

z/OS Communications Server



Improved control over VTAM VIT options for APAR OA50271

Version 2 Release 1

Note:

Links to related publications are from original documents and might not work. The links to publications are included for reference purposes only.

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Chapter 1. New Function Summary

V2R1 new function summary

Improved control over default VTAM VIT options

z/OS V2R1 Communications Server, with SNA APAR OA50271, provides two levels of operator control for managing VTAM Internal Trace (VIT) internal mode record collection:

- You can use “Full VIT control” to control the use of all VIT options, at any time, using VTAM start options or the MODIFY TRACE and MODIFY NOTRACE commands. This includes the ability to disable all internal mode VIT recording, with the exception of when a CSDUMP message or code trigger is active. In this condition the VIT MSG option cannot be disabled. The DISPLAY TRACE command always displays the current settings of all VIT options.
- You can use “Base VIT control” to allow VTAM to enforce that certain VIT options (API, CIO, MSG, NRM, PIU and SSCP) remain active at all times. The DISPLAY TRACE command displays the settings of these VIT options only if you have explicitly enabled the options, otherwise the settings are not displayed. This is the default behavior, and this was the only level of VIT control provided originally.

Restriction: The two levels of VIT control apply to internal mode recording only. External mode recording of VIT records is unchanged regardless of the level of VIT control used for internal mode recording.

To enable the improved control over default VTAM VIT options, complete the appropriate tasks in Table 1.

Table 1. Task topics to enable improved control over default VTAM VIT options

Task	Reference
Specify the VITCTRL=FULL start option on the VTAM START command to enable “Full VIT control” mode when VTAM is activated.	VTAM Start Options in z/OS Communications Server: SNA Resource Definition Reference
Specify the VITCTRL=BASE start option, or take the default setting, on the VTAM START command to enable “Base VIT control” mode when VTAM is activated.	VTAM Start Options in z/OS Communications Server: SNA Resource Definition Reference
Issue the MODIFY VTAMOPTS,VITCTRL=FULL command to dynamically activate “Full VIT control” mode.	MODIFY VTAMOPTS in z/OS Communications Server: SNA Operation
Issue the MODIFY VTAMOPTS,VITCTRL=BASE command to dynamically activate “Base VIT control” mode.	MODIFY VTAMOPTS in z/OS Communications Server: SNA Operation

Table 1. Task topics to enable improved control over default VTAM VIT options (continued)

Task	Reference
<p>If you are operating in “Full VIT control” mode, use the follow commands to control or display VIT options:</p> <ul style="list-style-type: none"> • Issue MODIFY NOTRACE,TYPE=VTAM,MODE=INT, OPTION=(options) to disable one or more VIT options. Specifying OPTION=ALL or OPTION=END disables all internal mode VIT recording. • Issue MODIFY TRACE,TYPE=VTAM,MODE=INT, OPTION=(options) to enable one or more VIT options. • Issue DISPLAY TRACES to display the current settings of all VIT options. 	<p>See the following topics:</p> <ul style="list-style-type: none"> • DISPLAY TRACES in z/OS Communications Server: SNA Operation • MODIFY TRACE in z/OS Communications Server: SNA Operation • MODIFY NOTRACE in z/OS Communications Server: SNA Operation

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 ▶▶
```

Abbreviations

Operand	Abbreviation
DISPLAY	D
TRACES	TRACE
TYPE=NODES	TYPE=NODE

Purpose

The DISPLAY TRACES command displays the status of a trace.

Operands

ID Specifies a value that varies depending on the type of trace.

- For **TYPE=NODES**, ID specifies the name of one or more resources whose trace status is to be displayed. The ID operand is required with **TYPE=NODES**. You can specify major or minor node names. Resource names can be network-qualified.

Depending on the value of the **DSPLYWLD** start option, wildcard values can be used for this operand. However, if you specify a wildcard, trace status information is displayed only for resources that match the wildcard value, and not for subordinate resources. For more information about using wildcards, see *Using wildcard names*.

Guideline: Specifying a wildcard name might degrade performance because VTAM checks every major or minor node in the network.

If model application program definition names match the pattern you specify on the ID operand of the **DISPLAY TRACES** command when **TYPE** specifies **NODES**, those model application program names appear in your display output. In addition, any dynamic application programs built from those model application program definitions also appear in your display output. Similarly, any model CDRSCs and clone CDRSCs that match the pattern you specify on the ID operand appear in your display output. On message **IST1041I**, a model application program is identified as **MODEL APPL**, a dynamic (clone) application program is identified as **DYNAMIC APPL**, a model CDRSC is identified as **MODEL CDRSC**, and a clone CDRSC is identified as **CLONE CDRSC**.

For example, if you issue the command **DISPLAY NET, TRACES, ID=APPL*, TYPE=NODES**, and model application programs and model CDRSCs have been defined using names that match the pattern specified on the ID operand (**APPL***), you get the following output:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1 APPL
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST1041I NETA.APPL1V APPL
IST1042I IO = ON - AMOUNT = **NA** - SAVED = NO
IST924I -----
IST075I NAME = TESTAPPL, TYPE = APPL SEGMENT
IST1041I NETA.APPL1* MODEL APPL
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST1041I NETA.APPL1Q DYNAMIC APPL
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST924I -----
IST075I NAME = TESTCDRS, TYPE = CDRSC SEGMENT
IST1041I NETA.APPL2* MODEL CDRSC
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST1041I NETA.APPL2Q CLONE CDRSC
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST314I END
```

The wildcard character used in **APPL*** on the ID operand of the **DISPLAY TRACES** command tells VTAM to display the trace status of any resource whose name begins with **APPL**, followed by zero to four valid characters. The name fields of the network-qualified names **NETA.APPL1*** and **NETA.APPL2***, even though they contain a wildcard character, begin with **APPL**, followed by zero to four valid characters [an asterisk (*) and a question mark (?) are valid characters in an application program minor node name and CDRSC minor node name]. Therefore, they are included in the display output, as are the dynamic application program (**NETA.APPL1Q**) built from **APPL1*** and the clone CDRSC (**NETA.APPL2Q**) built from **APPL2***.

See the “MODIFY TRACE command” on page 31 for information about which trace types are applicable to various VTAM resource types.

- For **TYPE=CNM**, the ID operand is not valid.
- For **TYPE=EXIT**, ID=ISTEXCAA, ISTECCS, and ISTECDM are the only valid values for the ID operand. ID = must be specified.
- For **TYPE=MODULE**, the ID operand is not valid.
- For **TYPE=NETCTLR**, ID specifies the name of the 3710 physical unit that is to perform the trace. The ID operand is required and wildcard names are not valid for TYPE=NETCTLR.
- For **TYPE=SMS**, ID=VTAMBUF is the only valid value for the ID operand. ID=VTAMBUF can be specified or assumed by default.
- For **TYPE=STATE**, the ID operand is not valid.
- For **TYPE=TSO**, ID specifies the user IDs for which trace status is to be displayed. The ID operand is required with TYPE=TSO. User IDs that do not have an active TSO trace are not displayed. Network-qualified names are not allowed with TYPE=TSO.

Depending on the value of the DSPLYWLD start option, wildcard values can be used for this operand. For more information about using wildcards, see Using wildcard names.

Attention: Specifying a wildcard name might degrade performance because VTAM checks every TSO user ID in the network.

- For **TYPE=VTAM**, the ID operand is not valid.
- For **TYPE=ALL**, the ID operand is not valid.

IDTYPE

Specifies the type of resource that the ID operand names. If several types of resources share the same name, IDTYPE identifies which resource the command should act on. The IDTYPE operand is valid only when TYPE=NODES is specified and the ID operand specifies a value other than an asterisk (*).

IDTYPE=CP

Displays information for the CP with the name specified on the ID operand. The control point that is displayed can be the host CP or a CDRSC representing an adjacent CP.

IDTYPE=RESOURCE

Displays information for a CP, an SSCP, or another resource with the name specified on the ID operand. If both an SSCP and a CP are found, VTAM displays information for both of them.

IDTYPE=SSCP

Displays information for the SSCP with the name specified on the ID operand.

TYPE

If TYPE is not specified, TYPE=VTAM is used by default.

TYPE=CNM

Displays information about communication network management (CNM) traces.

TYPE=EXIT

Displays information about the session management exit (SME) buffer trace.

TYPE=MODULE

Displays information about a module trace.

TYPE=NODES

Displays information about BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, and TG traces for the resources named on the ID operand.

BUF Buffer contents trace

GPT Generalized PIU trace

IO Input/output trace

LINE NCP line trace

QDIOSYNC

Queued Direct I/O diagnostic synchronization

SIT Scanner interface trace

STATE

Resource state trace

TG Transmission group trace

TYPE=NETCTLR

Displays information about a 3710 Network Controller line trace.

TYPE=ROUTE

Displays the status of the APPN route selection trace.

TYPE=SMS

Displays information about the Storage Management services (SMS) buffer use trace.

TYPE=STATE

Displays information about the resource types being traced.

TYPE=TSO

Displays trace information for the TSO user IDs specified on the ID operand. This function is similar to that provided by the DISPLAY TSOUSER command.

TYPE=VTAM

Displays information about the VTAM internal trace (VIT).

TYPE=ALL

Displays information for the following types of traces, if they are active:

- TYPE=CNM
- TYPE=EXIT
- TYPE=MODULE
- TYPE=NODES,ID=*
- TYPE=SMS
- TYPE=STATE
- TYPE=TSO,ID=*
- TYPE=VTAM

No information is displayed for the CNM, TSO, EXIT, MODULE, SMS, STATE, and VTAM traces if they are not active.

Note: Specifying TYPE=ALL might degrade performance because VTAM checks every major or minor node in the network. It may also temporarily delay subsequent VTAM operator commands.

Resulting display

The resulting display shows information specific to the trace type and ID specified.

- For TYPE=CNM, the resulting display shows the status for session awareness and problem determination PIU buffer traces (on or off).
- For TYPE=EXIT, the resulting display shows the functions of the session management exit (SME) for which tracing is active.
- For TYPE=MODULE, the resulting display shows the types of modules for which tracing is active.
- For TYPE=NODES, the resulting display shows:
 - For ID=*major node name*, the resources subordinate to the named resource that have an active BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, or TG trace.
 - For ID=*minor node name*, the status of BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, or TG tracing for this resource.
 - For ID=*, all resources that have an active BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, or TG trace, along with the name of the resource's major node.
 - For ID=*wildcard name*, the status of BUF, GPT, IO, LINE, QDIOSYNC, SIT, STATE, or TG tracing for the resources that match the wildcard value.

Note: For ID=*name* in any form, the display also shows whether BUF, IO, QDIOSYNC, and STATE trace requests are saved, with saved trace requests for unknown resources.

- For TYPE=NETCTLR, the resulting display shows the name of the 3710 performing the trace, and the PU name and line name of each resource being traced.
- For TYPE=ROUTE, the resulting display shows the APPN route selection trace status (on or off) and the amount of storage currently allocated to the trace table.
- For TYPE=SMS, the resulting display shows the trace status (on or off).
- For TYPE=STATE, the resulting display shows the resource types for which resource state tracing is active.
- For TYPE=TSO, the resulting display shows:
 - For ID=*name*, the trace status for the named user ID (on or off).
 - For ID=*, all user IDs that have an active trace.
- For TYPE=VTAM, the resulting display shows the mode (internal or both internal and external), the trace table size (applicable only to MODE=INT).
- For TYPE=VTAM, the display for the active trace options for MODE=INT is affected by the setting of the VTAM Internal Trace Control (VITCTRL) start option. See *z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps* and the VIT for more details.
- For TYPE=ALL, the resulting display shows all of the information for the following traces, if they are active:
 - TYPE=CNM
 - TYPE=EXIT
 - TYPE=MODULE
 - TYPE=NODES,ID=*
 - TYPE=SMS

- TYPE=STATE
- TYPE=TSO,ID=*
- TYPE=VTAM

Examples

Displaying the status of communication network management (CNM) traces:

```
d net, traces, type=cnm
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=CNM
IST655I PDPIUBUF TRACE STATUS = ON
IST655I SAWBUF TRACE STATUS = ON
IST314I END
```

Displaying the status of the session management exit (SME) buffer trace:

```
d net, traces, type=exit, id=istexcaa
IST097I DISPLAY ACCEPTED
IST075I NAME = ISTECA, TYPE = EXIT
IST199I OPTIONS = BEGIN INITAUTH SECAUTH ACCTING GWPATH XRF ADJSSCP
IST199I OPTIONS = ALIAS ALS REPL VRSEL HPRVRSEL HPRP_OLU HPRP_ANR
IST199I OPTIONS = HPRP_DLU END
IST314I END
```

Displaying the status for the exit trace for ISTECCS:

```
d net, traces, type=exit, id=istexccs
IST097I DISPLAY ACCEPTED
IST075I NAME = ISTECCS, TYPE = EXIT
IST199I OPTIONS = BEGIN CONNSTAT DYNA_XID PRED_XID END
IST314I END
```

Displaying the status of the module trace:

```
d net, traces, type=module
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=MODULE
IST199I OPTIONS = COMMAND CONNECTION INTERFACES SESSION
IST314I END
```

Displaying node traces for a few resources with saved trace requests:

```
d net, traces, type=nodes, id=(app11,app12,netapp11,noapp1)
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1      APPL
IST1042I  BUF           = ON   - AMOUNT = PARTIAL - SAVED = YES
IST1042I  STATE         = ON   - AMOUNT = **NA**  - SAVED = YES
IST1041I NETA.APPL2      APPL
IST1042I  BUF           = ON   - AMOUNT = PARTIAL - SAVED = NO
IST1042I  STATE         = ON   - AMOUNT = **NA**  - SAVED = NO
IST924I -----
IST075I NAME = CDRSC1A, TYPE = CDRSC SEGMENT
IST1041I NETA.NETAPPL1    CDRSC
IST1042I  IO             = ON   - AMOUNT = **NA**  - SAVED = YES
IST1042I  STATE         = ON   - AMOUNT = **NA**  - SAVED = YES
IST924I -----
IST1422I SAVED TRACE REQUESTS FOR NETA.NOAPP1
IST1041I NETA.NOAPP1      N/A
IST1042I  BUF           = SAVED - AMOUNT = PARTIAL
IST1042I  STATE         = SAVED - AMOUNT = **NA**
IST314I END
```

Displaying node traces for all resources:

```

d net, traces, type=nodes, id=*
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = A50CDRMC, TYPE = CDRM SEGMENT
IST1041I C01N          CDRM
IST1042I  BUF          = ON    - AMOUNT = PARTIAL - SAVED = NO
IST924I -----
IST075I NAME = A0362ZC, TYPE = PU T4/5
IST1041I A03S16        LINE
IST1042I  LINE          = TRACT
IST924I -----
IST075I NAME = TRLHYDRA, TYPE = TRL MAJOR NODE
IST1041I TRLHYDRA      TRL MAJOR NODE
IST1042I  IO            = ON    - AMOUNT = **NA** - SAVED = NO
IST1041I NSQDIO11     TRLE
IST1042I  IO            = ON    - AMOUNT = **NA** - SAVED = NO
IST2183I QDIOSYNC = ALLINOUT - SYNCID = NSQDIO11 - SAVED = YES
IST314I END

```

Displaying node traces for a control point:

```

d net, traces, type=nodes, id=a500n, idtype=cp
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = NETA.A500N, TYPE = APPL
IST1041I NETA.A500N    APPL
IST1042I  BUF          = ON    - AMOUNT = PARTIAL - SAVED = NO
IST314I END

```

Displaying node traces for an SSCP:

```

d net, traces, type=nodes, id=a500n, idtype=sscp
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = A500N, TYPE = CDRM
IST1041I A500N          CDRM
IST1042I  BUF          = ON    - AMOUNT = PARTIAL - SAVED = NO
IST314I END

```

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

```

d net, traces, type=route
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=ROUTE
IST2154I ROUTE SELECTION TRACE IS ACTIVE - BFRNUM = 100
IST2156I STORAGE ALLOCATED TO ROUTE SELECTION TRACE = 2000K
IST314I END

```

Displaying the status of the SMS trace:

```

d net, traces, type=sms
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=SMS
IST655I SMS TRACE STATUS = OFF
IST314I END

```

Displaying the status of the resource state trace:

```

d net, traces, type=state
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=STATE
IST199I OPTIONS = ADJCP APPL CDRM CDRSC GROUP LINE LU NCP PU
IST314I END

```

Displaying a TSO user trace:


```

d net, traces, type=tso, id=user1
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=TSO
IST1200I USER1      TSO USERID  TRACE = OFF
IST314I END

```

Displaying the status of the VTAM internal trace when VITCTRL=BASE is being used:

```

d net, traces, type=vtam
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 0100 MB
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
IST1730I SUBTRACE TREE ACTIVE UNDER TRACE OPTION SSCP
IST1730I SUBTRACE ARBP ACTIVE UNDER TRACE OPTION SSCP
IST314I END

```

Displaying all active traces:

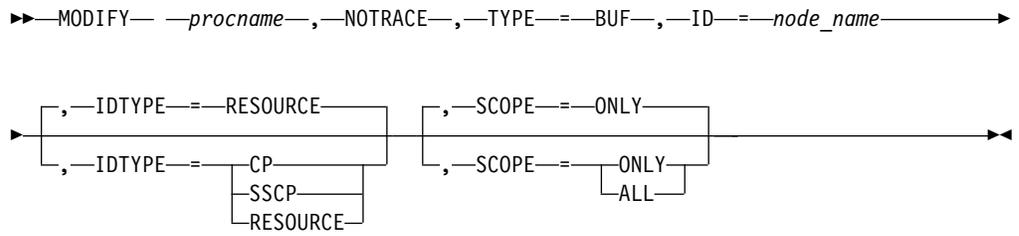
```

d net, traces, type=all
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = A50CDRMC, TYPE = CDRM SEGMENT
IST1041I C01N          CDRM
IST1042I  BUF          = ON    - AMOUNT = PARTIAL
IST924I -----
IST075I NAME = A0362ZC, TYPE = PU T4/5
IST1041I A03S16        LINE
IST1042I  LINE         = TRACT
IST924I -----
IST075I NAME = TRLHYDRA, TYPE = TRL MAJOR NODE
IST1041I TRLHYDRA      TRL MAJOR NODE
IST1042I  IO           = ON    - AMOUNT = **NA** - SAVED = NO
IST1041I NSQDIO11      TRLE
IST1042I  IO           = ON    - AMOUNT = **NA** - SAVED = NO
IST2183I  QDIOSYNC = ALLINOUT - SYNCID = NSQDIO11 - SAVED = YES
IST924I -----
IST075I NAME = ISTECAA, TYPE = EXIT
IST199I OPTIONS = BEGIN INITAUTH VRSEL END
IST924I -----
IST075I NAME = ISTECCS, TYPE = EXIT
IST199I OPTIONS = BEGIN CONNSTAT DYNA_XID PRED_XID END
IST924I -----
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 0050 MB
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = EXT, SIZE = 0002 BUFFERS
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
IST924I -----
IST350I DISPLAY TYPE = TRACES,TYPE=STATE
IST199I OPTIONS = ADJCP APPL CDRM CDRSC GROUP LINE LU NCP PU
IST924I -----
IST350I DISPLAY TYPE = TRACES,TYPE=MODULE
IST199I OPTIONS = COMMAND CONNECTION INTERFACES SESSION
IST314I END

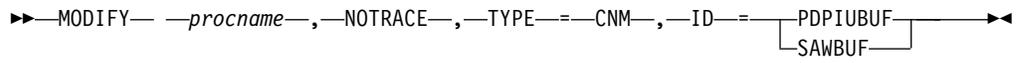
```

