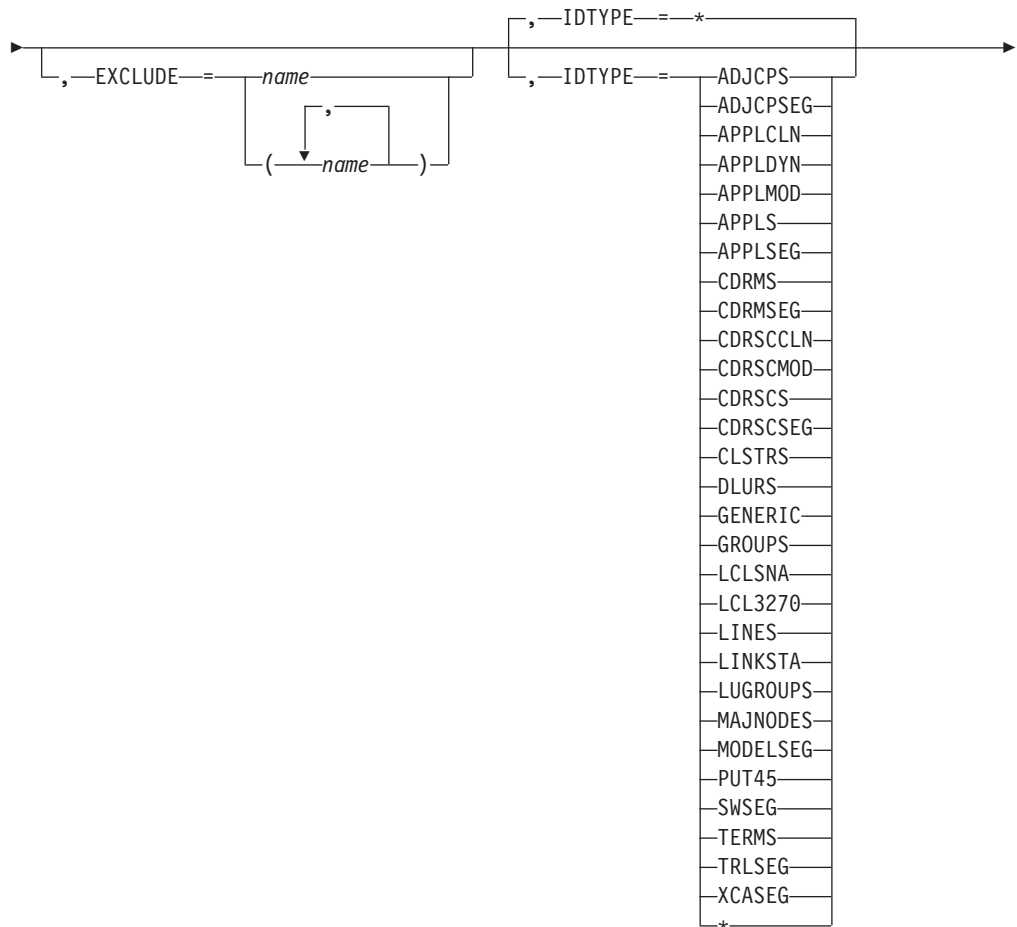
D ROUTE command

Displaying the status of routes:

►► DISPLAY — NET —, — ROUTE —, — DESTSUB —== *subarea_number* —————►►

└─, — ER —== ALL —┘
└─, — COSNAME —== *name* —┘
└─, — ER —== ALL —┘
└─, — ER —== *er_number* —┘
└─, — VR —== *vr_number* —┘
└─, — NETID —== *netid* —┘

└─, — ORIGIN —== *subarea_pu_name* —┘
└─, — ORIGIN —== ALL —┘
└─, — TEST —== NO —┘
└─, — TEST —== NO —┘
└─, — TEST —== YES —┘

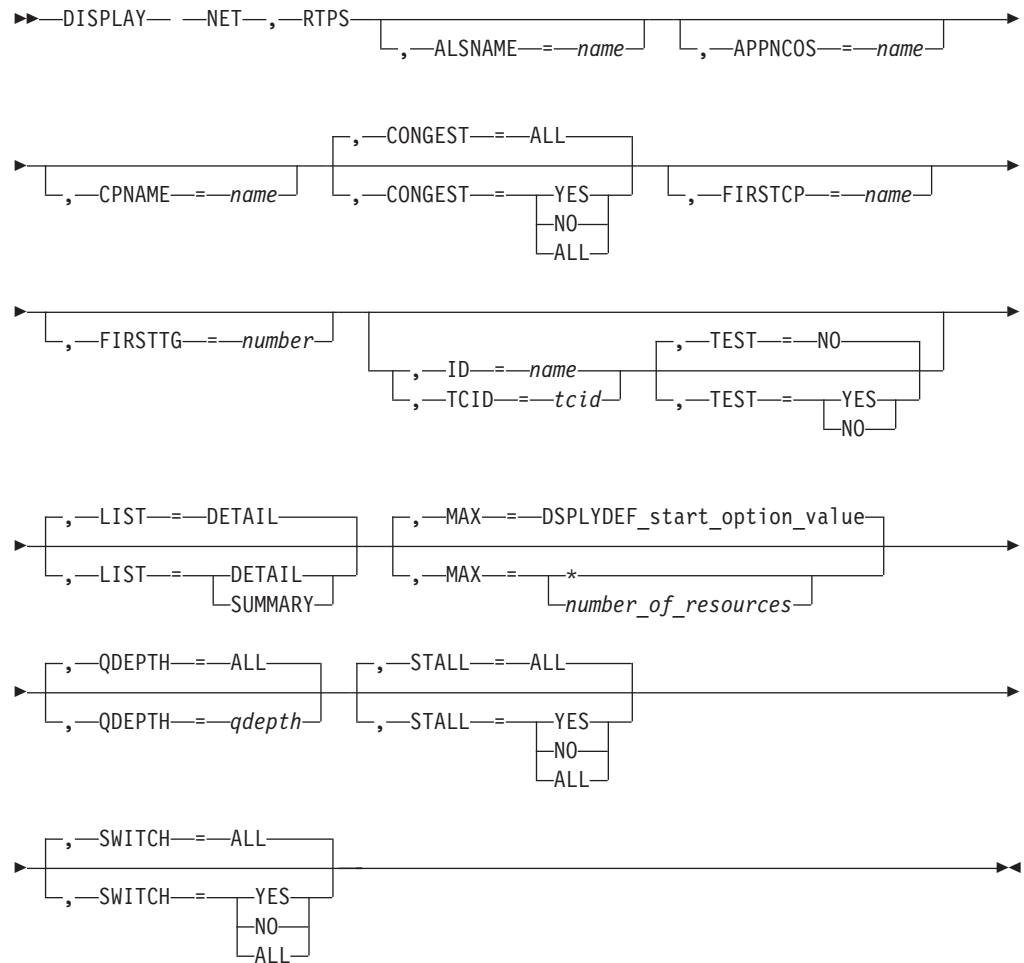


Notes:

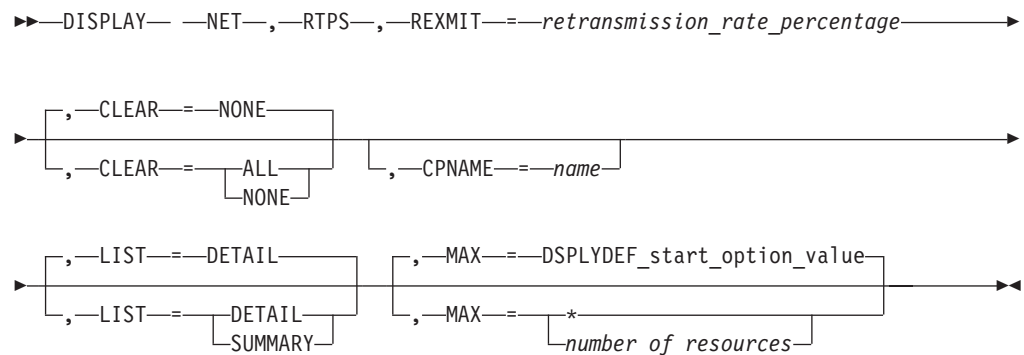
- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D RTPS command

Display information concerning HPR pipes:



Display RTP pipes that meet or exceed a specified retransmission threshold:



Clear the RTP pipes diagnostic counters:

```

>> DISPLAY NET, RTPS, CLEAR=ALL
                                     [, CPNAME=name
                                     [, ID=name
  
```

D SAMAP command

Display the subarea mapping table from an ICN host:

```

>> DISPLAY NET, SAMAP
  
```

D SATOAPPN command

Display the subarea-to-APPN class-of-service mapping table:

```

>> DISPLAY NET, SATOAPPN
  
```

D SESSIONS command

Display all sessions:

```

>> DISPLAY NET, SESSIONS
  
```

```

>
| [, LU1=lu_name |
| | [, LU2=lu_name |
| [, LU2=lu_name |
| | [, LU1=lu_name |
| [, PLU=plu_name |
| | [, SLU=slu_name |
| [, SLU=slu_name |
| | [, PLU=plu_name |
|
|
| [, LIST=COUNT |
| | ALL operand: |
| | COUNT |
| | SUMMARY |
|
| [, SCOPE=ALL |
| | [, SCOPE=ACT | |
| | | ALL |
| | | PENDING |
| | | Q |
|
  
```

ALL operand:

```

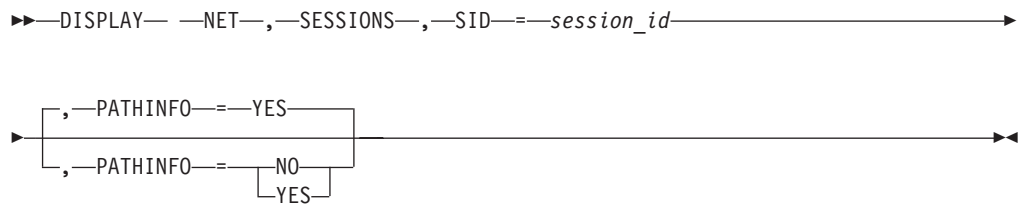
| ALL | MAX operand: |
  
```

MAX operand:

```

| [, MAX=DSPLYDEF_start_option_value |
| [, MAX=* |
| | number_of_resources |
  
```


Display a specific session:



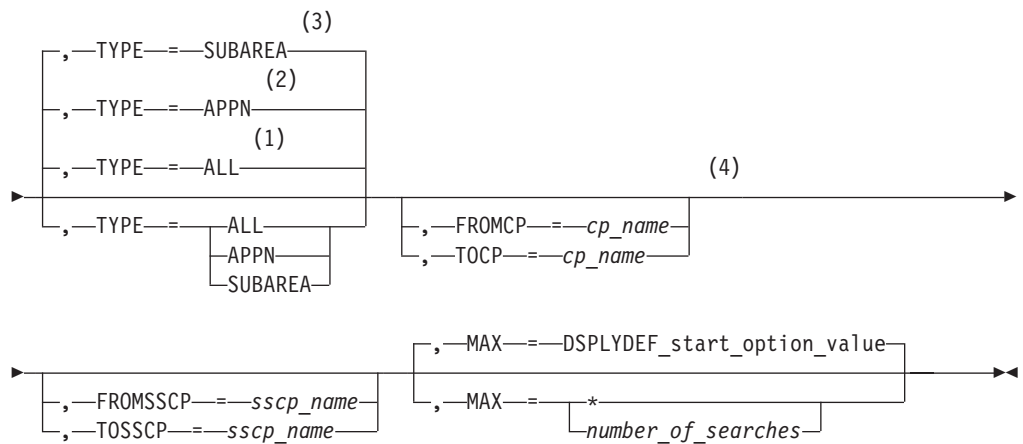
D SNSFILTR command

Display the current active SAW sense filter:



D SRCHINFO command

Display summary information about outstanding subarea and APPN searches:



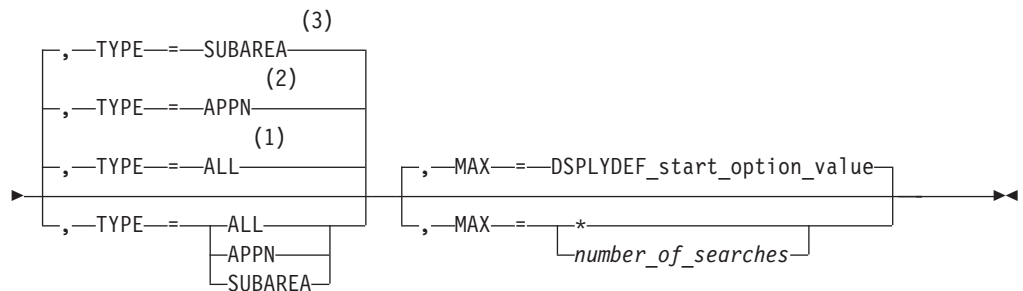
Notes:

- 1 TYPE=ALL is the default when the HOSTSA and NODETYPE start options are specified.
- 2 TYPE=APPN is the default when the NODETYPE start option is specified without the HOSTSA start option.

- 3 TYPE=SUBAREA is the default when the HOSTSA start option is specified without the NODETYPE start option.
- 4 These operands are valid with TYPE=APPN or TYPE=ALL.

Display search information about a specific search request:

►► DISPLAY —NET—, —SRCHINFO—, —SID—=*session_identifier*—————►



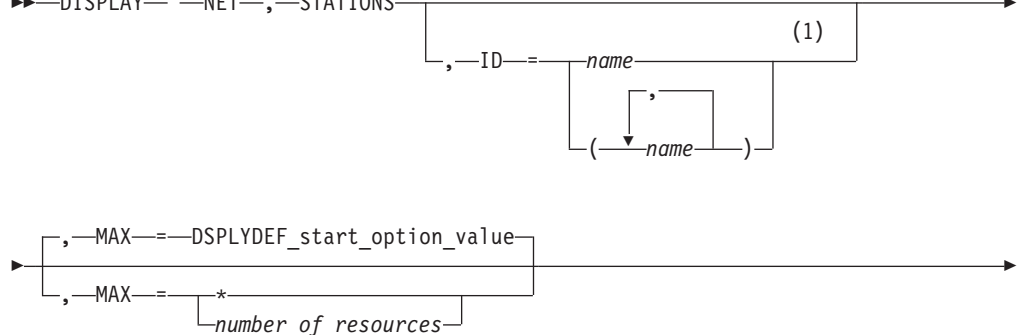
Notes:

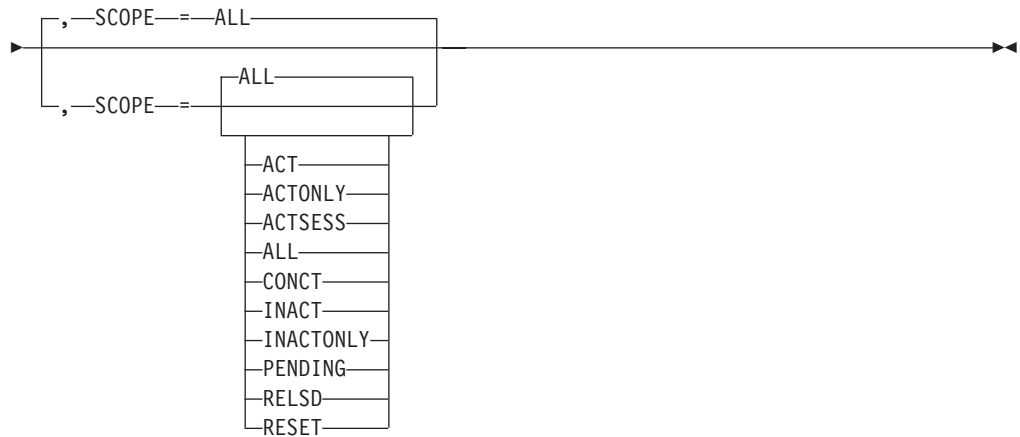
- 1 TYPE=ALL is the default when the HOSTSA and NODETYPE start options are specified.
- 2 TYPE=APPN is the default when the NODETYPE start option is specified without the HOSTSA start option.
- 3 TYPE=SUBAREA is the default when the HOSTSA start option is specified without the NODETYPE start option.

D STATIONS command

Display the status of all cross-subarea link stations for active major nodes:

►► DISPLAY —NET—, —STATIONS—————►



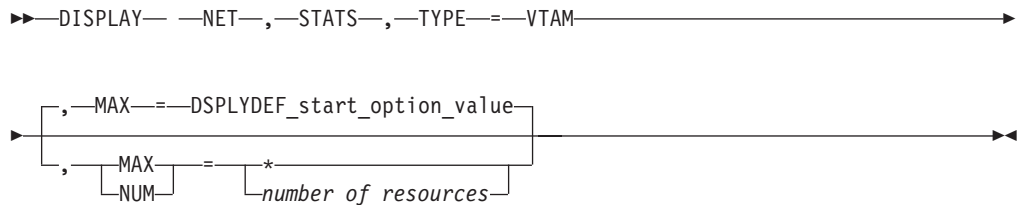


Notes:

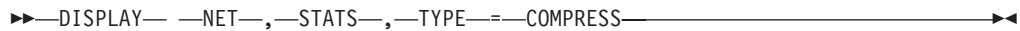
- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D STATS command

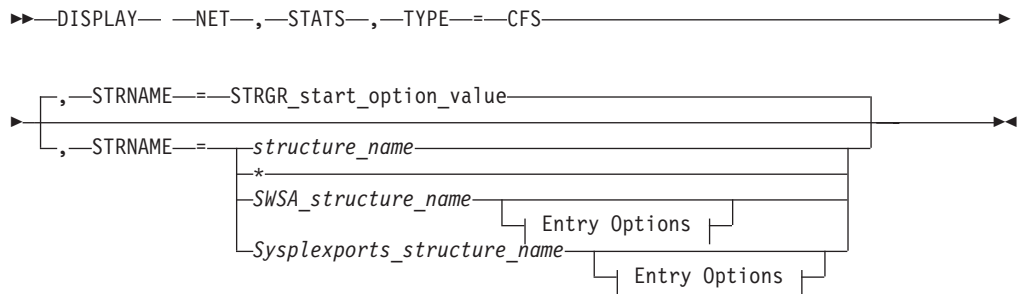
Display resource statistics:



Display data compression statistics:



Display coupling facility structure statistics:

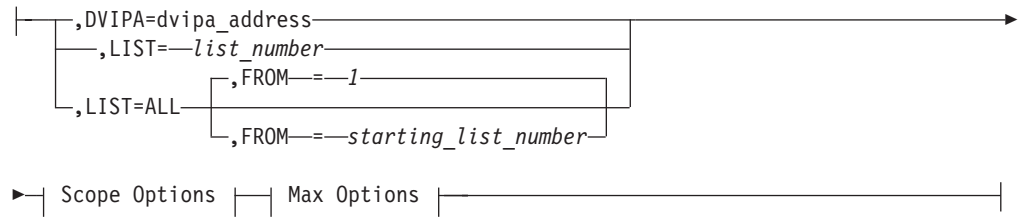


The vv value is the VTAM XCF group ID, as specified on the XCFGRPID start option. The tt value is the TCP XCF group ID, as specified on the XCFGRPID parameter on the GLOBAL CONFIG statement.

If a VTAM XCF group ID is specified, and no TCP XCF group ID is specified, the tt value is not present. If a TCP XCF group ID is specified, and no VTAM XCF

group ID is specified, vv is 01. If both a VTAM XCF group ID and a TCP XCF group ID were not specified, vv and tt are not present.

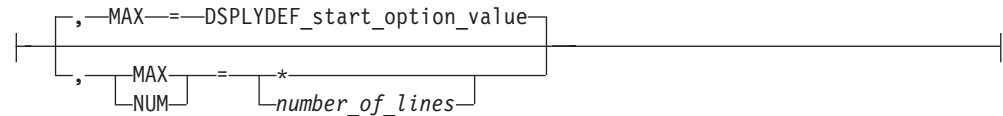
Entry Options:



Scope Options:

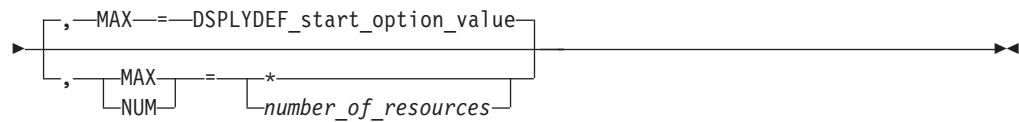
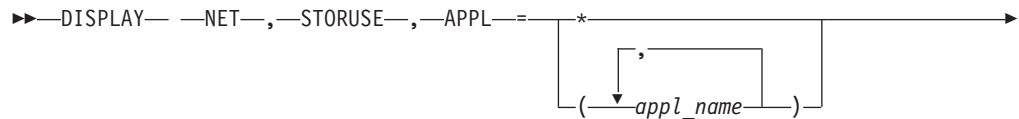


Max Options:

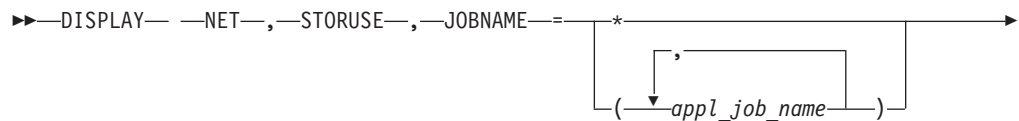


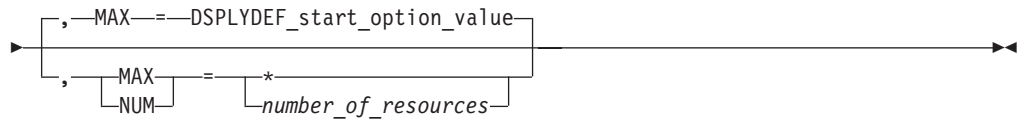
D STORUSE command

Display storage usage for applications:

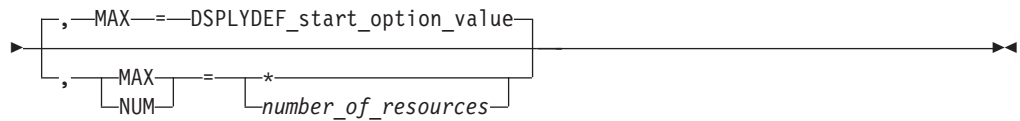
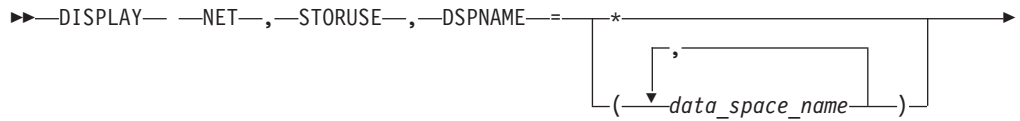


Display storage usage for application jobs:

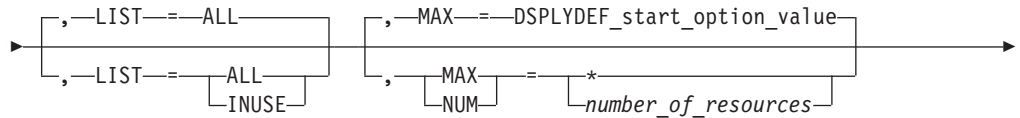
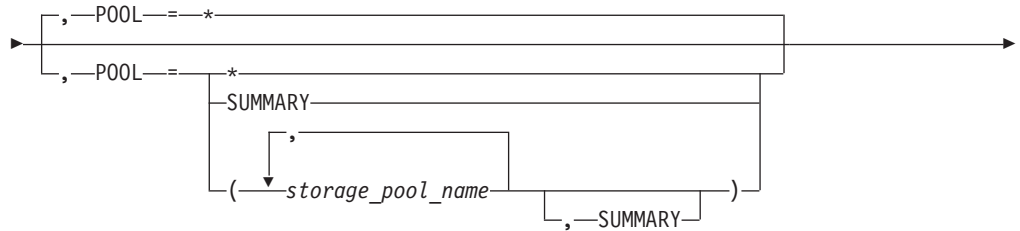
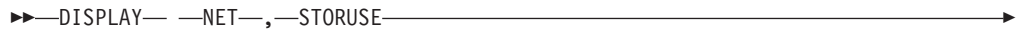




Display storage usage for data spaces:

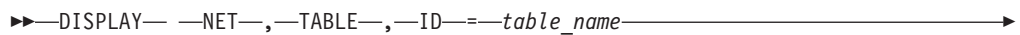


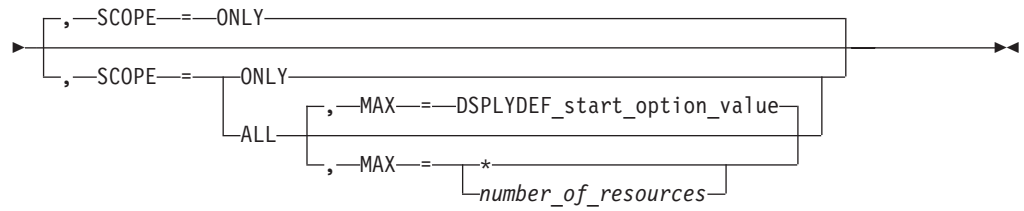
Display storage usage for storage pools:



D TABLE command

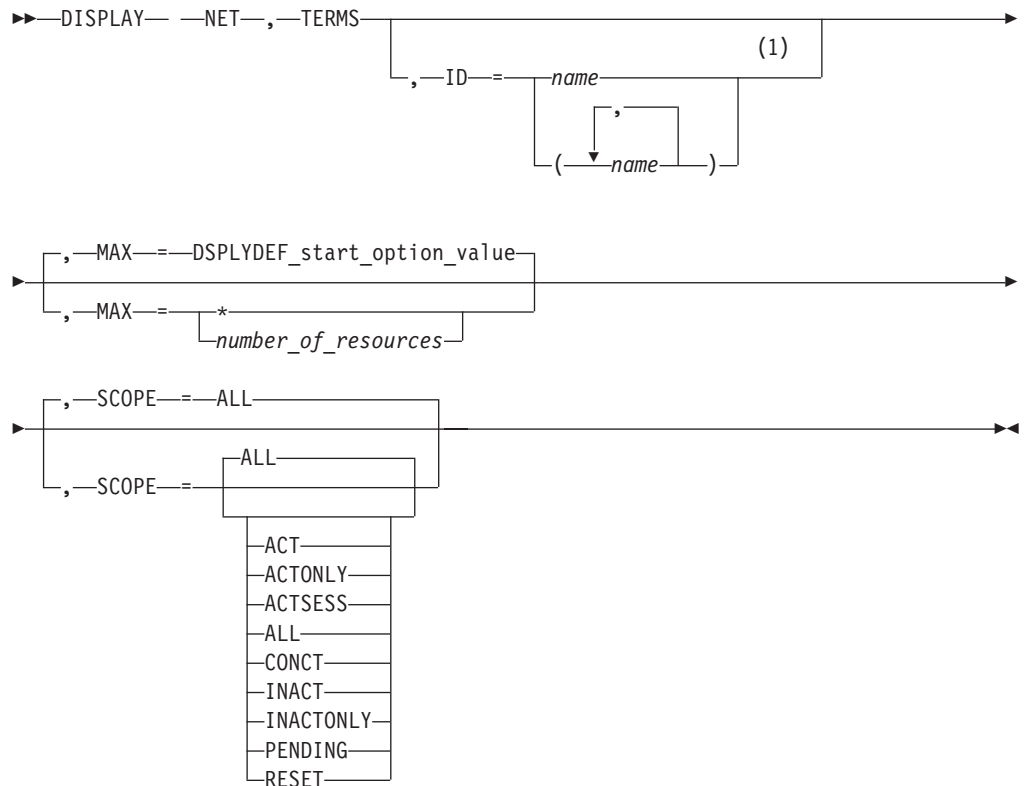
Display the table type and the number of resources that are associated with the table (use count) and identify the users of a table:





D TERMS command

Display the status of device-type logical units (terminals) that are in active major nodes:

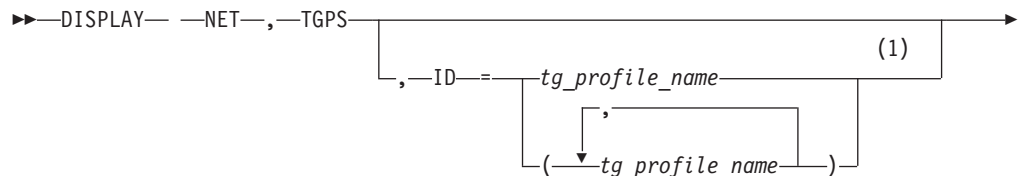


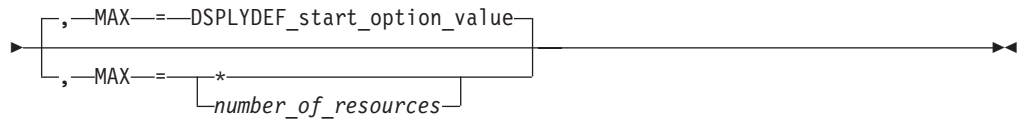
Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

D TGPS command

Display the currently defined TG profiles by name, along with the transmission group characteristics that they represent:



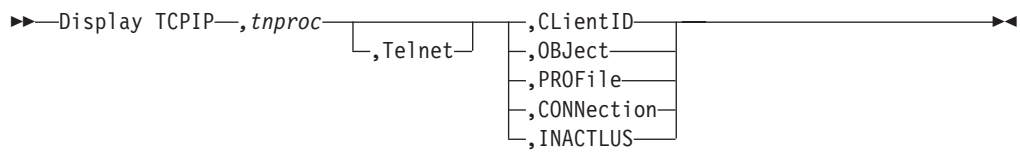


Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

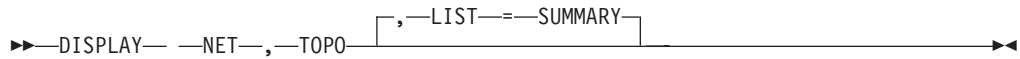
D TNSTAT command

Display the current status of global and TRLE tuning statistics and the CNSL and TIME values: (If system management facility (SMF) recording is enabled, this is also indicated.)