MODIFY NOTRACE command

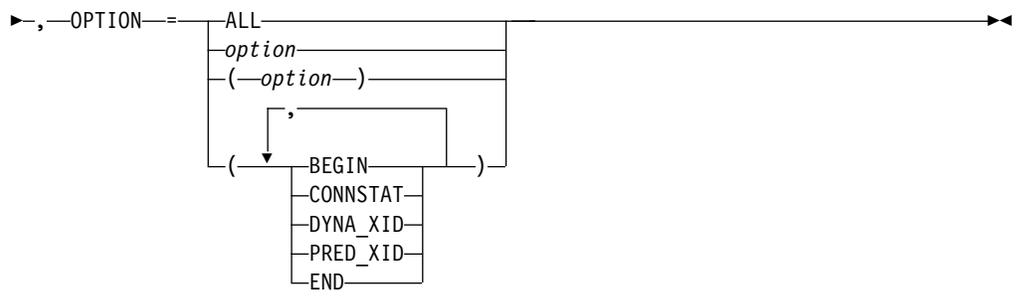
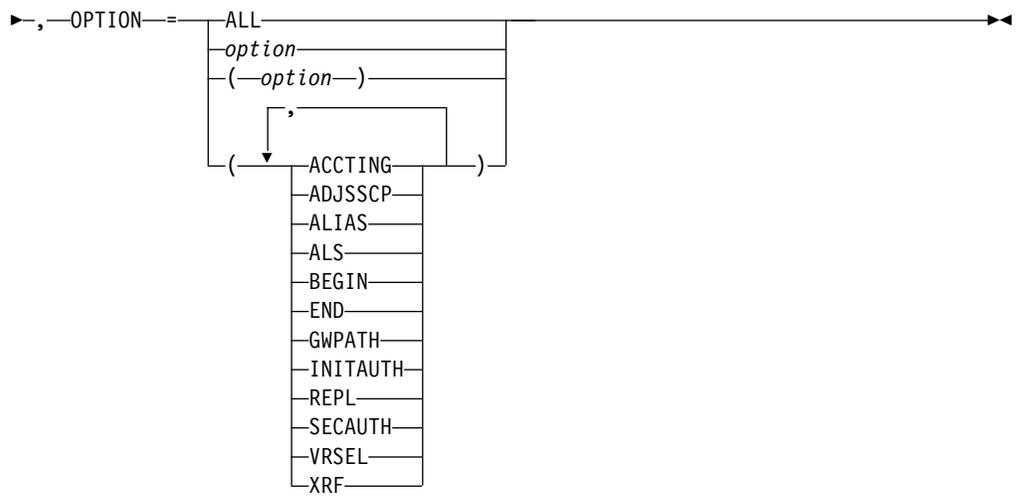
Stop a buffer contents trace:

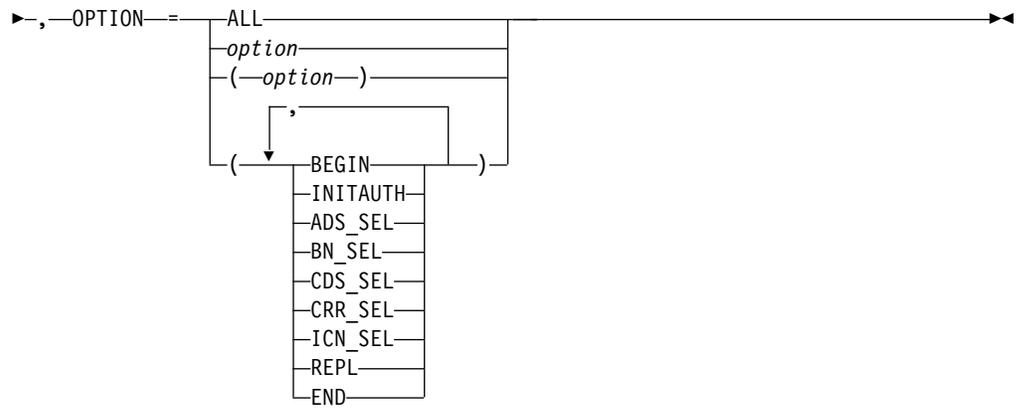


Stop a communication network management trace:

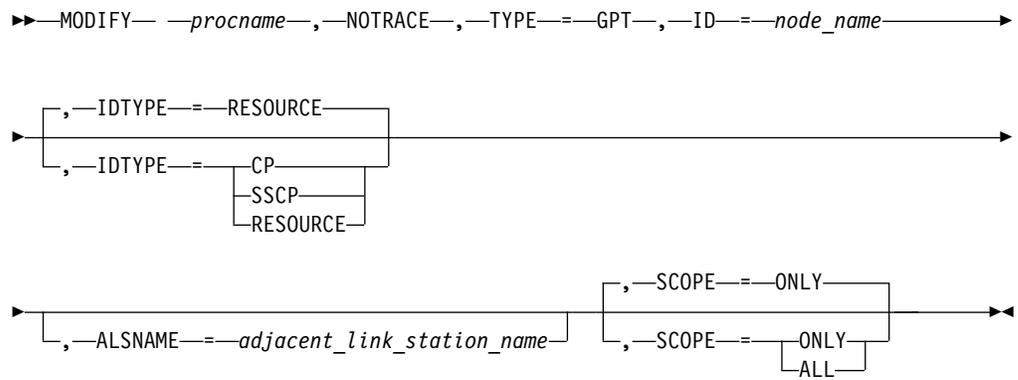


Stop a user Exit buffer trace:

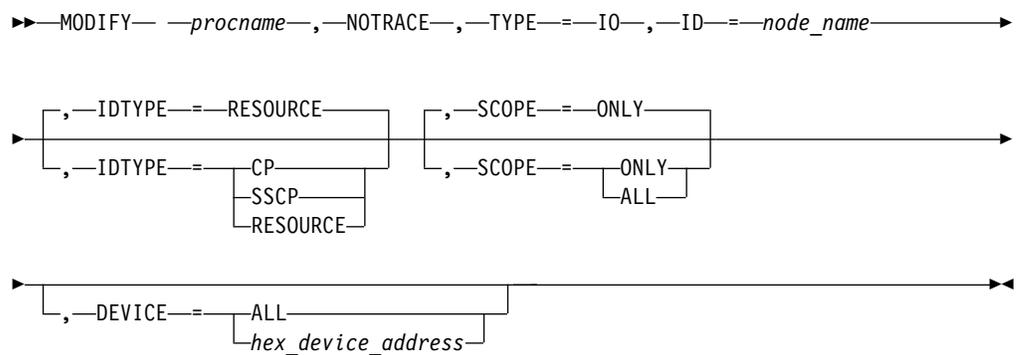




Stop a generalized PIU trace:

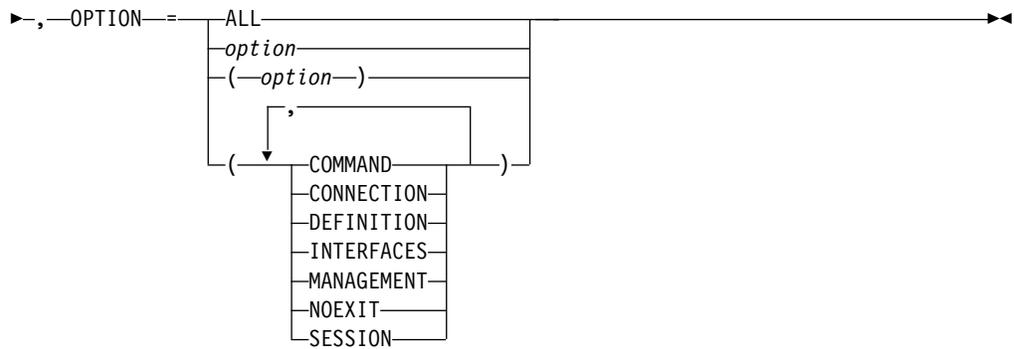


Stop an input/output trace:



Stop a module trace:





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:

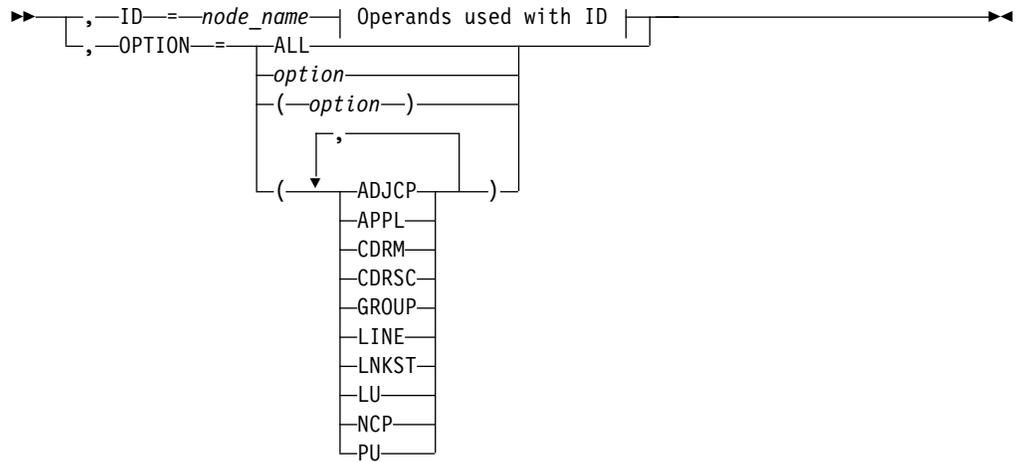
>> MODIFY *procname*, NOTRACE, TYPE=SIT, ID=*line_name*

Stop an SMS (buffer use) trace:

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

Stop a resource state trace:

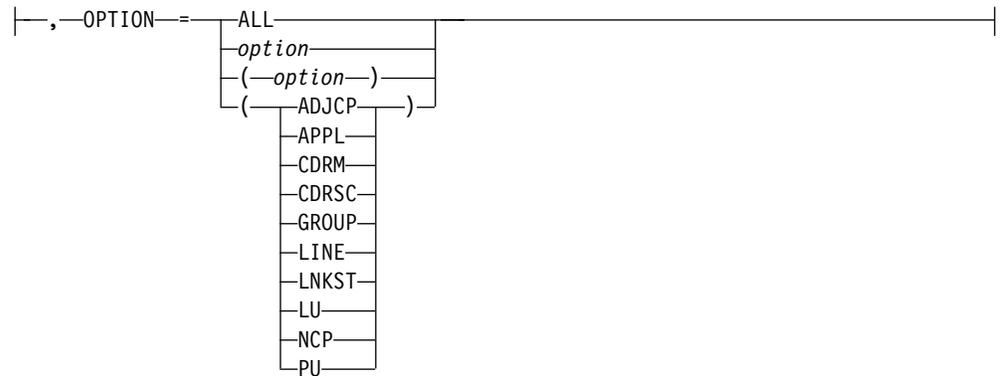
►► MODIFY —*procname*—, —NOTRACE—, —TYPE—=—STATE—



Operands used with ID:



OPTION Operand:



Stop a transmission group trace:

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

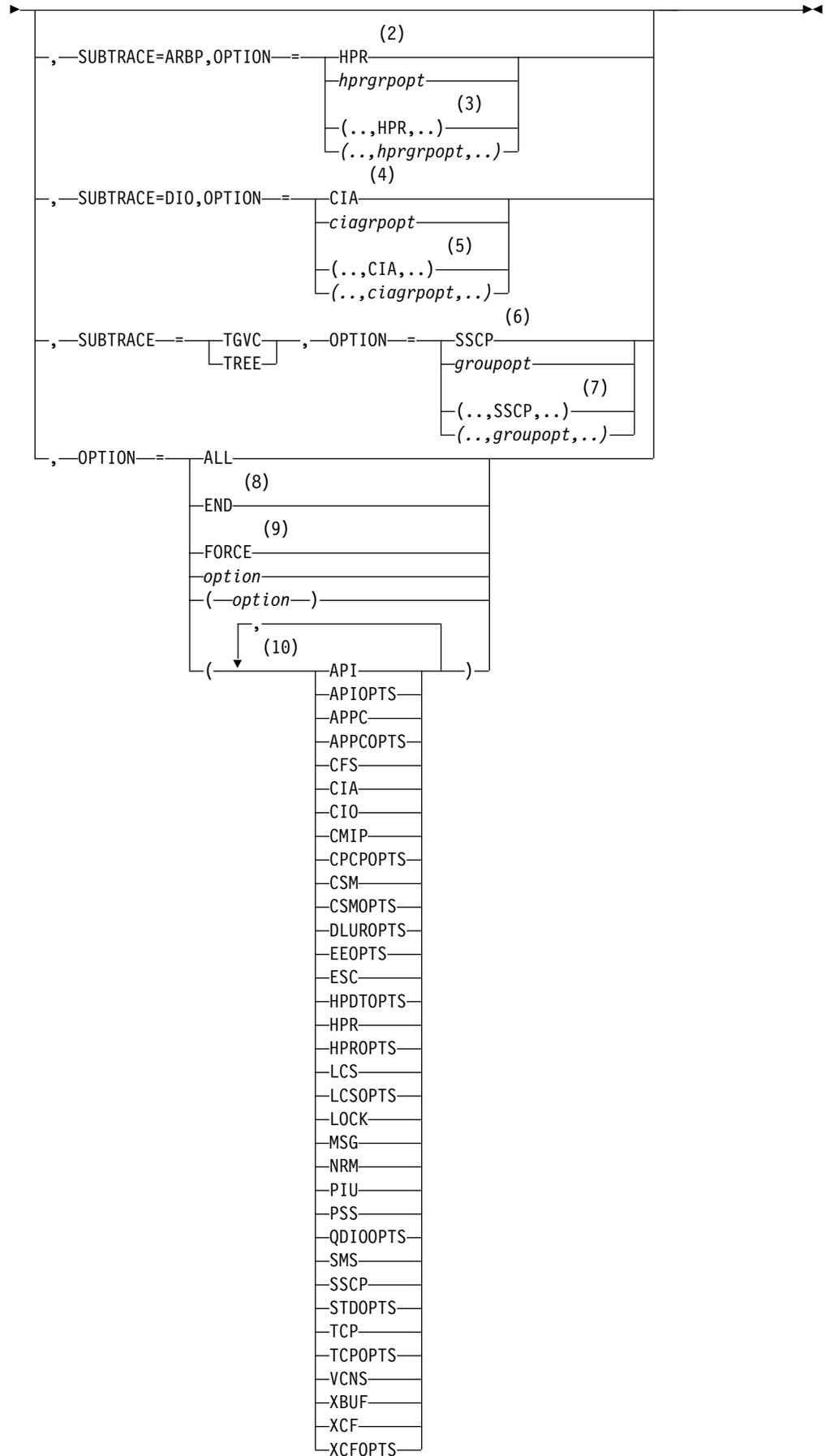
Stop a TSO user ID trace:

►► 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, when operating with VITCTRL=BASE 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 XCFPTS.
- 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 (*ciagrpopt*) that include CIA as an individual option equivalent. The applicable group options are EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, TCPOPTS, and XCFPTS.
- 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 (*ciagrpopt*) 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, CPCOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDPTS, TCPOPTS, and XCFPTS.
- 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.
- 10 For internal recording (MODE=INT), VTAM manages and displays the setting of the API, CIO, MSG,NRM, PIU and SSCP VIT options based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.

Abbreviations

Operand	Abbreviation
MODIFY	F
ALSNAME	ALS
OPTION	OPT
OPTION=COMMAND	OPT=CMD
OPTION=CONNECTION	OPT=CON

Operand	Abbreviation
OPTION=DEFINITION	OPT=DEF
OPTION=INTERFACES	OPT=INT
OPTION=MANAGEMENT	OPT=MGMT
OPTION=SESSION	OPT=SES
SCOPE=ALL	EVERY or E
SCOPE=ONLY	NONE

When using an abbreviation in place of an operand, code the abbreviation exactly as shown in the table. For example, when coding the abbreviation for SCOPE=ALL, code only EVERY or E. Do not code SCOPE=E.

Purpose

The MODIFY NOTRACE command stops a specified trace or deletes a trace command that was saved previously with MODIFY TRACE,SAVE=YES. See z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures for a more detailed description of the VTAM trace facilities. See also the z/OS Communications Server: SNA Resource Definition Reference and the “MODIFY TRACE command” on page 31.

Operands

procname

The procedure name for the command. If *procname* in the START command was specified as *startname.ident*, where *startname* is the VTAM start procedure and *ident* is the optional identifier, either *startname.ident* or *ident* can be specified for *procname*.

If *procname* in the START command was *startname*, *startname* must be specified for *procname*.

ALSNAME=adjacent_link_station_name

Applies only when TYPE=GPT. It specifies the name of the adjacent link station through which you want to turn off traces. The adjacent link station name must be a PU in an NCP major node or a switched PU connected by an NCP link.

The LU can be traced over multiple connections. To turn off tracing for multiple connections, enter a separate command for each connection.