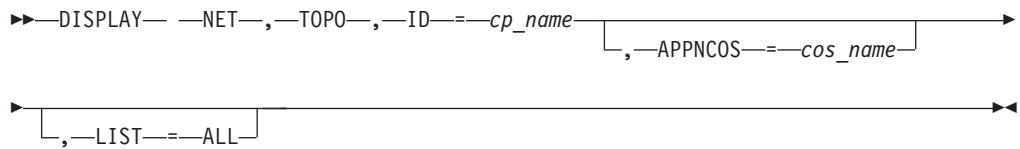


D TOPO command

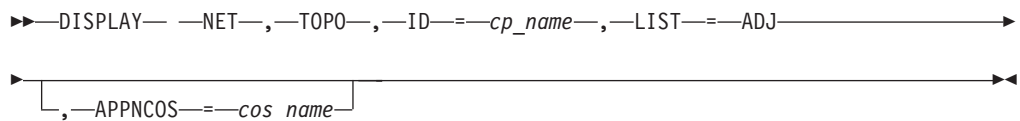
Display a summary of the topology database:



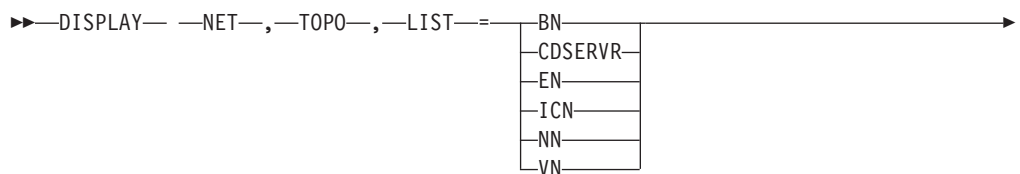
Display a specific node:

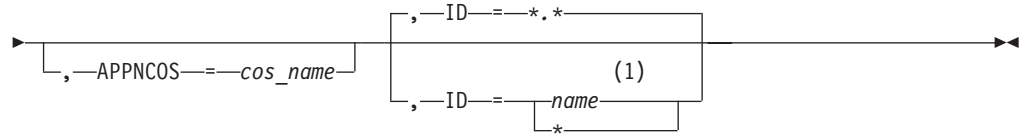


Display adjacent nodes:



Display nodes of a specific type:

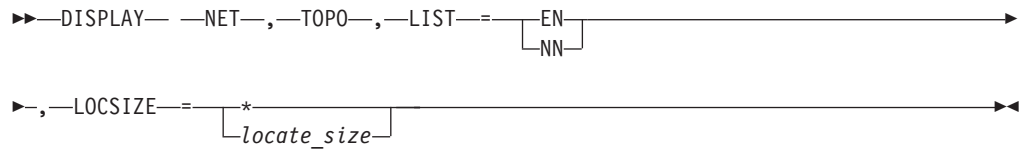




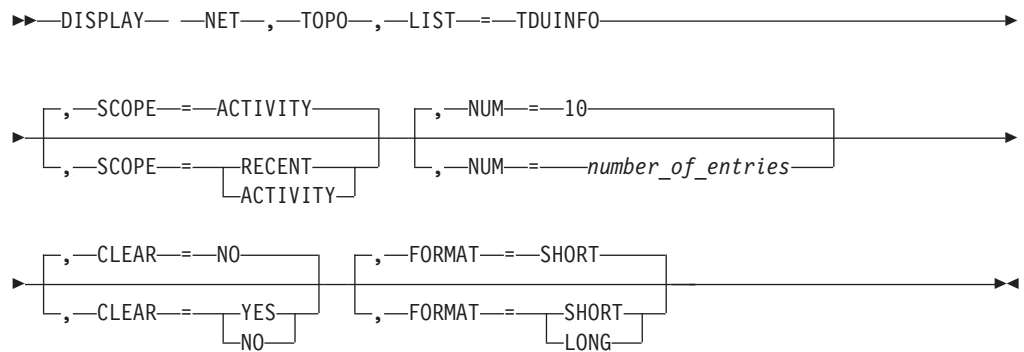
Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

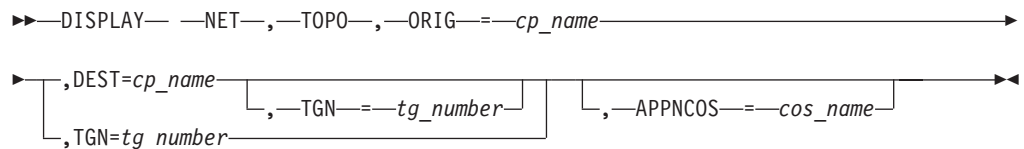
Display all nodes with a specific locsize:



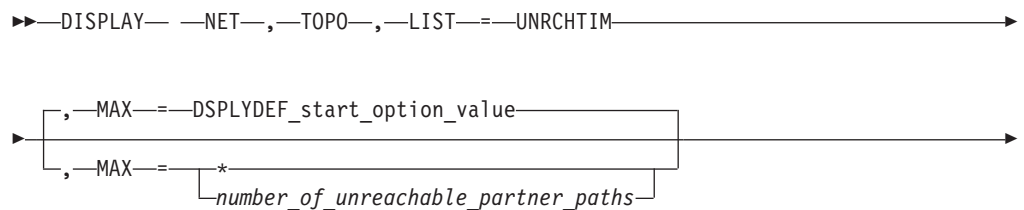
Display TDU statistics information:

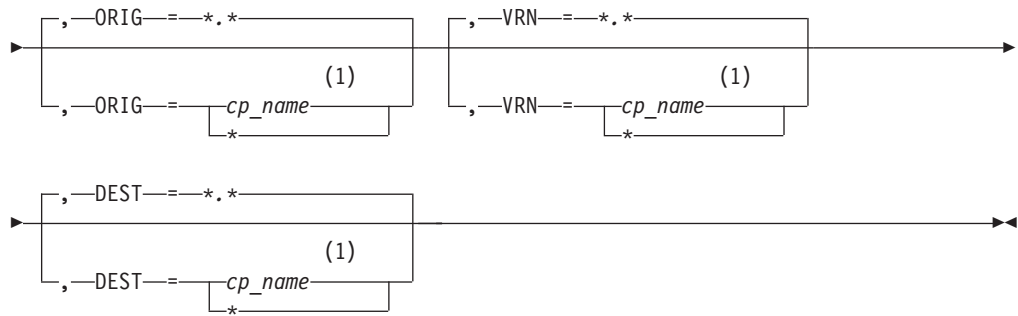


Display a specific TG or TGs:



Display Enterprise Extender connection network unreachable partner information on a network node:

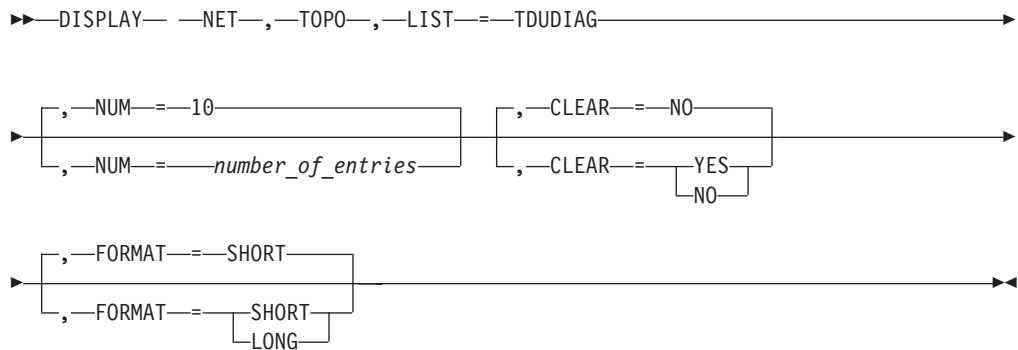




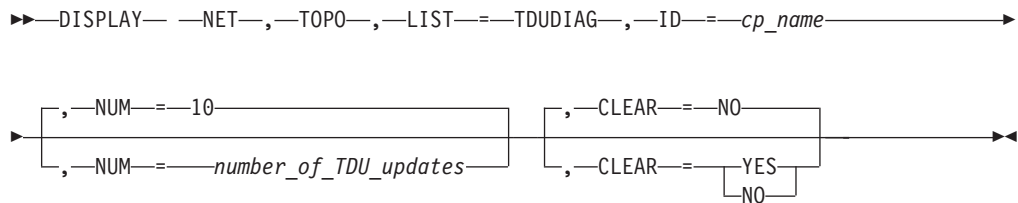
Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

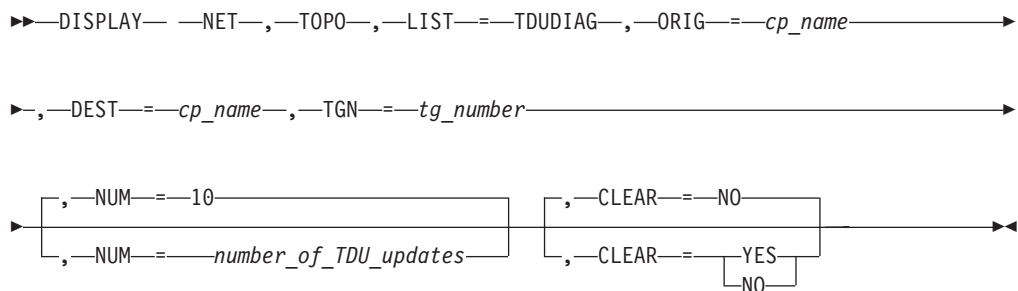
Display a summary of topology database update (TDU) diagnostic information:



Display TDU diagnostic information for a node:



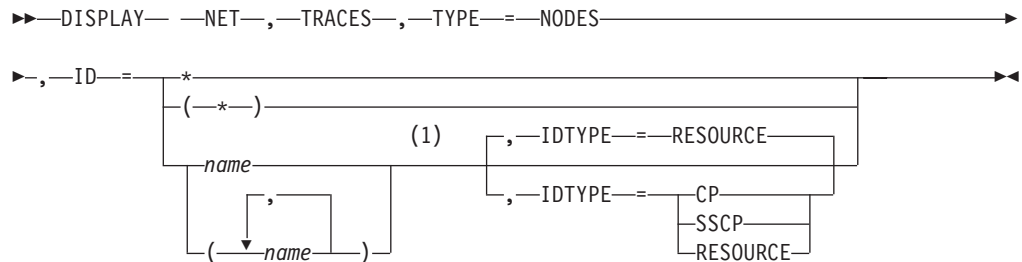
Display TDU diagnostic information for a TG:



Rule: The values LIST=UNRCHTIM and LIST=TDUDIAG are valid on the DISPLAY NET,TOPO command only when the command is issued on a network node.

D TRACES command

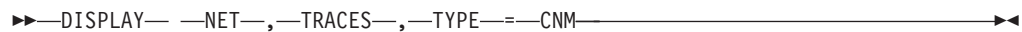
Display the status of BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, and TG traces:



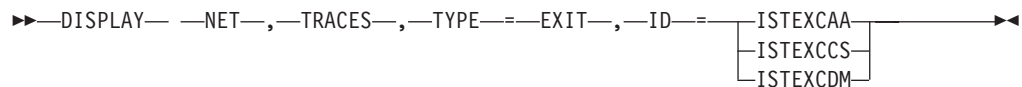
Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

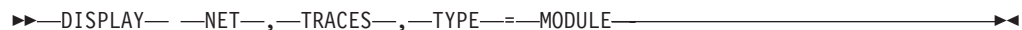
Display the status of communication network management traces:



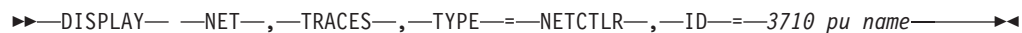
Display the status of the user Exit buffer trace:



Display the status of a module trace:



Display the status of a network controller line trace:



Display the status of the APPN route selection trace in a network node:



Notes:

- 1 TYPE=ROUTE is allowed only in a network node.

Display the status of an SMS (buffer use) trace:

```
▶▶ DISPLAY —NET—, —TRACES—, —TYPE—=—SMS [ , —ID—=—VTAMBUF ] ▶▶
```

Display the status of a resource state trace:

```
▶▶ DISPLAY —NET—, —TRACES—, —TYPE—=—STATE ▶▶
```

Display the status of a TSO user trace:

```
▶▶ DISPLAY —NET—, —TRACES—, —TYPE—=—TSO ▶▶
```

```
▶▶ , —ID—=— * ▶▶
```

```
▶▶ ( —*— ) ▶▶
```

```
▶▶ (1) ▶▶
```

```
▶▶ user_id ▶▶
```

```
▶▶ , ▶▶
```

```
▶▶ ( —user_id— ) ▶▶
```

Notes:

- 1 Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand.

Display the status of the VTAM internal trace:

```
▶▶ DISPLAY —NET—, —TRACES— [ , —TYPE—=—VTAM ] ▶▶
```

Display the status of all active traces:

```
▶▶ DISPLAY —NET—, —TRACES—, —TYPE—=—ALL ▶▶
```

D TRL command

Display the entries in the TRL major nodes:

```
▶▶ DISPLAY —NET—, —TRL— [ , —CONTROL—=—ALL ] ▶▶
```

```
▶▶ , —CONTROL—=— ALL ▶▶
```

```
▶▶ MPC ▶▶
```

```
▶▶ RoCE ▶▶
```

```
▶▶ TCP [ , —ULPID—=—name ] ▶▶
```

```
▶▶ XCF ▶▶
```

```
▶▶ [ , —MAX—=—DSPLYDEF_start_option_value ] ▶▶
```

```
▶▶ [ , —MAX—=— * ] ▶▶
```

```
▶▶ [ number_of_resources ] ▶▶
```

Display information about a specific user-defined TRLE:

▶▶ DISPLAY —NET—, —TRL—, —TRLE—=*trl_entry_name*▶▶

Display information about a dynamic XCF TRLE:

▶▶ DISPLAY —NET—, —TRL—, —XCFCP—=*cp_name*▶▶

Display the entries in one or more specific TRL major nodes:

▶▶ DISPLAY —NET—, —TRL—
└──, —TRLMN—=*name*
└──┬──
└──┬──, —
└──┬──(*name*)

└──, —MAX—=*DSPLYDEF_start_option_value* └──, —DEVSTATS—=*NO*
└──, —MAX—=**number_of_resources* └──, —DEVSTATS—=*YES*
└──┬──
└──┬──*NO*

D TSOUSER command

Display the status of a TSO user ID:

▶▶ DISPLAY —NET—, —TSOUSER—, —ID—=*user_id*▶▶

D USERVAR command

Display all USERVARs:

▶▶ DISPLAY —NET—, —USERVAR—
└──, —MAX—=*DSPLYDEF_start_option_value*
└──, —MAX—=**number_of_resources*

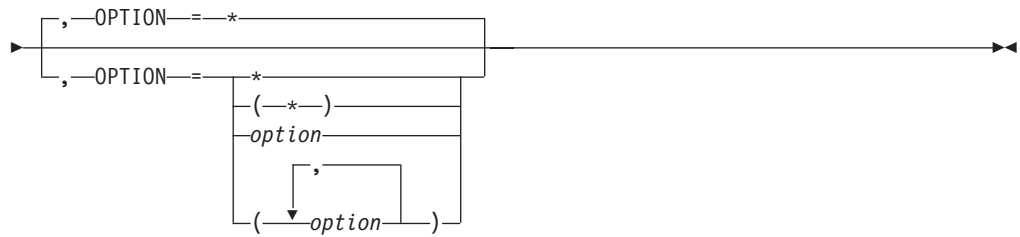
Display a specific USERVAR:

▶▶ DISPLAY —NET—, —USERVAR—, —ID—=*uservar_name*▶▶

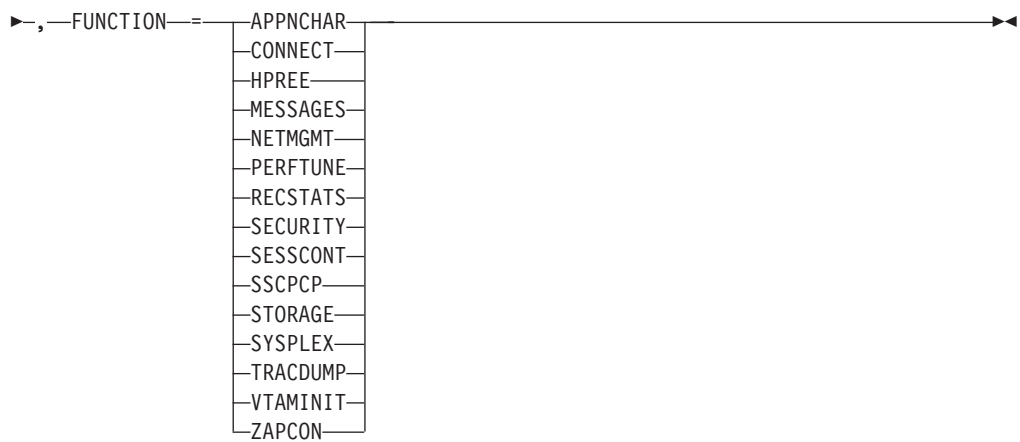
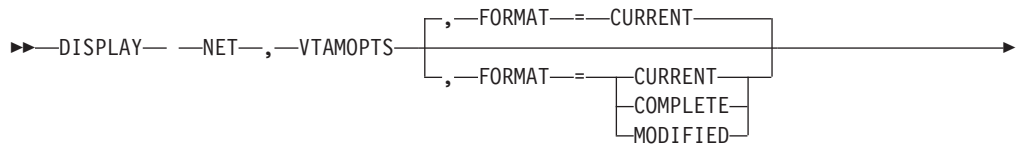
D VTAMOPTS command

Display selected start options:

▶▶ DISPLAY —NET—, —VTAMOPTS—
└──, —FORMAT—=*CURRENT*
└──, —FORMAT—=*CURRENT*
└──┬──
└──┬──*COMPLETE*
└──┬──*MODIFIED*

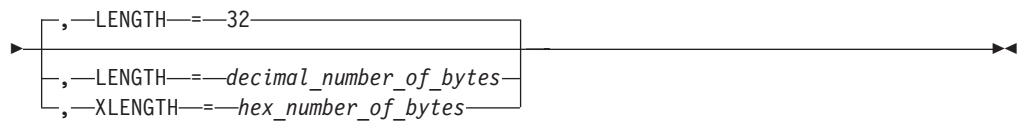


Display a group of related start options:



D VTAMSTOR command

Display storage contents associated with a storage address:

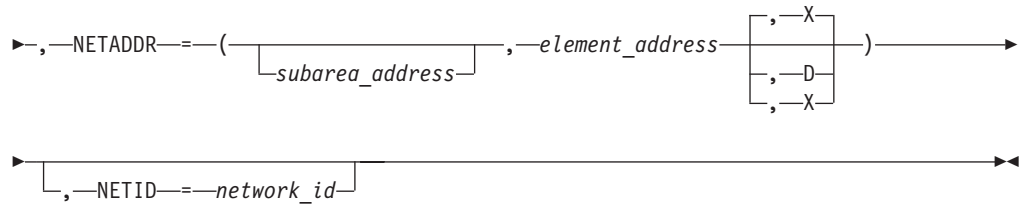


Display storage contents associated with a module:

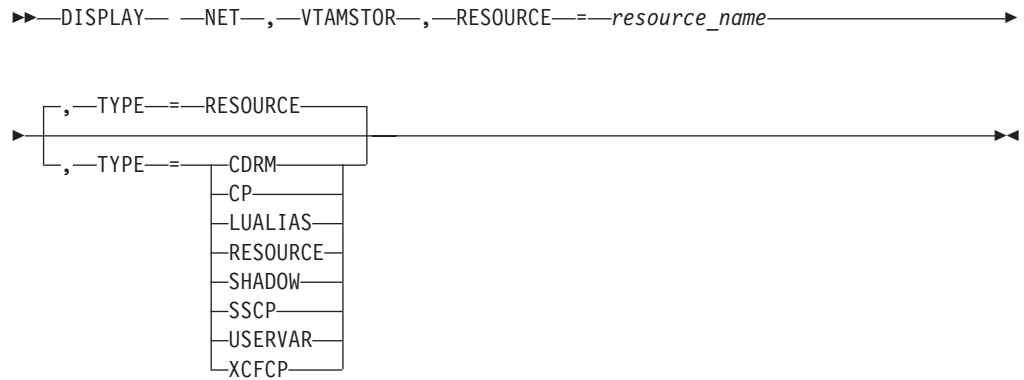


Display storage contents associated with a network address:





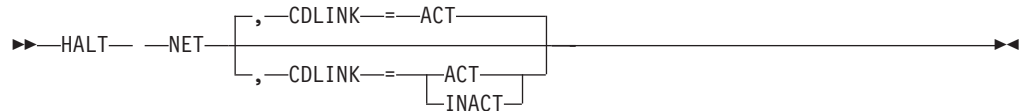
Display storage contents associated with a resource name:



Operator halt commands

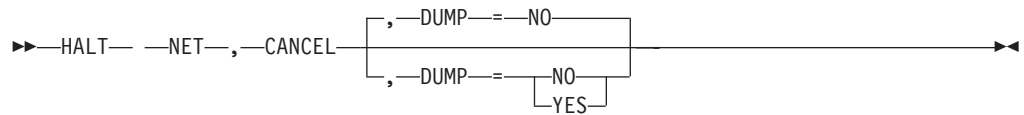
HALT (Z) command

Request a normal halt of VTAM without disrupting active LU-LU sessions:



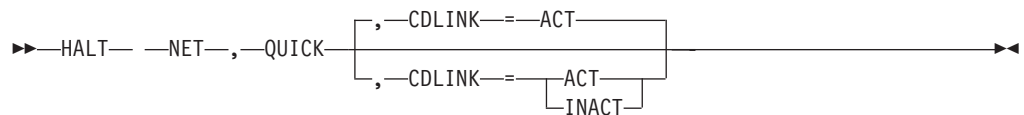
Z CANCEL command

Request a halt of VTAM via abend:



Z QUICK command

Request a halt of VTAM disrupting active LU-LU sessions:



Operator modify commands

F ALSLIST command

Add an entry to an adjacent link station list:

```
►►—MODIFY— —procname—,—ALSLIST—,—ACTION—==—ADD—►►►►
►,—ID—==*—┌──────────────────┐,—NEWALS—==—adjacent_link_station_name—►►
           └──cdrsc_major_node──┘
           └──cdrsc_name────────┘
```

Delete an entry from an adjacent link station list:

```
►►—MODIFY— —procname—,—ALSLIST—,—ACTION—==—DELETE—►►►►
►,—ID—==*—┌──────────────────┐,—OLDALS—==—adjacent_link_station_name—►►
           └──cdrsc_major_node──┘
           └──cdrsc_name────────┘
```

Replace an entry in an adjacent link station list:

```
►►—MODIFY— —procname—,—ALSLIST—,—ACTION—==—REPLACE—►►►►
►,—ID—==*—┌──────────────────┐,—NEWALS—==—adjacent_link_station_name—►►
           └──cdrsc_major_node──┘
           └──cdrsc_name────────┘
►,—OLDALS—==—adjacent_link_station_name—►►►►
```

Create a clone CDRSC or a dynamic CDRSC and add entry in adjacent link station list:

```
►►—MODIFY— —procname—,—ALSLIST—,—ACTION—==—CREATE—►►►►
►,—ID—==—cdrsc_name—,—NEWALS—==—adjacent_link_station_name—►►►►
```

F APINGDTP command

Change the number of APINGD transaction programs permitted to run concurrently for responding to APING requests from other nodes:

```
►►—MODIFY— —procname—,—APINGDTP—,—INSTANCE—==—┌UNLIMITED┐►►►►
                                                    └──value──┘
```

F APINGTP command

Change the number of APING transaction programs permitted to run concurrently for sending APING command requests to other nodes:

```
►►—MODIFY— —procname—,—APINGTP— —,—INSTANCE—==—┌UNLIMITED┐►►►►
                                                    └──value──┘
```


F BFRUSE command

Dynamically change the total amount of common service area (CSA) storage that VTAM is allowed to use for the IO buffer pool:

```

▶▶—MODIFY— —procname—,—BFRUSE—,—, —BUFFER—==IOBUF—, —XSPANLIM—==value—▶▶
                                     ┌──, —BUFFER—==IO000
                                     │
                                     └──IO
  
```

F CDRM command

Change the owner (external CDRM) of a particular cross-domain resource (CDRSC) or set of CDRSCs:

```

▶▶—MODIFY— —procname—,—CDRM—==new_cdrm—▶▶
                                     ┌──(—new_cdrm—)
                                     │
                                     └──(—new_cdrm—,—old_cdrm—)

▶,—, —ID—==* ┌──cdrsc_major_node_name
              │
              └──cdrsc_minor_node_name
                    ┌──, —TYPE—==NORM
                    │
                    └──, —TYPE—==IMMED
                              │
                              └──NORM
  
```

F CHKPT command

Save a copy of the directory database or the topology database (or both) to a checkpoint data set:

```

▶▶—MODIFY— —procname—,—CHKPT—┌──, —TYPE—==ALL
                                │
                                └──, —TYPE—==ALL
                                       │
                                       ├──DIR
                                       └──TOPO
  
```

F CNOS command

Set session limits to zero for one logon mode:

```

▶▶—MODIFY— —procname—,—CNOS—,—, —ID—==appl_name—▶▶

▶,—, —LIMITS—==(—0—,—0—,—0—)—,—, —LOGMODE—==logon_mode_name—▶▶

▶,—, —LUNAME—==lu_name—┌──, —DRAINL—==NO
                        │
                        └──, —DRAINL—==NO
                               │
                               └──YES
                                     ┌──, —DRAINR—==NO
                                     │
                                     └──, —DRAINR—==NO
                                           │
                                           └──YES

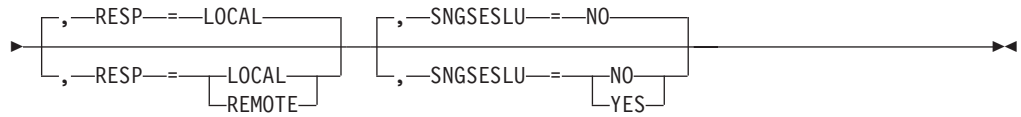
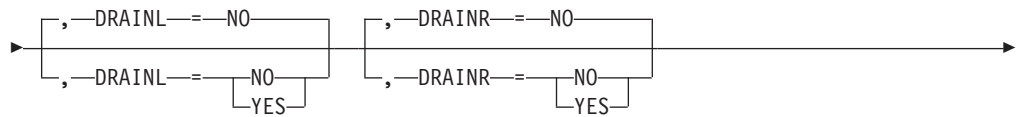
▶,—, —NBRMODE—==ONE—┌──, —RESP—==LOCAL
                    │
                    └──, —RESP—==LOCAL
                              │
                              └──REMOTE
  
```



Set session limits to zero for all logon modes:

▶▶ MODIFY --procname--,--CNOS--,--ID==--appl_name

▶ ,--LIMITS==(--0--,--0--,--0--),--LUNAME==--lu_name--,--NBRMODE==--ALL

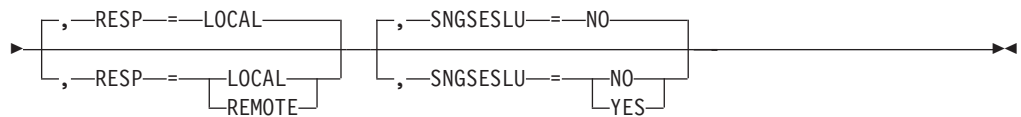
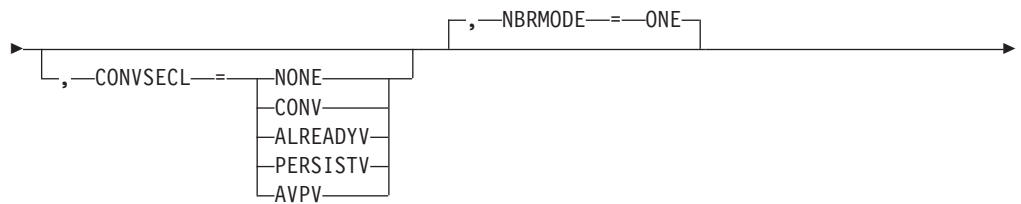


Set session limits to nonzero:

▶▶ MODIFY --procname--,--CNOS--,--ID==--appl_name

▶ ,--LIMITS==(--sesslim--,--minwinl--,--minwinr--)

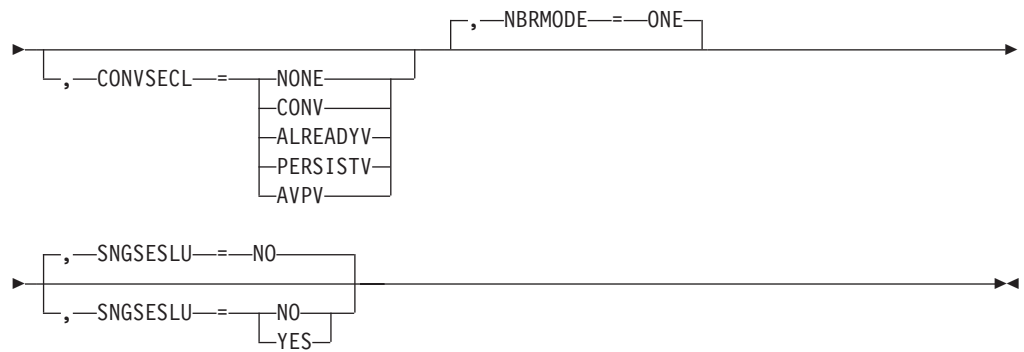
▶ ,--LOGMODE==--logon_mode_name--,--LUNAME==--lu_name



Use existing session limits:

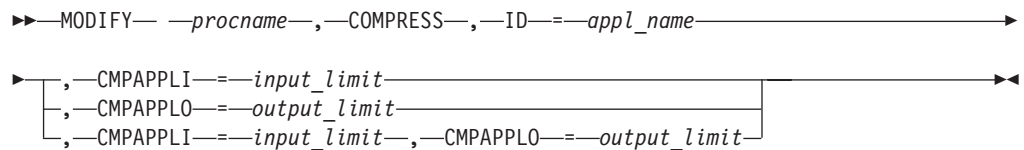
▶▶ MODIFY --procname--,--CNOS--,--ID==--appl_name

▶ ,--LOGMODE==--logon_mode_name--,--LUNAME==--lu_name

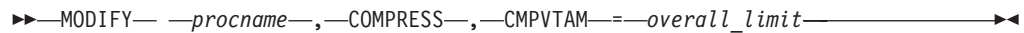


F COMPRESS command

Change the compression levels set by the APPL definition statement:

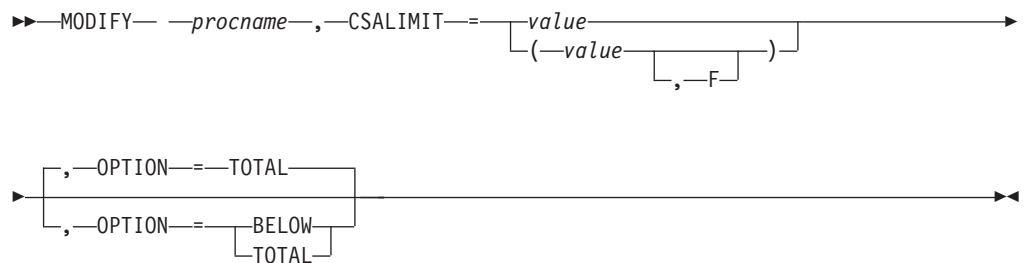


Change the compression level set by start option:



F CSALIMIT command

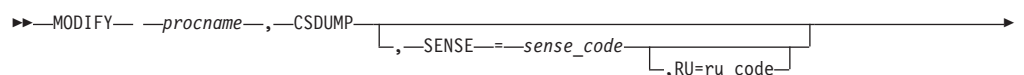
Dynamically change the amount of common service area (CSA) storage that VTAM is allowed to use:

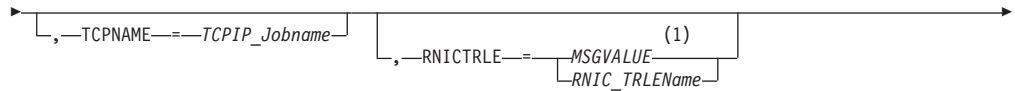
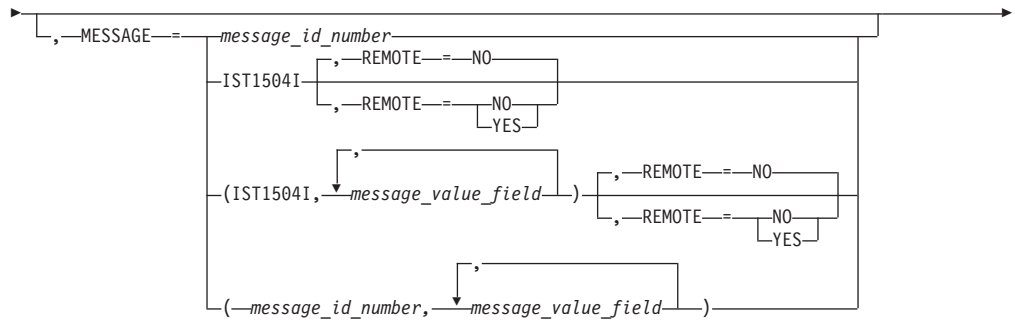


F CSDUMP command

Dump the current address space and VIT data space now, or set up a trigger that invokes a dump of the current address space and VIT data space and possibly a dump of a remote VTAM, when either a particular sense code or a particular message is issued:

Set the CSDUMP trigger:



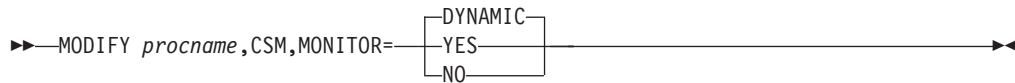


Notes:

- 1 MSGVALUE is valid only when the MESSAGE operand is used and specifies either message IST239II or IST2406I.

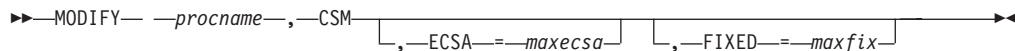
Tip: You can use the CSDUMP start option to set a CSDUMP message trigger, a sense code trigger, or both.

Remove the CSDUMP trigger:



F CSM command

Dynamically change the amount of storage used by the communications storage manager (CSM) or activate changes made to the CSM parmlib member without requiring an IPL:

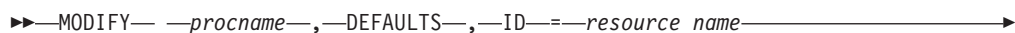


Modify CSM Monitoring as follows:



F DEFAULTS command

Modify the DLOGMOD value for a resource:



►, —DLOGMOD—=
└── *logon_mode_name* ──┘

Change the delay timer for disconnection of a switched PU:

►► —MODIFY— —*procname*—, —DEFAULTS—, —ID—=
└── *resource_name* ──┘

►, —DISCNTIM—=
└── *time_period* ──┘

F DEFINE command

Set session limits to zero:

►► —MODIFY— —*procname*—, —DEFINE—, —ID—=
└── *appl_name* ──┘

►, —DLIMITS—=
└── (—0—, —0—, —0—), —LOGMODE—=
└── *logon_mode_name* ──┘

►, —LUNAME—=
└── *lu_name* ──┘
└──, —AUTOSSES—=
└── *number_of_winner_sessions* ──┘

► ┌──, —DELETE—=
└── NALLOW ──┘
└──, —DELETE—=
└── ALLOW ──┘
└── NALLOW ──┘ └──, —DDRAINL—=
└── ALLOW ──┘
└── NALLOW ──┘

► └──, —DRESPL—=
└── ALLOW ──┘
└── NALLOW ──┘

Set session limits to nonzero:

►► —MODIFY— —*procname*—, —DEFINE—, —ID—=
└── *appl_name* ──┘

►, —DLIMITS—=
└── (—*dseslim*—, —*dminwinl*—, —*dminwinr*—)

►, —LOGMODE—=
└── *logon_mode_name* ──┘, —LUNAME—=
└── *lu_name* ──┘

► └──, —AUTOSSES—=
└── *number_of_winner_sessions* ──┘ └──, —DELETE—=
└── NALLOW ──┘
└──, —DELETE—=
└── ALLOW ──┘
└── NALLOW ──┘

► └──, —DRESPL—=
└── ALLOW ──┘
└── NALLOW ──┘

Use existing session limits:

```
►► MODIFY —procname—, —DEFINE—, —ID—==—appl_name—►►
►, —LOGMODE—==—logon_mode_name—, —LUNAME—==—lu_name—►►
►, —AUTOSSES—==—number_of_winner_sessions—, —DELETE—==—NALLOW—►►
►, —DELETE—==—ALLOW—►►
►, —DELETE—==—NALLOW—►►
►, —DRESPL—==—ALLOW—►►
►, —DRESPL—==—NALLOW—►►
```

Delete an unusable LU-mode entry:

```
►► MODIFY —procname—, —DEFINE—, —ID—==—appl_name—, —LUNAME—==—lu_name—►►
►, —DELETE—==—UNUSE—►►
```

F DIRECTORY command

Change the ownership of APPN resources in the directory database:

```
►► MODIFY —procname—, —DIRECTORY—, —FUNCTION—==—UPDATE—►►
►, —ID—==—cdrsc_major_node_name—►►
►, —ID—==—resource_name—►►
►, —CPNAME—==—new_cp_name—►►
►, —CPNAME—==—(—new_cp_name—, —old_cp_name—)—►►
►, —NETSRVR—==—server_name—►►
►, —CPNAME—==—new_cp_name—, —NETSRVR—==—server_name—►►
►, —CPNAME—==—(—new_cp_name—, —old_cp_name—)—►►
```

Delete a resource from the directory database:

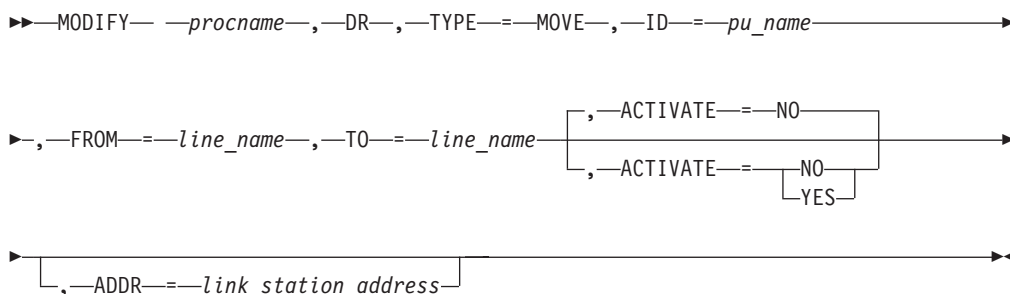
```
►► MODIFY —procname—, —DIRECTORY—, —FUNCTION—==—DELETE—►►
►, —ID—==—cdrsc_major_node_name—►►
►, —ID—==—resource_name—►►
```

F DR command

Delete a logical unit from a physical unit, or a physical unit from a line:

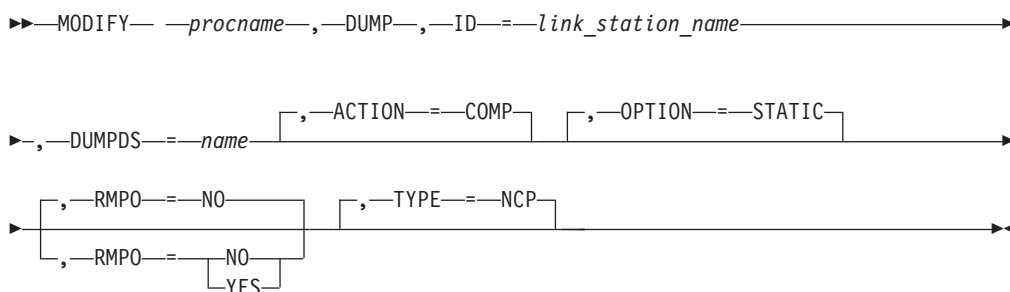
```
►► MODIFY —procname—, —DR—, —TYPE—==—DELETE—►►
►, —ID—==—lu_name—, —FROM—==—pu_name—►►
►, —ID—==—pu_name—, —FROM—==—line_name—►►
```

Move a physical unit:

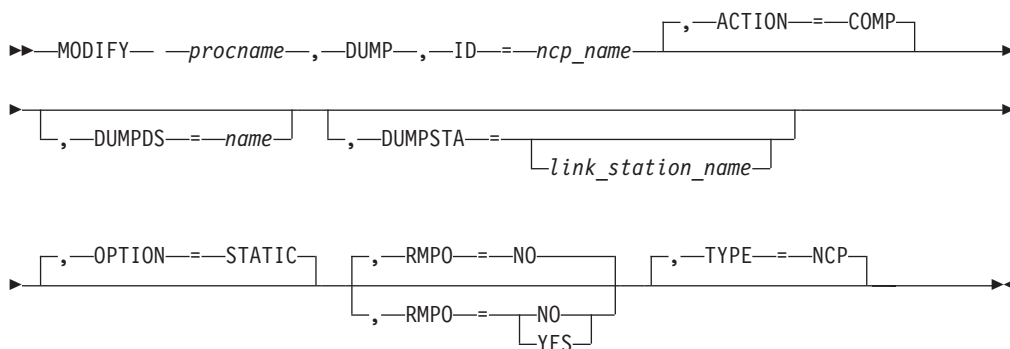


F DUMP command

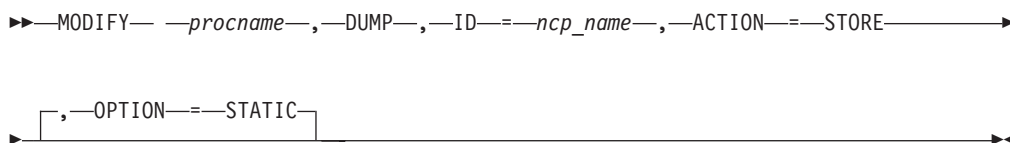
Static dump of remote NCP (via link station) to host:



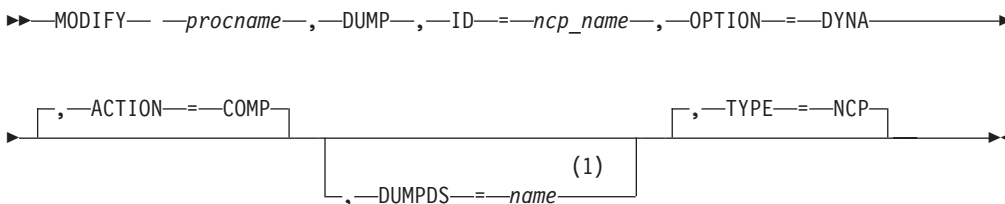
Static dump of NCP to host:



Static dump of NCP to hard disk:



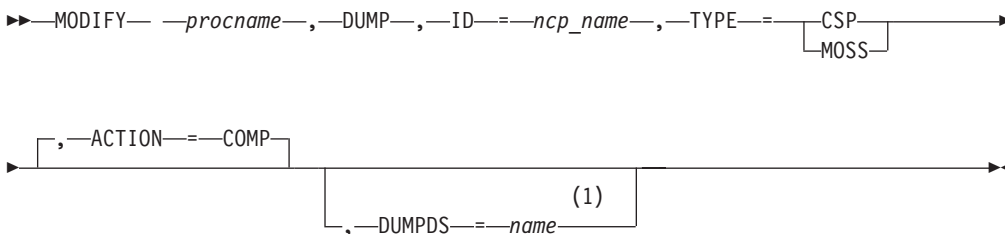
Dynamic dump of NCP to host:



Notes:

- 1 If the NCP has been acquired before activation, DUMPDS is required.

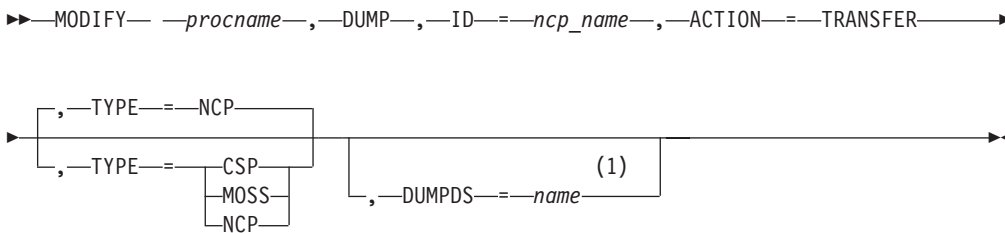
Transfer CSP or MOSS dump from hard disk to host:



Notes:

- 1 If the NCP has been acquired before activation, DUMPDS is required.

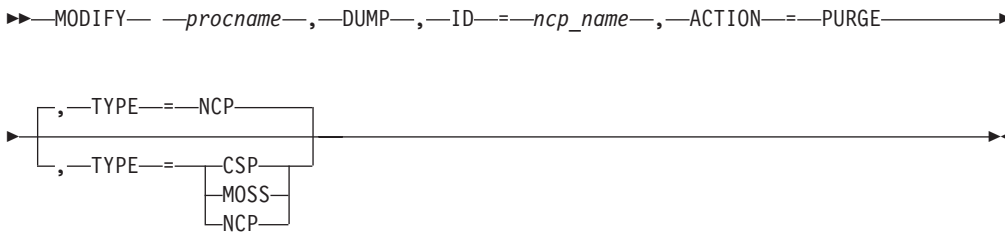
Transfer NCP, CSP, or MOSS dump from hard disk to host:



Notes:

- 1 If the NCP has been acquired before activation, DUMPDS is required.

Purge dump from hard disk:



F ENCR command

Change the cryptography specifications for logical units:

```

▶▶ MODIFY —procname—, —ENCR—= [COND] , —ID—= —lu_name—
                                [OPT]
                                [REQD]
  
```

F EXIT command

Activate or replace an exit routine:

```

▶▶ MODIFY —procname—, —EXIT—, —OPTION—= [ACT]
                                           [REPL]
  
```

```

▶, —ID—= ISTEEXCDM [,—PARMS—= —character_string—]
         ISTEEXCVR
         ISTEEXCVR [,—PARMS—= —character_string—]
         ISTEEXCVR
         ISTEEXCVR [,—PARMS—= —character_string—]
         ISTEEXCAA [,—PARMS—= —character_string—]
         ISTEEXCCS [,—PARMS—= —character_string—]
         ISTEEXCGR [,—PARMS—= —character_string—]
         ISTEEXCPM [,—PARMS—= —character_string—]
         ISTEEXCSD [,—PARMS—= —character_string—]
         ISTEEXCUV [,—PARMS—= —character_string—]
  
```

```

▶ [,—MODULE—= —module_name—]
  
```

Activate a multiple instance of ISTEEXCPM:

```

▶▶ MODIFY —procname—, —EXIT—, —OPTION—= —ACT—
  
```

```

▶, —ID—= ISTEEXCPM.—instance_name— [,—PARMS—= —character_string—]
  
```

Replace a multiple instance of ISTEEXCPM:

```

▶▶ MODIFY —procname—, —EXIT—, —OPTION—= —REPL—
  
```

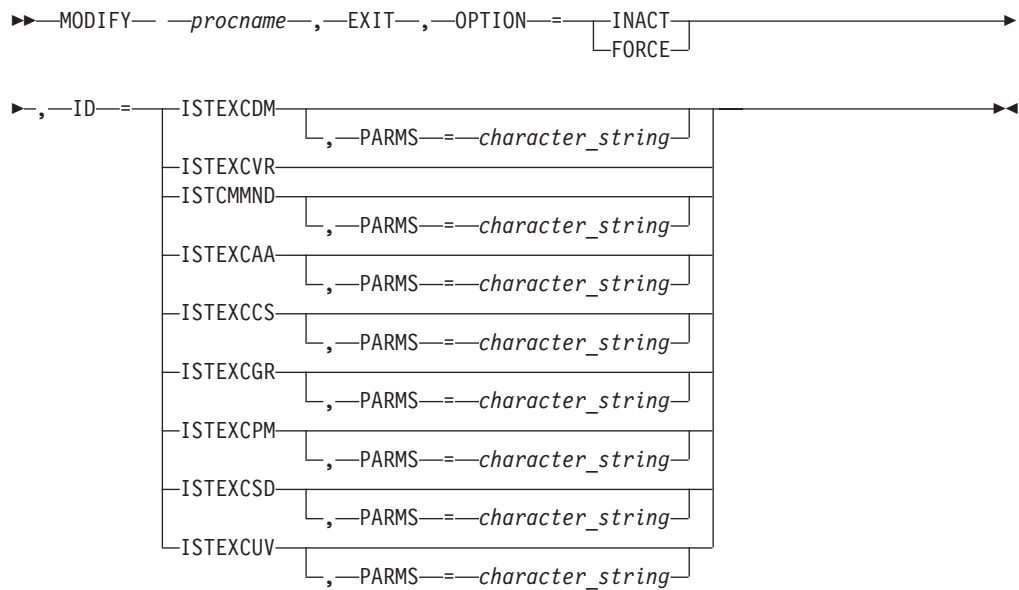
```

▶, —ID—= ISTEEXCPM.—instance_name— [,—MODULE—= —module_name—]
  
```

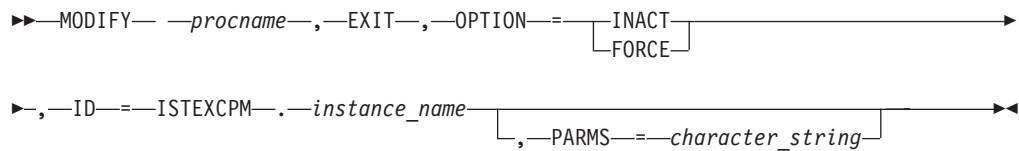
```

▶ [,—PARMS—= —character_string—]
  
```

Deactivate an exit routine:

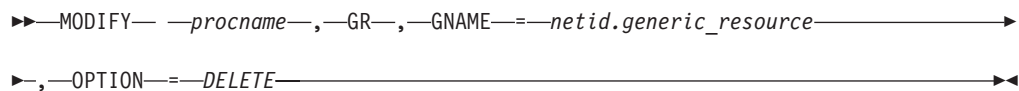


Deactivate a multiple instance of ISTECPM:



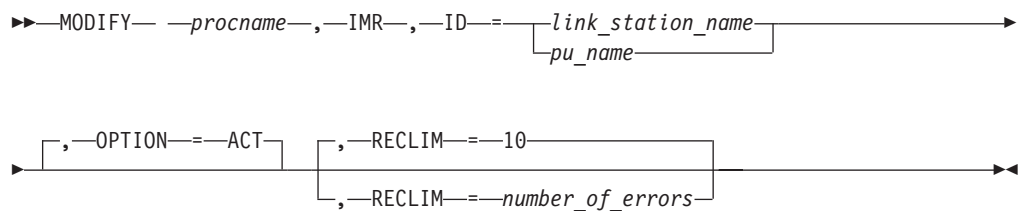
F GR command

Delete a generic resource:



F IMR command

Start intensive mode recording:



Stop intensive mode recording:

```
►► MODIFY — procname —, —IMR—, —ID—= link_station_name
                                     └──┬──┘
                                     └──┴──┘
                                     pu_name
►, —OPTION—= —INACT—
```

F INOPCODE command

Controls the dump attribute of VTAM INOPCODEs:

```
►► MODIFY — procname —, —INOPCODE—= ( ALL
                                     └──┬──┘
                                     └──┴──┘
                                     modulename
                                     , ALL
                                     └──┬──┘
                                     └──┴──┘
                                     inopcode
                                     , DUMPENABLE
                                     └──┬──┘
                                     └──┴──┘
                                     DUMPDISABLE
                                     └──┬──┘
                                     └──┴──┘
                                     DUMPDEFAULT
                                     )
```

Notes:

1. When specifying an InOpCode for the second parameter, always specify three digits by including any leading zeros.
2. If an InOpCode is specified for the second parameter, the first parameter cannot be ALL.

F INOPDUMP command

Controls the automatic dumping of VTAM when an inoperative condition occurs in one of VTAMs data link control layers:

```
►► MODIFY — procname —, —INOPDUMP—= OFF
                                     └──┬──┘
                                     └──┴──┘
                                     ON
►, —TRLE—= trle_name
           └──┬──┘
           └──┴──┘
           (trle_name)
```

F IOPD command

Change the I/O problem determination (IOPD) time-out interval:

```
►► MODIFY — procname —, —IOPD—, —IOINT—= number_of_seconds
```

F IOPURGE command

Set a time interval after which outstanding I/O is assumed to be lost and recovery steps are taken:

```
►► MODIFY — procname —, —IOPURGE—= timeout_value
```

F LINEDEF command

Dynamically change the definition of a redefinable line:

```
➤➤ MODIFY procname, LINEDEF, ID=line_name
➤, USE= [DEFINED]
        [SPARE]
```

F LL2 command

Start a continuous link level 2 test:

```
➤➤ MODIFY procname, LL2, ID=name, OPTION=CONT
➤ [DATA=data] [NFRAMES=1]
➤ [NFRAMES=number_of_test_messages]
```

Start a brief link level 2 test:

```
➤➤ MODIFY procname, LL2, ID=name [DATA=data]
➤ [NFRAMES=1]
➤ [NFRAMES=number_of_test_messages]
➤ [NTRANS=10]
➤ [NTRANS=number_of_test_messages]
```

Stop a link level 2 test:

```
➤➤ MODIFY procname, LL2, ID=name, OPTION=CANCEL
```

F LOAD command

Store a load module on the hard disk, and optionally for a 3745, schedule an IPL:

```
➤➤ MODIFY procname, LOAD, ID=ncl_name [ACTION=ADD]
➤ [IPLTIME=(date, time)] [NOTIFY=60]
➤ [NOTIFY=time_period]
➤ [NO]
➤ [time_period]
```

```
▶ [ ,—LOADMOD—==—load_module_name— ] ▶
```

Replace a load module on the hard disk, and optionally for a 3745, schedule an IPL:

```
▶▶—MODIFY— —procname—,—LOAD—,—ID—==—ncp_name—,—ACTION—==—REPLACE—▶▶
```

```
▶ [ ,—IPLTIME—==—(—date—,—time—) ] ▶  
▶ [ ,—NOTIFY—==—60— ] ▶  
▶ [ ,—NOTIFY—==— ] ▶  
▶ [ NO— ] ▶  
▶ [ time_period— ] ▶
```

```
▶ [ ,—LOADMOD—==—load_module_name— ] ▶
```

Purge a load module from the hard disk:

```
▶▶—MODIFY— —procname—,—LOAD—,—ID—==—ncp_name—,—ACTION—==—PURGE—▶▶
```

```
▶ [ ,—LOADMOD—==—load_module_name— ] ▶
```

Cancel an ADD or REPLACE operation in progress:

```
▶▶—MODIFY— —procname—,—LOAD—,—ID—==—ncp_name—,—ACTION—==—CANCEL—▶▶
```

```
▶ [ ,—LOADMOD—==—load_module_name— ] ▶
```

Schedule or cancel an automatic IPL for an NCP load module in a 3745:

```
▶▶—MODIFY— —procname—,—LOAD—,—ID—==—ncp_name—,—ACTION—==—SETTIME—▶▶
```

```
▶ [ ,—IPLTIME—==—(—date—,—time—) ] ▶  
▶ [ ,—NOTIFY—==—60— ] ▶  
▶ [ ,—NOTIFY—==— ] ▶  
▶ [ NO— ] ▶  
▶ [ time_period— ] ▶  
▶ [ CANCEL— ] ▶
```

```
▶ [ ,—LOADMOD—==—load_module_name— ] ▶
```

Rename a load module on the 3745 hard disk for MOSS:

```
▶▶—MODIFY— —procname—,—LOAD—,—ID—==—ncp_name—,—ACTION—==—RENAME—▶▶
```

```
▶ [ ,—LOADMOD—==—load_module_name—,—NEWNAME—==—new_load_module_name— ] ▶
```


Stop a communication network management trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—CNM—, —ID—=— PDPIUBUF
SAWBUF —►

Stop a user Exit buffer trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—EXIT—, —ID—=—ISTEXCAA —►

►, —OPTION—=— ALL —►

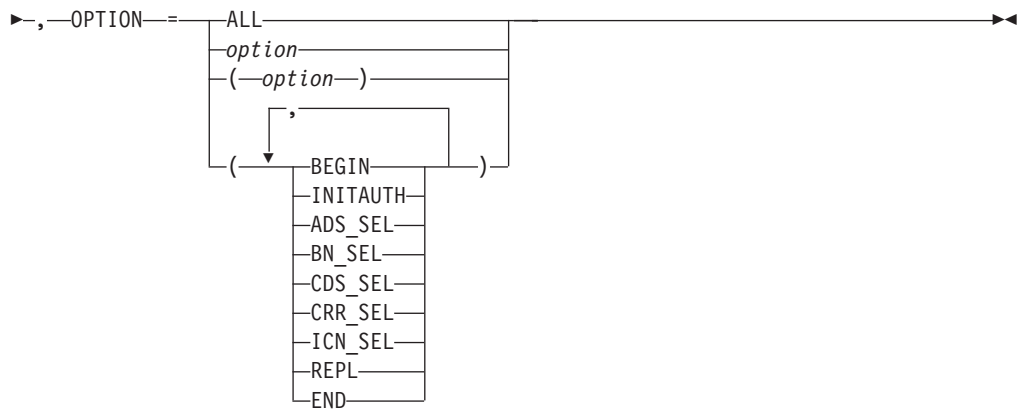
<i>option</i>
(— <i>option</i> —)
,
(— ACCTING —)
ADJSSCP
ALIAS
ALS
BEGIN
END
GWPATH
INITAUTH
REPL
SECAUTH
VRSEL
XRF

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—EXIT—, —ID—=—ISTEXCCS —►

►, —OPTION—=— ALL —►

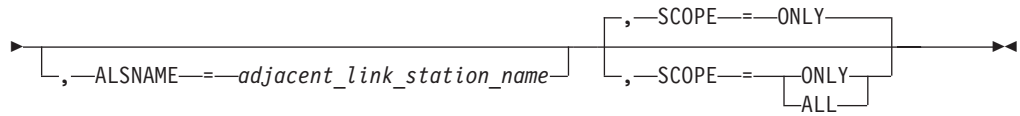
<i>option</i>
(— <i>option</i> —)
,
(— BEGIN —)
CONNSTAT
DYNA_XID
PRED_XID
END

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—EXIT—, —ID—=—ISTEXCDM —►



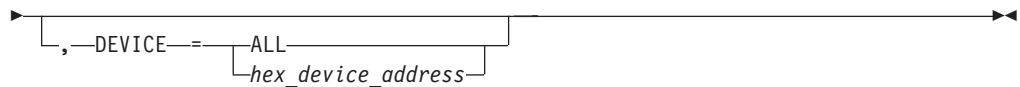
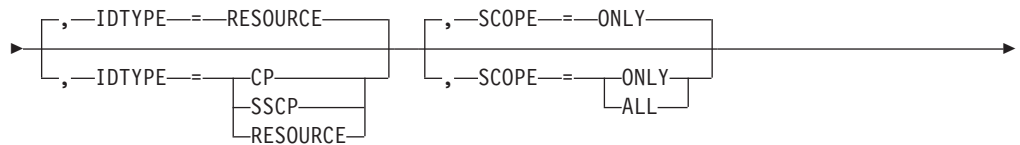
Stop a generalized PIU trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—GPT—, —ID—=—*node_name*—►►



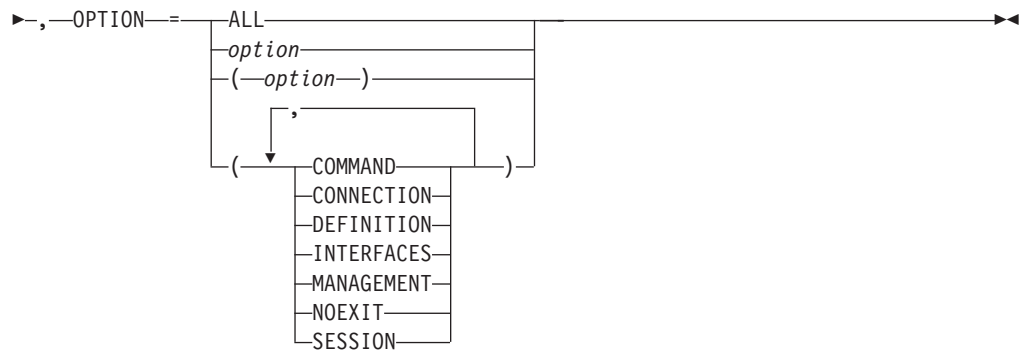
Stop an input/output trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—IO—, —ID—=—*node_name*—►►



Stop a module trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—MODULE—►►



Stop an NCP line trace:

>> MODIFY *procname*, NOTRACE, TYPE=LINE, ID=*line_name* >>>

Stop a 3710 Network Controller line trace:

>> MODIFY *procname*, NOTRACE, TYPE=NETCTLR, ID=*pu_name* >>

>> ,LINE=*line_name*, PU=*3710_pu_name* >>>

Stop OSA-Express2 diagnostic data synchronization for an OSA-Express2 adapter:

>> MODIFY *procname*, NOTRACE, TYPE=QDIOSYNC >>>



Stop the APPN route selection trace in a network node:

>> MODIFY *procname*, NOTRACE, TYPE=ROUTE⁽¹⁾ >>>



Notes:

- 1 TYPE=ROUTE is allowed only in a network node.

Stop a scanner interface trace:

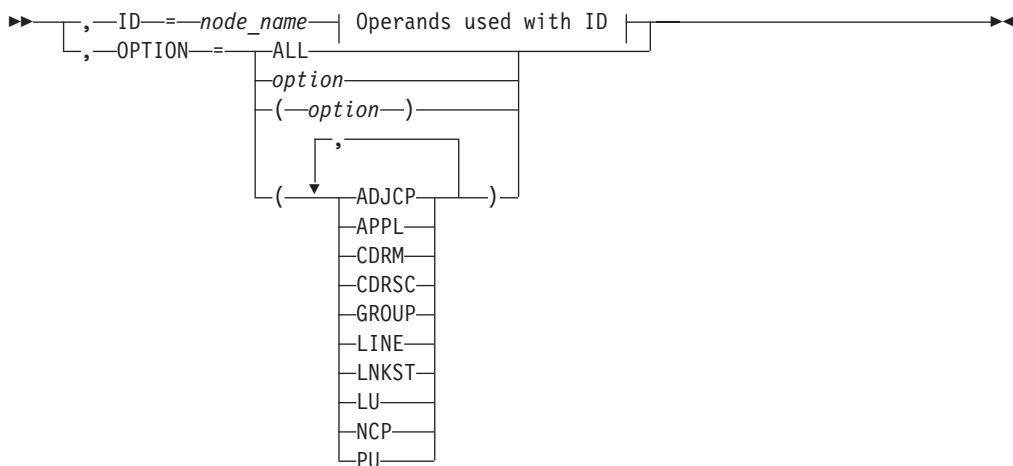
>> MODIFY *procname*, NOTRACE, TYPE=SIT, ID=*line_name* >>>

Stop an SMS (buffer use) trace:

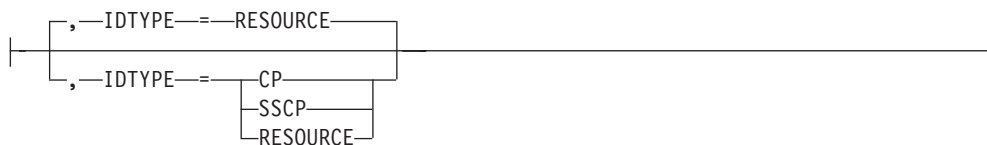
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—SMS— [, —ID—=—VTAMBUF—]

Stop a resource state trace:

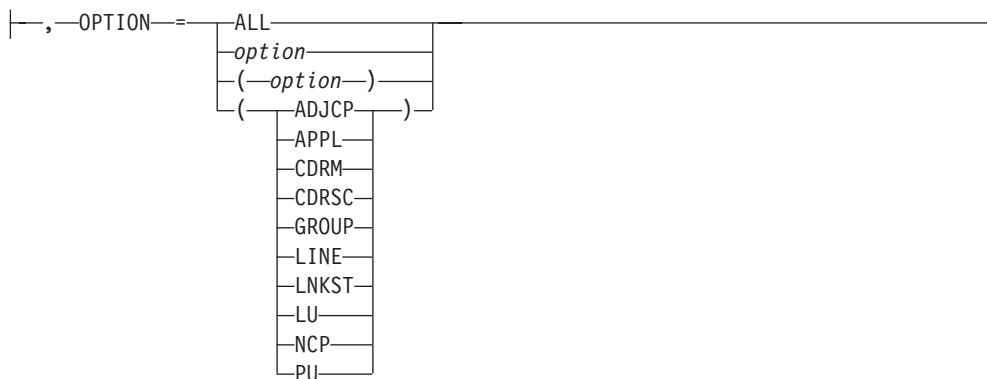
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—STATE—



Operands used with ID:



OPTION Operand:



Stop a transmission group trace:

►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—TG—, —ID—=—*line_name*—

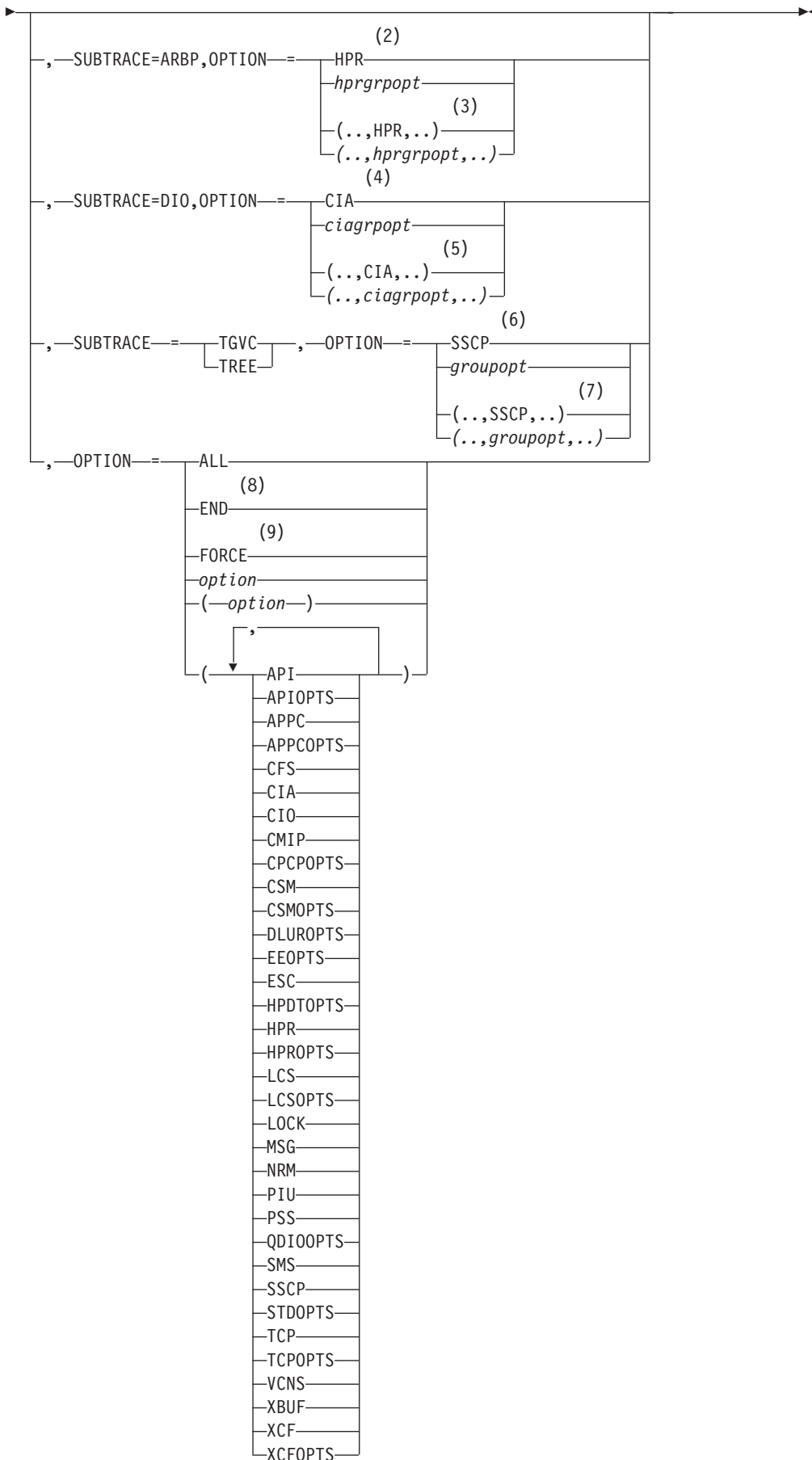
Stop a TSO user ID trace:

►► MODIFY —*procname*—, —NOTRACE—, —TYPE—=—TSO—, —ID—=—*tso_user_id*—►◄

Stop a VTAM internal trace:

►► MODIFY —*procname*—, —NOTRACE—, —TYPE—=—VTAM—►





Notes:

- 1 If you do not specify the mode, both internal and external recording are stopped. However, any default options that you have stopped are immediately restarted by VTAM and recorded on the internal trace table.
- 2 When you specify SUBTRACE=ARBP and you code a single OPTION value, the OPTION value must be either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent. The applicable group options are DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, and XCFOPTS.
- 3 When you code SUBTRACE=ARBP and you code multiple trace options in parentheses, you must code either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent inside the parentheses.
- 4 When you specify SUBTRACE=DIO and you code a single OPTION value, the OPTION value must be either CIA or one of the group options (*ciagrppopt*) that include CIA as an individual option equivalent. The applicable group options are EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, TCPOPTS, and XCFOPTS.
- 5 When you code SUBTRACE=DIO and you code multiple trace options in parentheses, you must code either CIA or one of the group options (*ciagrppopt*) that include CIA as an individual option equivalent inside the parentheses.
- 6 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code a single OPTION value, the OPTION value must be either SSCP or one of the group options (*groupopt*), all of which include SSCP as an individual option equivalent. The group options are APIOPTS, APPCOPTS, CPCPOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, TCPOPTS, and XCFOPTS.
- 7 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code multiple trace options in parentheses, you must code either SSCP or one of the group options (*groupopt*) inside the parentheses.
- 8 To stop external recording with OPTION=END, MODE=EXT must be explicitly specified.
- 9 OPTION=FORCE is not valid when MODE=EXT is specified.

F POLL command

Request that an NCP change the polling delay (the time delay between polling sequences) for a nonswitched, polled line to one or more attached BSC IBM 3270 terminals:

```
►►—MODIFY— —procname—, —POLL—=—number_of_seconds—, —ID—=—line_name—►►
```

F PPOLOG command

Request that VTAM start or stop sending copies of VTAM operator commands and VTAM messages to the primary program operator (PPO):

```
►►—MODIFY— —procname—, —PPOLOG—=—

|     |
|-----|
| YES |
| NO  |

—►►
```

F PROFILES command

Refresh an active application's set of RACF® profiles:

```
►►—MODIFY— —procname—,—PROFILES—,—ID—==—appl_name——————►◄
```

F RESOURCE command

Modify the DLOGMOD value for a resource:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—DLOGMOD—==  
└─┬──────────────────┘  
  |logon_mode_name—|
```

Add or change the ADJLIST value for a cross-domain resource:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—ADJLIST—==—list_name—,—ACTION—==—UPDATE——————►◄
```

Delete the ADJLIST value for a cross-domain resource:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—ADJLIST—==—list_name—,—ACTION—==—DELETE——————►◄
```

Change the error message display option for an APPL or CDRSC:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—SIRFMSG—==  
└─┬──────────┘  
  |OLUSSCP—|  
  |ALLSSCP—|  
  |STARTOPT—|  
  |NONE—|
```

Change the delay timer for disconnection of a switched PU:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—DISCNTIM—==—time_period——————►◄
```

Change the number of search requests for a resource:

```
►►—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name——————►
```

```
►,—SRCOUNT—==—number_of_search_requests——————►◄
```

Change the value of the search reduction timer for a resource:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—SRTIMER—==—number_of_seconds—————▶◀

```

Reset the search reduction entry for a resource:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—SRCLEAR—==—YES—————▶◀

```

Modify the registration value for a resource:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—REGISTER—==
| CDSRVR
| NETSRVR
| NO
—————▶◀

```

Modify the ASRCVLM value for an application program:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—ASRCVLM—==—amount_of_storage—————▶◀

```

Modify the MODSRCH value for a model application program:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—MODSRCH—==
| FIRST
| LAST
| NEVER
—————▶◀

```

Modify the VTAMTOPO value for a reporting status:

```

▶▶—MODIFY— —procname—,—RESOURCE—,—ID—==—resource_name—————▶
▶,—VTAMTOPO—==
| REPORT
| NOREPORT
| NOLLINES
| NOSWPUS
| INCLUDE
| IGNORE
—————▶◀

```

F RTP command

Request that VTAM search for the best high performance routing (HPR) route, based on transmission group weight, between the two endpoints of a rapid transport protocol (RTP) connection:

```

▶▶—MODIFY— —procname—,—RTP—,—ID—==—rtp_pu_name—————▶◀

```

F SECURITY command

Increase the cryptography specification for an LU:

```

▶▶—MODIFY— —procname—,—SECURITY—,—ID—==—lu_name—,—ENCR—==—COND—▶▶
                                     |—OPT—|
                                     |—REQD—|

```

```

(1)
▶▶—,—ENCRTYPE—==—DES—▶▶
▶▶—,—ENCRTYPE—==—TDES24—▶▶

```

Notes:

- 1 ENCRTYPE cannot be downlevel. If the current value is TDES24, MODIFY SECURITY ENCRTYPE=DES will not be allowed.