You do not need to specify the ALSNAME operand if either of the following situations is true:

- The ALS list has only one entry (and it is not ISTAPNPU). That entry is selected.
- The ALS list has two entries, one of which is ISTAPNPU. The entry other than ISTAPNPU is selected.

The command fails if ISTAPNPU is specified, or if ISTAPNPU is used by default because it is the only entry in the ALS list.

If no ALS list exists for the resource, specify the adjacent link station on the ALSNAME operand.

Use the DISPLAY ID=*lu_name*,SCOPE=ALL command to display all sessions for an independent LU and which adjacent link station list is used for each session.

DEVICE

Applies only when the ID operand is a TRLE that has the DATAPATH operand coded. Use DEVICE to stop input/output trace on OSA-Express devices specified on the DATAPATH operand.

DEVICE=ALL

Specifies to turn off input/output trace on all devices in the DATAPATH list.

DEVICE=hex_device_address

Specifies to turn off input/output trace for a specific DATAPATH device.

FREE

Applies only when you specify TYPE=ROUTE. The FREE operand specifies whether the APPN route selection trace table storage should be freed.

FREE=YES

The storage allocated for the route selection trace table is freed.

Guidelines for using the FREE operand:

1. Start the APPN route selection trace with the MODIFY TRACE,TYPE=ROUTE command.
2. Recreate the problem (an incorrect APPN route was taken).
3. Stop the APPN route selection trace with the MODIFY NOTRACE,TYPE=ROUTE command.
4. Dump VTAM to capture the information in the APPN route selection trace.
5. Free the route selection trace table storage with the MODIFY NOTRACE,TYPE=ROUTE, FREE=YES

FREE=NO

The storage allocated for the route selection trace table is not freed.

ID=name

Specifies one of the following values:

- When TYPE is **BUF, IO, GPT, LINE, SIT, STATE, or TG**, the ID operand specifies the name of a node for which there is an active trace of the type specified by the TYPE operand.

For TYPE=BUF, TYPE=IO, TYPE=GPT, or TYPE=STATE, the name can be a network-qualified name. If *name* is an ACB name, and the ACB name matches the name on the APPL definition statement, then you can use a network-qualified ACB name.

For TYPE=BUF, TYPE=IO, or TYPE=STATE for a CDRM, you can specify a network-qualified name, but this does not remove the restriction that the non-network-qualified CDRM name must be unique across networks.

For TYPE=BUF, you can specify the name of the internal or external CMIP application program. For the VTAM topology agent, *node_name* is ISTTOPAG. For notification services, *node_name* is ISTNOTIF

For TYPE=IO, the name can be a TRLE name with OSA-Express.

For TYPE=BUF, TYPE=IO, or TYPE=STATE, the name can be a model resource (APPL or CDRSC). If SCOPE=ALL is specified, the command also

applies to the clone resources created from the model. If SCOPE=ONLY is specified, current clone resources are unaffected, but future clone resources are affected when they are created.

- When TYPE is **CNM**, the ID operand specifies one of the following values:
 - PDPIUBUF, to stop the problem determination PIU buffer trace
 - SAWBUF, to stop the session awareness buffer trace.
- When TYPE is **EXIT**, the ID operand is required and must be specified as ISTEEXCAA, ISTEEXCCS, or ISTEEXCDM.
- When TYPE is **MODULE**, the ID operand does not apply.
- When TYPE is **NETCTLR**, the ID operand specifies the physical unit for which the trace is to be stopped. (VTAM is not required to own or know about the IBM® 3710 Network Controller). VTAM sends the name of the resource specified on the ID operand to the IBM 3710 Network Controller specified on the PU operand.
- When TYPE is **QDIOSYNC**, the ID operand specifies the TRLE name of the OSA-Express2 adapter for which diagnostic data synchronization and filtering is to be stopped. Specify ID=* to stop QDIOSYNC for all OSA-Express2 adapters.

When multiple QDIOSYNC NOTRACE or TRACE commands are specified, the last one that is applicable to a specific TRLE name takes precedence. For example, TRACE TYPE=QDIOSYNC,ID=TRLE1 requests synchronization for a single OSA-Express2 adapter but the request is canceled if it is followed by NOTRACE TYPE=QDIOSYNC,ID=*. TRACE TYPE=QDIOSYNC,ID=* requests synchronization of all OSA-Express2 adapters and, if it is followed by NOTRACE TYPE=QDIOSYNC,ID=TRLE1, results in the synchronization of all OSA-Express2 adapters except TRLE1.

- When TYPE is **SMS**, the ID operand is optional and, if specified, is always VTAMBUF.
- When TYPE is **TSO**, the ID operand specifies the name of a TSO user ID for which there is an active trace.
- When TYPE is **VTAM**, the ID operand does not apply.

IDTYPE

Specifies the type of resource that the ID operand names. If several types of resources share the same name, IDTYPE identifies which resource the command should act on. IDTYPE applies when TYPE=BUF, TYPE=IO, TYPE=GPT, or TYPE=STATE.

IDTYPE=CP

Stops tracing for the CP with the name specified on the ID operand. The control point can be the host CP or a CDRSC representing an adjacent CP.

IDTYPE=SSCP

Stops tracing for the SSCP with the name specified on the ID operand.

IDTYPE=RESOURCE

Stops tracing for a CP, an SSCP, or another resource with the name specified on the ID operand. If both an SSCP and a CP are found, VTAM stops tracing for both of them.

LINE=line_name

Applies only when TYPE=NETCTLR. It specifies the name of a link whose trace is to be stopped. This link is attached to the IBM 3710 Network Controller specified on the PU operand. VTAM has no knowledge of this link. VTAM sends the name of the link specified on the LINE operand to the IBM 3710 Network Controller specified on the PU operand.

MODE

Applies only when TYPE=VTAM. It specifies whether to stop internal or external trace recording.

If you do not specify MODE, the requested options are stopped both internally and externally. However, if external tracing is active when the command is issued, external tracing is restarted with the same number of external buffers.

If you turn off internal trace recording, VTAM might immediately restart the default set of trace options based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.

MODE=INT

Stops internal trace recording for the specified options.

MODE=EXT

Stops external trace recording for the specified options.

MODE=EXT is not valid when OPTION=FORCE is specified.

OPTION

Applies to TYPE=EXIT, TYPE=MODULE, TYPE=STATE, and TYPE=VTAM.

For TYPE=EXIT, OPTION specifies the functions for which tracing is to be stopped.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(BEGIN,INITAUTH,ACCTING).

For TYPE=MODULE, OPTION specifies the modules for which tracing is to be stopped.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(COMMAND,SESSION).

For TYPE=STATE, OPTION specifies the types of resources for which resource state tracing is to be stopped.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(APPL,GROUP,NCP).

For TYPE=VTAM, OPTION indicates the types of VTAM internal traces to be stopped. For additional information about the OPTION operand, see the "MODIFY TRACE command" on page 31 and the z/OS Communications Server: SNA Resource Definition Reference. For more information about VTAM internal trace options, see the z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT.

If TYPE=VTAM is specified and OPTION is omitted, VTAM issues messages identifying the components for which the internal trace is active, without stopping any active traces.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example, OPTION=(API,LOCK,SSCP).

For internal recording (MODE=INT), VTAM manages and displays the setting of the API, CIO, MSG, NRM, PIU and SSCP VIT options based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details. For external recording (MODE=EXT), there are no default options. You can start or stop any options.

OPTION=ALL

Applies to TYPE=MODULE, TYPE=STATE, and TYPE=VTAM.

For TYPE=MODULE, it stops the tracing of all modules.

For TYPE=STATE, it stops the tracing of all resource types except for those started for a specific resource.

For TYPE=VTAM, it stops all of the internal trace options. Exception trace entries continue to be recorded in the internal trace table. For MODE=INT, OPTION=ALL stops internal recording for all options. However, when running with VITCTRL=BASE, the default options (except PSS) are restarted immediately. When running with VITCTRL=FULL and a CSDUMP message or sense code trigger is enabled, then the MSG option is restarted immediately. For MODE=EXT, OPTION=ALL stops external trace recording for all options. If you do not specify the MODE, tracing is stopped both internally and externally, but the default options, when running with VITCTRL=BASE, are restarted immediately for MODE=INT.

OPTION=END

Applies to TYPE=VTAM.

- If MODE is not specified, OPTION=END stops both internal and external trace recording and frees the internal trace table (with consequent loss of existing trace data if external recording is not being used). The default internal trace table size is always reallocated. When running with VITCTRL=BASE, VTAM immediately restarts the default trace options (except PSS) with MODE=INT. When running with VITCTRL=FULL, VTAM immediately restarts with no trace options active (when CSDUMP message or sense code trigger is enabled then the MSG trace option is activated) with MODE=INT. External trace recording is restarted with the previous trace options defined for MODE=EXT.
- If MODE=INT is specified, OPTION=END stops internal trace recording only and frees the internal trace table (with consequent loss of existing trace data if external recording is not being used). The default internal trace table size is always reallocated. When running with VITCTRL=BASE, VTAM also immediately restarts the default trace options (except PSS) with MODE=INT. When running with VITCTRL=FULL, VTAM immediately restarts with no trace options active (when CSDUMP message or sense code trigger is enabled then the MSG trace option is activated) with MODE=INT.
- If MODE=EXT is specified, OPTION=END stops external trace recording only. To stop external recording with OPTION=END, MODE=EXT must be explicitly specified.

For TYPE=EXIT where ID=ISTEXCAA, you can also specify the following options:

OPTION=ALL

Stops the tracing of all functions of the session management exit (SME).

OPTION=ACCTING

Stops tracing the initial and final accounting function of the session management exit (SME).

OPTION=ADJSSCP

Stops tracing the adjacent SSCP selection function of the session management exit (SME).

OPTION=ALIAS

Stops tracing the alias translation function of the session management exit (SME).

OPTION=ALS

Stops tracing the adjacent link station function of the session management exit (SME).

OPTION=BEGIN

Stops tracing the begin function of the session management exit (SME).

OPTION=END

Stops the tracing of the END function of the session management exit (SME).

OPTION=GWPATH

Stops tracing the gateway path list function of the session management exit (SME).

OPTION=INITAUTH

Stops tracing the initial authorization function of the session management exit (SME).

OPTION=REPL

Stops tracing the exit replacement function of the session management exit (SME).

OPTION=SECAUTH

Stops tracing the secondary authorization function of the session management exit (SME).

OPTION=VRSEL

Stops tracing the virtual route selection function of the session management exit (SME).

OPTION=XRF

Stops tracing the XRF session switch function of the session management exit (SME).

For **TYPE=EXIT** where ID=ISTEXCCS, you can also specify the following options:

OPTION=ALL

Stops tracing of all functions.

OPTION=BEGIN

Stops tracing the begin function.

OPTION=CONNSTAT

Stops tracing the connection status.

OPTION=DYNA_XID

Stops tracing the XIDs for dynamic PUs function.

OPTION=END

Stops tracing the end function.

OPTION=PRED_XID

Stops tracing the XIDs for predefined PUs function.

For **TYPE=EXIT** where ID=ISTEXCDM, you can also specify the following options:

OPTION=ALL

Stops tracing of all the functions.

OPTION=ADS_SEL

Stops tracing the alternate central directory server selection function.

OPTION=BEGIN

Stops tracing the begin function.

OPTION=BN_SEL

Stops tracing the border node selection function.

OPTION=CDS_SEL

Stops tracing the central directory server selection function.

OPTION=CRR_SEL

Stops tracing the central resource registration selection function.

OPTION=END

Stops tracing the end function.

OPTION=ICN_SEL

Stops tracing the interchange node selection function.

OPTION=INITAUTH

Stops tracing the initial authorization function.

OPTION=REPL

Stops tracing the exit replacement function

For **TYPE=MODULE**, you can also specify the following options:

OPTION=COMMAND

Stops tracing modules involved in command processing.

OPTION=CONNECTION

Stops tracing modules involved in setting up connections between nodes.

OPTION=DEFINITION

Stops tracing modules involved in resource definition processing.

OPTION=INTERFACES

Stops tracing modules involved in the interface with the host SSCP or the host CP.

OPTION=MANAGEMENT

Stops tracing modules involved in network management.

OPTION=NOEXIT

Specifies that module exits are to be traced for the modules associated with all active **OPTION** values for **TYPE=MODULE**. Module exits are traced for all modules until a subsequent **MODIFY TRACE,TYPE=MODULE,OPTION=NOEXIT** command is issued.

Note: When a **MODULE** trace is started with **OPTION=NOEXIT** (either with the **TRACE** start option or a **MODIFY TRACE** command), module exits are not traced. Specifying **OPTION=NOEXIT** on the **MODIFY NOTRACE** command resumes the tracing of the module exits.

OPTION=SESSION

Stops tracing modules involved in session establishment.

For **TYPE=STATE**, you can also specify the following options:

OPTION=ADJCP

Stops tracing the states of all adjacent control points.

OPTION=APPL

Stops tracing the states of all application programs.

OPTION=CDRM

Stops tracing the states of all CDRMs.

OPTION=CDRSC

Stops tracing the states of all CDRSCs.

OPTION=GROUP

Stops tracing the states of all line groups.

OPTION=LINE

Stops tracing the states of all lines.

OPTION=LNKST

Stops tracing of link stations.

OPTION=LU

Stops tracing the states of all logical units.

OPTION=NCP

Stops tracing the states of all NCPs.

OPTION=PU

Stops tracing the states of all physical units.

For **TYPE=VTAM**, you can also specify the following options:

OPTION=API

Stops tracing the application programming interface.

OPTION=APIOPTS

Stops tracing events related to the application programming interface (API). Specifying this value is equivalent to specifying **OPTION=(API,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=APPC

Stops tracing LU 6.2 communication.

OPTION=APPCOPTS

Stops tracing events related to LU 6.2 application programs. Specifying this value is equivalent to specifying **OPTION=(API,APPC,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=CFS

Stops tracing coupling facility services.

OPTION=CIA

This option helps isolate problems related to channel I/O. CIA entries are the remaining trace records from the CIO option.

OPTION=CIO

Stops tracing channel I/O for channel-attached devices and for lines attached to a communication adapter.

OPTION=CMIP

Stops tracing internal events in CMIP services and the VTAM topology agent.

OPTION=CPCPOPTS

Stops tracing events related to CP-CP sessions. Specifying this value is equivalent to specifying **OPTION=(API,APPC,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=CSM

Stops tracing the communications storage manager.

OPTION=CSMOPTS

Stops tracing events related to communications storage manager (CSM). Specifying this value is equivalent to specifying OPTION=(API,APPC,CIO,CSM,MSG,NRM,PIU,PSS,SMS,SSCP,XBUF).

OPTION=DLUROPTS

Stops tracing events related to dependent LU requester (DLUR). Specifying this value is equivalent to specifying OPTION=(API,APPC,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=EEOPTS

Stops tracing events related to Enterprise Extender (EE). Specifying this value is equivalent to specifying OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP,TCP).

OPTION=ESC

Stops tracing the execution sequence control.

OPTION=HPDTPPTS

Stops tracing events related to high performance data transfer (HPDT). Specifying this value is equivalent to specifying OPTION=(CIA,CIO,HPR,MSG,PIU,PSS,SMS,SSCP).

OPTION=HPR

Stops tracing for HPR.

OPTION=HPROPTS

Stops tracing events related to high performance routing (HPR). Specifying this value is equivalent to specifying OPTION=(API,APPC,CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=LCS

Stops tracing LAN channel stations.

OPTION=LCSOPTS

Stops tracing events related to LAN channel station (LCS). Specifying this value is equivalent to specifying OPTION=(CIO,LCS,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=LOCK

Stops tracing locks

OPTION=MSG

Stops tracing messages.

OPTION=NRM

Stops tracing network resource management.

OPTION=PIU

Stops tracing path information units.

OPTION=PSS

Stops tracing process scheduling services.

OPTION=QDIOOPTS

Stops tracing events related to queued direct I/O (QDIO). Specifying this value is equivalent to specifying OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=SMS

Stops tracing Storage Management services.

OPTION=SSCP

Stops tracing the system services control point.

OPTION=STDOPTS

Stops tracing events related to the application programming interface, channel I/O, messages, network resource management, path information units, process scheduling services and the system services control point. Specifying this value is equivalent to specifying `OPTION=(API,CIO,MSG,NRM,PIU,PSS,SSCP)`. When running with `VITCTRL=BASE`, the options (except PSS) are restarted.

OPTION=TCP

Stops tracing the Enterprise Extender events.

OPTION=TCPOPTS

Stops tracing events related to TCP/IP. Specifying this value is equivalent to specifying `OPTION=(CIA,CIO,MSG,NRM,PIU,PSS,SMS,SSCP,TCP)`.

OPTION=VCNS

Stops tracing VTAM common network services.

OPTION=XBUF

Stops tracing of extended buffer list information.

OPTION=XCF

Stops tracing XCF communication.

OPTION=XCFOPTS

Stops tracing events related to the cross-system coupling facility (XCF). Specifying this value is equivalent to specifying `OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP,XCF)`.

OPTION=FORCE

Stops trace recording if it appears that a previous `MODIFY NOTRACE,OPT=ALL` or `END` command did not complete. Use `OPTION=FORCE` only if your attempt to use `OPTION=END` appears to have failed. VTAM immediately reallocates the default trace table size. When running with `VITCTRL=BASE`, VTAM also restarts the default trace options (except PSS).

Note: `OPTION=FORCE` may cause ABENDs for applications that are in a hung condition.

`OPTION=FORCE` is not valid when `MODE=EXT` is specified. If `OPTION=FORCE` is specified without the `MODE` operand, external tracing is stopped and all external buffers are freed.

PU=3710_pu_name

Applies only when `TYPE=NETCTLR`. It specifies the 3710 physical unit performing the trace to be stopped. VTAM rejects the command if the physical unit is not active to this VTAM (SSCP).

SCOPE

Specifies the scope of the trace. It applies when `TYPE=BUF` or `TYPE=IO`. You can also specify the `SCOPE` operand for `TYPE=GPT`, but it is meaningful only for the NCP node. `SCOPE=ALL` is assumed for a GPT trace of all other node types.

SCOPE=ALL

Stops traces for any nodes subordinate to the node specified. `SCOPE=ALL` is not valid for the host PU trace or for the host intermediate routing node trace (`ID=ISTIRN`). If `SCOPE=ALL` is specified, VTAM issues a message and uses `SCOPE=ONLY` instead.