Modify which cryptographic key name is used for an LU:

```

▶▶—MODIFY— —procname—,—SECURITY—,—ID—==—lu_name—▶▶
▶▶,—,—CKEY—==—ALTERNATE—▶▶
                                     |—PRIMARY—|

```

Initiate SLU authentication for an LU:

```

▶▶—MODIFY— —procname—,—SECURITY—,—ID—==—lu_name—,—CERTIFY—==—YES—▶▶

```

Increase the message authentication specification for an LU:

```

▶▶—MODIFY— —procname—,—SECURITY—,—ID—==—lu_name—,—MAC—==—COND—▶▶
                                     |—REQD—|
▶▶—,—,—MACTYPE—==—CRC—▶▶
                                     |—,—MACLNTH—==—2—|
                                     |—,—MACLNTH—==—4—|
▶▶—,—,—MACTYPE—==—DES—▶▶
                                     |—,—MACLNTH—==—4—|
                                     |—,—MACLNTH—==—6—|
                                     |—,—MACLNTH—==—8—|

```

F SESSION command

Request that an NCP change the session limit (the maximum number of concurrent line scheduling sessions allowed) for a nonswitched multipoint line to one or more attached start/stop or BSC terminals:

```

▶▶—MODIFY— —procname—,—SESSION—==—number_of_sessions—▶▶
▶▶,—,—ID—==—line_name—▶▶

```


F SUPP command

Change the message suppression level after VTAM has been started:

```
►► MODIFY — procname —, —SUPP—=
|
| NOSUP
| —INFO—
| —WARN—
| —NORM—
| —SER—
|
|_____►►
```

F TABLE command

Change resource associations or load a new table and associate it with a resource (other than a CoS table):

```
►► MODIFY — procname —, —TABLE—, —OPTION—= —ASSOCIATE—, —ID—= —name—►►
►, —NEWTAB—= —new_table_name—, —OLDTAB—= * —old_table_name—►►
►, —TYPE—=
| ASLTAB
| —FLDTAB—
| —LOGTAB—
| —MDLTAB—
| —MODETAB—
| —USSTAB—
|
|_____►►
```

Change resource association with a CoS table or load a new CoS table and associate it with a resource:

```
►► MODIFY — procname —, —TABLE—, —OPTION—= —ASSOCIATE—►►
►, —TYPE—= —COSTAB—, —NETID—= —netid—, —ORIGIN—= —ncp_name—►►
►, —NEWTAB—= —new_table_name—►►
```

Delete resource associations:

```
►► MODIFY — procname —, —TABLE—, —OPTION—= —DELETE—►►
►, —TYPE—=
| ASLTAB
| —FLDTAB—
| —LOGTAB—
| —MDLTAB—
| —MODETAB—
| —USSTAB—
|
| COSTAB —, —NETID—= —netid—, —ORIGIN—= —ncp_name—
| FILTER
|
|_____►►
```

Load a table to replace an existing table (other than a filter table):

```
►► MODIFY — procname —, —TABLE—, —OPTION—= —LOAD—►►
►, —NEWTAB—= —new_table_name—
| —, —OLDTAB—= —old_table_name—
|_____►►
```

Load a filter table to replace an existing filter table:

```
►► MODIFY —procname—, —TABLE—, —OPTION—=—LOAD—, —TYPE—=—FILTER—►►  
►, —NEWTAB—=—new_table_name—►►
```

Load an updated directory definition file:

```
►► MODIFY —procname—, —TABLE—, —OPTION—=—LOAD—, —TYPE—=—CMIPDDF—►►
```

F TGP command

Change the transmission group (TG) profile associated with a 2.1 connection:

```
►► MODIFY —procname—, —TGP—, —TGPNAME—=—tg_profile_name—►►  
►, —ID—=—adjacent_link_station_name—►►  
└, —ID—=—cp_name—, —TGN—=—tg_number—┘
```

F TNSTAT command

Initiate global or TRLE tuning statistics. Also used to alter the CNSL and TIME tuning statistics values.

```
►► MODIFY —procname—, —TNSTAT— [ , —ACTION—=—ACTIVATE— ] ►►  
[ , —ACTION—=—UPDATE— ]  
►, —CNSL—=—NO— [ , —TIME—=—number_of_minutes— ]  
└ YES ┘  
►, —TRLE—=—trle_name—►►  
└ ( —trle_name— ) ┘
```

F TOPO command

Delete a node at a network node:

```
►► MODIFY —procname—, —TOPO—, —ID—=—cp_name—►►  
►, —FUNCTION—=—DELETE— [ , —SCOPE—=—LOCAL— ] ►►  
[ , —SCOPE—=—LOCAL— ]  
└ NETWORK ┘
```

▶ [,--TYPE==FORCE]

Delete a transmission group:

▶▶ MODIFY --procname--, --TOPO [,--FUNCTION==DELETE]

▶ ,--ORIG==cp_name--, --DEST==cp_name--, --TGN==tg_number

▶ [,--SCOPE==LOCAL]
[,--SCOPE==LOCAL]
[NETWORK] [,--TYPE==FORCE]

Modify the status of a node for route calculation at a network node:

▶▶ MODIFY --procname--, --TOPO, --ID==cp_name

▶ ,--FUNCTION== [NORMAL]
[QUIESCE] [,--SCOPE==LOCAL]
[,--SCOPE==LOCAL]
[NETWORK]

Modify the status a transmission group for route calculation:

▶▶ MODIFY --procname--, --TOPO, --FUNCTION== [NORMAL]
[QUIESCE]

▶ ,--ORIG==cp_name--, --DEST==cp_name--, --TGN==tg_number

▶ [,--SCOPE==LOCAL]
[,--SCOPE==LOCAL]
[NETWORK]

Clear Enterprise Extender connection network unreachable partner information on a network node:

▶▶ MODIFY --procname--, --TOPO, --FUNCTION==CLRNRCH

▶ [,--ORIG==cp_name] [,--VRN==cp_name] [,--DEST==cp_name]



Rule: The ORIG, VRN, and DEST operands are optional on the MODIFY *procname*, TOPO, FUNCTION=CLRNRCH command; however, at least one of these three operands must be specified.

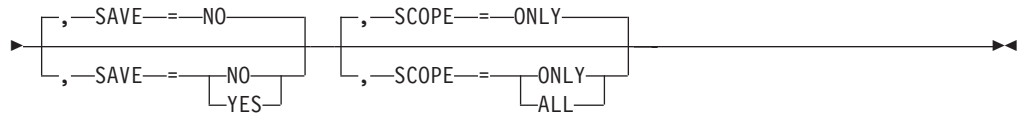
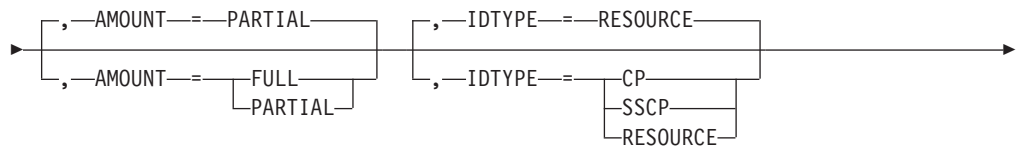
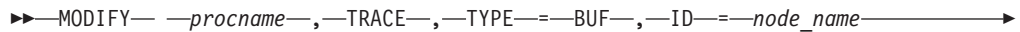
Clear APPN routing tree information:



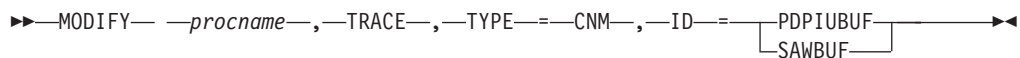
Rule: The values FUNCTION=CLRNRCH and FUNCTION=CLRTREES are valid on the MODIFY *procname*, TOPO command only when the command is issued on a network node.

F TRACE command

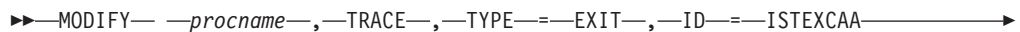
Start or modify a buffer contents trace:

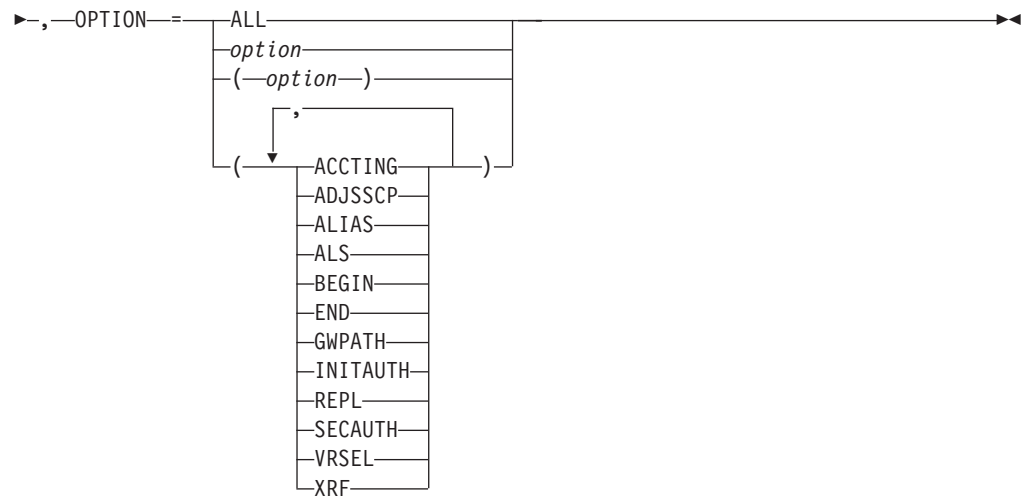


Start or modify a communication network management trace:

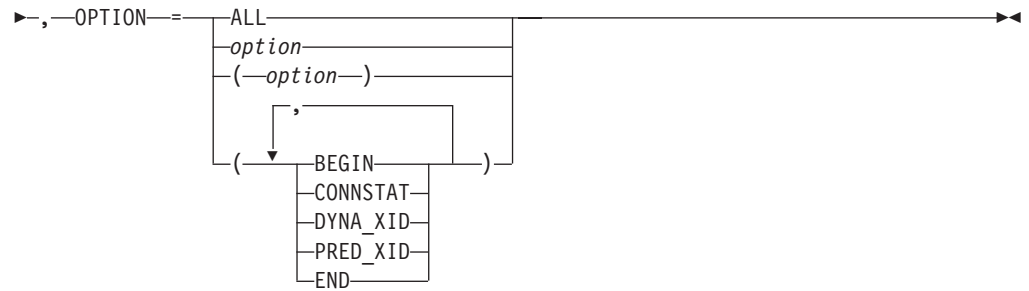


Start or modify a user Exit buffer trace:

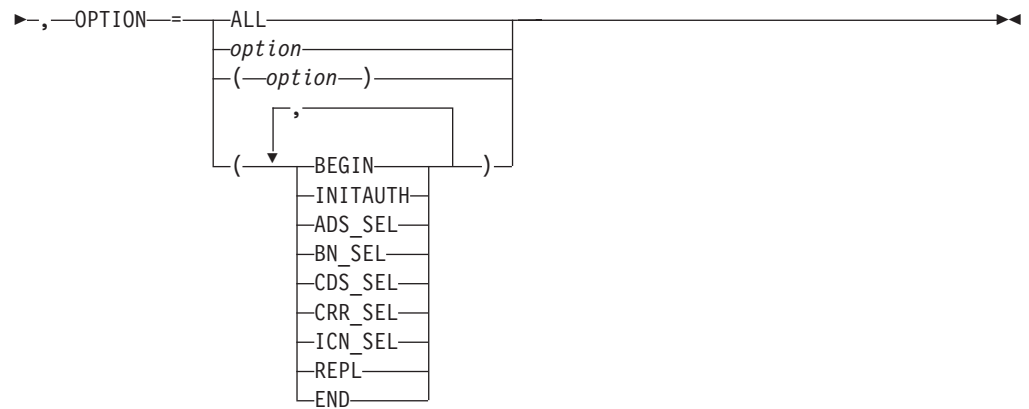




▶▶ MODIFY -procname-, -TRACE-, -TYPE == EXIT-, -ID == ISTECCS

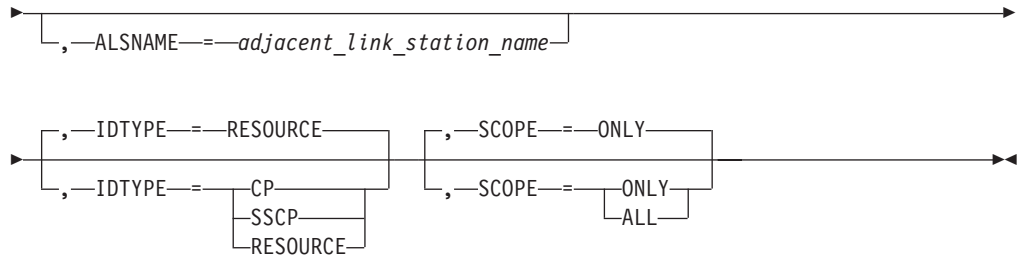


▶▶ MODIFY -procname-, -TRACE-, -TYPE == EXIT-, -ID == ISTECDM

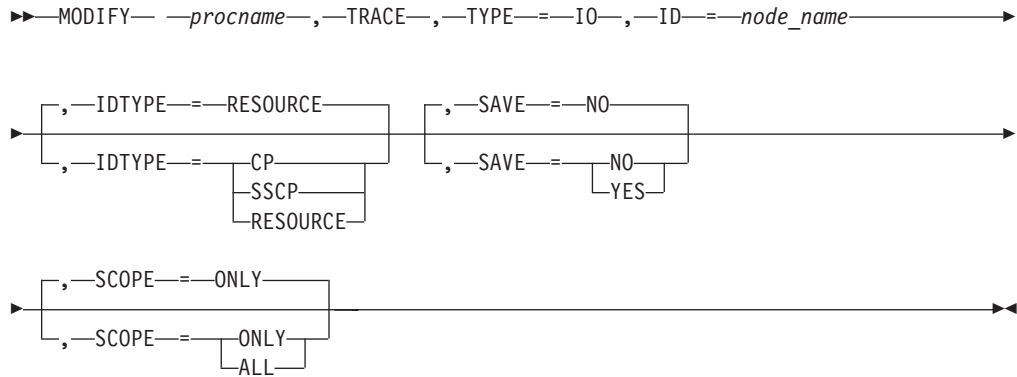


Start or modify a generalized PIU trace:

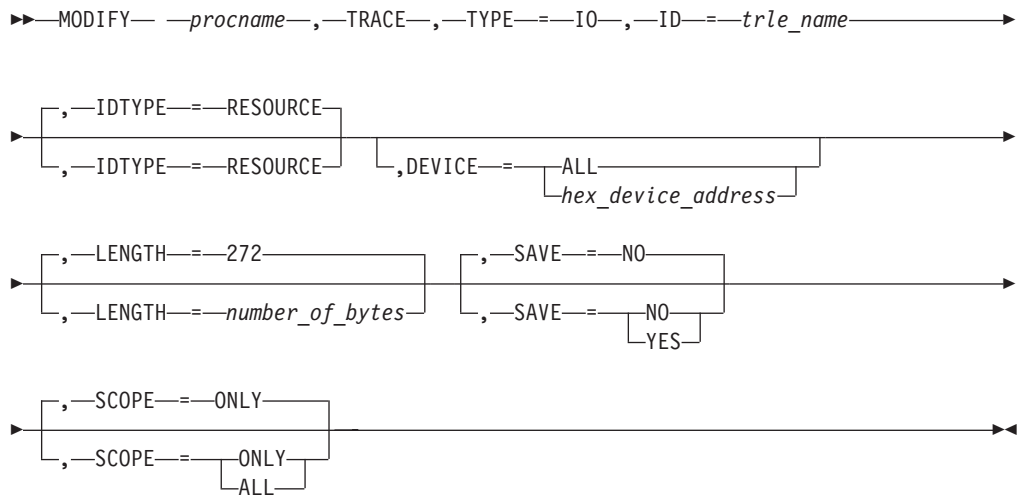
▶▶ MODIFY -procname-, -TRACE-, -TYPE == GPT-, -ID == node_name



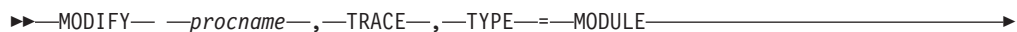
Start or modify an input/output trace:

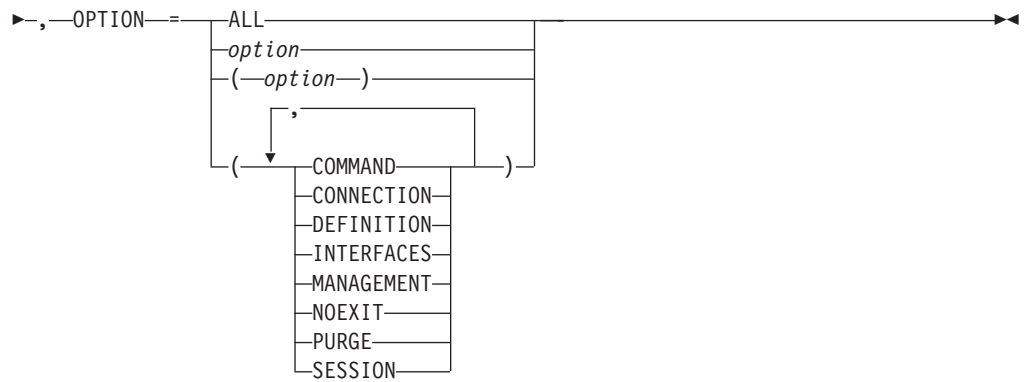


Start or modify an input/output trace for a TRLE with the DATAPATH operand coded:

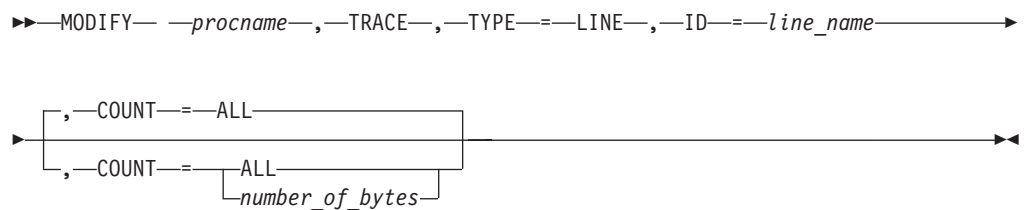


Start or modify a module trace:

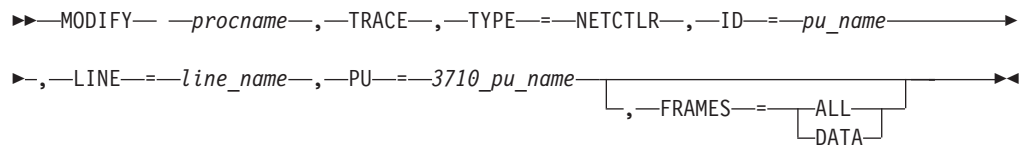




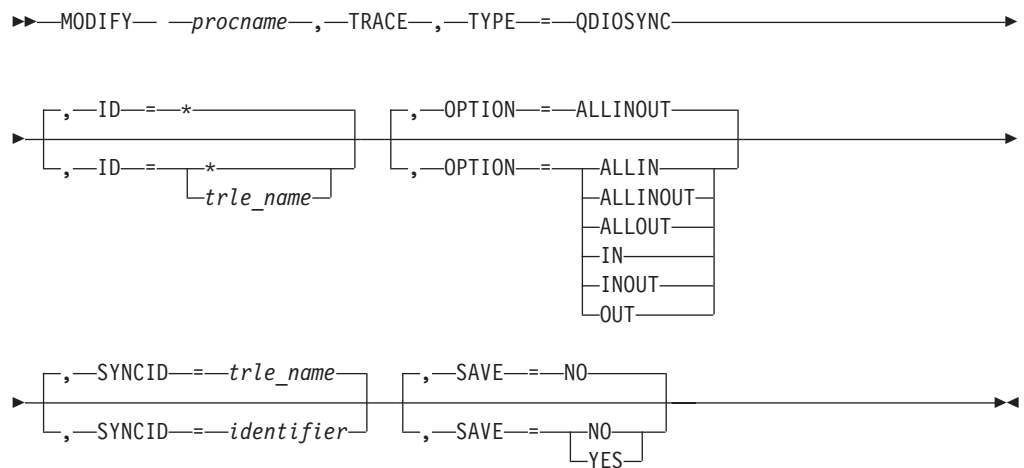
Start or modify an NCP line trace:



Start or modify a 3710 Network Controller line trace:



Start or modify OSA-Express2 diagnostic data synchronization for an OSA-Express2 adapter:



Start the APPN route selection trace in a network node:

►► MODIFY — *procname* —, —TRACE—, —TYPE—=ROUTE (1) —————►
 ►► [, —BFRNUM—=100 —] (2) —————►
 ►► [, —BFRNUM—= *buffers* —] —————►

Notes:

- 1 TYPE=ROUTE is allowed only in a network node.
- 2 The initial default value for BFRNUM is 100. When the initial value has been set, it remains until the value is changed with BFRNUM specified on another MODIFY TRACE command.

Start or modify a scanner interface trace:

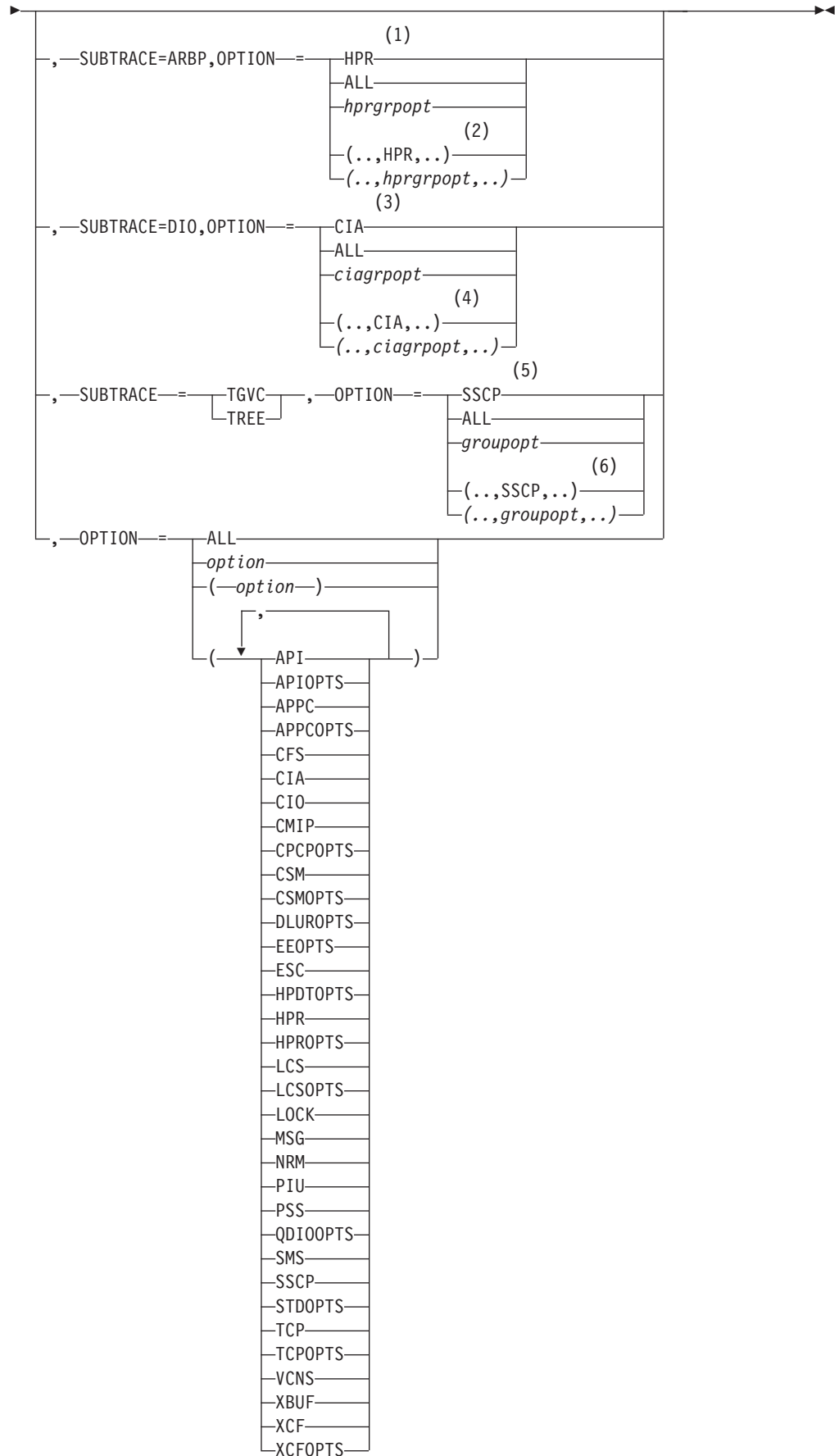
►► MODIFY — *procname* —, —TRACE—, —TYPE—=SIT —, —ID—= *line_name* —————►
 ►► [, —COUNT—=ALL —] —————►
 ►► [, —COUNT—= ALL —] [, —TRACEPT—= *trace_point_id* —] —————►
 | *number_of_bytes* |

Start or modify a transmission group trace:

►► MODIFY — *procname* —, —TRACE—, —TYPE—=TG —, —ID—= *line_name* —————►
 ►► MODIFY — *procname* —, —TRACE—, —TYPE—=TSO —, —ID—= *tso_user_id* —————►

Start or modify the VTAM internal trace:

►► MODIFY — *procname* —, —TRACE—, —TYPE—=VTAM —————►
 ►► [, —MODE—= EXT —] —————►
 | [, —BFRNUM—=2 —] —————►
 | [, —BFRNUM—= *number* —] —————►
 | [, —SIZE—= *size* —] —————►
 | INT —

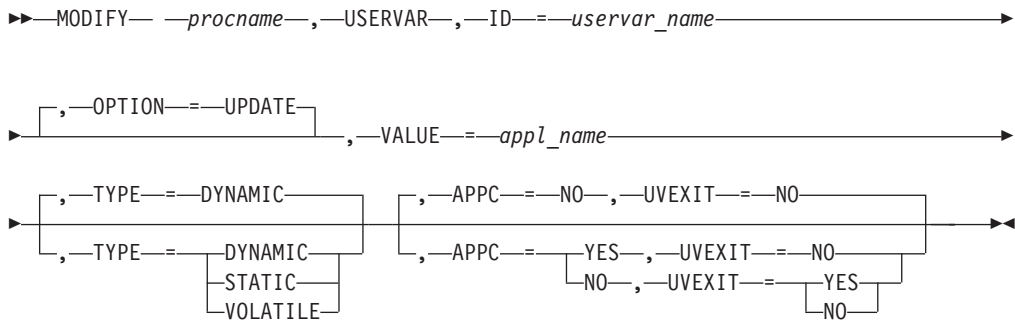


Notes:

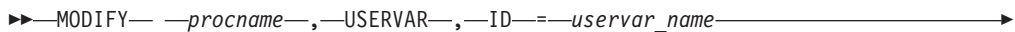
- 1 When you specify SUBTRACE=ARBP and you code a single OPTION value, the OPTION value must be HPR, ALL, or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent. The applicable group options are DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, and XCFOPTS.
- 2 When SUBTRACE=ARBP is coded and you code multiple trace options in parentheses, you must code either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent inside the parentheses.
- 3 When you specify SUBTRACE=DIO and you code a single OPTION value, the OPTION value must be CIA, ALL, or one of the group options (*ciagrpopt*) that include CIA as an individual option equivalent. The applicable group options are EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, TCPOPTS and XCFOPTS.
- 4 When SUBTRACE=DIO is coded and you code multiple trace options in parentheses, you must code either CIA or one of the group options (*ciagrpopt*) that include CIA as an individual option equivalent inside the parentheses.
- 5 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code a single OPTION value, the OPTION value must be either SSCP, ALL, or one of the group options (*groupopt*), all of which include SSCP as an individual option equivalent. The group options are APIOPTS, APPCOPTS, CPCPOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, TCPOPTS, and XCFOPTS.
- 6 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code multiple trace options in parentheses, you must code either SSCP or one of the group options (*groupopt*) inside the parentheses.

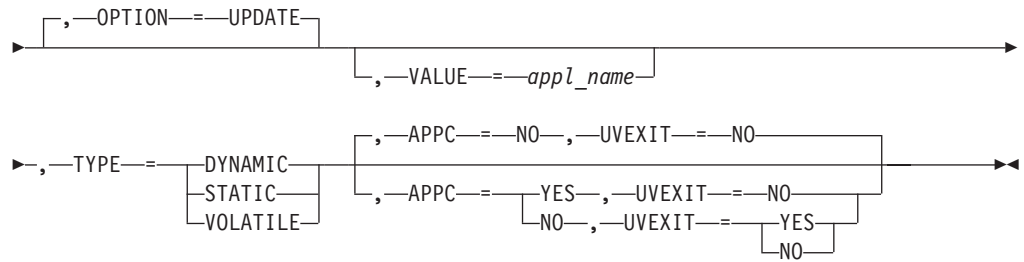
F USERVAR command

Create a new USERVAR:

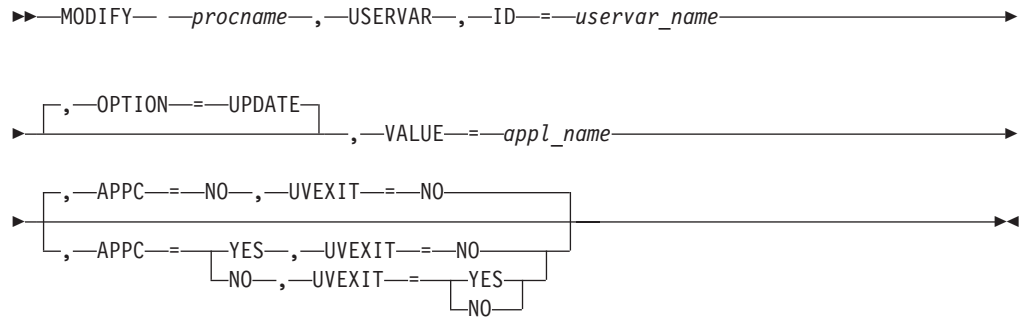


Update an existing USERVAR and change the TYPE:

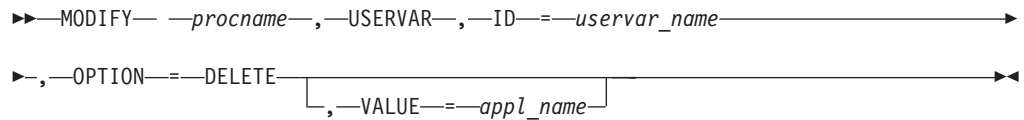




Update an existing USERVAR, leaving the TYPE unchanged:

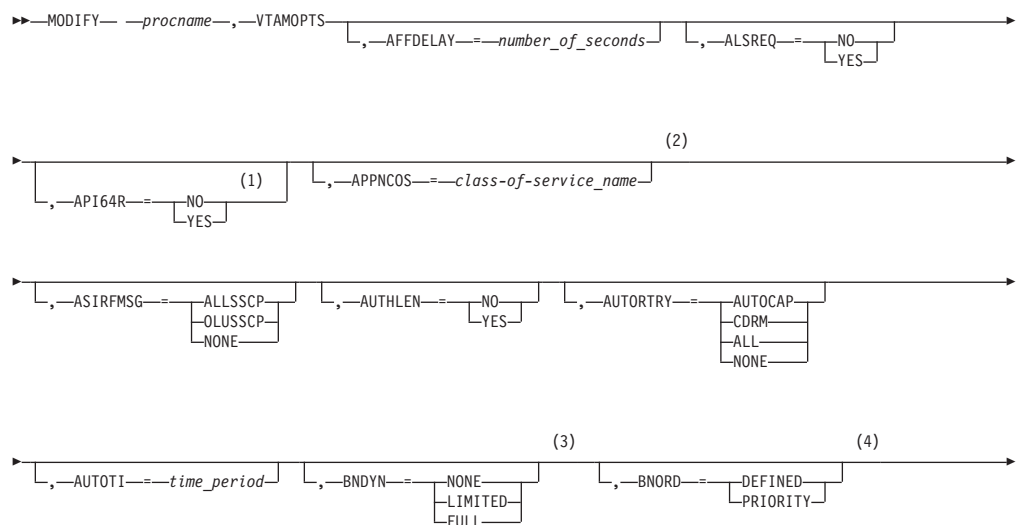


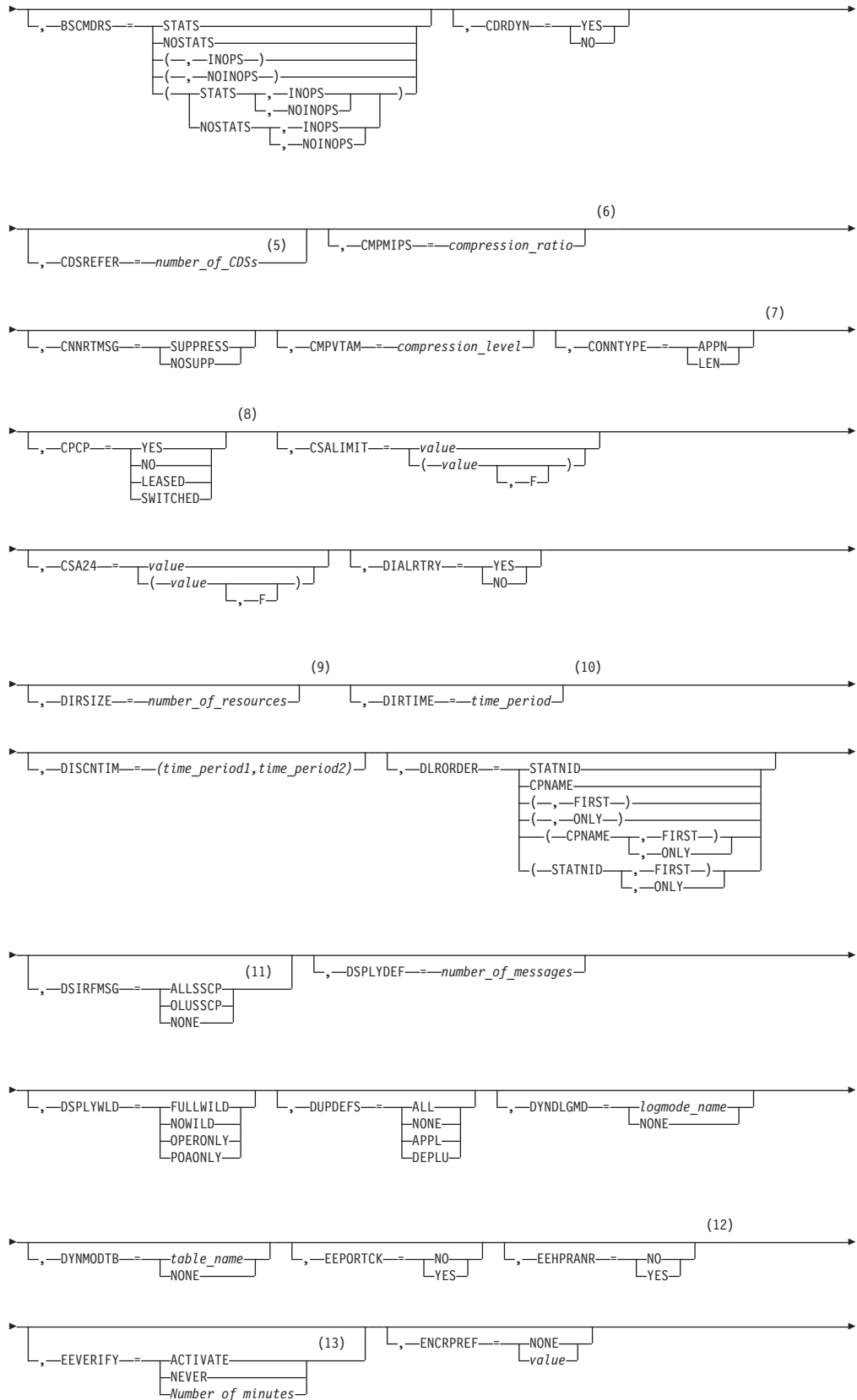
Delete a USERVAR:

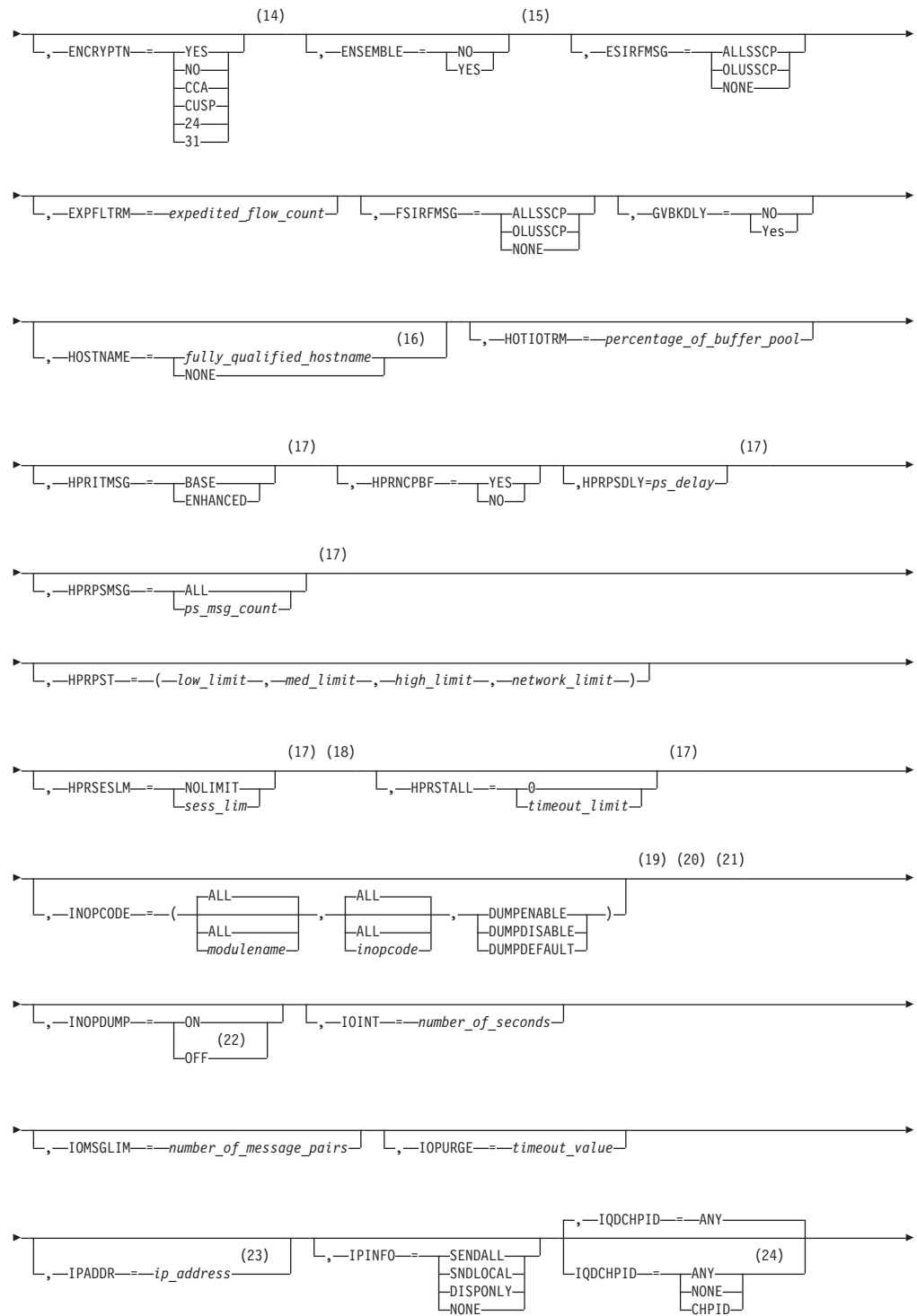


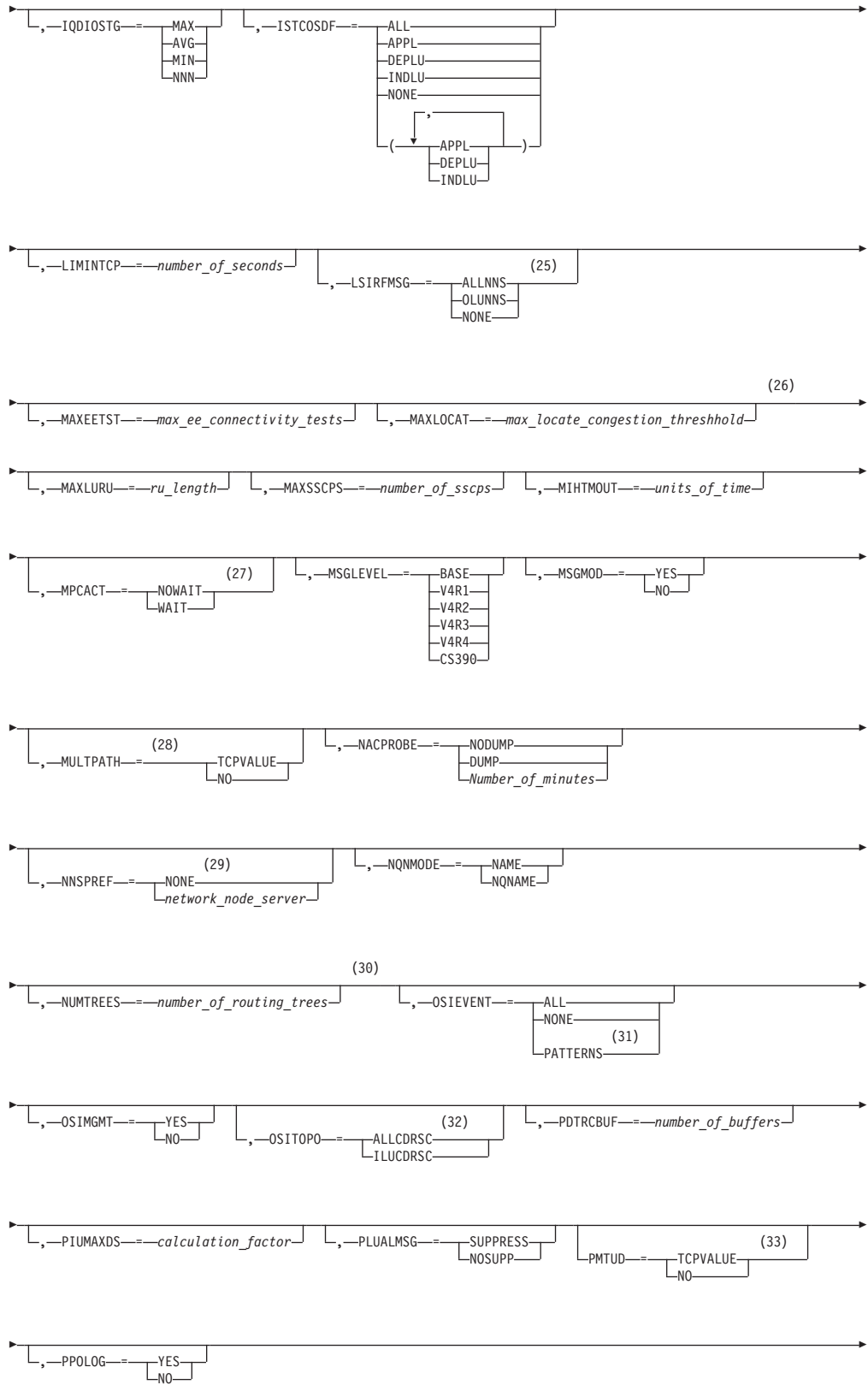
F VTAMOPTS command

Change certain values that might have been specified on VTAM start options:









[,--PSRETRY==(low_tp_int,med_tp_int,high_tp_int,network_tp_int,IMMED,SCHED)]

[,--PSSTRACE==(NORB,IRB,SRB,BOTH)] [,--PSWEIGHT==(EQUAL,LESSTHAN,SAMEROUT)] [,--QDIOSTG==(MAX,AVG,MIN,NNN)]

(34) [,--RESUSAGE==usage_limit] (35) [,--ROUTERES==resistance_value]

[,--RSIRFMSG==(ALLSSCP,OLUSSCP,NONE)] [,--SAVERSCV==(,FREE), (,KEEP), NO, (NO,FREE), (NO,KEEP), YES, (YES,FREE), (YES,KEEP), SAWDATA, (SAWDATA,FREE), (SAWDATA,KEEP)]

[,--SAWMXQPK==calculation_factor] [,--SDLCMDRS==(YES,NO,STATS,NOSTATS,(-,INOPS-), (-,NOINOPS-), (-STATS,INOPS-), (-NOSTATS,INOPS-), (-STATS,NOINOPS-), (-NOSTATS,NOINOPS-))]

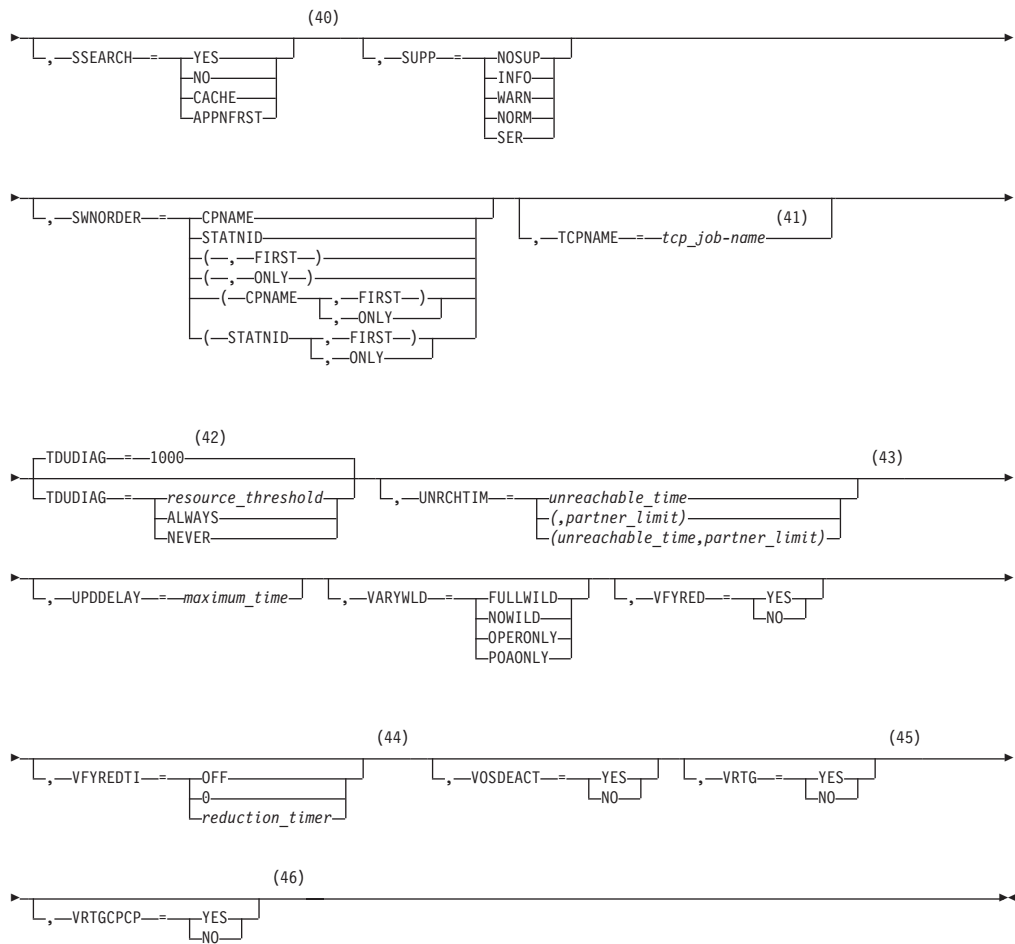
[,--SIRFMSG==(ALLSSCP,OLUSSCP,NONE)] [,--SLOWVAL==(warn_time,(warn_time,end_time))]

[,--SLUALMSG==(SUPPRESS,NOSUPP)] (36) [,--SNAMGMT==(YES,NO)] [,--SNVC==subnet_visit_count]

(37) [,--SORDER==(ADJSSCP,APPN,APPNFRST,SUBAREA)] [,--SRCHRED==(OFF,ON)]

(38) [,--SRCOUNT==number_of_search_requests] (39) [,--SRTIMER==number_of_seconds]

[,--SSCPORD==(DEFINED,PRIORITY)] [,--SSDTMOUT==number_of_seconds]



Notes:

- 1 API64R can be modified only when running in z/Architecture® mode.
- 2 APPNCOS can be modified only if NODETYPE was specified during VTAM START processing.
- 3 BNDYN can be modified only if BN=YES was specified during VTAM START processing.
- 4 BNORD can be modified only if BN=YES was specified during VTAM START processing.
- 5 CDSREFER can be modified only if NODETYPE=NN and CDSERVER=NO were specified during VTAM START processing.
- 6 CMPMIPS is meaningful only if the value for CMPVTAM is greater than 1.
- 7 CONNTYPE can be modified only if NODETYPE was specified during VTAM START processing.
- 8 CPCP can be modified only if NODETYPE was specified during VTAM START processing.
- 9 DIRSIZE can be modified only if NODETYPE=NN was specified during VTAM START processing.
- 10 DIRTIME can be modified only if NODETYPE=NN was specified during VTAM START processing.

- 11 Because of the volume of messages that can be generated, it is not recommended that this option be enabled during normal operation. Instead, it is recommended that this option be enabled (using the MODIFY VTAMOPTS command) on all necessary hosts only when trying to diagnose specific problems. After the problem has been diagnosed or documentation has been collected, this option should be disabled once again (using the MODIFY VTAMOPTS command).
- 12 EEHPRANR is meaningful only when the NODETYPE=NN start option is also used.
- 13 The EEVERIFY start option is meaningful only if VTAM provides RTP-level HPR support. The EEVERIFY start option can be modified only if the NODETYPE start option is specified and the RTP value is specified on the HPR start option.
- 14 The ENCRYPTN start option cannot be modified if ENCRYPTN=NO was specified during VTAM START processing.
- 15 The ENSEMBLE setting is used to either permit or deny connectivity to the intraensemble data network and the intranode management network. The ensemble setting permits or denies connectivity by either allowing or denying activation of OSX and OSM interfaces. Modifying the ENSEMBLE start option does not cause z/OS Communications Server to take action on active OSX or OSM interfaces.
- 16 HOSTNAME can be modified only if NODETYPE was specified during VTAM START processing. Displays of VTAM start options will show the new value immediately; however, the new value will not be used until all Enterprise Extender lines, whose GROUP definition statements do not have HOSTNAME explicitly coded, are inactive. Any subsequent line activation from the Enterprise Extender XCA major node, whose GROUP definition statements do not have HOSTNAME explicitly coded, will make use of the new HOSTNAME start option value. The IPADDR start option, if it is in effect at the time when the MODIFY VTAMOPTS,HOSTNAME=*hostname* is specified, will be reset (that is, set to a value of 0.0.0.0) as part of the MODIFY processing. The value NONE can be used to clear the setting of the HOSTNAME start option. HOSTNAME and IPADDR cannot be modified using one MODIFY VTAMOPTS command. If both start options are specified on the same MODIFY command, they will both be ignored and message IST1917I will be generated.
- 17 This option is meaningful only if VTAM provides RTP-level HPR support.
- 18 If the current value of the HPRSESLM start option is DISABLED, then the HPRSESLM value can be changed only by stopping and restarting VTAM.
- 19 When specifying an InOpCode for the second parameter, always specify three digits by including any leading zeros.
- 20 If an InOpCode is specified for the second parameter, the first parameter cannot be ALL.
- 21 INOPCODE has no effect unless INOPDUMP is active for the resource when an inoperative condition is detected. See the section called MODIFY INOPCODE command in z/OS Communications Server: SNA Operation for more details.
- 22 When altering the INOPDUMP VTAM start option, the resulting INOPDUMP status is propagated to all TRLEs in the TRL major node and becomes the default status for any subsequently activated TRLEs.

- 23 IPADDR can be modified only if NODETYPE was specified during VTAM START processing. The new value will not be used until all lines, defined with or defaulting to the old value of the IPADDR start option, in the XCA major node used for Enterprise Extender are inactive. However, displays of VTAM start options will show the new value immediately. Any subsequent line activation from the Enterprise Extender XCA major node, whose GROUP definition statement does not specify the IPADDR operand, will make use of the new IPADDR start option value. The HOSTNAME start option, if it is in effect at the time when the MODIFY VTAMOPTS,IPADDR=*ip_address* is specified, will be reset (that is, set to a value of NONE) as part of the MODIFY processing. The value of 0.0.0.0, or an IPv6 address of all zeros, usually written as ::, can be used to clear the setting of the IPADDR start option. HOSTNAME and IPADDR cannot be modified using one MODIFY VTAMOPTS command. If both start options are specified on the same MODIFY command, they will both be ignored and message IST1917I will be generated.
- 24 The IQDCHPID option controls which IQD CHPID (and related subchannel devices) VTAM selects to dynamically build the iQDIO (IUTIQDIO) MPC group. The IUTIQDIO MPC group is used for TCP/IP dynamic XCF communications within System z[®]. Although this option can be modified (and the modification will immediately be displayed) while the IUTIQDIO MPC group is currently active, any modifications have the effects shown in the section called IQD CHPID modifications in z/OS Communications Server: SNA Operation.
- 25 Because of the volume of messages that can be generated, it is not recommended that this option be enabled during normal operation. Instead, it is recommended that this option be enabled (using the MODIFY VTAMOPTS command) on all necessary hosts only when trying to diagnose specific problems. After the problem has been diagnosed or documentation has been collected, this option should be disabled once again (using the MODIFY VTAMOPTS command).
- 26 MAXLOCAT can be modified only if NODETYPE was specified during VTAM START processing.
- 27 The option does not take effect for MPC groups that are in the process of being activated when the command is issued until those MPC groups are deactivated and reactivated.
- 28 MULTPATH is meaningful only if the NODETYPE start option is also specified.
- 29 NNSPREF can be modified only if NODETYPE=EN was specified during VTAM START processing.
- 30 NUMTREES can be modified only if NODETYPE=NN was specified during VTAM START processing.
- 31 OSIEVENT=PATTERNS is not valid when OSIMGMT=YES.
- 32 OSITOP0=ALLCDRSC is not valid when OSIMGMT=YES.
- 33 PMTUD is meaningful only if the NODETYPE start option is also specified.
- 34 RESUSAGE can be modified only if NODETYPE=NN was specified during VTAM START processing.
- 35 ROUTERES can be modified only if NODETYPE=NN was specified during VTAM START processing.

- 36 SNVC can be modified only if BN=YES was specified during VTAM START processing.
- 37 SORDER can be modified only if VTAM has been started as an interchange node or a migration data host.
- 38 SRCOUNT is meaningful only when SRCHRED=ON.
- 39 SRTIMER is meaningful only when SRCHRED=ON.
- 40 SSEARCH can be modified only if NODETYPE=NN was specified during VTAM START processing.
- 41 TCPNAME can be modified only if NODETYPE was specified during VTAM START processing. The new value will not be used until all lines in the XCA major node used for Enterprise Extender are inactive. However, displays of VTAM start options will show the new value immediately. Any subsequent line activation from the Enterprise Extender XCA major node will make use of the new TCPNAME value.
- 42 TDUDIAG is meaningful only if the NODETYPE=NN start option is also available.
- 43 UNRCHTIM is meaningful only if the NODETYPE start option is also used.
- 44 VFYREDTI can be modified only if NODETYPE=NN was specified during VTAM START processing.
- 45 VRTG can be modified only if NODETYPE and HOSTSA are specified.
- 46 VRTGCPCP can be modified only if NODETYPE and HOSTSA are specified.

Starting VTAM

START command

Starting VTAM in an MVS environment:

▶▶—START— *—procname—*,—, —, —, —(—| Options |—)—————▶▶

For the syntax of the start options that you can specify on this command, see “Start options” on page 188

Operator VARY commands

V ACQ command

Acquire an NCP, and optionally its subordinate resources, from another host:

▶▶—VARY— —NET—, —ACQ—, —ID—=*—ncp_name—*—————▶▶
 [,—OWNER—=*—host_name—*]
 ▶▶ [,—PUSUB] [,—ACT—| Operands used with ACT |]—————▶▶

Acquire inactive NCP, and optionally its subordinate resources, without activating them:

```
▶▶ VARY NET, ACQ, ID=ncp_name [ , PUSUB ]
```

Acquire inactive NCP, and optionally its subordinate resources, and activate them:

```
▶▶ VARY NET, ACQ, ID=ncp_name, ACT
```

```
▶ | Operands used with ACT | [ , PUSUB ]
```

```
▶ [ , LOADMOD=load_module_name ]
```

Acquire nonswitched PU and its LUs:

```
▶▶ VARY NET, ACQ, ID=pu_name
```

```
▶ [ , ACT | Operands used with ACT ]
```

Operands used with ACT:

```
| [ , LOGON=appl_name [ , LOGMODE=logon_mode_name ] ]
```

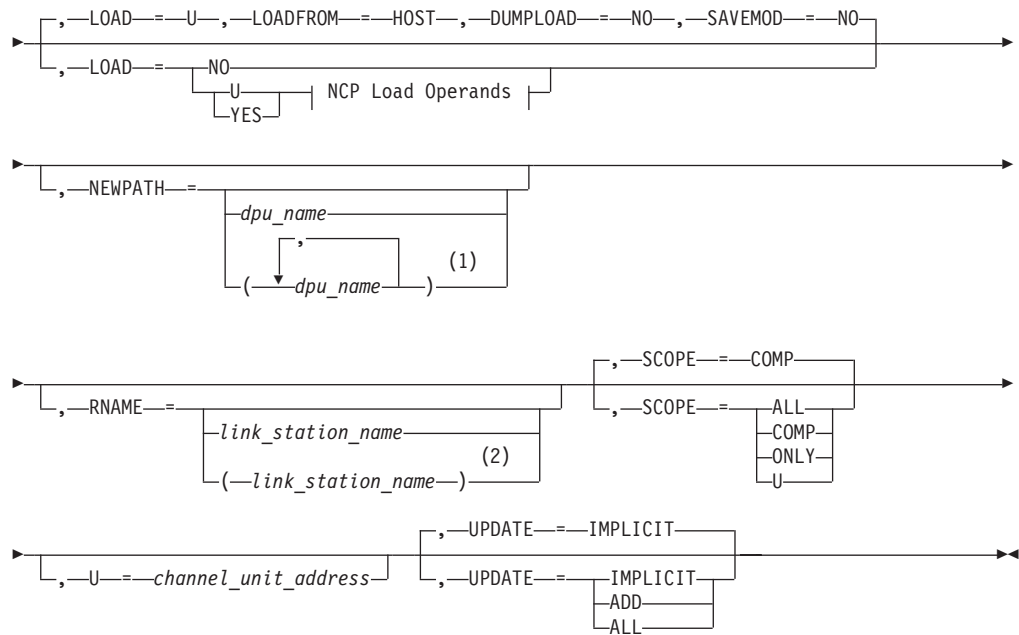
```
▶ [ , SCOPE=COMP ]
  [ , SCOPE=ALL
    [ COMP
      [ ONLY
        [ U ] ] ] ]
```

V ACT command

Activate an NCP major node:

```
▶▶ VARY NET, ACT, ID=ncp_name [ , DUMPSTA=link_station_name ]
```

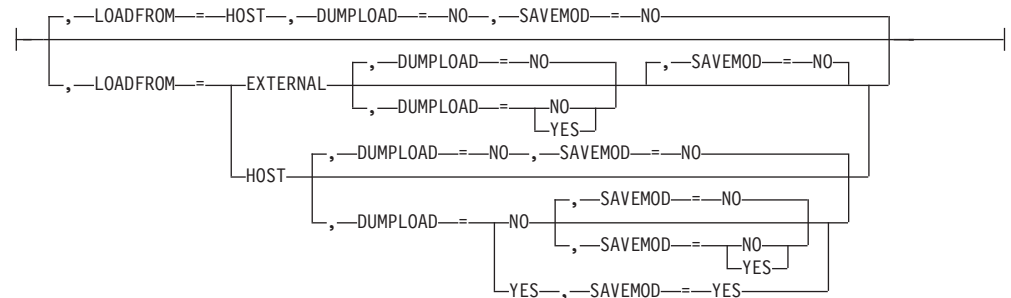
```
▶ [ , LOGON=appl_name [ , LOGMODE=logon_mode_name ] ]
```



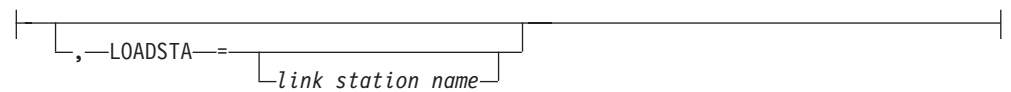
Notes:

- 1 You can specify up to 3 dynamic path update member names on the NEWPATH operand.
- 2 You can specify up to 13 link station names on the RNAME operand.

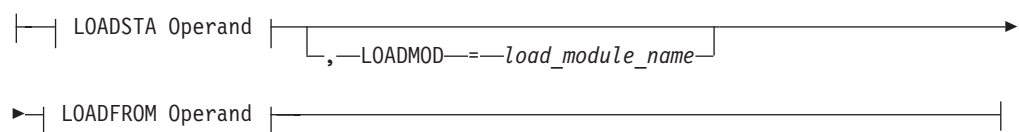
LOADFROM Operand:



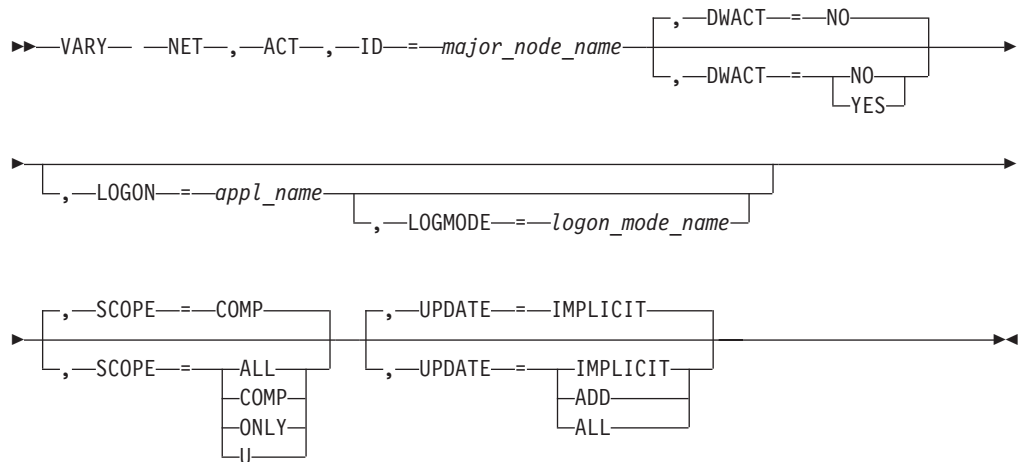
LOADSTA Operand:



NCP Load Operands:



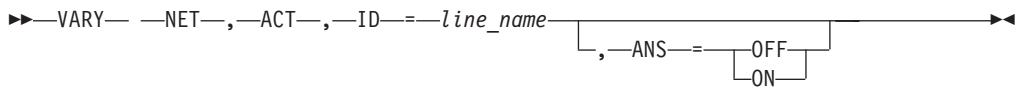
Activate a switched major node:



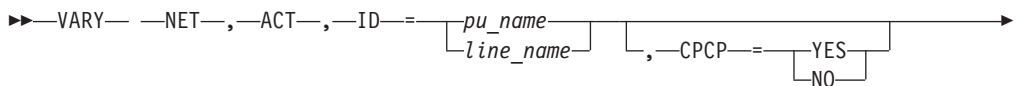
Activate the dynamic XCF local SNA major node:



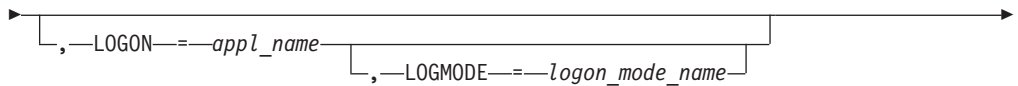
Activate a switched line:



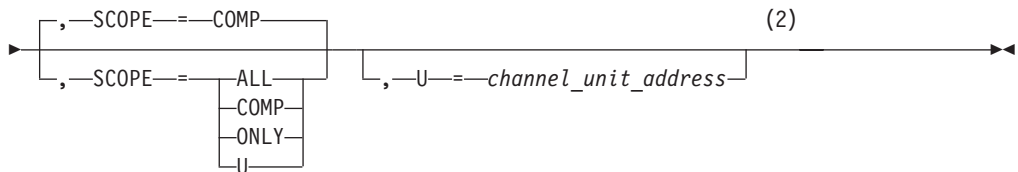
Activate a type 2.1 PU (adjacent link station) or a nonswitched line under an NCP:



(1)



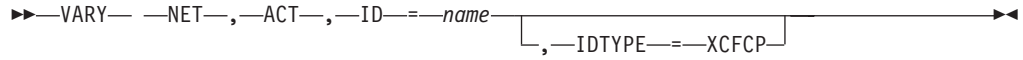
(2)



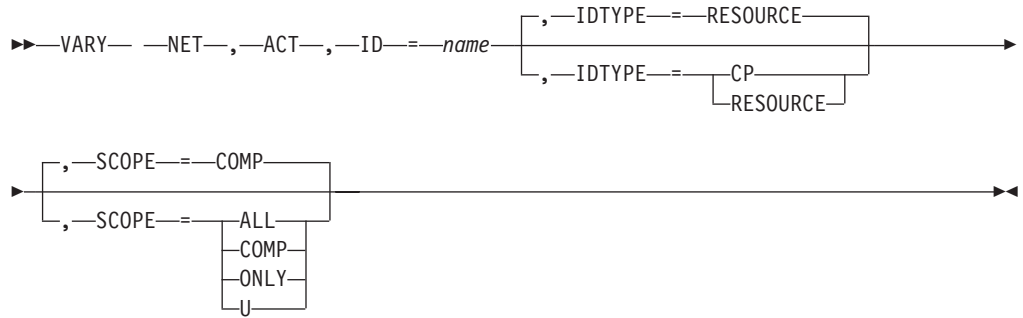
Notes:

- 1 The HPR operand is valid for HPR-capable resources only.
- 2 The U operand is valid for a local SNA PU only.