If the specified node is a model application, SCOPE=ALL turns off the trace option for the model application and stops traces for all existing dynamic applications created using the model. Traces will not be started for future dynamic applications created using the model.

SCOPE=ONLY

Stops a trace only for the specified node.

If the specified node is a model application, SCOPE=ONLY turns off the trace option for the model application. Traces for all existing dynamic applications created using the model are unaffected. Traces will not be started for future dynamic applications created using the model.

SUBTRACE

Specifies that SUBTRACE can be used to turn off a subset of trace entries under a trace option. Currently, four SUBTRACE types are defined; subtrace TREE and TGVC are defined under the SSCP trace option, subtrace DIO is defined under the CIA trace option, and subtrace ARBP is defined under the HPR trace option.

SUBTRACE=ARBP

Specifies that OPTION is a required keyword when SUBTRACE is specified and HPR must be one of the trace options specified when SUBTRACE=ARBP is coded.

SUBTRACE=DIO

Specifies that OPTION is a required keyword when SUBTRACE is specified and CIA must be one of the trace options specified when SUBTRACE=DIO is coded.

SUBTRACE=TGVC

Specifies that OPTION is a required keyword when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TGVC is coded.

SUBTRACE=TREE

Specifies that OPTION is a required keyword when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TREE is coded.

TYPE

Specifies the kind of trace that is to be stopped. Each trace must be stopped with a separate MODIFY NOTRACE command.

TYPE=BUF

Stops the tracing of text that passes through VTAM buffers on the way to or from the node indicated by the ID operand. The SCOPE=ALL operand can be used to extend the scope of the trace to all nodes subordinate to the specified node.

TYPE=CNM

Stops a communication network management trace.

TYPE=EXIT

Stops the tracing of functions of the session management exit (SME).

TYPE=GPT

Stops an NCP generalized PIU trace for the resources specified by the ID operand.

Note: The ID operand of MODIFY NOTRACE cannot specify:

- An NCP switched line that is a switched subarea connection

- A dynamic CDRSC

TYPE=IO

Stops a trace of I/O activity associated with the node specified on the ID operand. The SCOPE=ALL operand can be used to extend the scope of the trace to all nodes subordinate to the specified node. Also, for an NCP major node with an active channel attachment, the SCOPE=ALL operand terminates any active channel I/O trace.

Note: The external VIT is now used to record the IO trace entries. The previously used IO trace is no longer available. PIU, NLPI, NLPO, LSNA, and MPTNFMT entries may be written for a specific IO trace invocation. When the last IO trace is terminated, the external VIT remains active. You must explicitly turn the VIT off.

TYPE=LINE

Stops an NCP line trace for the line specified by the ID operand. Note that specifying TYPE=LINE stops any transmission group trace that was started using the same line name.

TYPE=MODULE

Stops module tracing for the options specified on the OPTION operand.

TYPE=NETCTLR

Stops the IBM 3710 Network Controller line trace for the physical unit named on the PU operand.

TYPE=QDIOSYNC

Stops QDIOSYNC OSA-Express2 diagnostic data synchronization and filtering.

TYPE=ROUTE

Stops the APPN route selection trace.

TYPE=SIT

Stops a scanner interface trace (SIT) of the communication scanner processor in the IBM 3720 or 3745 Communication Controller.

TYPE=SMS

Stops a Storage Management services (SMS) trace that is recording VTAM buffer pool usage data.

TYPE=STATE

Stops resource state tracing. If the ID operand is specified, state tracing is stopped for that resource only. If the OPTION operand is specified, state tracing is stopped for those resource types specified.

TYPE=TG

Stops an NCP transmission group trace for the transmission group containing the line specified by the ID operand.

TYPE=TSO

Stops a TSO component trace for the user ID specified by the ID operand.

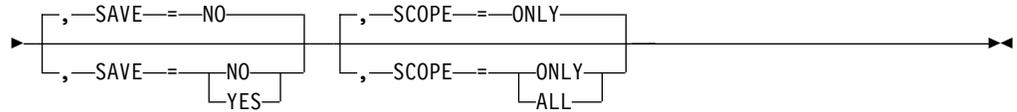
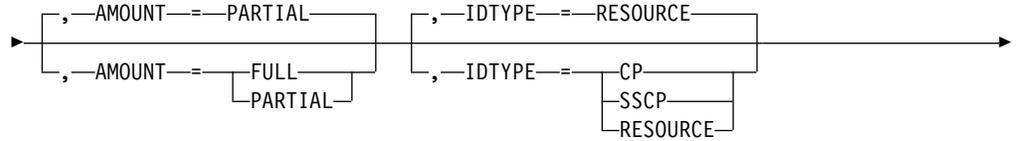
TYPE=VTAM

Stops the VTAM internal trace (VIT) for the components specified by the OPTION operand. If OPTION is omitted, no internal traces are stopped; rather, VTAM issues messages identifying the components for which the internal trace is currently active.

MODIFY TRACE command

Start or modify a buffer contents trace:

►► MODIFY — *procname* —, —TRACE—, —TYPE—=—BUF—, —ID—=—*node_name* —►►

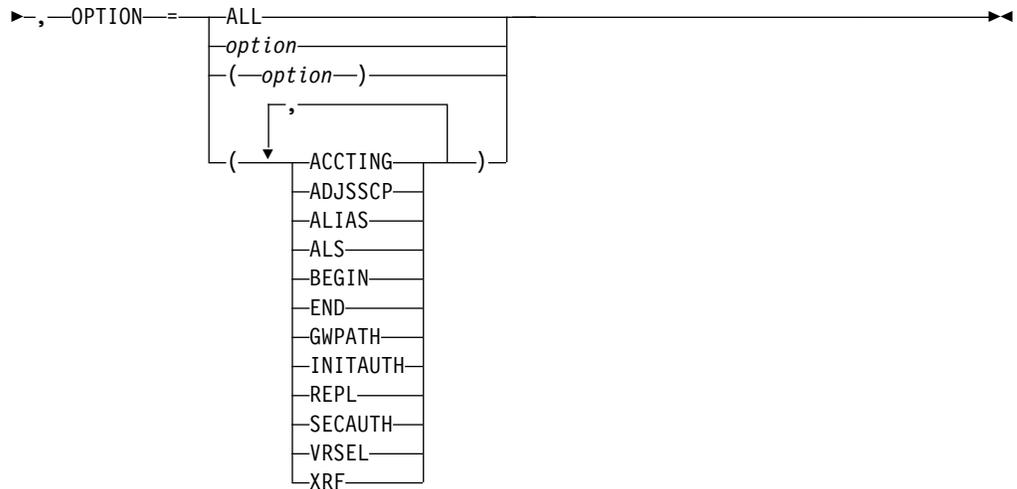


Start or modify a communication network management trace:

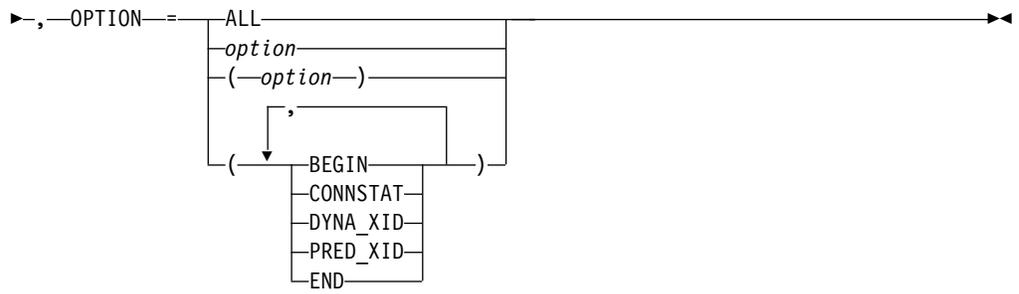
►► MODIFY — *procname* —, —TRACE—, —TYPE—=—CNM—, —ID—=—`PDPIUBUF`
`—SAWBUF—` —►►

Start or modify a user Exit buffer trace:

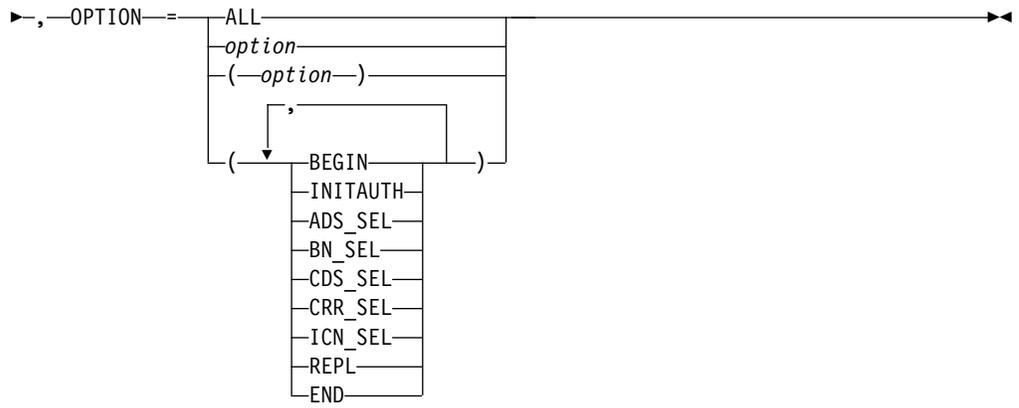
►► MODIFY — *procname* —, —TRACE—, —TYPE—=—EXIT—, —ID—=—ISTEXCAA —►►



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



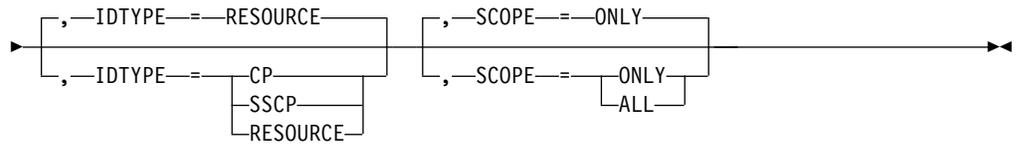
▶▶ MODIFY — *procname* —, —TRACE—, —TYPE—=EXIT—, —ID—=ISTEXCDM —▶



Start or modify a generalized PIU trace:

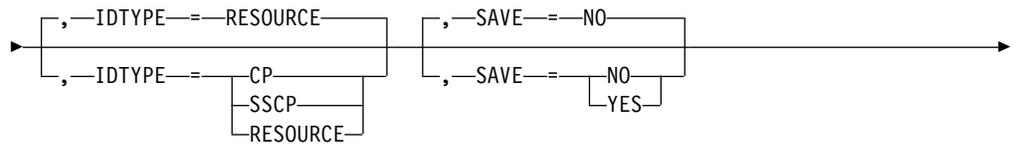
▶▶ MODIFY — *procname* —, —TRACE—, —TYPE—=GPT—, —ID—=*node_name* —▶

▶ [, —ALSNAME—=*adjacent_link_station_name*] —▶



Start or modify an input/output trace:

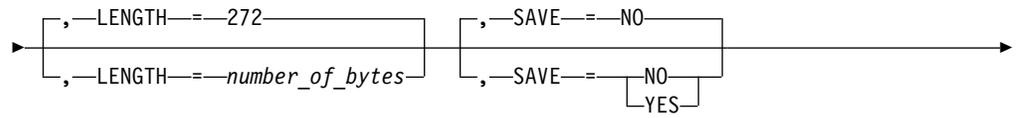
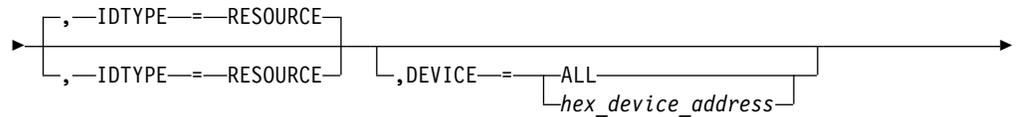
▶▶ MODIFY — *procname* —, —TRACE—, —TYPE—=IO—, —ID—=*node_name* —▶





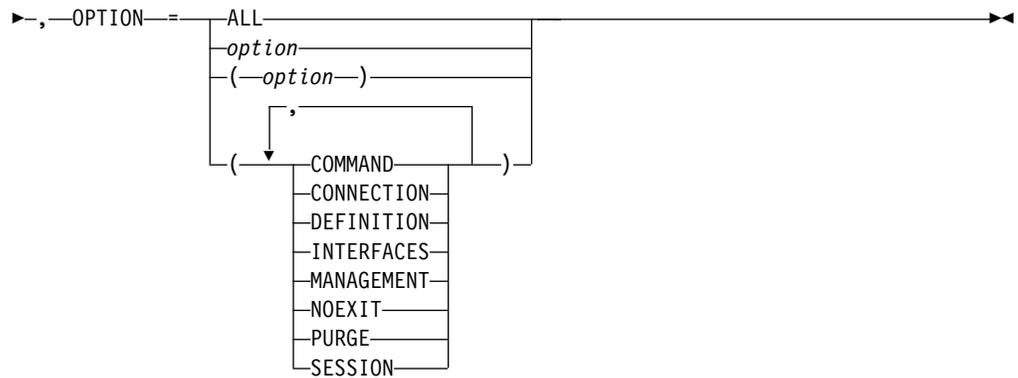
Start or modify an input/output trace for a TRLE with the DATAPATH operand coded:

►► MODIFY *procname*, TRACE, TYPE=IO, ID=*trle_name* ►►



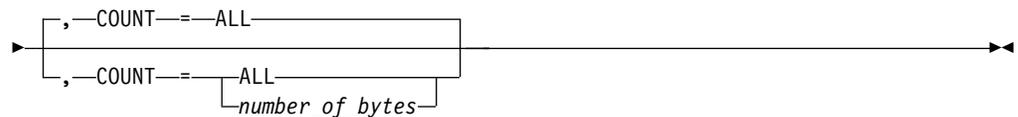
Start or modify a module trace:

►► MODIFY *procname*, TRACE, TYPE=MODULE ►►

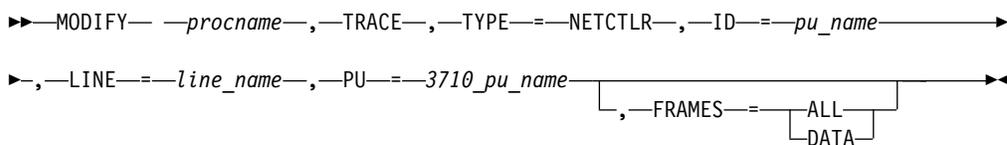


Start or modify an NCP line trace:

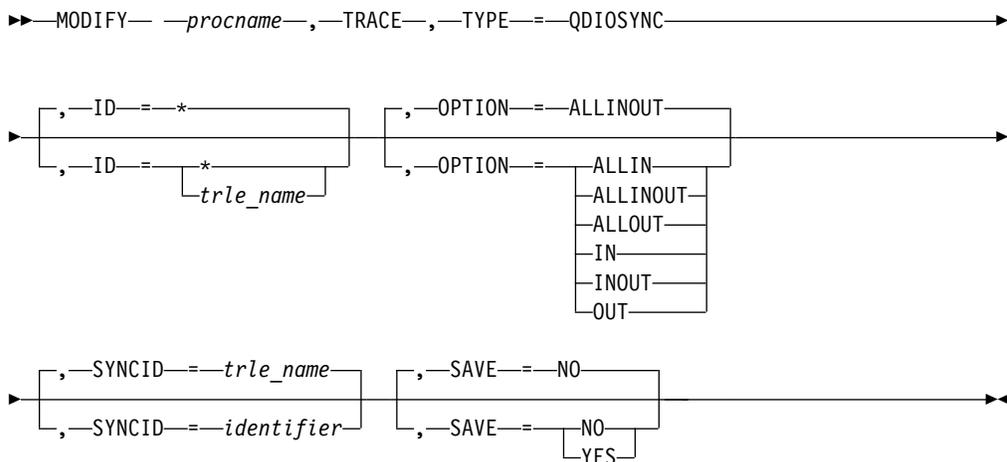
►► MODIFY *procname*, TRACE, TYPE=LINE, ID=*line_name* ►►



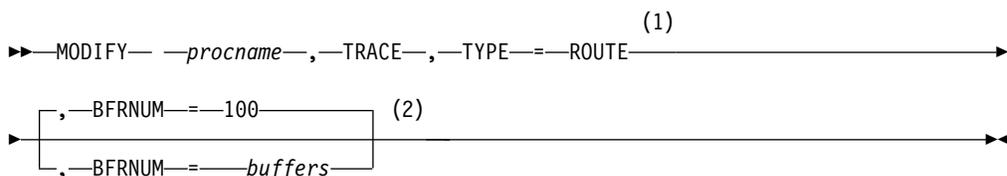
Start or modify a 3710 Network Controller line trace:



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



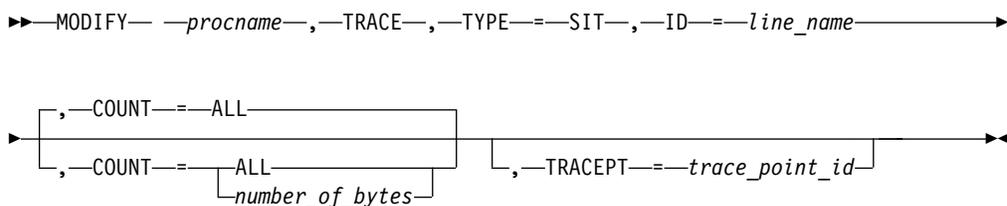
Start the APPN route selection trace in a network node:



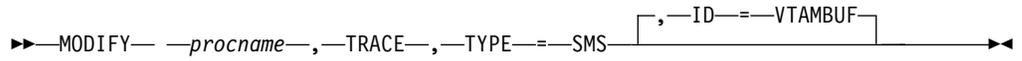
Notes:

- 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.