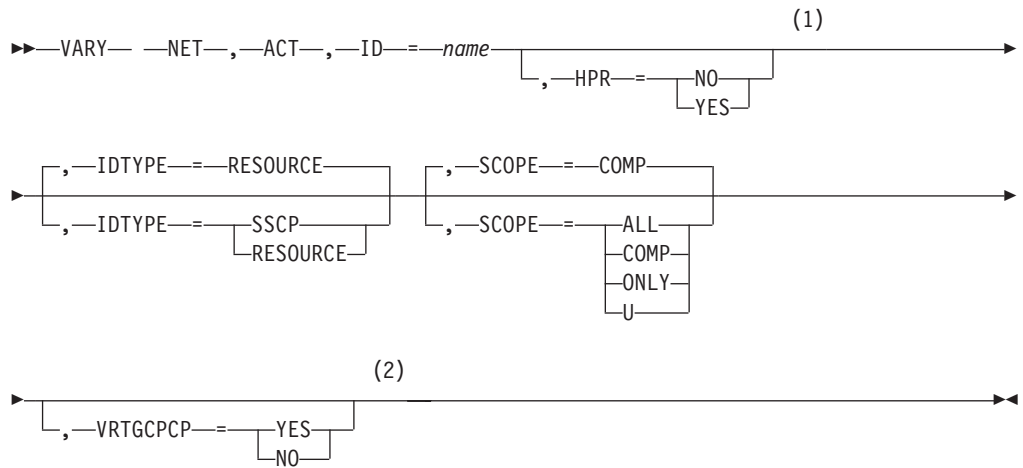
Activate a dynamic XCF local SNA PU:



Activate a control point (CDRSC minor node or application program minor node):



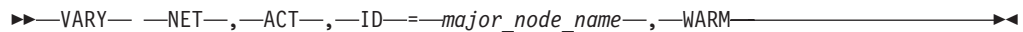
Activate an SSCP (CDRM minor node):



Notes:

- 1 HPR and VRTGCPCP are valid only if VRTG=YES is coded for the CDRM, and the CDRM is in an inactive state.
- 2 HPR and VRTGCPCP are valid only if VRTG=YES is coded for the CDRM, and the CDRM is in an inactive state.

Warm start a major node:



Activate a definition file (a major node with no subordinate resources):

►► VARY NET, ACT, ID == *major_node_name* ◀◀

Check the syntax of a definition file (major node):

►► VARY NET, ACT, ID == *major_node_name*, SCOPE == SYNTAX ◀◀
 [, LOADMOD == *load_module_name*]

Note: For an NCP major node, follow the syntax diagram for “Activating an NCP major node” and specify the UPDATE operand.

Dynamically reconfigure resources in a major node:

►► VARY NET, ACT, ID == *major_node_name* [, SCOPE == COMP] [, SCOPE == ALL] [, SCOPE == COMP] [, SCOPE == ONLY] [, SCOPE == U] ◀◀
 [, UPDATE == IMPLICIT] [, UPDATE == IMPLICIT] [, UPDATE == ADD] [, UPDATE == ALL]

Dynamically reconfigure TRLEs in a TRL major node:

►► VARY NET, ACT, ID == *trl_major_node_name* ◀◀
 [, UPDATE == ADD] [, UPDATE == IMPLICIT] [, UPDATE == ADD] [, UPDATE == ALL] (1)

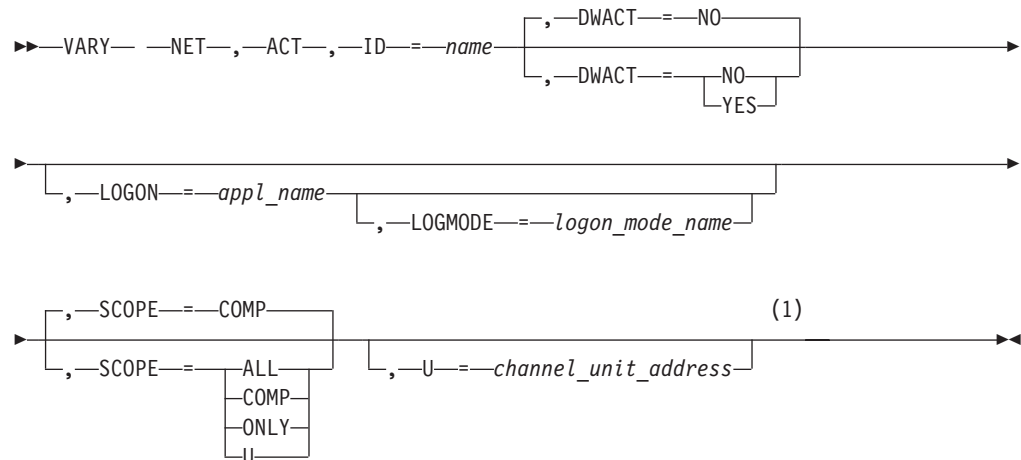
Notes:

1 Specifying UPDATE=IMPLICIT is the same as UPDATE=ADD.

Activate a group under an Enterprise Extender XCA major node:

►► VARY NET, ACT, ID == *group_name* [, SCOPE == COMP] [, SCOPE == ALL] [, SCOPE == COMP] [, SCOPE == ONLY] [, SCOPE == U] ◀◀

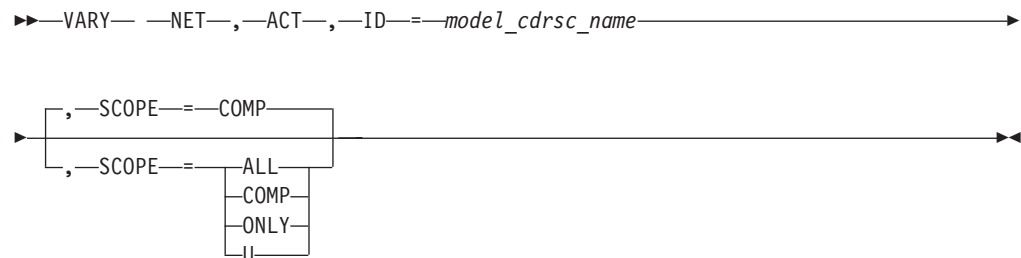
Activate other resources:



Notes:

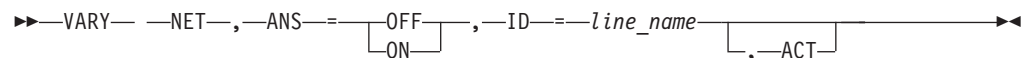
- 1 The U operand is valid for a local SNA PU or a channel link.

Activate a model CDRSC and, optionally, all the clone CDRSCs created from it:



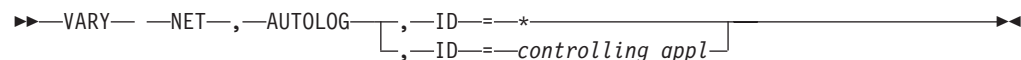
V ANS command

Enable active switched SDLC lines with dial-in capability to allow or disallow an incoming call from a physical unit defined in a switched major node:



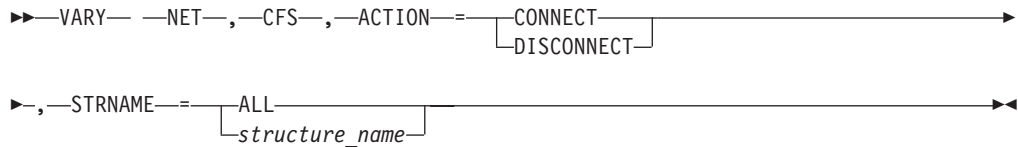
V AUTOLOG command

Initiate automatic logon processing for resources that are defined with controlling applications:



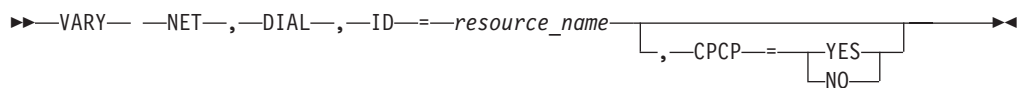
V CFS command

Connect or disconnect from a VTAM coupling facility structure:



V DIAL command

Establish a switched subarea connection, a switched connection to a type 1,2, or 2.1 device (adjacent link station), or a CPSVRMGR session between a dependent LU requester (DLUR) and a dependent LU server (DLUS):



V DRDS command

Dynamically reconfigure an NCP or a nonswitched peripheral node:



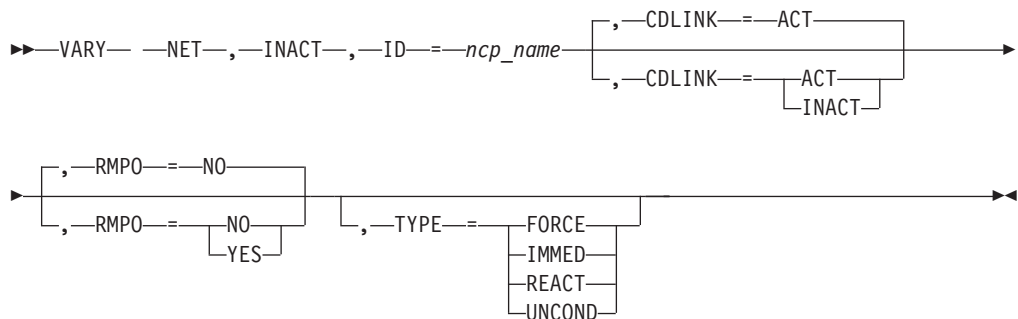
V HANGUP command

Take down a switched subarea connection or a switched connection to a type 1,2, or 2.1 device.

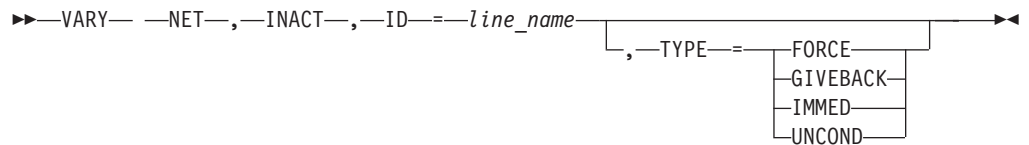


V INACT command

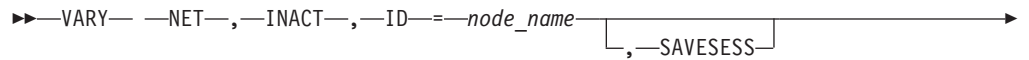
Deactivate an NCP major node:



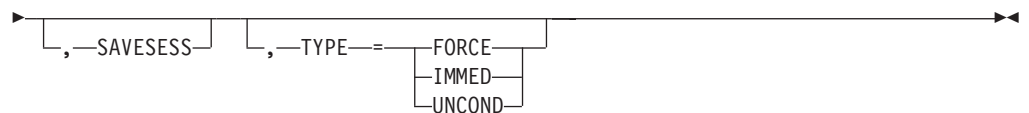
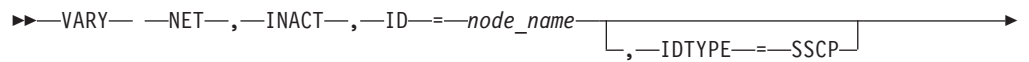
Deactivate an NCP line:



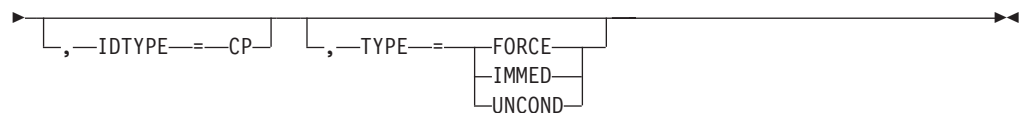
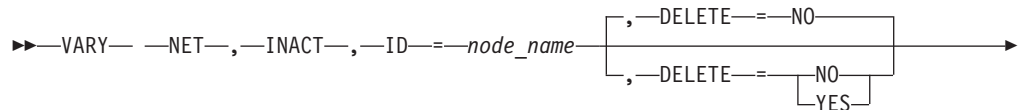
Deactivate a CDRM major node:



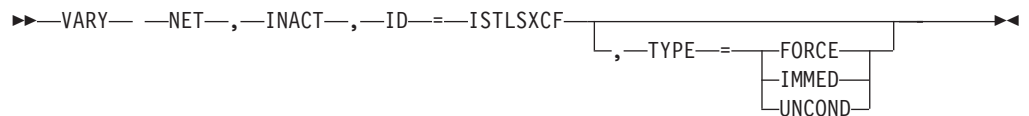
Deactivate a CDRM minor node:



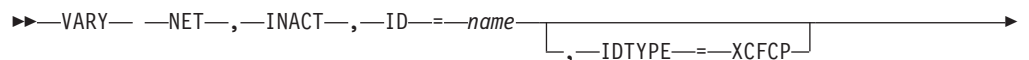
Deactivate a CDRSC minor node:

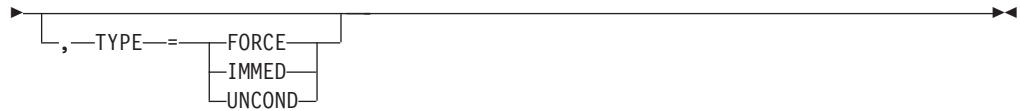


Deactivate the dynamic XCF local SNA major node:

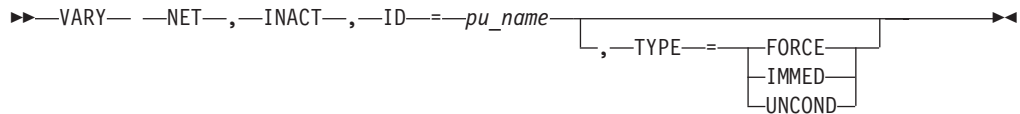


Deactivate a dynamic XCF local SNA PU:

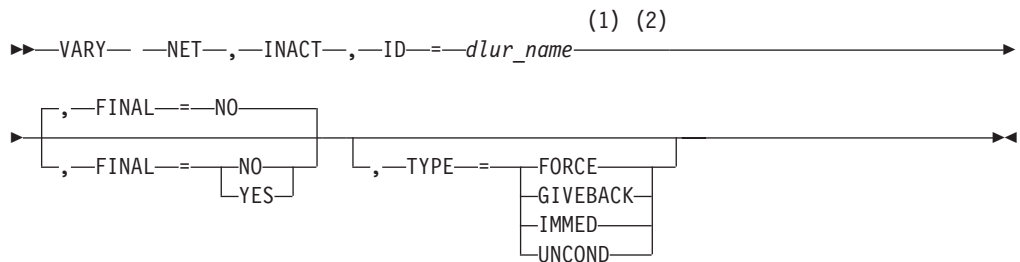




Deactivate a dynamic switched PU:



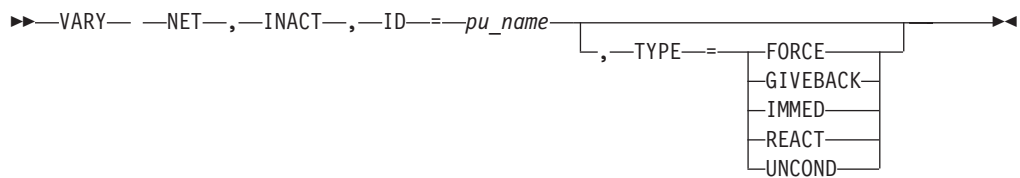
Deactivate a dependent LU requester (DLUR):



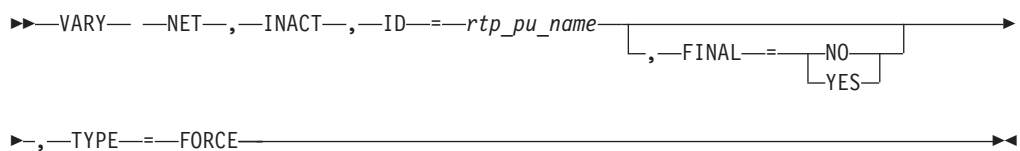
Notes:

- 1 Depending on the value of the VARYWLD start option, wildcard values can be used for this operand.
- 2 Depending on the value of the GVBKDLY start option, GIVEBACK commands generated for DLURs using wildcard values might be paced by VTAM.

Deactivate a PU supported by a DLUR:

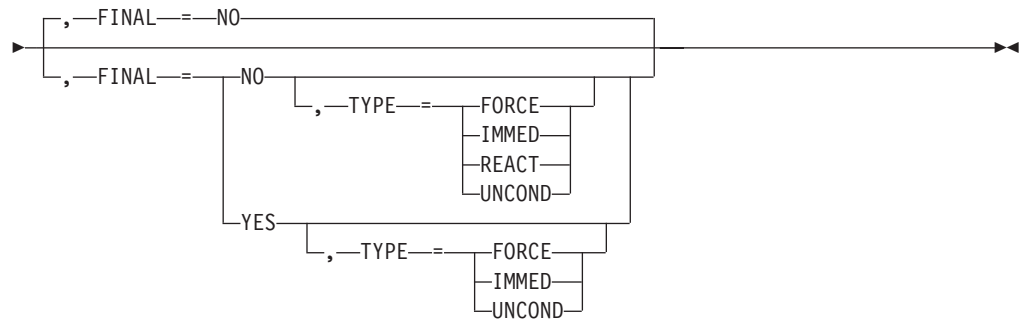


Deactivate RTP PUs:

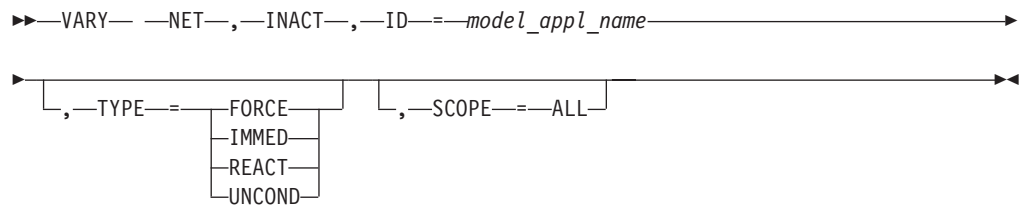


Deactivate other PUs:

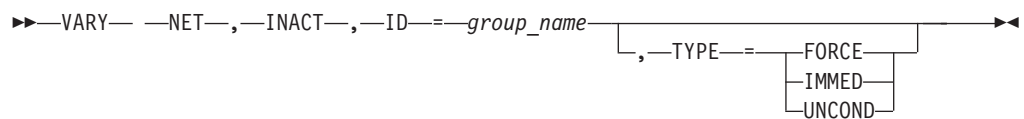




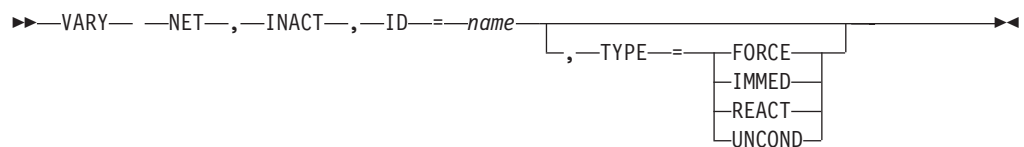
Deactivate a model application and all the APPLs created from it:



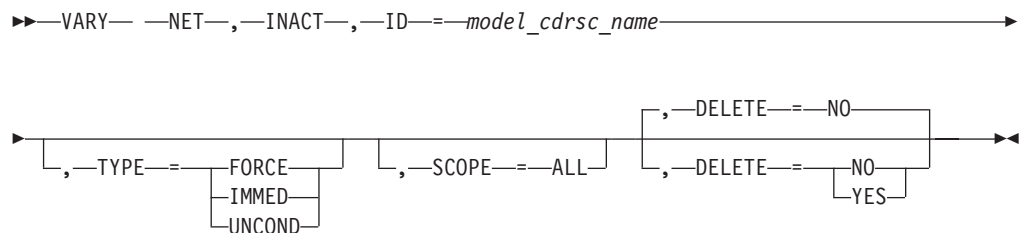
Deactivate a group under an Enterprise Extender XCA major node:



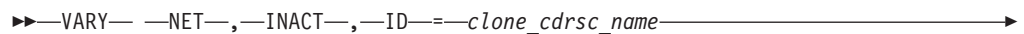
Deactivate other resources:

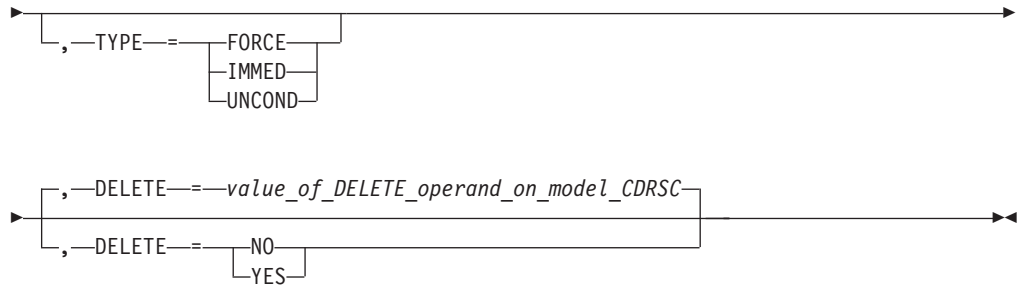


Deactivate a model CDRSC and, optionally, all the clone CDRSCs created from it:



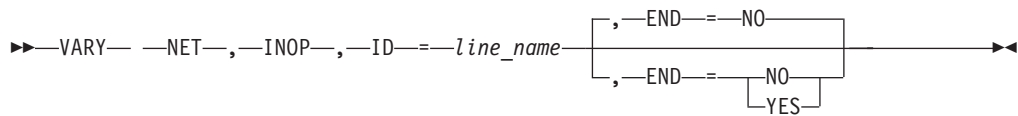
Deactivate a clone CDRSC:





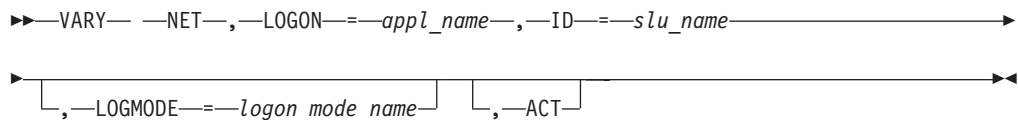
V INOP command

Terminate a manual dial operation if the VTAM operator is unable to complete the call:



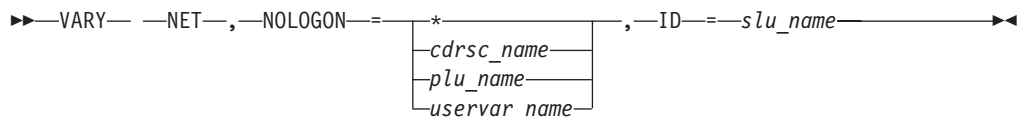
V LOGON command

Create or change an automatic logon specification:



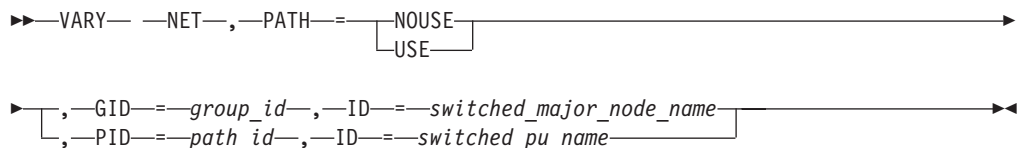
V NOLOGON command

Delete an existing automatic logon specification:



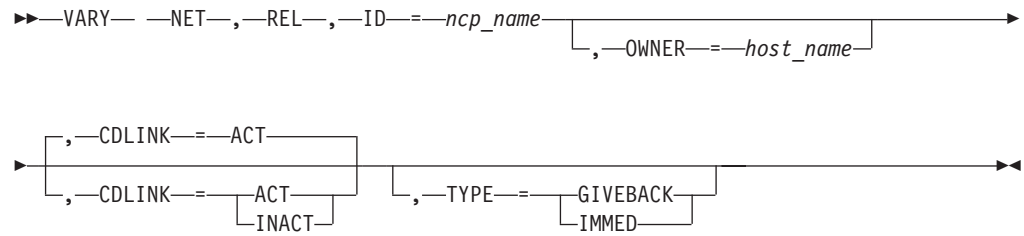
V PATH command

Modify the availability of a dial-out path to a specific switched physical unit or a group of dial-out paths within a switched major node:

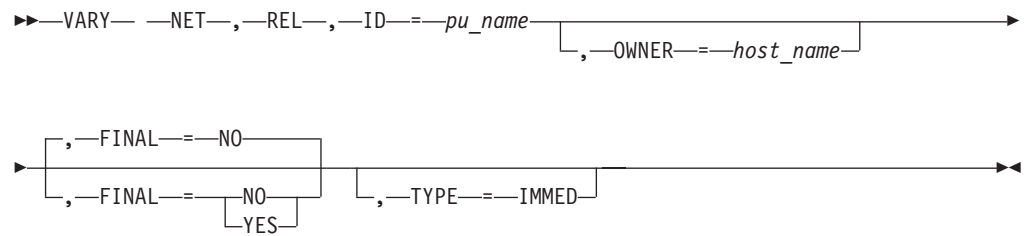


V REL command

Release a previously acquired NCP:

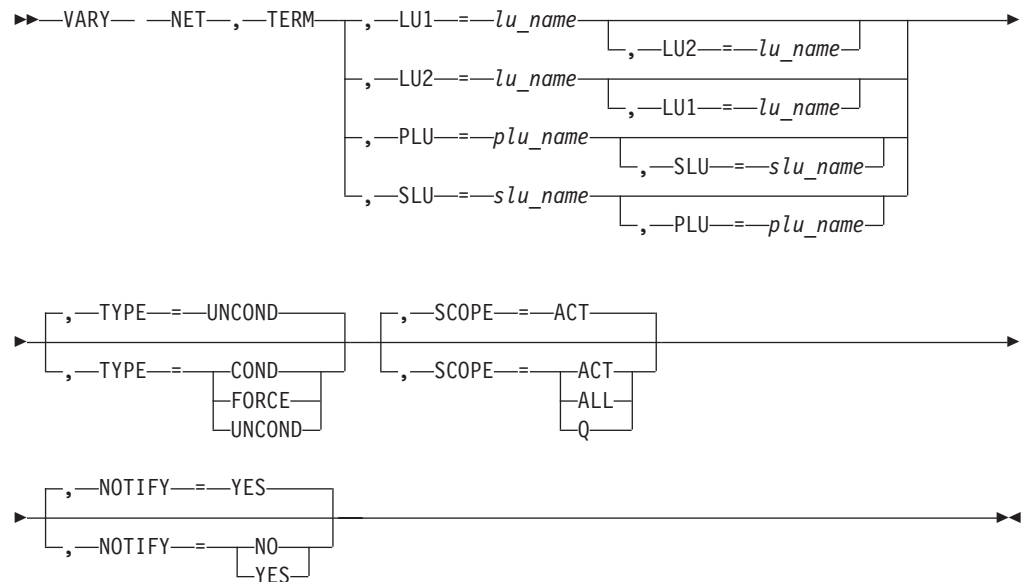


Release a PU:

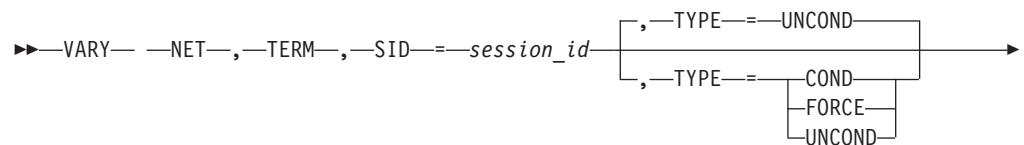


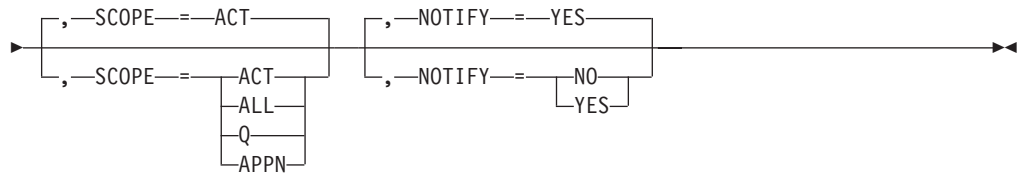
V TERM command

VARY TERM command using name or name pair:



VARY TERM command using session ID:





Start options

Start options are listed in this section alphabetically; however, you can code them in any order.

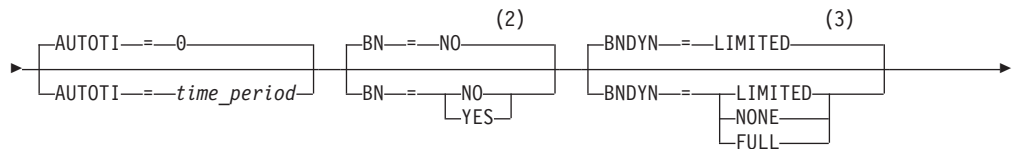
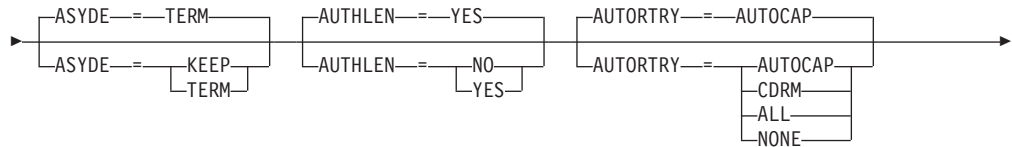
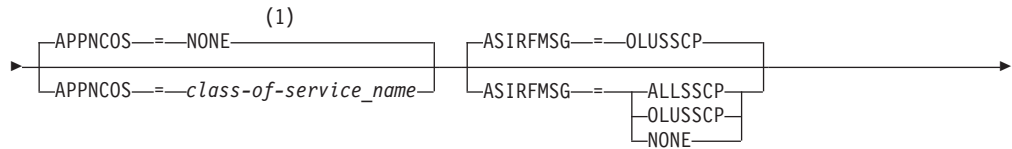
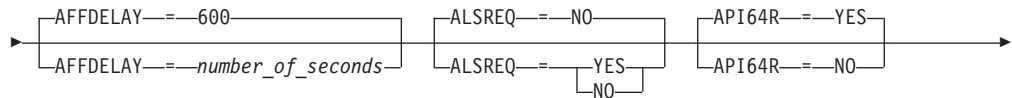
Precede the option list with three commas and enclose the group of options in parentheses.

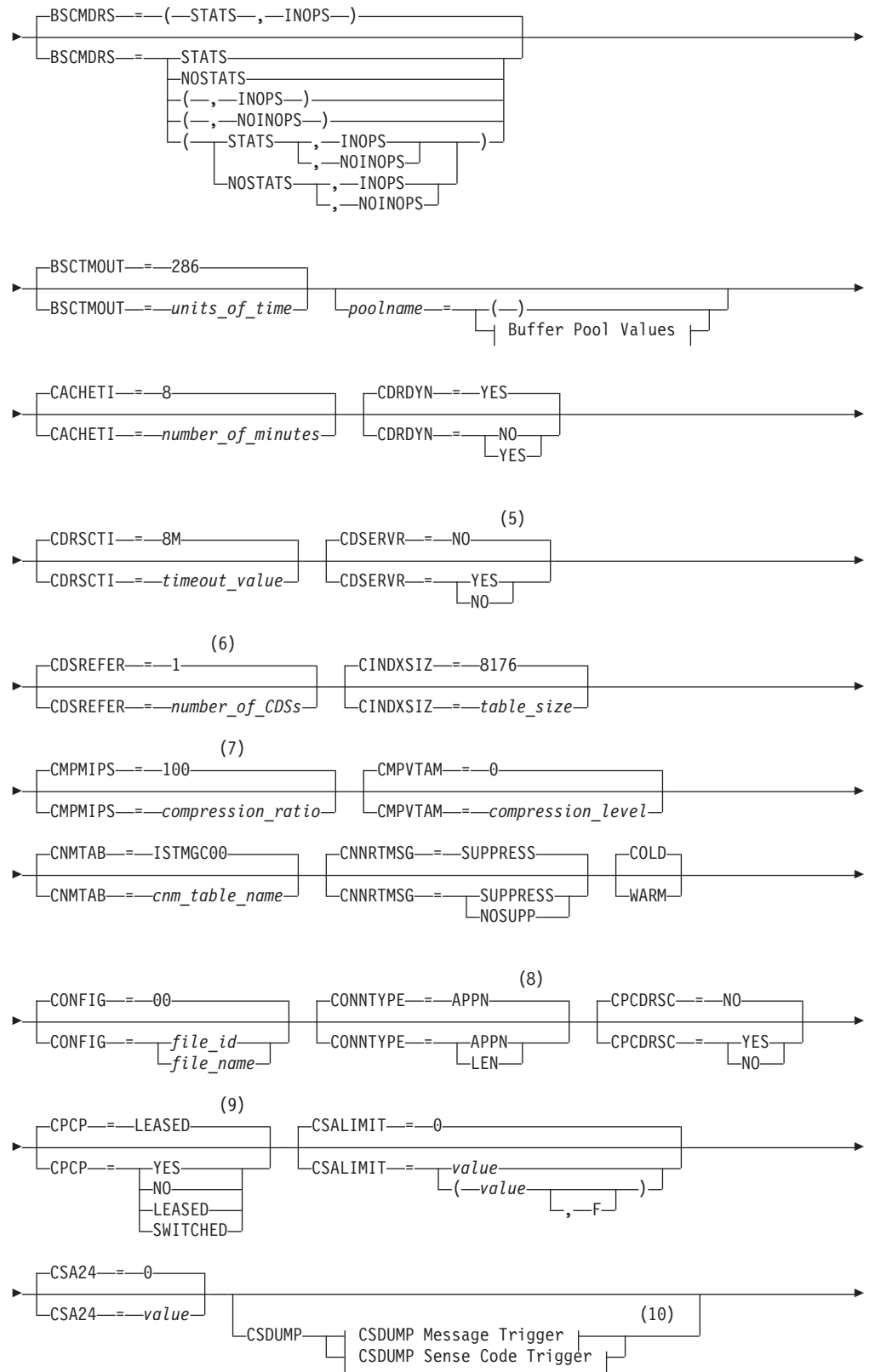
Start options that are entered on the START command must be separated by commas. Do not leave any blanks between options.