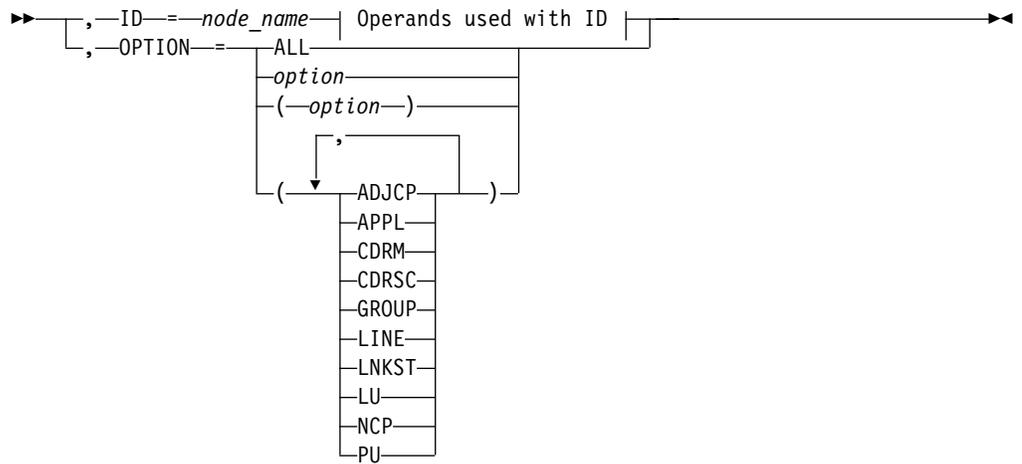
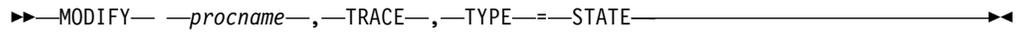
Start or modify a scanner interface trace:



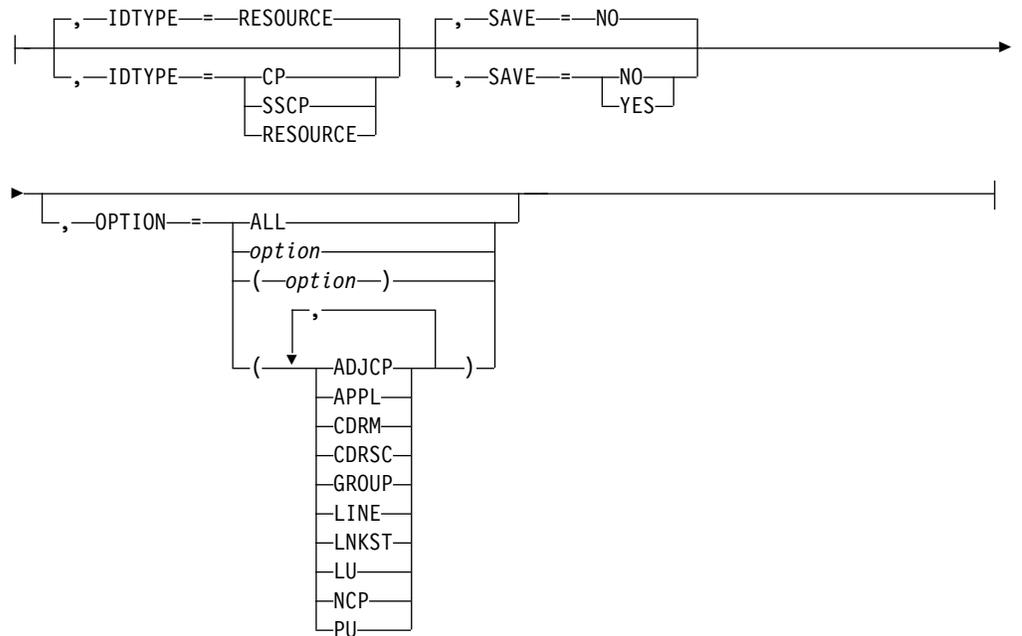
Start or modify an SMS (buffer use) trace:



Start or modify a resource state trace:



Operands used with ID:



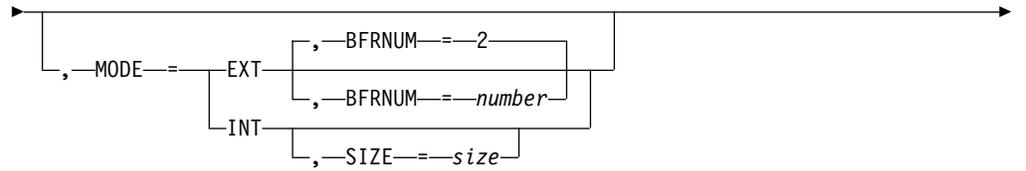
Start or modify a transmission group trace:

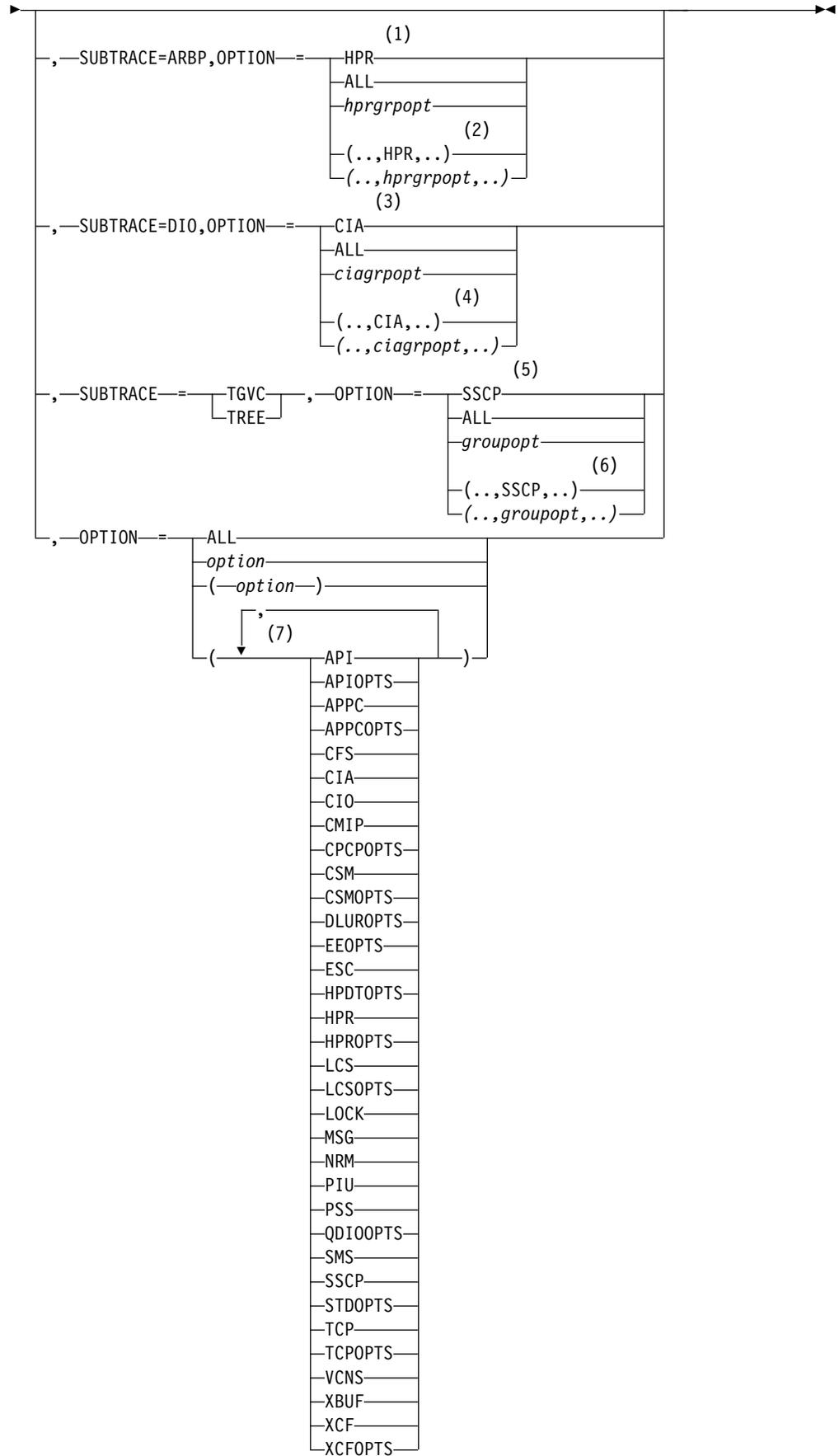
▶▶ MODIFY —*procname*—, —TRACE—, —TYPE—=—TG—, —ID—=—*line_name*—▶▶

▶▶ MODIFY —*procname*—, —TRACE—, —TYPE—=—TSO—, —ID—=—*tso_user_id*—▶▶

Start or modify the VTAM internal trace:

▶▶ MODIFY —*procname*—, —TRACE—, —TYPE—=—VTAM—▶▶





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.
- 7 If you are operating in VIT Control FULL mode and you specify any of the group options (*groupopt*), the STDOPPTS group option is also started. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for more information on VIT control options.

Abbreviations

Operand	Abbreviation
MODIFY	F
ALSNAME	ALS
AMOUNT=FULL	AMT=F
AMOUNT=PARTIAL	AMT=P
OPTION	OPT
OPTION=COMMAND	OPT=CMD
OPTION=CONNECTION	OPT=CON
OPTION=DEFINITION	OPT=DEF
OPTION=INTERFACES	OPT=INT
OPTION=MANAGEMENT	OPT=MGMT
OPTION=SESSION	OPT=SES
SAVE=YES	SAVE

Operand	Abbreviation
SCOPE=ALL	EVERY or E
SCOPE=ONLY	NONE
TRACES	TRACE

When using an abbreviation in place of an operand, code the abbreviation exactly as shown in the table. For example, when coding the abbreviation for SCOPE=ALL, code only EVERY or E. Do not code SCOPE=E.

Purpose

The MODIFY TRACE command starts traces or modifies the parameters for currently running traces. VTAM traces are also started with the TRACE start option, as described in the z/OS Communications Server: SNA Resource Definition Reference.

Activation and use of VTAM traces have dependencies on the options used to start the system trace facility in each operating system environment. See the z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures for a complete description of the system trace facility requirements, when to use these traces, and how to interpret the results.

General PIU trace (GPT) records are printed by the trace analysis program (ACFTAP) utility. For more information about ACFTAP, see z/OS Communications Server: ACF/TAP Trace Analysis Handbook.

Operands

procname

The procedure name for the command. If *procname* in the START command was specified as *startname.ident*, where *startname* is the VTAM start procedure and *ident* is the optional identifier, either *startname.ident* or *ident* can be specified for *procname*.

If *procname* in the START command was *startname*, *startname* must be specified for *procname*.

ALSNAME=adjacent_link_station_name

Applies only when TYPE=GPT and specifies the name of the adjacent link station through which you want tracing to occur. The adjacent link station name must be a PU in an NCP major node or a switched PU connected by an NCP link.

The LU can be traced over multiple connections; however, to do so, you must enter a separate command for each connection.

You do not need to specify the ALSNAME operand if either of the following situations is true:

- The ALS list has only one entry (and it is not ISTAPNPU). That entry is selected.
- The ALS list has two entries, one of which is ISTAPNPU. The entry other than ISTAPNPU is selected.

The command fails if ISTAPNPU is specified, or if ISTAPNPU is used by default because it is the only entry in the ALS list.

If no ALS list exists for the resource, specify the adjacent link station on the ALSNAME operand.

Use the DISPLAY ID=*lu_name*,SCOPE=ALL command to display all sessions for an independent LU and which adjacent link station list is used for each session.

AMOUNT

Applies only when TYPE=BUF. It determines whether VTAM starts a partial buffer contents trace or a full buffer contents trace for the specified node name.

You can run a partial buffer contents trace and a full buffer contents trace at the same time for different resources. (Issue a separate MODIFY TRACE command for each resource.) For example, you can start a partial buffer contents trace for an application program, with partial buffer contents tracing for some resources in session with the application program and full buffer contents tracing for other resources in session with the application program. When the level of tracing differs between two resources on opposite ends of a session (one is partial and the other is full), full buffer tracing is used.

You can switch between partial and full buffer tracing for the same resource by issuing additional MODIFY TRACE commands, without having to deactivate the trace.

AMOUNT=PARTIAL

Tells VTAM to record the data in trace records with a maximum size of 256 bytes. Each trace record contains a trace record header and data. Data that does not fit in a 256-byte trace record is lost.

AMOUNT=FULL

Tells VTAM to record all of the data transmitted in message buffers. Multiple trace records might be needed to record all of the data.

BFRNUM=*number*

- When you specify TYPE=VTAM,MODE=EXT this operand specifies the number of 8-K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Values in the range of 2 - 50, or 0 can be specified. If you omit this option, the default value is 2. To ensure that enough buffers are available, specify a value that is twice as much as the number of processors in the central processing unit (CPU).

When you specify a value in the range of 2 - 50, VTAM accumulates approximately 8 K of external trace data before sending the data to GTF.

If 0 is specified or there is no buffer available for the trace record, VTAM sends each trace record to GTF as it is recorded. This can incur a significant system overhead, but might be necessary if you need individually timestamped records.

If external trace recording is already active, and the new value specified for BFRNUM is less than the existing value, the number of buffers is not changed; if the new value is greater than the existing value, the number of the buffers is increased.

- When you specify TYPE=ROUTE, the BFRNUM operand specifies the maximum number of 40-K buffers to be allocated for the APPN route selection trace table. Values in the range of 1 - 500 can be specified. Storage for the route selection trace is not completely allocated when the trace is activated, but is allocated in 40-K buffers as it is needed. The APPN route selection trace is allocated in extended private storage.

If you omit the BFRNUM option initially, the default for the maximum number of buffers is 100. After the APPN route selection trace is started, the

BFRNUM operand does not have a default value. If successive MODIFY TRACE,TYPE=ROUTE commands are issued, the BFRNUM specification remains the same until you respecify it on a MODIFY command.

If the BFRNUM value is too small, trace information might be lost as a result of wraparound in the route selection trace table. Also, if the BFRNUM value specified on the MODIFY TRACE,TYPE=ROUTE command is smaller than the previous BFRNUM value, information is lost because the existing trace table is freed. If a MODIFY TRACE,TYPE=ROUTE command is entered with a BFRNUM value larger than the previous BFRNUM value, however, the storage allocated for the trace table will not be freed and additional buffers will be allocated as needed up to the new limit. If an attempt to allocate an additional block of trace table storage fails because of insufficient storage, the route selection trace table size might not reach the maximum size that you requested.

COUNT

Applies only when TYPE=LINE or TYPE=SIT. It specifies the number of bytes that are traced by either the NCP for a line trace (without the TG operand), or the communication scanner processor for the scanner interface trace. The COUNT operand has no effect on NTRI lines before NCP V5R2.1. NTRI always traces the same amount of data.

COUNT=number_of_bytes

Specifies the number of bytes of data to be traced. The value must be a decimal integer 0 - 254. COUNT=0 specifies that only the NCP control characters and none of the data is to be traced.

COUNT=ALL

Specifies that all of the data is to be traced.

DEVICE

Applies only when the ID operand is a TRLE that has the DATAPATH operand coded. Use DEVICE to start input/output trace on OSA-Express devices specified on the DATAPATH operand.

DEVICE=ALL

Specifies to turn on input/output trace on all devices in the DATAPATH list.

DEVICE=hex_device_address

Specifies to turn on input/output trace for a specific DATAPATH device.

FRAMES

Applies only when TYPE=NETCTLR. For a start/stop line, ALL is the only option. If DATA is specified on a start/stop line, it is ignored and the command proceeds as if ALL were specified. For SDLC and BSC lines, either DATA or ALL can be specified, with DATA being the default.

FRAMES=ALL

Specifies that all frames (meaning control and data frames) are to be traced by the cluster control unit.

FRAMES=DATA

Specifies that only data frames are to be traced by the cluster control unit.

ID=name

Specifies the name of the resource for which tracing is to be done. Only active resources can be traced. This operand does not apply when TYPE=MODULE or TYPE=VTAM.

Names of various types of resources can be specified, depending on the value of the TYPE operand. The different resources and the traces that can be specified for them (with the TYPE operand) are shown in Figure 1 on page 43 and are described in the following information.

For TYPE=BUF, TYPE=IO, TYPE=GPT, or TYPE=STATE, the name can be a network-qualified name. If *name* is an ACB name, and the ACB name matches the name on the APPL definition statement, then you can use a network-qualified ACB name.

For TYPE=BUF, TYPE=IO, or TYPE=STATE for a CDRM, you can specify a network-qualified name, but this does not remove the restriction that the non-network-qualified CDRM name must be unique across networks.

For TYPE=BUF, TYPE=IO, or TYPE=STATE, the name can be a model resource (APPL or CDRSC). If SCOPE=ALL is specified, the command also applies to the clone resources created from the model. If SCOPE=ONLY is specified, current clone resources are unaffected, but future clone resources will be affected when they are created.

For TYPE=QDIOSYNC, the ID operand specifies the TRLE name of the OSA-Express2 adapter for which diagnostic data synchronization and filtering is to be started. Specify ID=* to start QDIOSYNC for all TRLEs that define OSA-Express2 adapters. When ID=* is specified with SAVE=NO, ID=* indicates that the QDIOSYNC command is to be applied to all currently active TRLEs that define OSA-Express2 adapters. When ID=* is specified with SAVE=YES, ID=* indicates that the QDIOSYNC command is to be applied to all currently active TRLEs that define OSA-Express2 adapters and to those that are activated by this VTAM in the future.

When multiple QDIOSYNC NOTRACE or TRACE commands are specified, the last one that is applicable to a specific *trle_name* value takes precedence. For example, TRACE TYPE=QDIOSYNC,ID=TRLE1 requests synchronization for a single OSA-Express2 adapter, but the request is canceled if it is followed by NOTRACE TYPE=QDIOSYNC, ID=*. TRACE TYPE=QDIOSYNC, ID=* requests synchronization of all OSA-Express2 adapters and, if it is followed by NOTRACE TYPE=QDIOSYNC,ID=TRLE1, results in synchronization of all OSA-Express2 adapters except TRLE1.

MODIFY TRACE														ID=				
BUF	BUF	C/M	EXIT	GPT	GPT	IO	IO	LINE	MODULE	NETCTLR	QDIOSYNC	SIT	SMS	STATE	TG	TSO	VTAM	
•							•											Adjacent CP major node
																		Application program major node
•	•						•									•		Application program minor node
						•												Channel-attachment major node
							•											Channel link
																		Channel link station
				•														CDRSC major node
•	•			•		•												CDRSC minor node
																		Dynamic CDRSC major node
•	•					•												Dynamic CDRSC minor node
																		CDRM major node
•	•					•	•											CDRM minor node
							•											XCA major node
																		Nonswitched line
																		Link station
							•											Switched line
•																		Local non-SNA major node
•	•						•											Local non-SNA logical unit
																		Local SNA major node
•	•					•	•											Local SNA physical unit
	•						•											Local SNA logical unit
•	•		•	•	•	•												NCP major node
•				•	•		•				•					•		Nonswitched line
•				•	•		•				•							Switched line
																		Link station
•	•			•	•	•												Physical unit
•	•			•	•		•											Logical unit
																		Switched major node
•	•			•	•	•												Switched physical unit
																		Switched link station
•	•			•	•													Switched logical unit
																		Dynamic switched major node
•	•			•	•	•												Dynamic switched physical unit
•	•			•	•		•											Dynamic switched logical unit
•						•												TCP/IP major node
•	•					•	•											Nonswitched line
•	•					•	•											Physical unit
										•								IBM 3710-attached resource
	•						•											Host physical unit
			•															ISTEXCAA
							•											ISTIRN
	•																	ISTNOTIF
	•																	ISTTOPAG
			•															PDPIUBUF
			•															SAWBUF
•	•					•	•											VTAM
													•					VTAMBUF
	•	•	•	•			•	•	•		•	•	•	•	•	•	•	RTP major node
						•					•							TRLE

Figure 1. Resource and trace reference

- For **TYPE=BUF** or **TYPE=IO**, any of the following names can be specified along with the **SCOPE=ALL** operand to trace message activity with the named resource and, if applicable, all of the resource's subordinate nodes:

- The name of an NCP major node
- The name of the following major nodes (only TYPE=IO,SCOPE=ALL can be specified):
 - Channel-attachment major node
 - XCA major node
- The name of a line attached to a communication adapter (only TYPE=IO,SCOPE=ONLY can be specified)
- The name of a switched line that has a physical unit attached to it
- The name of a TRLE (only TYPE=IO,SCOPE=ONLY can be specified)

Restriction: I/O tracing is not supported for a TRLE that represents a 10GbE RoCE Express[®] feature.

- The name of one of following types of physical units:
 - Channel-attached SNA physical unit
 - Switched physical unit
- The name of a logical unit
- The name of the host CDRM

Note: If you do a trace for a host CDRM, any subordinate minor nodes also have trace turned on.

Any of the following names can be specified to trace message activity with the named resource:

- Host physical unit (for a trace of all PIUs between this host and another PU type 4 or PU type 5)
- ISTIRN (with TYPE=IO only, for an IO trace of all PIUs passing through this host that are received from a channel-attached PU type 4 or type 5 and are being sent to another channel-attached PU type 4 or type 5)
- VTAM (for a trace of all SSCP sessions)
- The name of an NCP
- The name of a logical unit (including application programs)
- The name of a local non-SNA minor node
- The name of a CDRM (only in a multiple-domain or multiple-network environment)
- The name of a CDRSC
- The name of the internal or external CMIP application program (for TYPE=BUF only). For the VTAM topology agent, *node_name* is ISTTOPAG. For notification services, *node_name* is ISTNOTIF. For external CMIP application programs, *node_name* is the application name defined as the ACB name of the application program major node. In the following example, APPL1 is the name of the CMIP application program, as defined in the name field of the APPL definition statement.

```
APPL1    APPL    PRTCT=ADRAPL01
```

The host CP can be traced as an application program minor node, and adjacent CPs can be traced as CDRSC minor nodes.

- For **TYPE=CNM**, the ID operand specifies one of the following values:
 - PDPIUBUF, to start the problem determination PIU buffer trace
 - SAWBUF, to start the session awareness buffer trace
- For **TYPE=EXIT**, the ID operand is required and must be specified as ISTECCA, ISTECCS, or ISTECCDM.

- For **TYPE=GPT**, the ID operand specifies the name of the NCP resource for which tracing is to be done:
 - An NCP major node (and all of its resources) that is active or pending active
 - An NCP switched or nonswitched line

Note: The ID operand of MODIFY TRACE cannot specify an NCP switched line that is a switched subarea connection.

- An active LU that has been dynamically reconfigured within the NCP
- An active PU on an NCP switched line
- An active or inactive PU on an NCP nonswitched line
- An active PU that is dynamically reconfigured within the NCP
- An active or inactive LU associated with an active PU on a switched line
- An active or inactive LU associated with a PU (active or inactive) on a nonswitched line
- An active or inactive independent LU associated with a PU (ALS) in an NCP major node or a switched PU connected by an NCP link. The state (active or inactive) of the PU with which the independent LU is associated must be as follows:
 - If it has been dynamically reconfigured within the NCP, the PU must be active
 - If it is on an NCP switched line, the PU must be active.
 - If it is on an NCP nonswitched line, the PU can be either active or inactive.

The SSCP and host CP are not valid resources for a GPT trace, but the adjacent CP can be traced as a CDRSC minor node.

- For **TYPE=NETCTLR**, the ID operand specifies the name of the physical unit representing the device for which the trace is to be started. (VTAM is not required to own or have knowledge of the 3710.) VTAM sends the name of the PU specified on the ID operand to the 3710 specified on the PU operand.

If a 3710 is to be simultaneously traced over more than one line, use a separate MODIFY TRACE command to start each trace.

Note: It is not necessary that the resource specified by the ID operand be another 3710.

- For **TYPE=LINE** or **TYPE=SIT**, the ID operand specifies the name of the line for which tracing is to be done.

ID cannot specify a line attached to a communication adapter or the name of a transmission group through a communication adapter.
- For **TYPE=SMS** the ID operand is optional. If it is omitted, ID=VTAMBUF will be used for an SMS trace.
- For **TYPE=STATE**, the ID operand specifies the name of the resource for which state tracing is to be done.
- For **TYPE=TG**, the ID operand specifies the name of a nonswitched line currently within the transmission group to be traced. All the lines in the transmission group are traced as if they were a single logical line.
- For **TYPE=TSO**, the ID operand specifies the TSO user ID for which tracing is to be done.

IDTYPE

Specifies the type of resource that the ID operand names. If several types of resources share the same name, IDTYPE identifies which resources the command should act on. IDTYPE applies to TYPE=BUF, TYPE=IO, TYPE=GPT, and TYPE=STATE.

IDTYPE=CP

Starts tracing for the control point (CP) with the name specified on the ID operand. The CP that is traced can be the host CP or a CDRSC representing an adjacent CP.

IDTYPE=SSCP

Starts tracing for the system services control point (SSCP) with the name specified on the ID operand.

IDTYPE=RESOURCE

Starts tracing for a CP, an SSCP, or another resource with the name specified on the ID operand. If both an SSCP and a CP are found, VTAM starts tracing for both of them.

LENGTH

Applies only when the DEVICE operand is specified and the ID operand is a TRLE that has the DATAPATH operand coded. Use LENGTH to specify the number of bytes from each packet to trace. Valid values are 56 - 9016. Values are rounded up to 56 and values above 9016 are rounded down to 9016. All values are rounded up, if necessary, to an even multiple of 28.

Note: The default value is 272 for a TRLE that has the DATAPATH operand coded.

LINE=line_name

Applies only to TYPE=NETCTLR. It specifies the name of a link that is attached to the 3710 that is to be traced. The 3710 performing the trace (named on the PU operand) copies the SDLC, BSC, and S/S data link control frames that are transmitted or received on that link for the physical unit named by the ID operand. VTAM has no knowledge of this link. VTAM sends the name of the link specified on the LINE operand to the 3710 specified on the PU operand.

MODE

Applies only to TYPE=VTAM. It specifies that the VTAM internal trace is to record its data on an internal, wraparound table (MODE=INT) or an external trace file (MODE=EXT).

You can record trace data internally and externally at the same time. If required, you can have different sets of trace options active for internal and external recording. With the default VITCTRL=BASE, VTAM always runs with MODE=INT and the default trace options, regardless of whether you request tracing.

You must run specific operating system utilities to trap, format, and view external trace output. See *z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures* for more information about use of these operating system utilities.

Do not specify MODE=EXT and SIZE on the same command.

MODE=INT

Specifies that the VTAM internal trace is to record its data on an internal, wraparound table.

MODE=EXT

Specifies that the VTAM internal trace is to record its data on an external trace file and on an internal, wraparound table.

OPTION

Applies to TYPE=EXIT, TYPE=MODULE, TYPE=QDIOSYNC, TYPE=STATE and TYPE=VTAM.

For TYPE=EXIT, OPTION specifies the functions of the session management exit (SME), directory services management exit (DSME), or configuration services XID exit for which tracing is to be started.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(BEGIN,INITAUTH,ACCTING).

For TYPE=MODULE, OPTION specifies the types of processing modules for which tracing is to be started.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(COMMAND,SESSION).

For TYPE=QDIOSYNC, OPTION specifies the scope and filter to be applied by the OSA-Express2 adapter. OPTION specifies the devices and the direction for which diagnostic data is to be gathered.

For TYPE=STATE, OPTION specifies the types of resources for which resource states are to be recorded. The data is recorded using the mode (internal or external) specified for the SSCP VIT option.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(APPL,GROUP,NCP).

For TYPE=VTAM, OPTION specifies the VTAM internal functions for which trace data is to be recorded.

For internal recording (MODE=INT), VTAM manages and displays the setting of the API, CIO, MSG, NRM, PIU and SSCP VIT options based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details. For external recording (MODE=EXT), there are no default options. You can start or stop any options.

If more than one option is selected, separate them with commas and enclose the list in parentheses; for example OPTION=(API,NRM,SSCP). For information about what is traced for each internal function, see the z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT.

OPTION=ALL

Applies to TYPE=EXIT, TYPE=MODULE, TYPE=STATE, and TYPE=VTAM.

Note: Turning on all traces slows performance.

For TYPE=EXIT, it starts the tracing of all functions.

For TYPE=MODULE, it starts the tracing of all the modules shown on the OPTION operand for which TYPE=MODULE apply.

For TYPE=STATE, it starts the tracing of resource states for all of the resource types shown on the OPTION operand for which TYPE=STATE apply.

For TYPE=VTAM, it starts the VTAM internal trace for all of the VTAM internal functions for which the VTAM internal trace is available. Exception trace entries continue to be recorded.

For **TYPE=EXIT** where **ID=ISTEXCAA**, you can also specify the following options:

OPTION=ALL

Starts the tracing of all functions.

OPTION=ACCTING

Starts tracing the initial and final accounting function of the session management exit (SME).

OPTION=ADJSSCP

Starts tracing the adjacent SSCP selection function of the session management exit (SME).

OPTION=ALIAS

Starts tracing the alias translation function of the session management exit (SME).

OPTION=ALS

Starts tracing the adjacent link station function of the session management exit (SME).

OPTION=BEGIN

Starts tracing the begin function of the session management exit (SME).

OPTION=END

Starts tracing the end function of the session management exit (SME).

OPTION=GWPATH

Starts tracing the gateway path list function of the session management exit (SME).

OPTION=INITAUTH

Starts tracing the initial authorization function of the session management exit (SME).

OPTION=REPL

Starts tracing the exit replacement function of the session management exit (SME).

OPTION=SECAUTH

Starts tracing the secondary authorization function of the session management exit (SME).

OPTION=VRSEL

Starts tracing the virtual route selection function of the session management exit (SME).

OPTION=XRF

Starts tracing the XRF session switch function of the session management exit (SME).

For **TYPE=EXIT** where **ID=ISTEXCCS**, you can also specify the following options:

OPTION=ALL

Starts the tracing of all functions.

OPTION=BEGIN

Starts tracing the begin function.

OPTION=CONNSTAT

Starts tracing the connection status.

OPTION=DYNA_XID

Starts tracing the XIDs for dynamic PUs function.

OPTION=END

Starts tracing the end function.

OPTION=PRED_XID

Starts tracing the XIDs for predefined PUs function.

For **TYPE=EXIT** where **ID=ISTEXCDM**, you can also specify the following options:

OPTION=ALL

Starts the tracing of all the functions.

OPTION=ADS_SEL

Starts tracing the alternate central directory server selection function.

OPTION=BEGIN

Starts tracing the begin function.

OPTION=BN_SEL

Starts tracing the border node selection function.

OPTION=CDS_SEL

Starts tracing the central directory server selection function.

OPTION=CRR_SEL

Starts tracing the central resource registration selection function.

OPTION=END

Starts tracing the end function.

OPTION=ICN_SEL

Starts tracing the interchange node selection function.

OPTION=INITAUTH

Starts tracing the initial authorization function.

OPTION=REPL

Starts tracing the exit replacement function

For **TYPE=MODULE**, you can also specify the following options:

OPTION=COMMAND

Starts tracing modules involved in command processing.

OPTION=CONNECTION

Starts tracing modules involved in setting up connections between nodes.

OPTION=DEFINITION

Starts tracing modules involved in resource definition processing.

OPTION=INTERFACES

Starts tracing modules involved in the interface with the host SSCP or the host CP.

OPTION=MANAGEMENT

Starts tracing modules involved in network management.

OPTION=NOEXIT

Specifies that module exits are not traced for modules associated with other **OPTION** values for **TYPE=MODULE**. Module exits are not traced for any modules until a subsequent **MODIFY NOTRACE,TYPE=MODULE,OPTION=NOEXIT** command is issued.

Starting a module trace for any OPTION with TYPE=MODULE starts the tracing of the module exits also, unless you specify OPTION=NOEXIT.

OPTION=PURGE

Causes all information currently held in module tracing buffers to be written to VTAM internal trace (VIT) entries. Upon completion of the command, new information is written to the module tracing buffers.

OPTION=SESSION

Starts tracing modules involved in session establishment.

For TYPE=QDIOSYNC, you can specify the following options:

OPTION=ALLIN

Indicates that the adapter should gather diagnostic data for all devices, including any that might be controlled by other operating systems. This option also indicates that the adapter should collect records pertinent to events and data flowing from the adapter to the host. Code the value OPTION=ALLIN only when advised by IBM service to do so.

OPTION=ALLINOUT

Indicates that the adapter should gather diagnostic data for all devices, including any that might be controlled by other operating systems. This option also indicates that the adapter should collect both inbound and outbound diagnostic data.

OPTION=ALLOUT

Indicates that the adapter should gather diagnostic data for all devices, including any that might be controlled by other operating systems. This option also indicates that the adapter should collect records pertinent to events and data flowing from the host to the adapter. Code OPTION=ALLOUT only when advised by IBM service to do so.

OPTION=IN

Indicates that the adapter should gather diagnostic data for devices defined to this VTAM only. This option also indicates that the adapter should collect records pertinent to events and data flowing from the adapter to the host. Code OPTION=IN only when advised by IBM service to do so.

OPTION=INOUT

Indicates that the adapter should gather diagnostic data for devices defined to this VTAM only. This option also indicates that the adapter should collect both inbound and outbound diagnostic data. Code OPTION=INOUT only when advised by IBM service to do so.

OPTION=OUT

Indicates that the adapter should gather diagnostic data for devices defined to this VTAM only. This option also indicates that the adapter should collect records pertinent to events and data flowing from the host to the adapter. Code OPTION=OUT only when advised by IBM service to do so.

For TYPE=STATE, you can also specify the following options:

OPTION=ADJCP

Starts tracing the states of all adjacent control points.

OPTION=APPL

Starts tracing the states of all application programs.

OPTION=CDRM

Starts tracing the states of all CDRMs.

OPTION=CDRSC

Starts tracing the states of all CDRSCs.

OPTION=GROUP

Starts tracing the states of all line groups.

OPTION=LINE

Starts tracing the states of all lines.

OPTION=LNKST

Starts tracing of link stations.

OPTION=LU

Starts tracing the states of all logical units.

OPTION=NCP

Starts tracing the states of all NCPs.

OPTION=PU

Starts tracing the states of all physical units.

For **TYPE=VTAM**, you can also specify the following options:

OPTION=API

Starts tracing the application programming interface.

OPTION=APIOPTS

Starts tracing events related to the application programming interface (API). Specifying this value is equivalent to specifying **OPTION=(API,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=APPC

Starts tracing LU 6.2 communication.

OPTION=APPCOPTS

Starts tracing events related to LU 6.2 application programs. Specifying this value is equivalent to specifying **OPTION=(API,APPC,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=CFS

Starts tracing coupling facility services.

OPTION=CIA

This option helps isolate problems related to channel I/O. CIA entries are the remaining trace records from the CIO option.

OPTION=CIO

Starts tracing channel I/O for channel-attached devices and for lines attached to a communication adapter.

OPTION=CMIP

Starts tracing internal events in CMIP services and the VTAM topology agent.

OPTION=CPCPOPTS

Starts tracing events related to CP-CP sessions. Specifying this value is equivalent to specifying **OPTION=(API,APPC,MSG,NRM,PIU,PSS,SMS,SSCP)**.

OPTION=CSM

Starts tracing of the communications storage manager.

OPTION=CSMOPTS

Starts tracing events related to communications storage manager (CSM). Specifying this value is equivalent to specifying
OPTION=(API,APPC,CIO,CSM,MSG,NRM,PIU,PSS,SMS,SSCP,XBUF).

OPTION=DLUROPTS

Starts tracing events related to dependent LU requester (DLUR). Specifying this value is equivalent to specifying
OPTION=(API,APPC,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=EEOPTS

Starts tracing events related to Enterprise Extender (EE). Specifying this value is equivalent to specifying
OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP,TCP).

OPTION=ESC

Starts tracing execution sequence control.

OPTION=HPDTPPTS

Starts tracing events related to high performance data transfer (HPDT). Specifying this value is equivalent to specifying
OPTION=(CIA,CIO,HPR,MSG,PIU,PSS,SMS,SSCP).

OPTION=HPR

Starts tracing for HPR.

OPTION=HPROPTS

Starts tracing events related to high performance routing (HPR). Specifying this value is equivalent to specifying
OPTION=(API,APPC,CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=LCS

Starts tracing LAN channel stations.

OPTION=LCSOPTS

Starts tracing events related to LAN channel station (LCS). Specifying this value is equivalent to specifying
OPTION=(CIO,LCS,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=LOCK

Starts tracing locking.

OPTION=MSG

Starts tracing messages.

OPTION=NRM

Starts tracing network resource management

OPTION=PIU

Starts tracing path information units.

OPTION=PSS

Starts tracing process scheduling services.

OPTION=QDIOPTS

Starts tracing events related to queued direct I/O (QDIO). Specifying this value is equivalent to specifying
OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP).

OPTION=SMS

Starts tracing Storage Management services.

OPTION=SSCP

Starts tracing the system services control point.