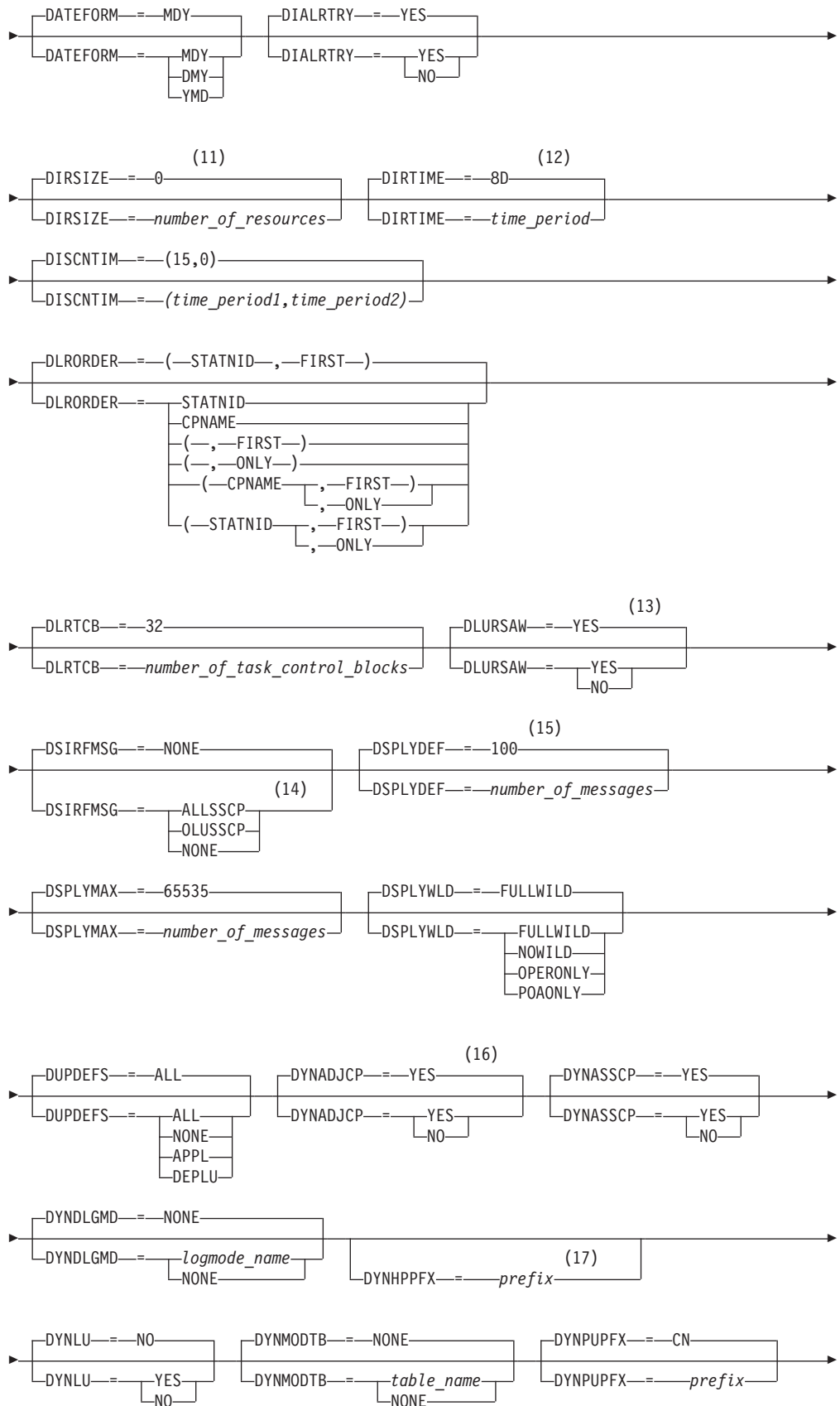
For more information on the START command, see *z/OS Communications Server: SNA Operation*.

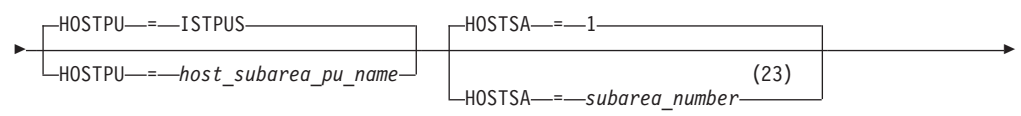
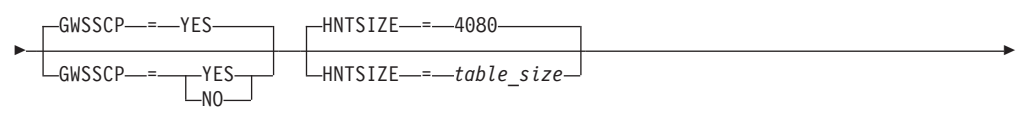
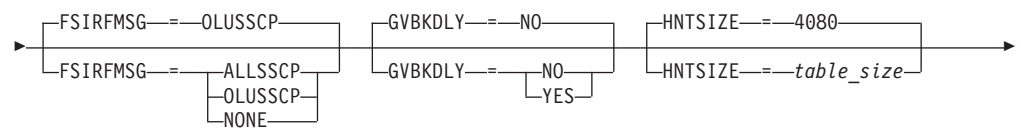
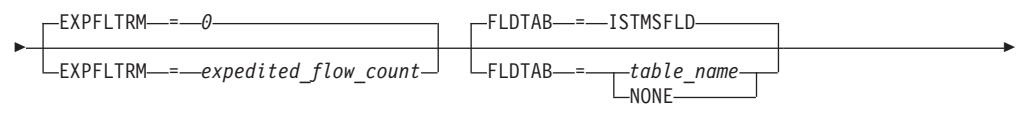
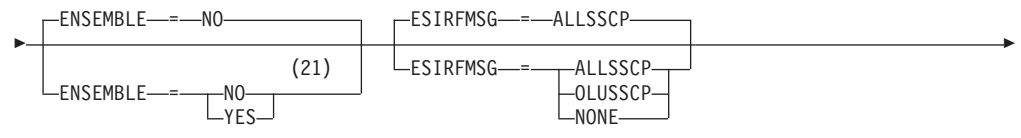
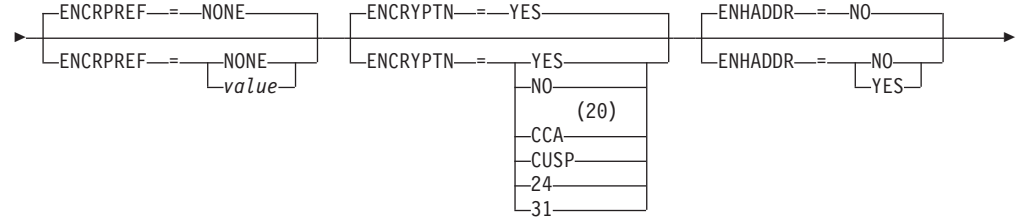
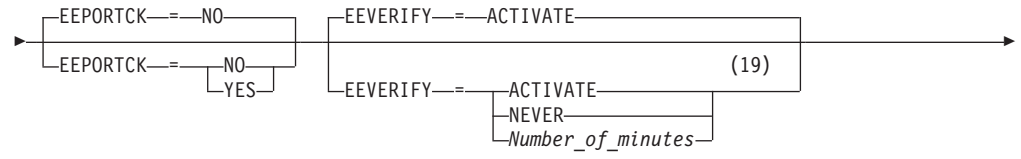
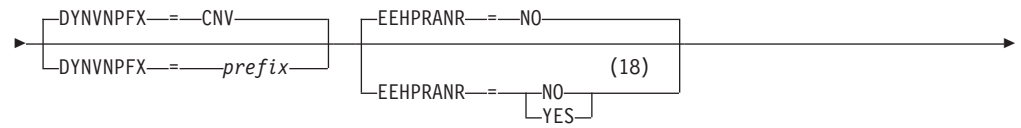
Options:

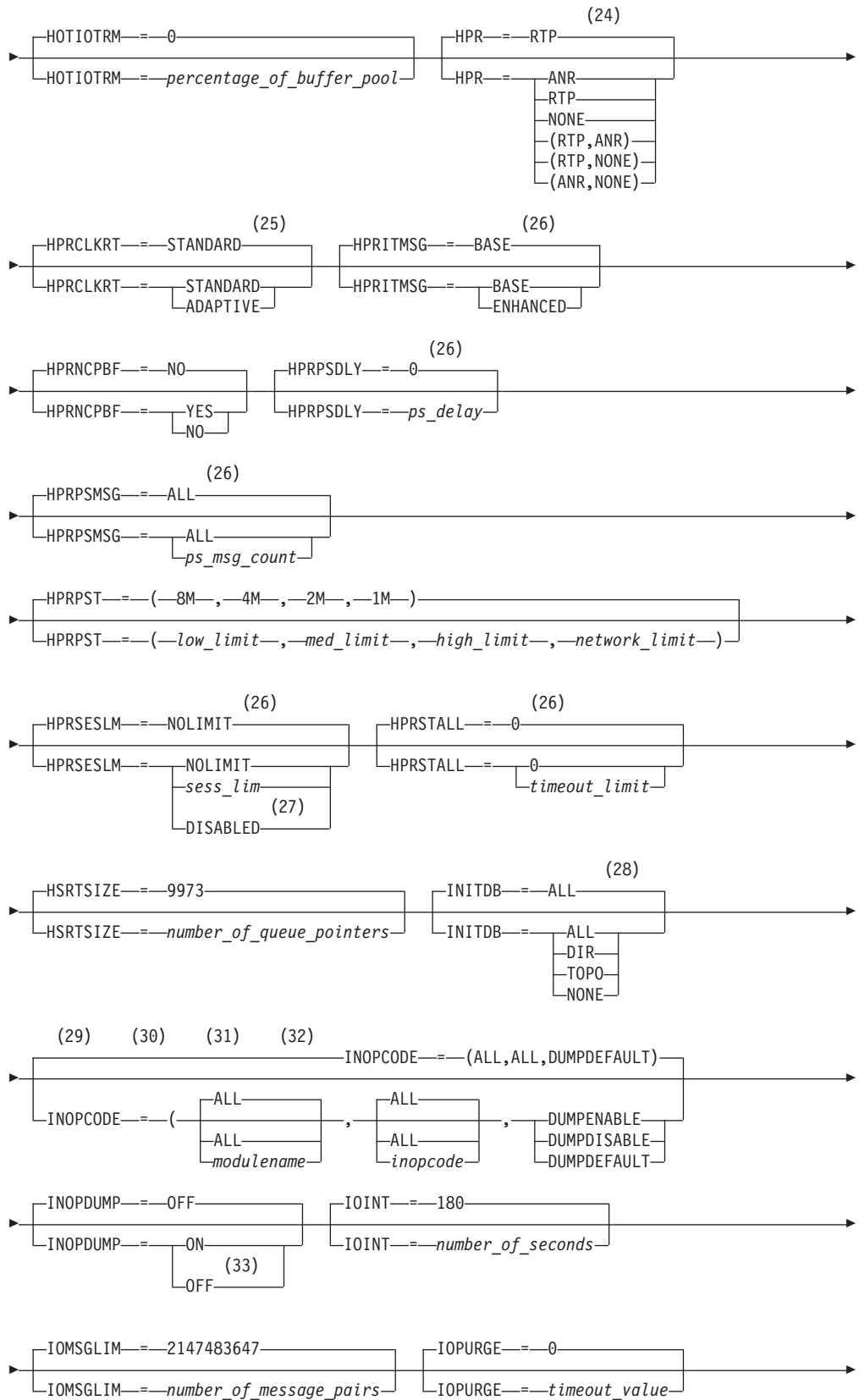
|NETID=*network_id*SSCPID=*sscp_id*SSCPNAME=*name*









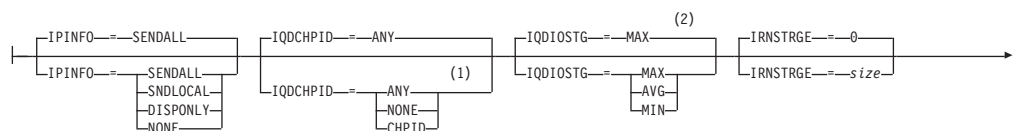


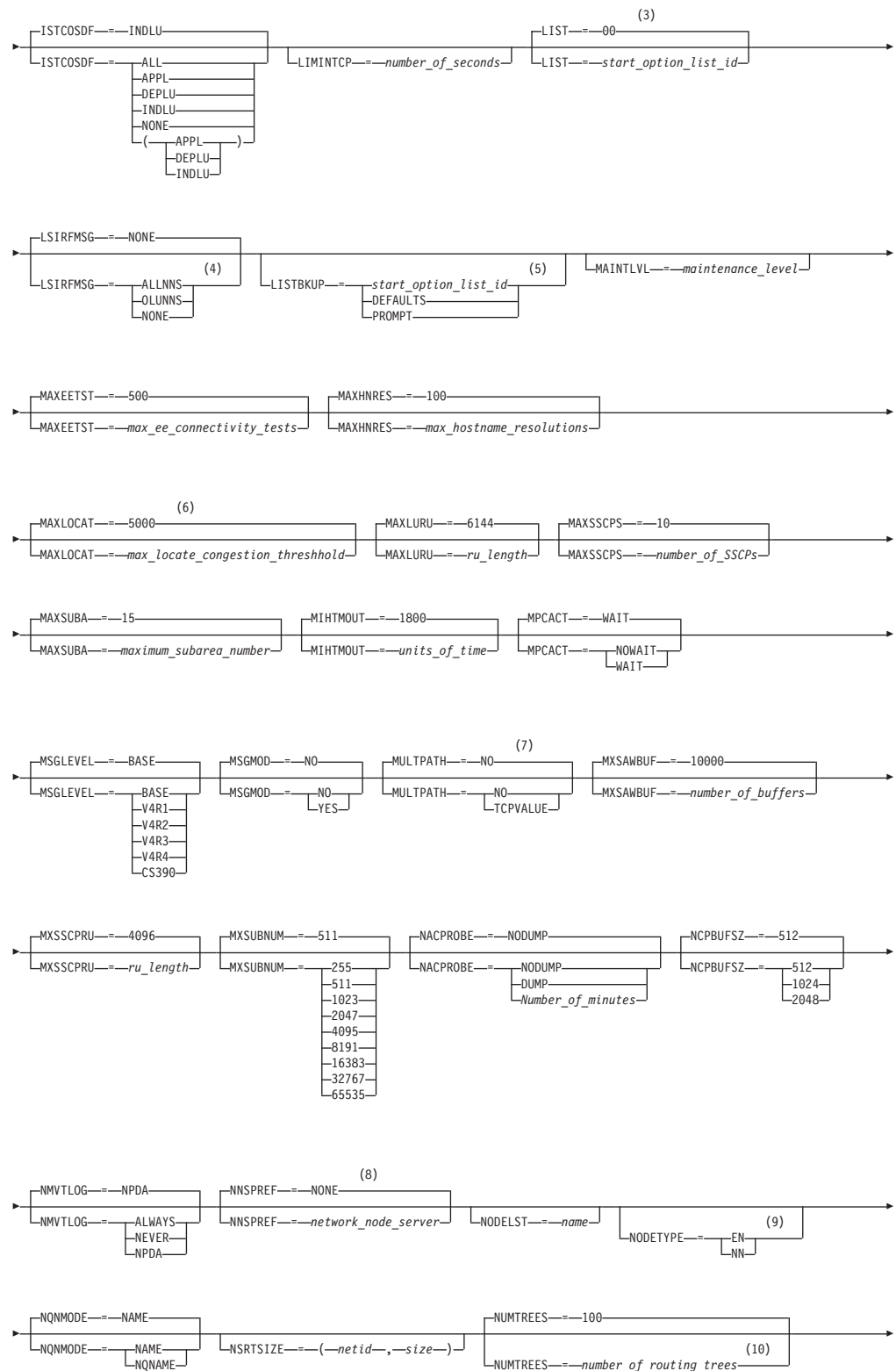
Notes:

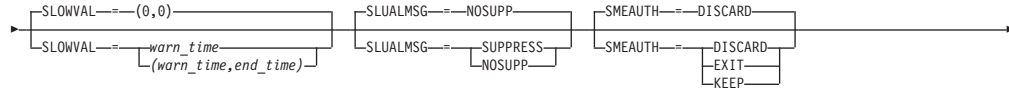
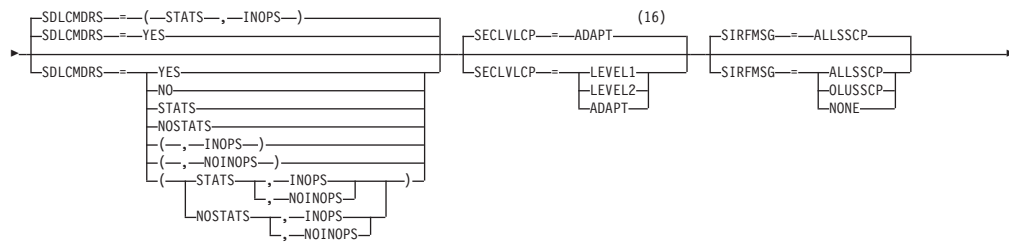
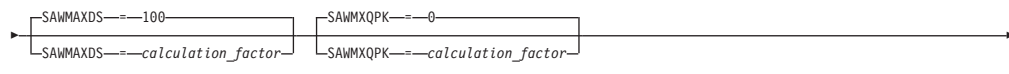
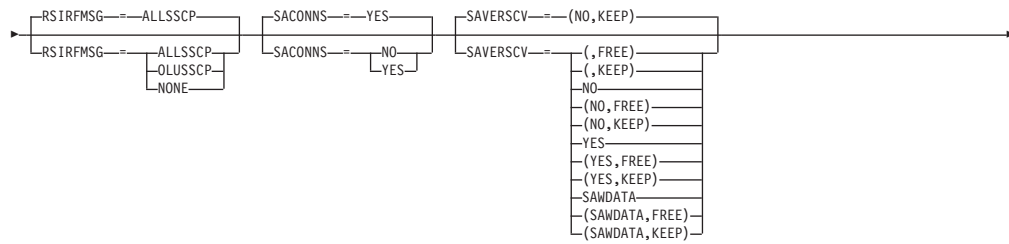
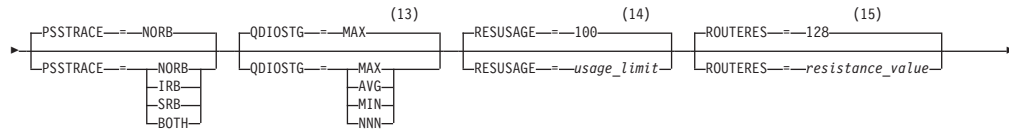
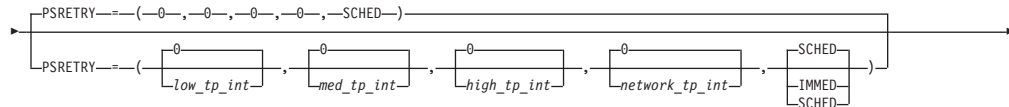
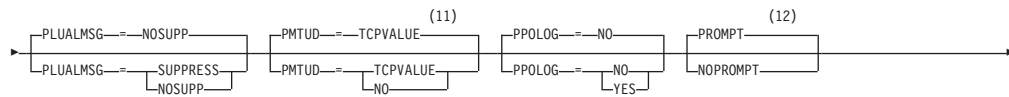
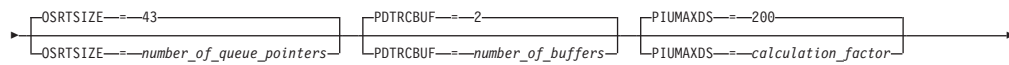
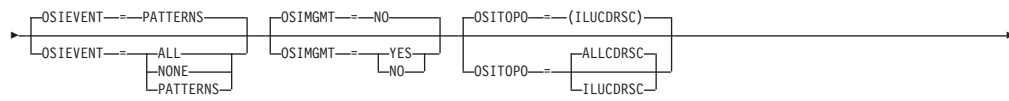
- 1 APPNCOS is meaningful only if the NODETYPE start option is also used.
- 2 BN is meaningful only if the NODETYPE=NN start option is also used.
- 3 BNDYN is meaningful only if the BN=YES start option is also used.
- 4 BNORD is meaningful only if the BN=YES start option is also used.
- 5 CDSERVER is meaningful only if the NODETYPE=NN start option is also used.
- 6 CDSREFER is meaningful only if the NODETYPE=NN and CDSERVER=NO start options are also used.
- 7 The CMPMIPS start option is meaningful only if the value for CMPVTAM is greater than 1.
- 8 CONNTYPE is meaningful only if the NODETYPE start option is also used.
- 9 CPCP is meaningful only if the NODETYPE start option is also used.
- 10 Specify the CSDUMP start option twice to set both message and sense code triggers.
- 11 DIRSIZE is meaningful only if the NODETYPE=NN start option is also used.
- 12 DIRTIME is meaningful only if the NODETYPE=NN start option is also used.
- 13 DLURSAW is meaningful only if the NODETYPE=NN start option is also used.
- 14 Because of the volume of messages that can be generated, it is not recommended that this option be enabled during normal operation. Instead, it is recommended that this option be enabled (using the MODIFY VTAMOPTS command) on all necessary hosts only when trying to diagnose specific problems. After the problem has been diagnosed or documentation has been collected, this option should be disabled once again (using the MODIFY VTAMOPTS command).
- 15 If the DSDPLYMAX start option value is less than 100, that value is the default for DSDPLYDEF.
- 16 DYNADJCP is meaningful only if the NODETYPE start option is also used.
- 17 Two character prefix.
- 18 EEHPRANR is meaningful only when the NODETYPE=NN start option is also used.
- 19 The EEVERIFY start option is meaningful only if VTAM provides RTP-level HPR support. The NODETYPE start option must be coded and the RTP value must be specified on the HPR start option.
- 20 ENCRYPTN=CCA needs to be coded when Triple Des Encryption is required.
- 21 The ENSEMBLE setting is used to either permit or deny connectivity to the intraensemble data network and the intranode management network. It does this by either allowing or denying activation of OSX and OSM interfaces.
- 22 HOSTNAME is meaningful only if the NODETYPE start option is also used.

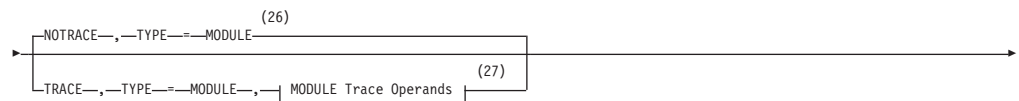
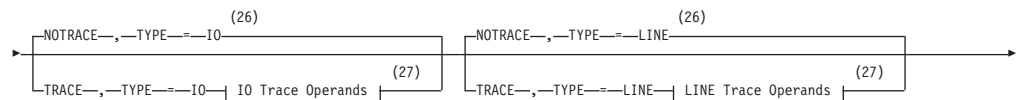
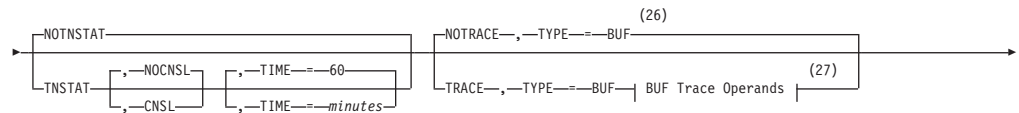
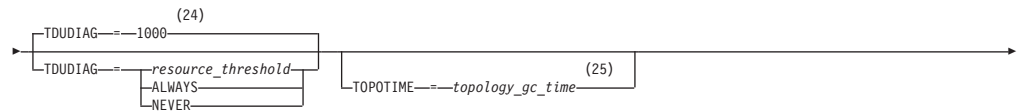
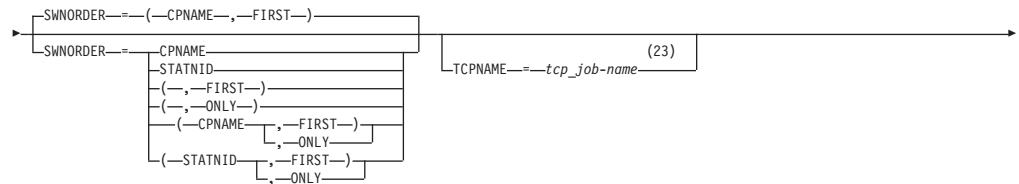
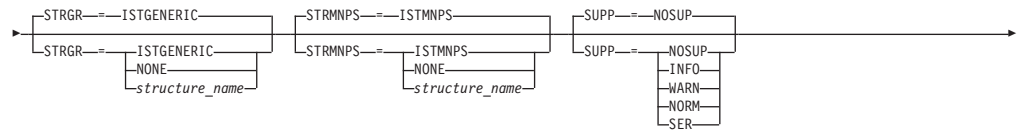
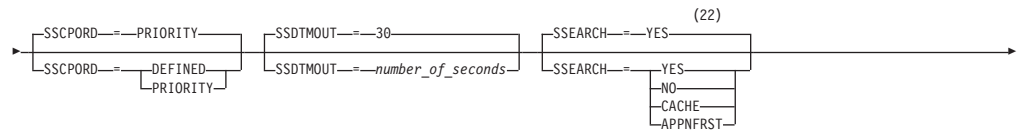
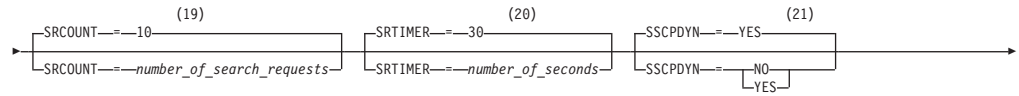
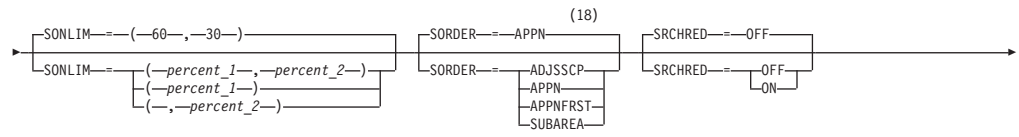
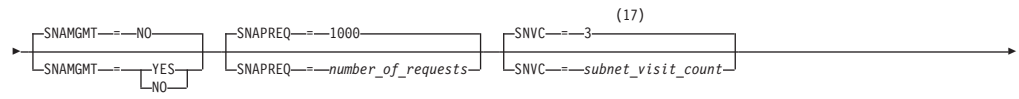
If neither HOSTNAME nor IPADDR is specified on any of the GROUP definition statements within the Enterprise Extender XCA major node, then either the HOSTNAME, TCPNAME, or IPADDR start options must be specified in order to activate an Enterprise Extender link. The HOSTNAME start option specifies the default hostname to be used for name-to-address resolution as part of activating an Enterprise Extender connection, and must resolve at this node to a static VIPA address associated with a TCP/IP stack at this node. If IPADDR is specified along with HOSTNAME on the START command, the IPADDR value is ignored.

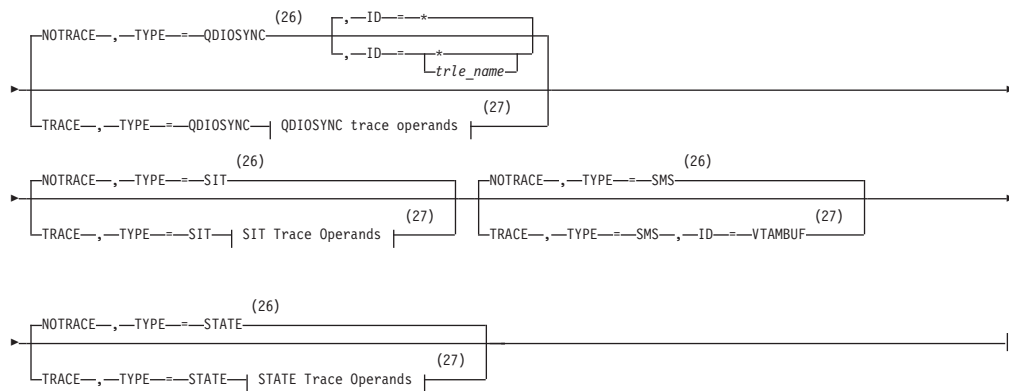
- 23 HOSTSA specifies the subarea number of this VTAM. If HOSTSA is not coded, then a default subarea number of 1 is used.
- 24 HPR is meaningful only if NODETYPE is also used.
- 25 HPRCLKRT=ADAPTIVE is meaningful only in Enterprise Extender configurations that have a defined capacity of 1 Gb (gigabit) or higher access speeds.
- 26 This option is meaningful only if VTAM provides RTP-level HPR support.
- 27 HPRSESLM=DISABLED is meaningful only on interchange nodes.
- 28 INITDB is meaningful only if the NODETYPE=NN start option is also used.
- 29 When specifying an InOpCode for the second parameter, always specify three digits by including any leading zeros.
- 30 If an InOpCode is specified for the second parameter, the first parameter cannot be ALL.
- 31 INOPCODE has no effect unless INOPDUMP is active for the resource when an inoperative condition is detected. See the MODIFY INOPCODE command in z/OS Communications Server: SNA Operation for more details.
- 32 Multiple INOPCODE parameters can be specified by the START command, and will be processed left to right as they are entered. This is different from specifying the INOPCODE parameter on either the MODIFY INOPCODE command or the MODIFY VTAMOPTS command, where only one INOPCODE parameter is allowed for each entry of these commands.
- 33 INOPDUMP status is propagated to resources that are defined within a TRLE when the entry is activated and the TRLE InOpDump status has not been explicitly set.
- 34 IPADDR is meaningful only if the NODETYPE start option is also used. If neither IPADDR nor HOSTNAME is specified on any of the GROUP definition statements within the Enterprise Extender XCA major node, then either the HOSTNAME, TCPNAME, or IPADDR start option must be specified in order to activate an Enterprise Extender link. The IPADDR start option specifies the default IPv4 or IPv6 static VIPA address to be used when activating an Enterprise Extender connection. If HOSTNAME is specified along with IPADDR on the START command, the IPADDR value is ignored.









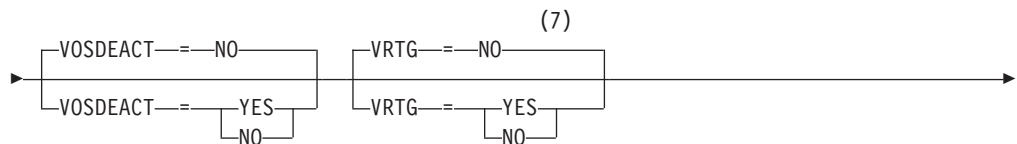
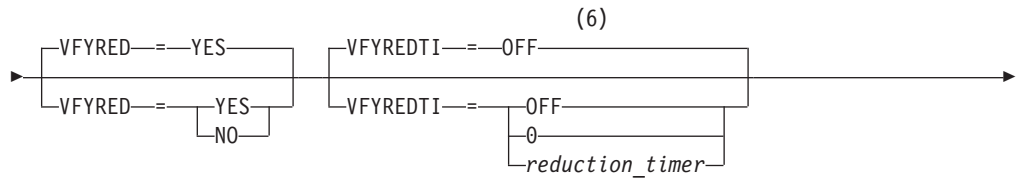
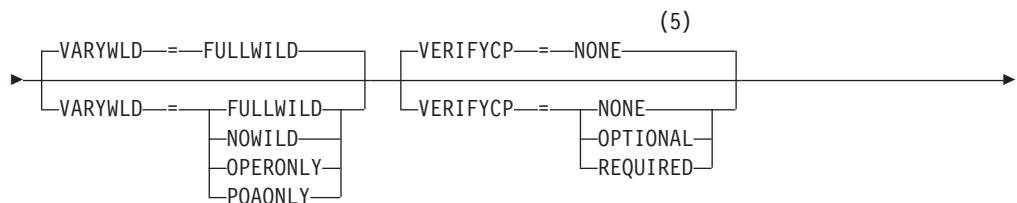
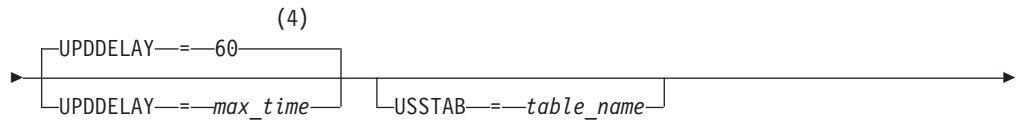
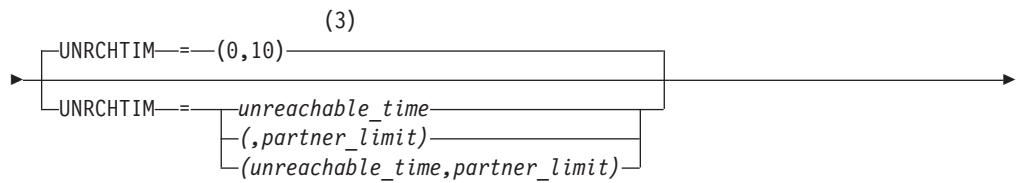
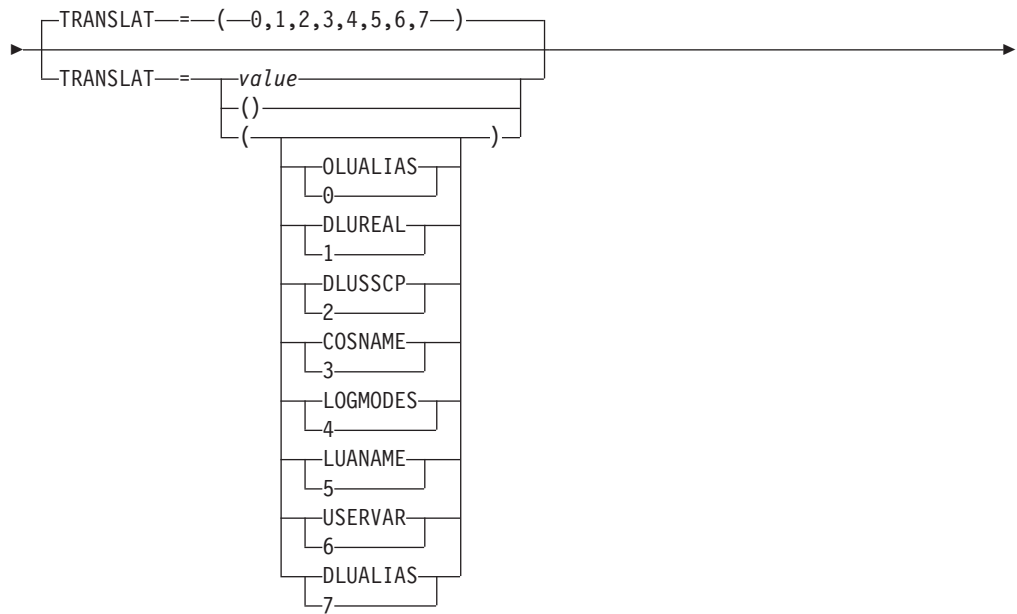


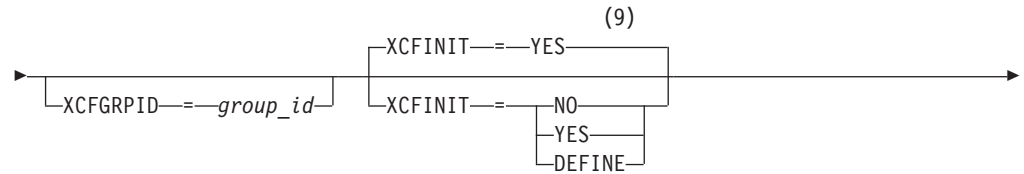
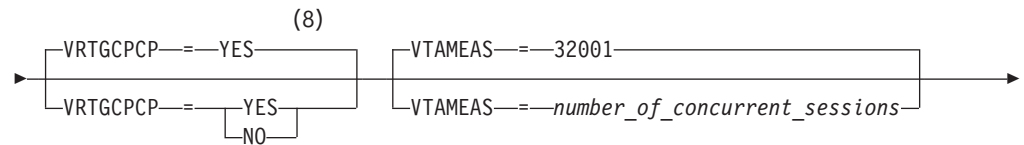
Notes:

- 1 The IQDCHPID option controls which IQD CHPID (and related subchannel devices) VTAM selects to dynamically build the iQDIO (IUTIQDIO) MPC group. The IUTIQDIO MPC group is used for TCP/IP dynamic XCF communications within System z. Although this option can be modified (and the modification will immediately be displayed) while the IUTIQDIO MPC group is currently active, any modifications have the effects shown in the section called IQD CHPID modifications in z/OS Communications Server: SNA Operation.
- 2 This option affects only iQDIO devices that use a MFS of 64k. The smaller frame sizes will always use 126 SBALs. You can override this option on a per-device basis using the READSTORAGE parameter on the LINK or INTERFACE statement in the TCP/IP profile. See z/OS Communications Server: IP Configuration Reference for more details.
- 3 LIST can be entered by a VTAM operator only. If LIST is coded in an ATCSTRxx file, it is considered to be an error and is ignored.
- 4 Because of the volume of messages that can be generated, it is not recommended that this option be enabled during normal operation. Instead, it is recommended that this option be enabled (using the MODIFY VTAMOPTS command) on all necessary hosts only when trying to diagnose specific problems. After the problem has been diagnosed or documentation has been collected, this option should be disabled once again (using the MODIFY VTAMOPTS command).
- 5 LISTBKUP can be coded only in a start option file. If you enter it on the START command or at an operator prompt, VTAM will ignore it.
- 6 MAXLOCAT is meaningful only if NODETYPE is specified.
- 7 MULTPATH is meaningful only if the NODETYPE start option is also specified.
- 8 NNSPREF can be specified only if NODETYPE=EN is specified during VTAM START processing.
- 9 NODETYPE enables APPN function. The combination of HOSTSA, NODETYPE, and SACONNS determines the configuration (subarea node, interchange node, migration data host, network node, or end node).
- 10 NUMTREES is meaningful only if the NODETYPE=NN start option is also used.
- 11 PMTUD is meaningful only if the NODETYPE start option is also specified.

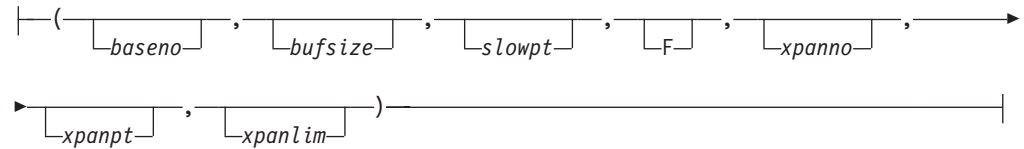
- 12 A VTAM operator cannot enter the PROMPT or NOPROMPT start option; it can be coded only in ATCSTR00. The value coded in ATCSTR00 is ignored if start options are entered on the START command or if VTAM finds an error in a start list. Upon finding an error in a start list, VTAM prompts the operator so that the operator can specify the option correctly.
- 13 QDIOSTG defaults to MAX for 64-bit (z/Architecture) machines and MIN for non 64-bit machines. You can override this option on a per-device basis using the READSTORAGE parameter on the LINK or INTERFACE statement in the TCP/IP profile. See z/OS Communications Server: IP Configuration Reference for more details.
- 14 RESUSAGE is meaningful only if the NODETYPE=NN start option is also used.
- 15 ROUTERES is meaningful only if the NODETYPE=NN start option is also used.
- 16 The SECLVLCP start option is meaningful only if the NODETYPE and VERIFYCP start options are also used.
- 17 SNVC is meaningful only if the BN=YES start option is also used.
- 18 SORDER is meaningful only in an interchange node or a migration data host.
- 19 SRCOUNT is meaningful only if the SRCHRED=ON start option is also used.
- 20 SRTIMER is meaningful only if the SRCHRED=ON start option is also used.
- 21 The SSCPDYN start option applies only for interconnected networks (that is, GWSSCP=YES is used).
- 22 SSEARCH is meaningful only if the NODETYPE=NN start option is also used.
- 23 TCPNAME is meaningful only if the NODETYPE start option is also used. If neither IPADDR nor HOSTNAME is specified on any of the GROUP definition statements within the Enterprise Extender XCA major node, then either the HOSTNAME, TCPNAME, or IPADDR start options must be specified in order to activate an Enterprise Extender link.
- 24 TDUDIAG is meaningful only if the NODETYPE=NN start option is also available.
- 25 TOPOTIME is meaningful only if the NODETYPE start option is also used.
- 26 Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list.
- 27 You can code TRACE and its qualifiers through position 71, even if you are in the middle of the start option. Continue the remainder of the item in the next record. Code the TYPE qualifier immediately after you code the TRACE start option.



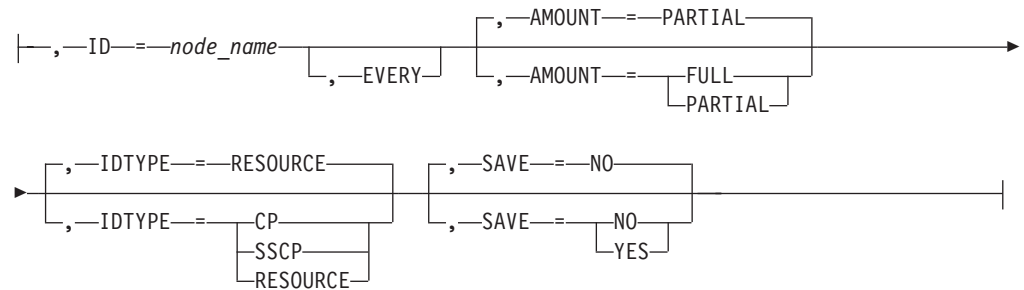




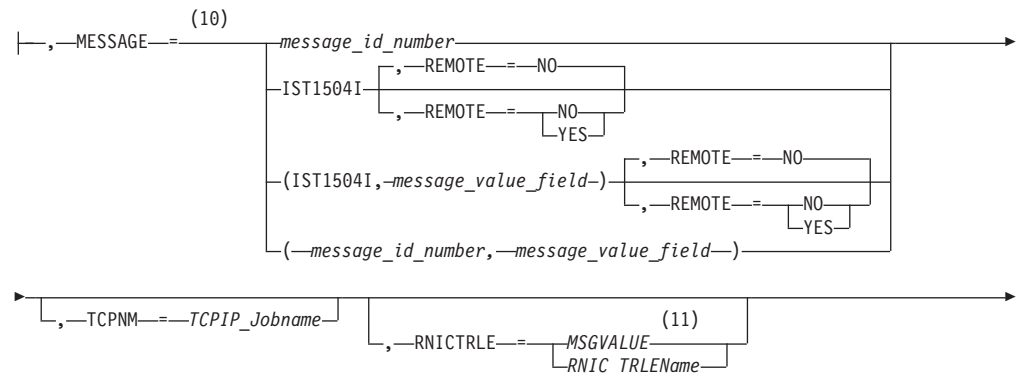
Buffer Pool Values:



BUF Trace Operands:

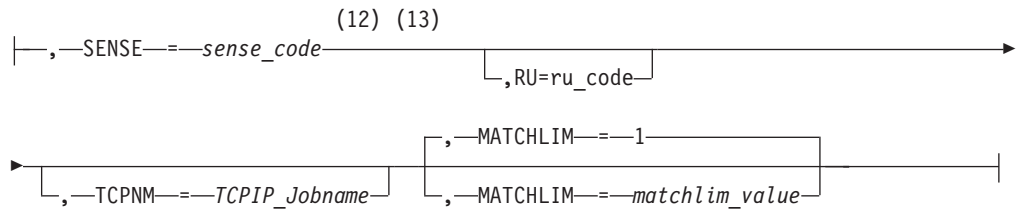


CSDUMP message trigger:

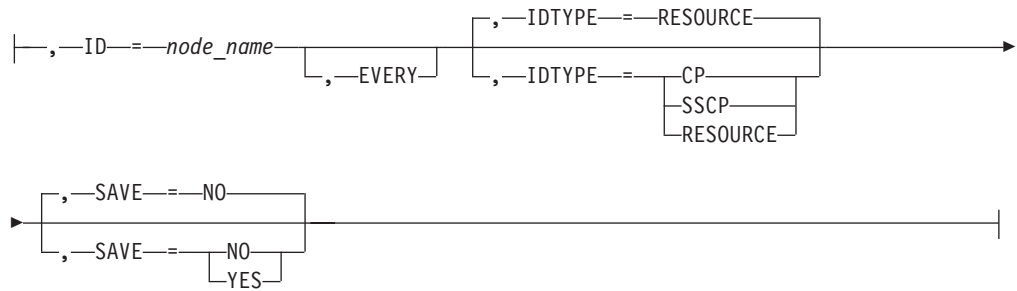




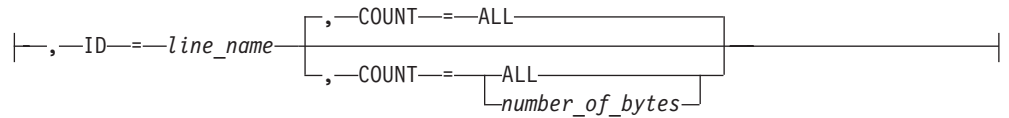
CSDUMP sense code trigger:



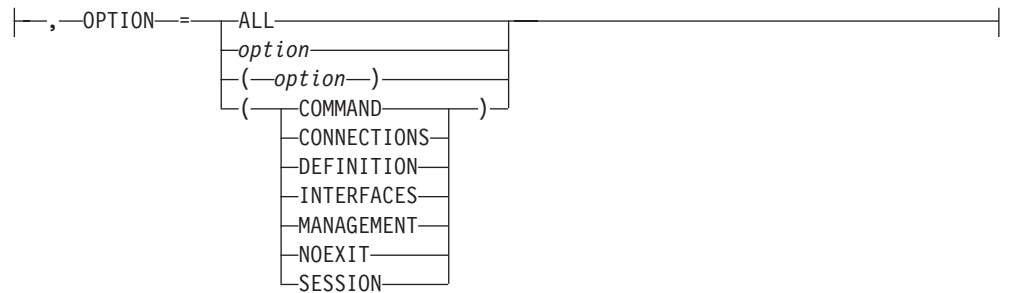
IO Trace Operands:



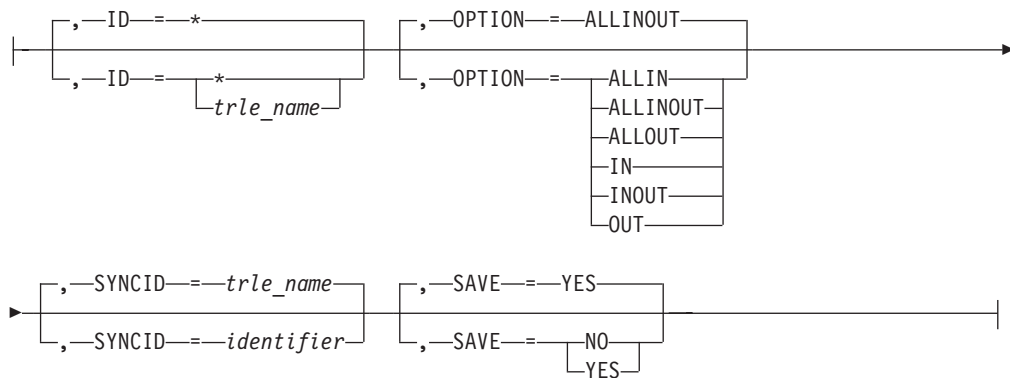
LINE Trace Operands:



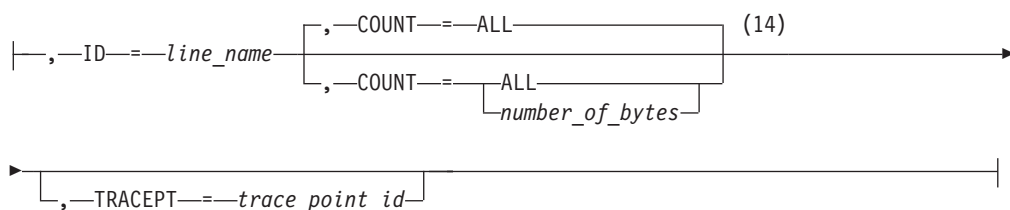
MODULE Trace Operands:



QDIOSYNC trace operands:



SIT Trace Operands:



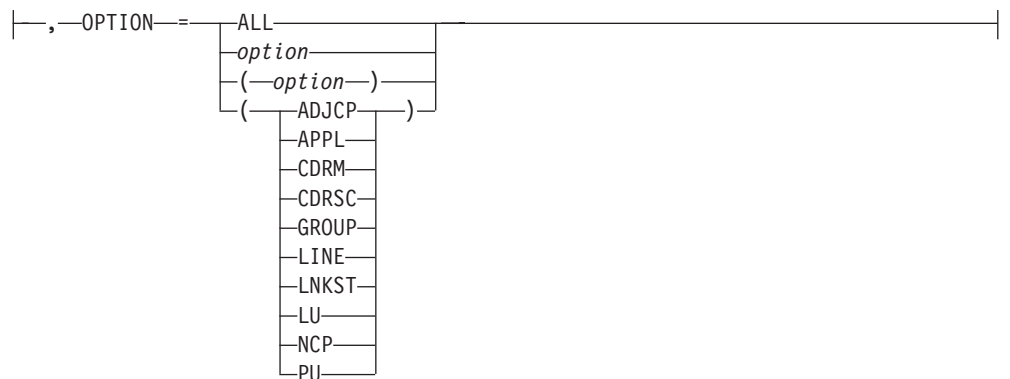
STATE Trace Operands:



Operands used with ID:



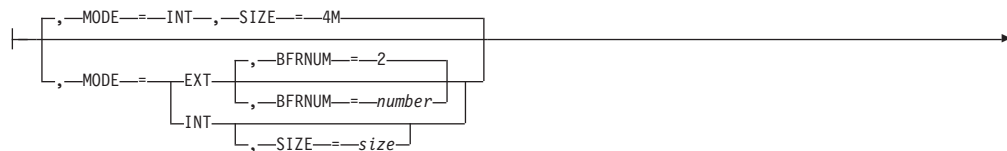
OPTION Operand:

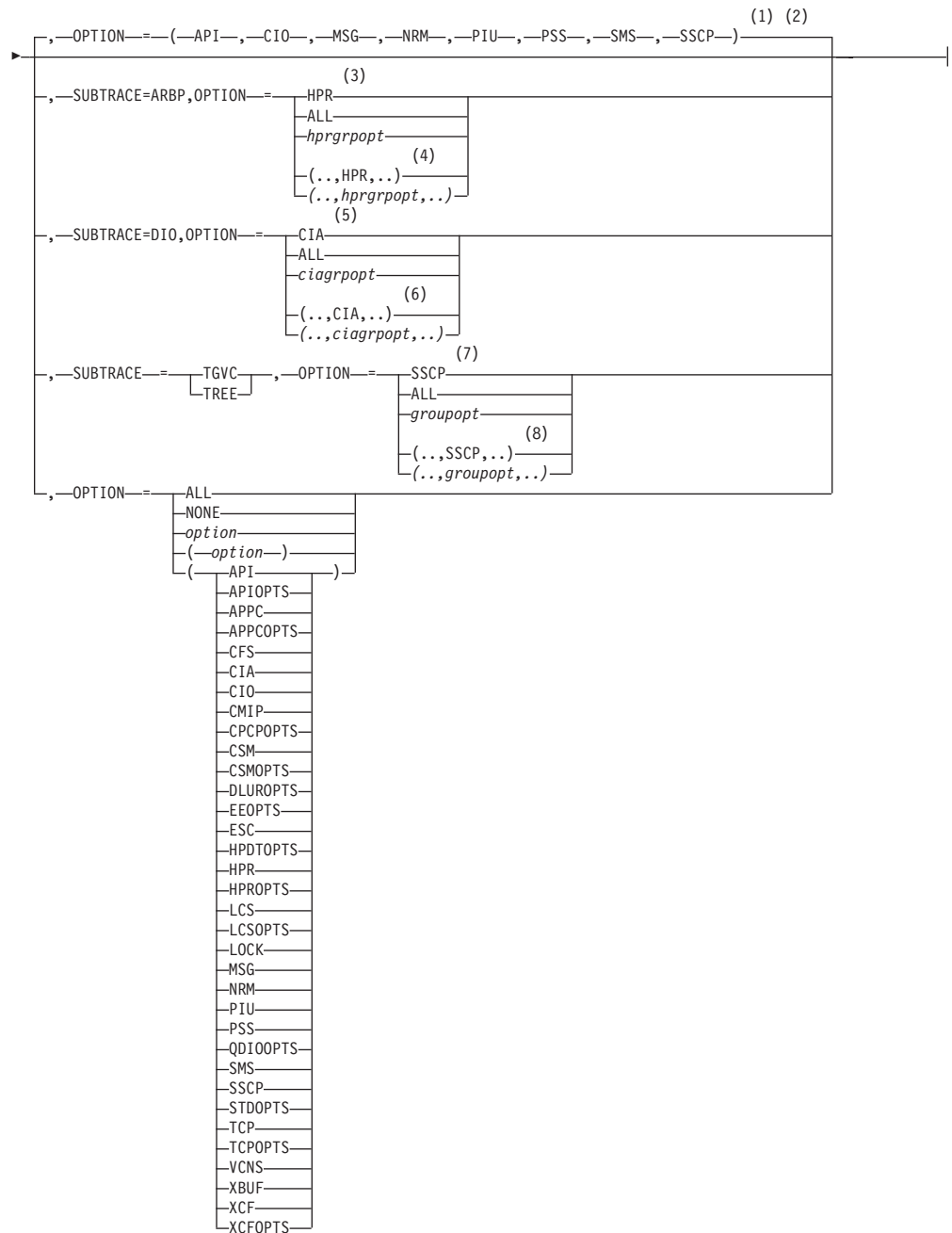


Notes:

- 1 NOTRACE,TYPE=VTAM is accepted but ignored. Tracing is started with the default trace table size and the default options.
- 2 You can code TRACE and its qualifiers through position 71, even if you are in the middle of the start option. Continue the remainder of the item in the next record. Code the TYPE qualifier immediately after you code the TRACE start option.
- 3 UNRCHTIM is meaningful only if the NODETYPE start option is also used.
- 4 UPDDELAY is meaningful only if the OSIMGMT=YES start option is also used.
- 5 The VERIFYCP start option is meaningful only if the NODETYPE start option is also used.
- 6 VFYREDTI is meaningful only if the NODETYPE=NN start option is also used.
- 7 VRTG is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 8 VRTGCPCP is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 9 XCFINIT=YES is the default if VTAM is started as an APPN node (that is, the NODETYPE start option has been specified). XCFINIT=YES is not valid for pure subarea nodes. XCFINIT=DEFINE is the default if VTAM is started as a pure subarea node (the NODETYPE start option has not been specified).
- 10 When the same parameter is entered multiple times on a CSDUMP message trigger, only the last occurrence is accepted.
- 11 MSGVALUE is valid only when the MESSAGE operand is used and specifies either message IST2391I or IST2406I.
- 12 When an error message is received on any parameter of the CSDUMP start option, the remaining parameters for this CSDUMP start option are ignored. Enter the complete CSDUMP start option again when you are prompted.
- 13 When the same parameter is entered multiple times on a CSDUMP sense trigger, only the last occurrence is accepted.
- 14 COUNT applies only to the IBM 3720 and 3745 Communication Controllers.

VIT Operands:





Notes:

- 1 The default options apply only to MODE=INT.
- 2 PSS and SMS can be turned off.
- 3 When you specify SUBTRACE=ARBP and you code a single OPTION value, the OPTION value must be HPR, ALL, or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent. The applicable group options are DLUROPTS, EEOPTS, HPDTOPTS, HPROPTS, QDIOOPTS, and XCFOPTS.
- 4 When SUBTRACE=ARBP is coded and you code multiple trace options in parentheses, you must code either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent inside the parentheses.

- 5 When you specify SUBTRACE=DIO and you code a single OPTION value, the OPTION value must be CIA, ALL, or one of the group options (*ciagrpopt*) that include CIA as an individual option equivalent. The applicable group options are EEOPTS, HPDTOPTS, HPROPTS, QDIOOPTS, TCPOPTS and XCFOPTS.
- 6 When SUBTRACE=DIO is coded and you code multiple trace options in parentheses, you must code either CIA or one of the group options (*ciagrpopt*) that include CIA as an individual option equivalent inside the parentheses.
- 7 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code a single OPTION value, the OPTION value must be either SSCP, ALL, or one of the group options (*groupopt*), all of which include SSCP as an individual option equivalent. The group options are APIOPTS, APPCOPTS, CPCPOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTOPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPTS, TCPOPTS, and XCFOPTS.
- 8 When you code SUBTRACE=TGVC or SUBTRACE=TREE and you code multiple trace options in parentheses, you must code either SSCP or one of the group options (*groupopt*) inside the parentheses.

Other VTAM codes and commands

Table 2. Other VTAM codes and commands

Command type	Reference
Status codes	See z/OS Communications Server: IP and SNA Codes.
Dump analysis tool commands	See z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures.

Appendix. Accessibility

Publications for this product are offered in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when using PDF files, you can view the information through the z/OS Internet Library website or IBM Knowledge Center. If you continue to experience problems, send an email to mhvrcfs@us.ibm.com or write to:

IBM Corporation
Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
USA

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/OS enable users to:

- Use assistive technologies such as screen readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

Using assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using such products to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. See *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Vol I* for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

z/OS information

z/OS information is accessible using screen readers with the BookServer or Library Server versions of z/OS books in the Internet library at www.ibm.com/systems/z/os/zos/bkserv/.

One exception is command syntax that is published in railroad track format, which is accessible using screen readers with IBM Knowledge Center, as described in "Dotted decimal syntax diagrams."

Dotted decimal syntax diagrams

Syntax diagrams are provided in dotted decimal format for users accessing IBM Knowledge Center using a screen reader. In dotted decimal format, each syntax element is written on a separate line. If two or more syntax elements are always

present together (or always absent together), they can appear on the same line, because they can be considered as a single compound syntax element.

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that your screen reader is set to read out punctuation. All the syntax elements that have the same dotted decimal number (for example, all the syntax elements that have the number 3.1) are mutually exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, you know that your syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a syntax element with dotted decimal number 3 is followed by a series of syntax elements with dotted decimal number 3.1, all the syntax elements numbered 3.1 are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add information about the syntax elements. Occasionally, these words and symbols might occur at the beginning of the element itself. For ease of identification, if the word or symbol is a part of the syntax element, it is preceded by the backslash (\) character. The * symbol can be used next to a dotted decimal number to indicate that the syntax element repeats. For example, syntax element *FILE with dotted decimal number 3 is given the format 3 * FILE. Format 3* FILE indicates that syntax element FILE repeats. Format 3* * FILE indicates that syntax element * FILE repeats.

Characters such as commas, which are used to separate a string of syntax elements, are shown in the syntax just before the items they separate. These characters can appear on the same line as each item, or on a separate line with the same dotted decimal number as the relevant items. The line can also show another symbol giving information about the syntax elements. For example, the lines 5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the LASTRUN and DELETE syntax elements, the elements must be separated by a comma. If no separator is given, assume that you use a blank to separate each syntax element.

If a syntax element is preceded by the % symbol, this indicates a reference that is defined elsewhere. The string following the % symbol is the name of a syntax fragment rather than a literal. For example, the line 2.1 %OP1 means that you should see separate syntax fragment OP1.

The following words and symbols are used next to the dotted decimal numbers:

- A question mark (?) means an optional syntax element. A dotted decimal number followed by the ? symbol indicates that all the syntax elements with a corresponding dotted decimal number, and any subordinate syntax elements, are optional. If there is only one syntax element with a dotted decimal number, the ? symbol is displayed on the same line as the syntax element, (for example 5? NOTIFY). If there is more than one syntax element with a dotted decimal number, the ? symbol is displayed on a line by itself, followed by the syntax elements that are optional. For example, if you hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that syntax elements NOTIFY and UPDATE are optional; that is, you can choose one or none of them. The ? symbol is equivalent to a bypass line in a railroad diagram.
- An exclamation mark (!) means a default syntax element. A dotted decimal number followed by the ! symbol and a syntax element indicate that the syntax element is the default option for all syntax elements that share the same dotted

decimal number. Only one of the syntax elements that share the same dotted decimal number can specify a ! symbol. For example, if you hear the lines 2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the default option for the FILE keyword. In this example, if you include the FILE keyword but do not specify an option, default option KEEP will be applied. A default option also applies to the next higher dotted decimal number. In this example, if the FILE keyword is omitted, default FILE(KEEP) is used. However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1 (DELETE), the default option KEEP applies only to the next higher dotted decimal number, 2.1 (which does not have an associated keyword), and does not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

- An asterisk (*) means a syntax element that can be repeated 0 or more times. A dotted decimal number followed by the * symbol indicates that this syntax element can be used zero or more times; that is, it is optional and can be repeated. For example, if you hear the line 5.1* data area, you know that you can include one data area, more than one data area, or no data area. If you hear the lines 3*, 3 HOST, and 3 STATE, you know that you can include HOST, STATE, both together, or nothing.

Notes:

1. If a dotted decimal number has an asterisk (*) next to it and there is only one item with that dotted decimal number, you can repeat that same item more than once.
 2. If a dotted decimal number has an asterisk next to it and several items have that dotted decimal number, you can use more than one item from the list, but you cannot use the items more than once each. In the previous example, you could write HOST STATE, but you could not write HOST HOST.
 3. The * symbol is equivalent to a loop-back line in a railroad syntax diagram.
- + means a syntax element that must be included one or more times. A dotted decimal number followed by the + symbol indicates that this syntax element must be included one or more times; that is, it must be included at least once and can be repeated. For example, if you hear the line 6.1+ data area, you must include at least one data area. If you hear the lines 2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or both. Similar to the * symbol, the + symbol can only repeat a particular item if it is the only item with that dotted decimal number. The + symbol, like the * symbol, is equivalent to a loop-back line in a railroad syntax diagram.

Notices

This information was developed for products and services offered in the USA.

IBM may not offer all of the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan, Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who want to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

Site Counsel
IBM Corporation
P.O. Box 12195
3039 Cornwallis Road
Research Triangle Park, North Carolina 27709-2195
U.S.A

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations might not appear.

COPYRIGHT LICENSE:

This information might contain sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing

application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_.

IBM is required to include the following statements in order to distribute portions of this document and the software described herein to which contributions have been made by The University of California. Portions herein © Copyright 1979, 1980, 1983, 1986, Regents of the University of California. Reproduced by permission. Portions herein were developed at the Electrical Engineering and Computer Sciences Department at the Berkeley campus of the University of California under the auspices of the Regents of the University of California.

Portions of this publication relating to RPC are Copyright © Sun Microsystems, Inc., 1988, 1989.

Some portions of this publication relating to X Window System** are Copyright © 1987, 1988 by Digital Equipment Corporation, Maynard, Massachusetts, and the Massachusetts Institute Of Technology, Cambridge, Massachusetts.

Some portions of this publication relating to X Window System are Copyright © 1986, 1987, 1988 by Hewlett-Packard Corporation.

Permission to use, copy, modify, and distribute the M.I.T., Digital Equipment Corporation, and Hewlett-Packard Corporation portions of this software and its documentation for any purpose without fee is hereby granted, provided that the above copyright notice appears in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the names of M.I.T., Digital, and Hewlett-Packard not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T., Digital, and Hewlett-Packard make no representation about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Copyright © 1983, 1995-1997 Eric P. Allman

Copyright © 1988, 1993 The Regents of the University of California.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:

This product includes software developed by the University of California, Berkeley and its contributors.

4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software program contains code, and/or derivatives or modifications of code originating from the software program "Popper." Popper is Copyright ©1989-1991 The Regents of the University of California. Popper was created by Austin Shelton, Information Systems and Technology, University of California, Berkeley.

Permission from the Regents of the University of California to use, copy, modify, and distribute the "Popper" software contained herein for any purpose, without fee, and without a written agreement is hereby granted, provided that the above copyright notice and this paragraph and the following two paragraphs appear in all copies. HOWEVER, ADDITIONAL PERMISSIONS MAY BE NECESSARY FROM OTHER PERSONS OR ENTITIES, TO USE DERIVATIVES OR MODIFICATIONS OF POPPER.

IN NO EVENT SHALL THE UNIVERSITY OF CALIFORNIA BE LIABLE TO ANY PARTY FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, ARISING OUT OF THE USE OF THE POPPER SOFTWARE, OR ITS DERIVATIVES OR MODIFICATIONS, AND ITS DOCUMENTATION, EVEN IF THE UNIVERSITY OF CALIFORNIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

THE UNIVERSITY OF CALIFORNIA SPECIFICALLY DISCLAIMS ANY WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE POPPER SOFTWARE PROVIDED HEREUNDER IS ON AN "AS IS" BASIS, AND THE UNIVERSITY OF CALIFORNIA HAS NO OBLIGATIONS TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.

Copyright © 1983 The Regents of the University of California.

Redistribution and use in source and binary forms are permitted provided that the above copyright notice and this paragraph are duplicated in all such forms and that any documentation, advertising materials, and other materials related to such distribution and use acknowledge that the software was developed by the University of California, Berkeley. The name of the University may not be used to endorse or promote products derived from this software without specific prior

written permission. THIS SOFTWARE IS PROVIDED ``AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Copyright © 1991, 1993 The Regents of the University of California.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
This product includes software developed by the University of California, Berkeley and its contributors.
4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 1990 by the Massachusetts Institute of Technology

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of M.I.T. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. Furthermore if you modify this software you must label your software as modified software and not distribute it in such a fashion that it might be confused with the original M.I.T. software. M.I.T. makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Copyright © 1998 by the FundsXpress, INC.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of FundsXpress not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. FundsXpress makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

THIS SOFTWARE IS PROVIDED ``AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Copyright © 1999, 2000 Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Copyright © 1995-1998 Eric Young (eay@cryptsoft.com)

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com). The implementation was written so as to conform with Netscape's SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used. This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment: "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)". The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related.
4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include acknowledgment:
"This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The license and distribution terms for any publicly available version or derivative of this code cannot be changed. i.e. this code cannot simply be copied and put under another distribution license [including the GNU Public License.]

This product includes cryptographic software written by Eric Young.

Copyright © 1999, 2000 Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Copyright © 2004 IBM Corporation and its licensors, including Sendmail, Inc., and the Regents of the University of California.

Copyright © 1999,2000,2001 Compaq Computer Corporation

Copyright © 1999,2000,2001 Hewlett-Packard Company

Copyright © 1999,2000,2001 IBM Corporation

Copyright © 1999,2000,2001 Hummingbird Communications Ltd.

Copyright © 1999,2000,2001 Silicon Graphics, Inc.

Copyright © 1999,2000,2001 Sun Microsystems, Inc.

Copyright © 1999,2000,2001 The Open Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

X Window System is a trademark of The Open Group.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

You can obtain softcopy from the z/OS Collection (SK3T-4269), which contains BookManager[®] and PDF formats.

Minimum supported hardware

The minimum supported hardware for z/OS releases identified in z/OS announcements can subsequently change when service for particular servers or devices is withdrawn. Likewise, the levels of other software products supported on a particular release of z/OS are subject to the service support lifecycle of those products. Therefore, z/OS and its product publications (for example, panels, samples, messages, and product documentation) can include references to hardware and software that is no longer supported.

- For information about software support lifecycle, see: <http://www-01.ibm.com/software/support/systemsz/lifecycle/>
- For information about currently-supported IBM hardware, contact your IBM representative.

Policy for unsupported hardware

Various z/OS elements, such as DFSMS, HCD, JES2, JES3, and MVS, contain code that supports specific hardware servers or devices. In some cases, this device-related element support remains in the product even after the hardware devices pass their announced End of Service date. z/OS may continue to service element code; however, it will not provide service related to unsupported hardware devices. Software problems related to these devices will not be accepted for service, and current service activity will cease if a problem is determined to be associated with out-of-support devices. In such cases, fixes will not be issued.

Trademarks

IBM, the IBM logo, and ibm.com[®] are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Intel is a registered trademark of Intel Corporation or its subsidiaries in the United States and other countries.

Java[™] and all Java-based trademarks are trademarks or registered trademarks of Oracle and/or its affiliates.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

Adobe and PostScript are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other product and service names might be trademarks of IBM or other companies.

Communicating your comments to IBM

If you especially like or dislike anything about this document, you can send us comments electronically by using one of the following methods:

Internet email:

comsvrcf@us.ibm.com

World Wide Web:

<http://www.ibm.com/systems/z/os/zos/webqs.html>

If you would like a reply, be sure to include your name, address, and telephone number. Make sure to include the following information in your comment or note:

- Title and order number of this document
- Page number or topic related to your comment

Feel free to comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this document. However, the comments you send should pertain to only the information in this manual and the way in which the information is presented. To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.



Product Number: 5650-ZOS

Printed in USA

SC27-3665-01