OPTION=STDOPTS

Starts tracing events related to the application programming interface, channel I/O, messages, network resource management, path information units, process scheduling services, and the system services control point. Specifying this value is equivalent to specifying `OPTION=(API,CIO,MSG,NRM,PIU,PSS,SSCP)`. `STDOPTS` is the default trace options.

OPTION=TCP

Starts tracing the Enterprise Extender events.

OPTION=TCPOPTS

Starts tracing events related to TCP/IP. Specifying this value is equivalent to specifying `OPTION=(CIA,CIO,MSG,NRM,PIU,PSS,SMS,SSCP,TCP)`.

OPTION=VCNS

Starts tracing VTAM common network services.

OPTION=XBUF

Starts tracing of extended buffer list information.

OPTION=XCF

Starts tracing XCF communication.

OPTION=XCFOPTS

Starts tracing events related to the cross-system coupling facility (XCF). Specifying this value is equivalent to specifying `OPTION=(CIA,CIO,HPR,MSG,NRM,PIU,PSS,SMS,SSCP,XCF)`.

PU=3710_pu_name

Applies only when `TYPE=NETCTLR`. It specifies the name of the IBM 3710 Network Controller that is to perform the trace. VTAM rejects the command if the physical unit is not known to VTAM.

SAVE

Applies to `TYPE=BUF`, `TYPE=IO`, `TYPE=QDIOSYNC`, and `TYPE=STATE`. It specifies whether the trace command should be saved for the resource named on the ID operand.

SAVE=YES

VTAM saves the trace command for the resource named on the ID operand. If the resource exists when this command is issued, the trace starts immediately. If the resource does not exist when this command is issued, VTAM saves the trace command and starts the trace when the resource is defined.

Note: For `TYPE=BUF`, `TYPE=IO`, and `TYPE=STATE`, if you start a trace with `IDTYPE=RESOURCE` and a CP or an SSCP (but not both) exists when the command is issued, VTAM starts the trace for the existing resource and saves the trace commands for both resources. If both a CP and an SSCP exist when the command is issued, VTAM starts tracing for them immediately.

You can also issue this command to update a previously saved trace command.

For `TYPE=QDIOSYNC`:

- If `ID=trlename` is specified, any saved command from a previous `TRACE TYPE=QDIOSYNC` command or start option for the TRLE specified by the `trle_name` value is deleted.

- If ID=* is specified, all saved commands from previous TRACE TYPE=QDIOSYNC commands and start options are deleted.

Use the “MODIFY NOTRACE command” on page 11 to delete a saved trace command. VTAM will not delete a saved trace command until you issue a MODIFY NOTRACE command for it, even though the resource might be created and freed or activated and deactivated several times. Saved trace commands are lost when VTAM is halted and restarted.

SAVE=NO

Does not save the MODIFY TRACE command. If the resource does not exist when you issue MODIFY TRACE, the command fails.

SCOPE

Applies when TYPE=BUF, TYPE=IO, or TYPE=GPT. It specifies the scope of the trace.

You can specify the SCOPE operand for TYPE=GPT, but it is meaningful only for the NCP node. SCOPE=ALL is assumed for a GPT trace of all other node types.

SCOPE=ALL

Starts traces for all nodes subordinate to the specified node. If an LU that is subordinate to a node is an independent LU, it is not considered to be subordinate to the node for the purpose of tracing.

SCOPE=ALL is not valid for the host PU trace or for the host intermediate routing node trace (ID=ISTIRN). If SCOPE=ALL is specified, VTAM issues a message and uses SCOPE=ONLY.

For an I/O trace of a channel-attached NCP, SCOPE=ALL provides a trace of all channel I/O, including network message traffic routed through the channel-attached NCP.

If the specified node is a model application, SCOPE=ALL turns on the trace option for the model application and starts traces for all existing dynamic applications created using the model. Traces will be started for future dynamic applications created using the model.

SCOPE=ONLY

Starts a trace only for the specified node.

SCOPE=ONLY on a GPT trace command for the NCP PU limits the trace to RUs that flow on the SSCP-PU session for the NCP.

If the specified node is a model application, SCOPE=ONLY turns on the trace option for the model application. Traces for all existing dynamic applications created using the model are unaffected. Traces will be started for future dynamic applications created using the model.

SIZE=size

Applies only when you specify TYPE=VTAM,MODE=INT. The size operand specifies the number of megabytes to be allocated for the internal trace table. Valid values are in the range 4M - 2048M. The VTAM internal trace table is allocated in 64-bit common (HVCOMMON) storage.

If the VTAM internal trace is not already started and you omit this option, the default size is 4M.

After the VTAM internal trace is started, the SIZE operand does not have a default value. If successive MODIFY commands change other options, the SIZE specification remains the same until you respecify it on a MODIFY command.

If the SIZE value is too small, trace information might be lost as a result of wraparound in the internal trace table. Also, if the SIZE operand specifies a size different from the current table size, information is lost because the trace table is freed when another table with a new size is obtained. When an attempt to increase the SIZE value fails because of insufficient storage, the internal trace table size is set to the minimum size, not the size that you requested.

Restriction: If you specify a SIZE value that is larger than the default value, z/OS® will perform paging on portions of the VIT table. Before you specify a large SIZE value, ensure that you have sufficient real or auxiliary storage to contain the entire VIT. Failure to ensure that sufficient storage might result in an auxiliary storage shortage. If an SVC dump is taken that includes common storage, the size of the dump data set also increases. You must also take the increase in the size of the dump data set into consideration.

SUBTRACE

Specifies that SUBTRACE can be used to turn on a subset of trace entries under a trace option. Of the SUBTRACE types defined, subtrace DIO is defined under the CIA trace option, subtrace TREE, and TGVC are defined under the SSCP trace option, and subtrace ARBP is defined under the HPR trace option.

Note: All of the SUBTRACE options are defaulted to off. They can generate many records in the VTAM trace and can incur a significant overhead, but may be necessary in some cases for diagnostic purposes. It is not recommended to activate them at VTAM start time. If used, the SUBTRACE options should be turned off when the necessary trace output has been obtained.

SUBTRACE=ARBP

Specifies that OPTION is a required keyword when SUBTRACE is specified and HPR must be one of the trace options specified when SUBTRACE=ARBP is coded. After subtrace ARBP is activated, the following trace records will be generated for the ARB algorithm processing: ARBR (Generated when ARB Responsive Mode algorithm is used) and ARBB (Generated when ARB Base Mode algorithm is used).

SUBTRACE=DIO

Specifies that OPTION is a required keyword when SUBTRACE is specified and CIA must be one of the trace options specified when SUBTRACE=DIO is coded. After subtrace DIO is activated, the following trace records may be generated for QDIO and Hipersockets processing: QAPL, QDIP and QSRB.

SUBTRACE=TGVC

Specifies that OPTION is a required keyword when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TGVC is coded. After subtrace TGVC is activated, the following trace records will be generated for various TG Vector requests: TGVC and TGV2. If large amounts of data are being traced, additional TGVC records (plus subsequent TGV2 records) may occur.

SUBTRACE=TREE

Specifies that OPTION is a required keyword when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TREE is coded. After subtrace TREE is activated, the following trace records will be generated for routing trees used by APPN route computation: TRRT, TRR2, TRR3, TRR4, TRR5, HLST, and HLS2.

SYNCID

Valid for TYPE=QDIOSYNC. The OSA-Express2 uses this value as part of an identifier when it captures diagnostic data.

Restriction: If you specify a value for SYNCID, it must conform to the rules for names. See *z/OS Communications Server: SNA Resource Definition Reference* for more information.

TRACEPT=trace_point_id

Applies to TYPE=SIT and is valid only if you are tracing connectivity subsystem (CSS) resources on an IBM 3745 Communication Controller. This operand specifies the point in the microcode at which tracing should be activated. If you omit this operand, tracing is done for all valid trace points. Using the TRACEPT operand, you can limit the tracing to a single trace point if too much output is being produced.

VTAM accepts any integer in the range 1 - 255; however, only a few values are defined by the NCP. For information about which values are defined and what they mean, see the *NCP, SSP, and EP Diagnosis Guide*.

TYPE

Specifies the kind of trace that is to be affected. More than one kind of trace can be active at the same time, but you must start or change each trace with a separate MODIFY TRACE command.

TYPE=BUF

Starts the tracing of text that passes through VTAM buffers on the way to or from the node identified by the ID operand. The SCOPE operand can be used to extend the scope of the trace to all nodes subordinate to the specified node. This trace is useful when one of the logical units in the session is an application program in this domain.

TYPE=CNM

Starts a communication network management trace.

Note: When this option is specified, the generalized trace facility (GTF) must be active with the TRACE=USR option specified.

TYPE=EXIT

Starts the tracing of functions of the session management exit (SME).

TYPE=GPT

Starts an NCP generalized PIU trace (GPT) for the resources identified by the ID operand.

Note: The ID operand of MODIFY TRACE cannot specify:

- An NCP switched line that is a switched subarea connection
- A dynamic CDRSC

TYPE=IO

Starts a trace of I/O activity associated with the node identified by the ID operand. The SCOPE operand can be used to extend the scope of the trace to all nodes subordinate to the specified node. In addition, for an NCP major node with an active channel attachment, the SCOPE=ALL operand provides a trace of all I/O going across the channel, including cross-domain session I/O.

Note: The external VIT is now used to record the IO trace entries. PIU, NLPI, NLPO, LSNA, and MPTNFMT entries may be written for a specific IO trace invocation.

TYPE=LINE

Starts an NCP line trace for the line identified by the ID operand.

TYPE=MODULE

Starts module tracing for the options specified on the OPTION operand.

TYPE=NETCTLR

Sends a trace request to the 3710 named on the PU operand.

TYPE=QDIOSYNC

Use TYPE=QDIOSYNC to synchronize and optionally filter OSA-Express2 diagnostic data.

Arming the OSA-Express2 adapter directs it to capture diagnostic data when there is an unexpected loss of host connectivity. Diagnostic data is also captured when the following situations occur:

- The VTAM-supplied message processing facility (MPF) exit IUTLLCMP is driven.
- Either the VTAM or TCP/IP functional recovery routine (FRR) is driven with the ABEND06F abend. ABEND06F is the result of a SLIP PER trap command specifying ACTION=RECOVERY.

Restriction: The SLIP must be a SLIP PER trap in order to specify ACTION=RECOVERY.

See z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures for more information about the QDIOSYNC facility.

TYPE=ROUTE

Starts the APPN route selection trace.

TYPE=SIT

Starts a scanner interface trace (SIT) through the communication scanner processor located in the IBM 3720 or 3745 Communication Controller containing the NCP identified by the line specified by the ID operand.

The scanner interface trace and the NCP line trace can be started separately, and can be active at the same time.

TYPE=SMS

Starts a Storage Management services (SMS) trace to record VTAM buffer pool usage data.

TYPE=STATE

Starts a resource state trace to record the changing states of resources.

TYPE=TG

Starts an NCP transmission group trace for the transmission group (TG) containing the NCP line identified by the ID operand. A line is part of a transmission group only when both the line and its subordinate link station are active. A transmission group trace can be started by naming any line within the transmission group. When a transmission group trace is started, another trace of the same transmission group cannot be requested by naming the same or another line within the transmission group in another MODIFY TRACE command.

If the line or its link station subsequently fails or is deactivated (that is, if the line is removed from the transmission group), the transmission group

trace is ended, even though the transmission group continues to operate if there are any remaining lines in the transmission group. The trace can be restarted, naming another line in the transmission group.

The NCP line trace and the transmission group trace are mutually exclusive for a particular line. Therefore, when starting a transmission group trace, select a line that is not being used, and is not likely to be used, for a line trace.

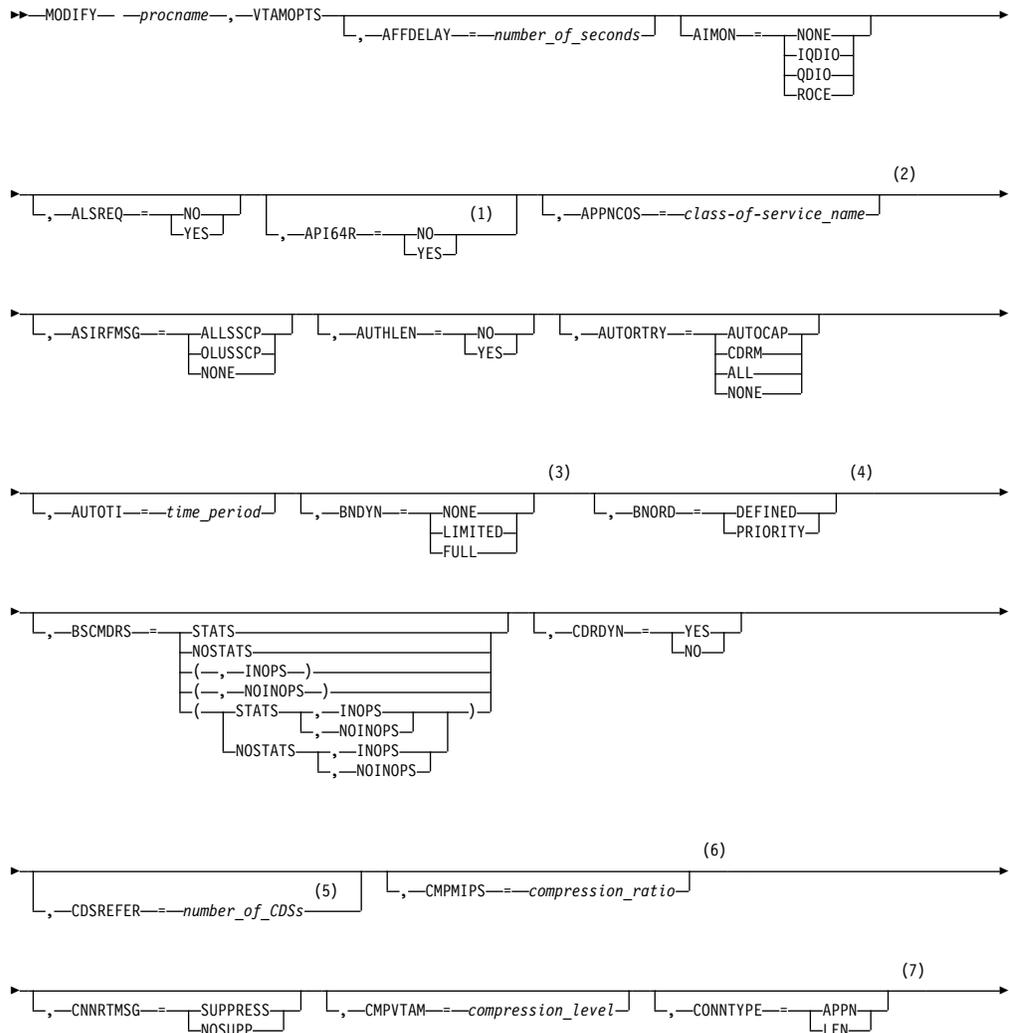
TYPE=TSO

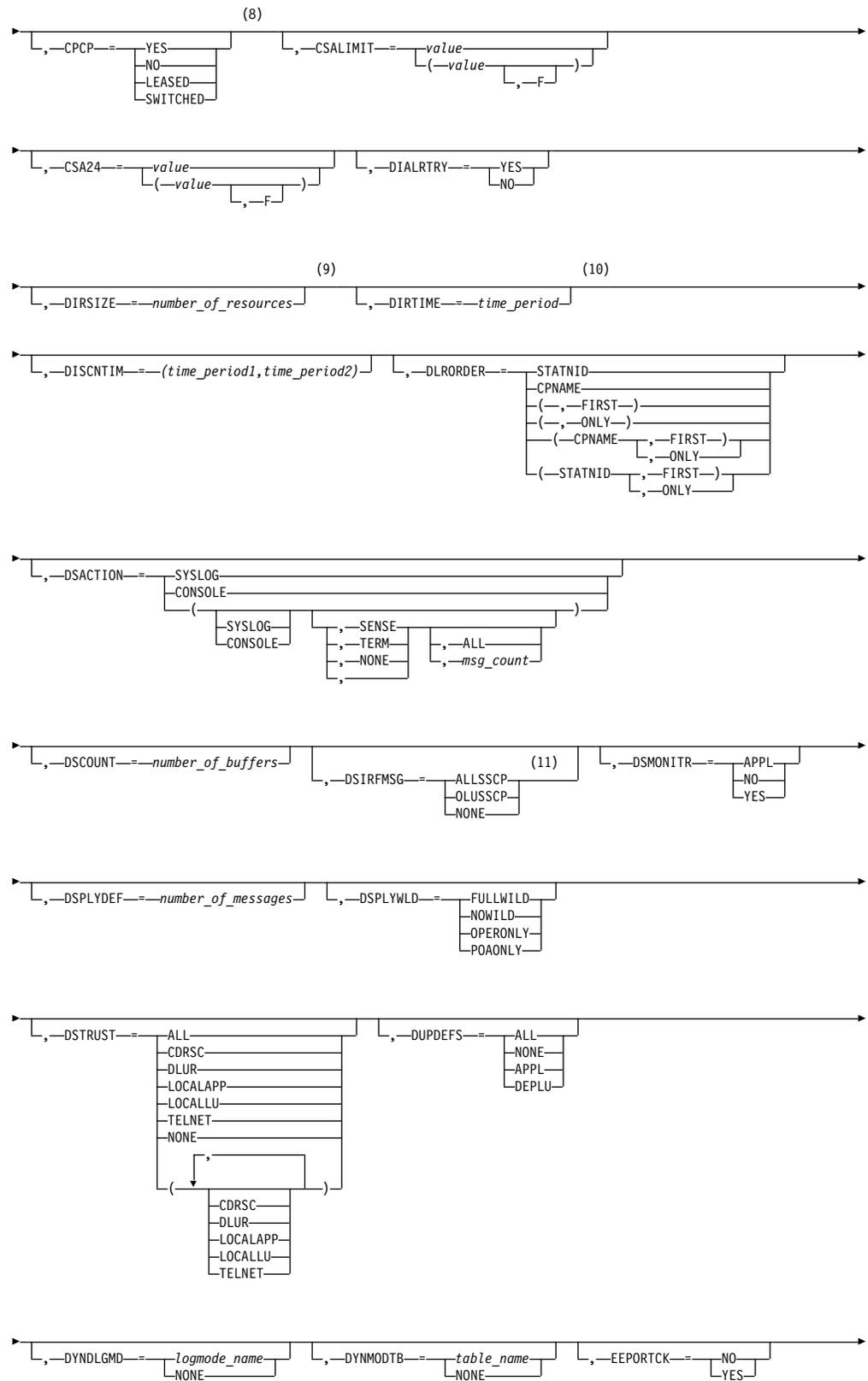
Starts a TSO component trace for the user ID identified by the ID operand. GTF must be active when this trace option is specified.

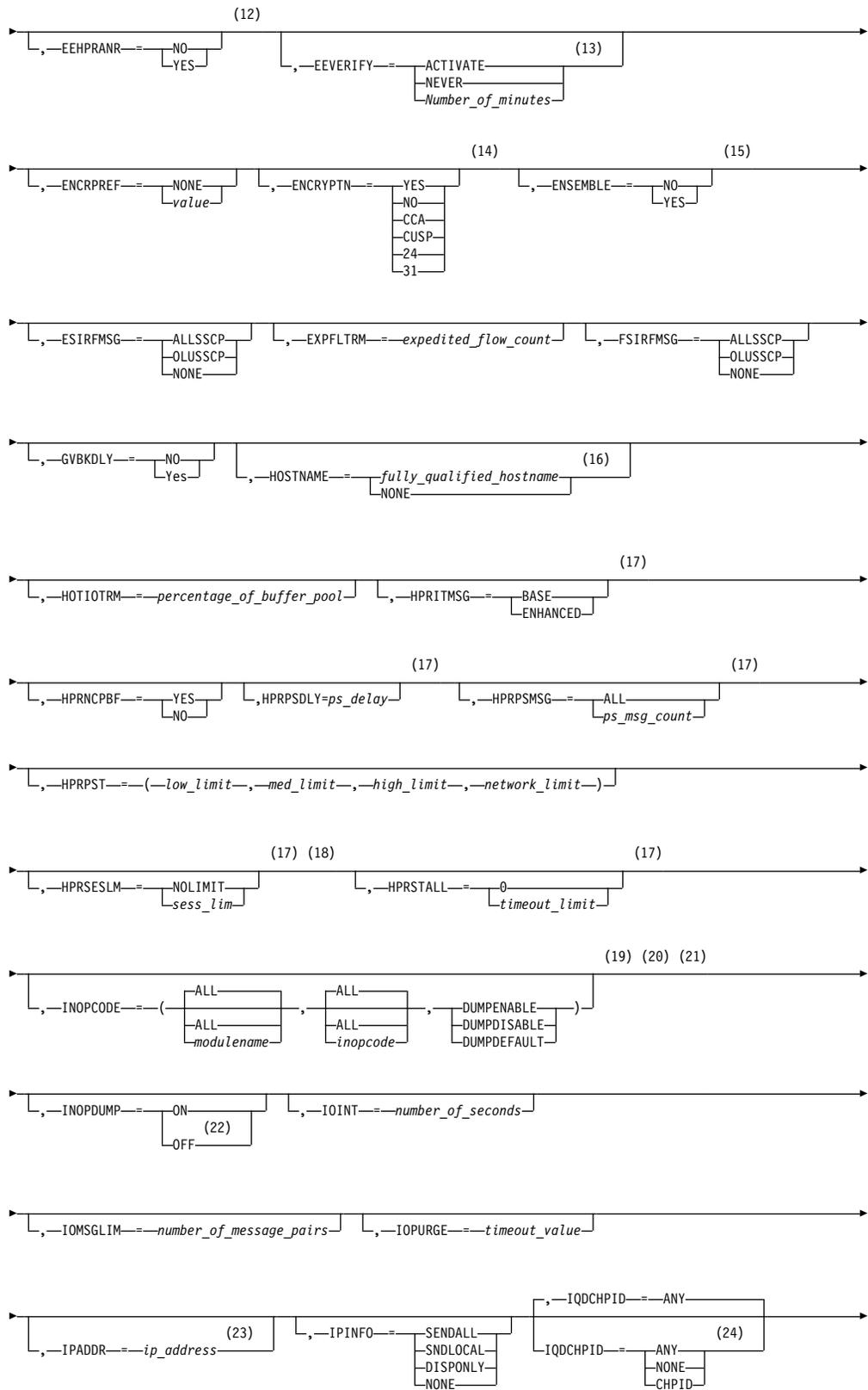
TYPE=VTAM

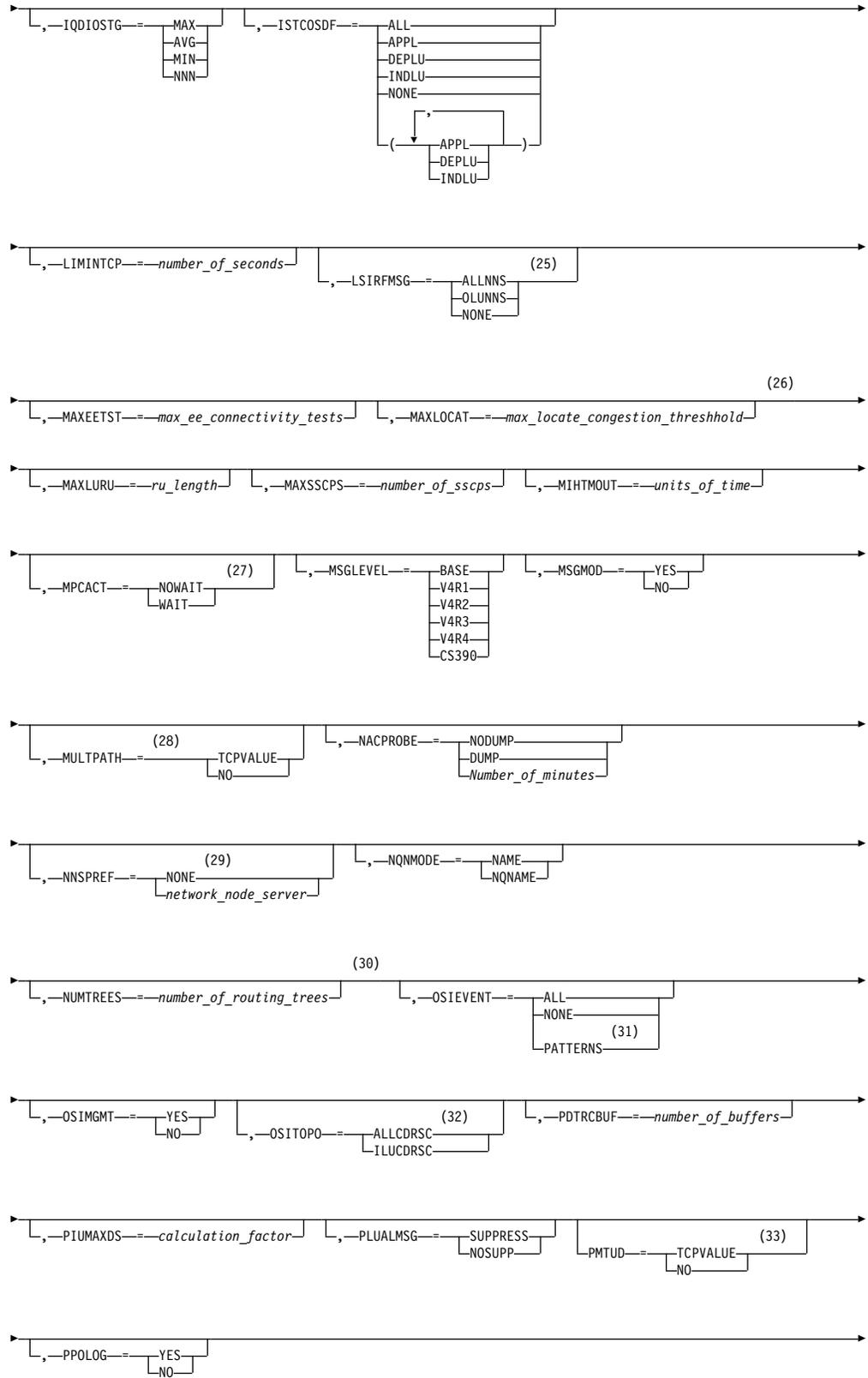
Starts the VTAM internal trace (VIT) for the components specified by the OPTION operand. If OPTION is omitted, no new component internal traces are initiated; rather, VTAM issues messages identifying the components for which the internal trace is currently active.

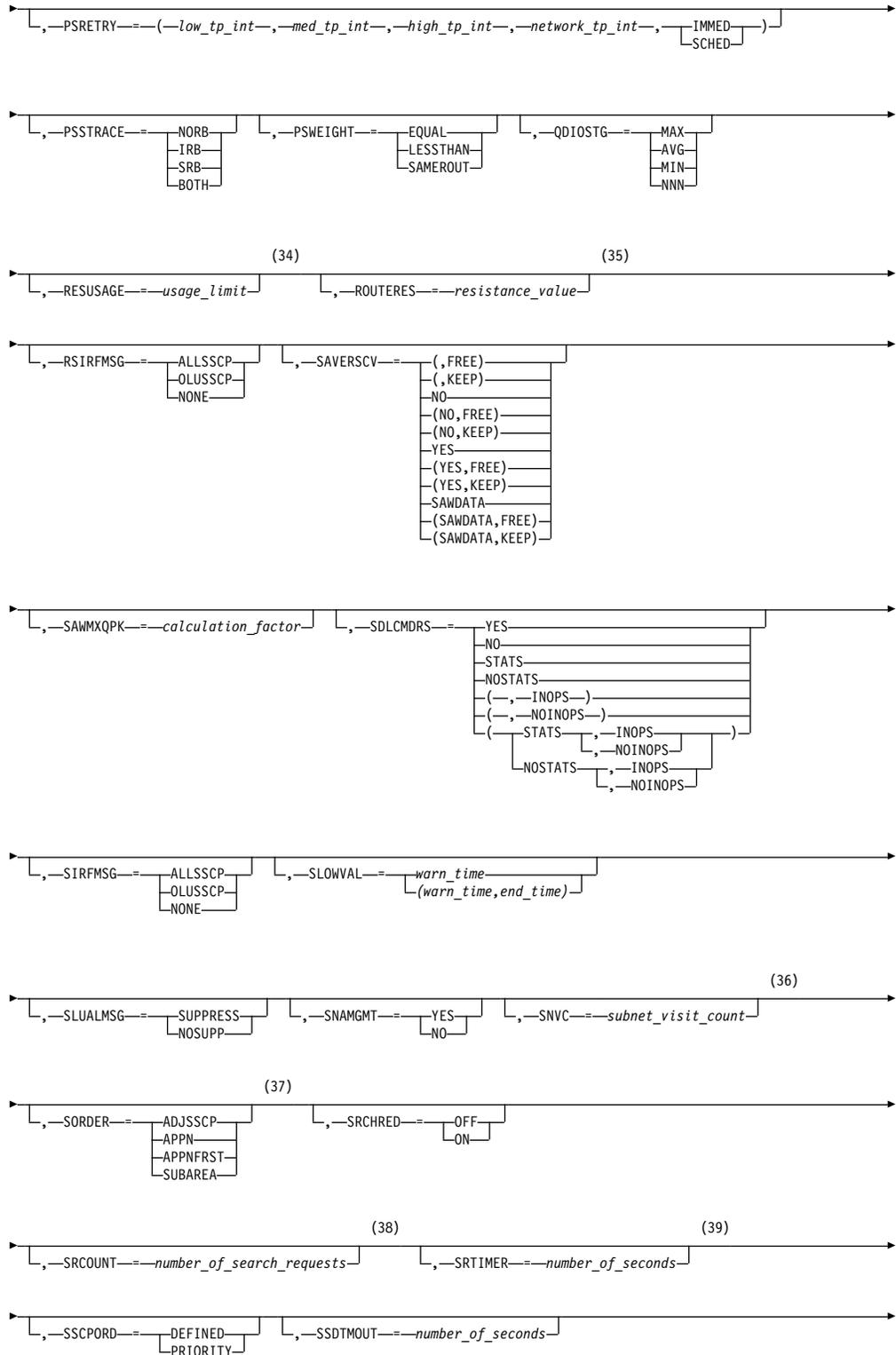
MODIFY VTAMOPTS command

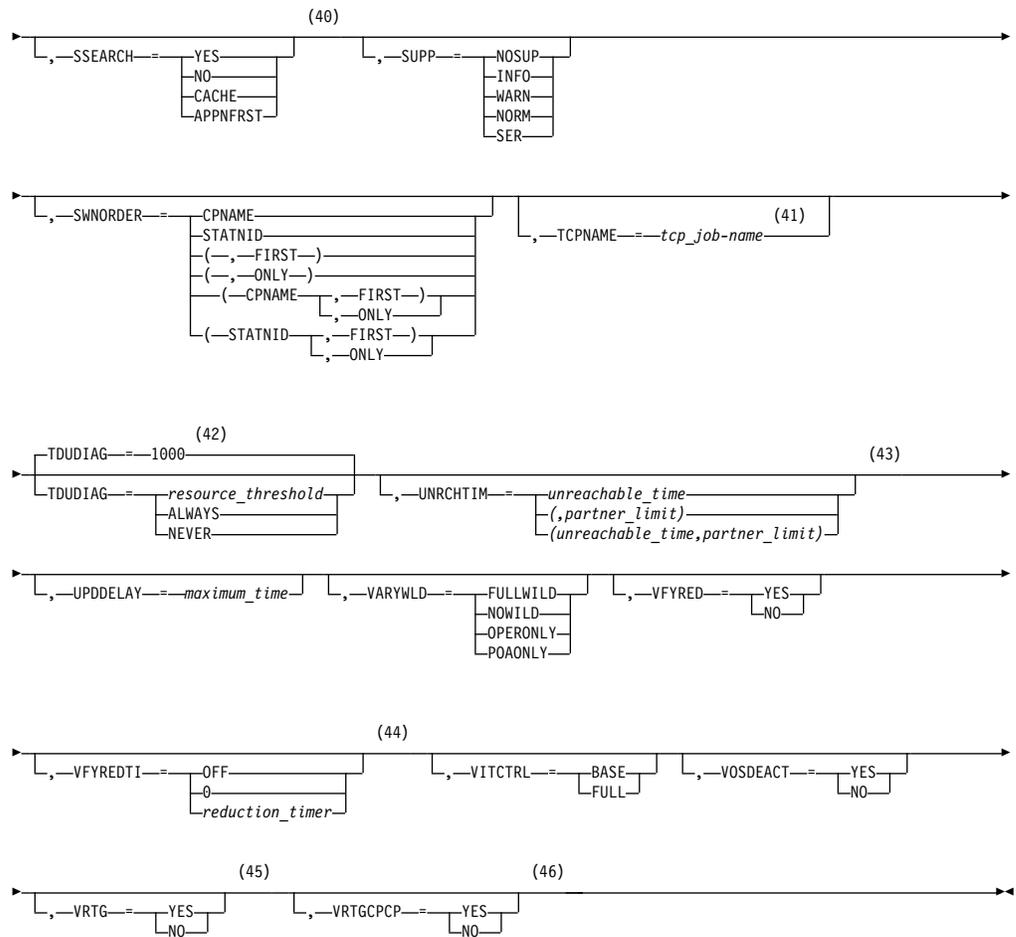












Notes:

- 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 CPMIPS 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.

Abbreviations

Operand	Abbreviation
MODIFY	F
MSGLEVEL	MSGLVL
PLUALMSG=NOSUPP	PLUALMSG=NOSUP
PLUALMSG=SUPPRESS	PLUALMSG=SUPP
SLUALMSG=NOSUPP	SLUALMSG=NOSUP
SLUALMSG=SUPPRESS	SLUALMSG=SUPP

When using an abbreviation in place of an operand, code the abbreviation exactly as shown in the table. For example, when coding the abbreviation for PLUALMSG=SUPPRESS, code only PLUALMSG=SUPP.

Purpose

The MODIFY VTAMOPTS (VTAM start options) command enables you to change certain values that might have been specified on VTAM start options. See the *z/OS Communications Server: SNA Resource Definition Reference* for descriptions of each of the start options that you can change with this command.

There are no default values on the MODIFY VTAMOPTS command. In general, only the values that you specify are affected, and operands that are not specified on the command are unaffected. The exceptions are the IPADDR and HOSTNAME operands, which do affect each other when specified on the MODIFY VTAMOPTS command.

Note: If a start option affects individual resources, and you change the value of the start option with this command, the change does not go into effect until the major nodes for those resources are deactivated and reactivated. The command takes effect for major nodes that are activated after you issue this command and for dynamic cross-network resources that are dynamically defined after the command is issued.

Operands

procname

The procedure name for the command. If *procname* in the START command was specified as *startname.ident*, where *startname* is the VTAM start procedure and *ident* is the optional identifier, either *startname.ident* or *ident* can be specified for *procname*.

If *procname* in the START command was *startname*, *startname* must be specified for *procname*.

Logon manager operator commands

START command

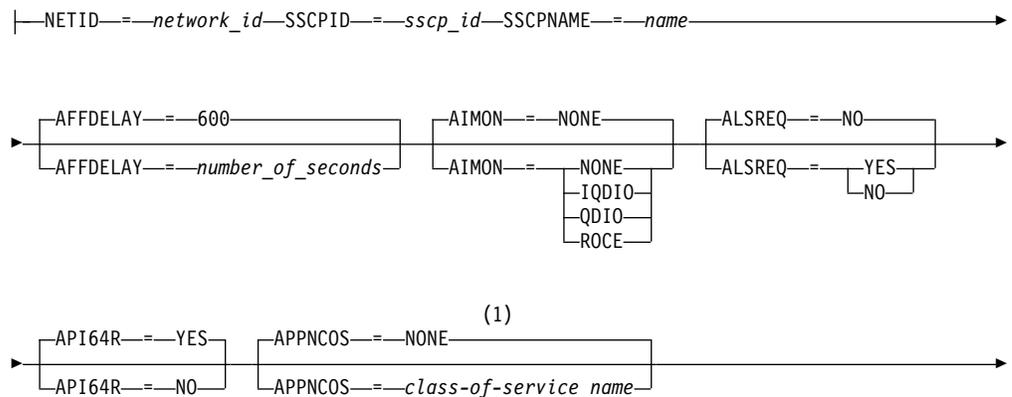
Starting VTAM in an MVS environment:

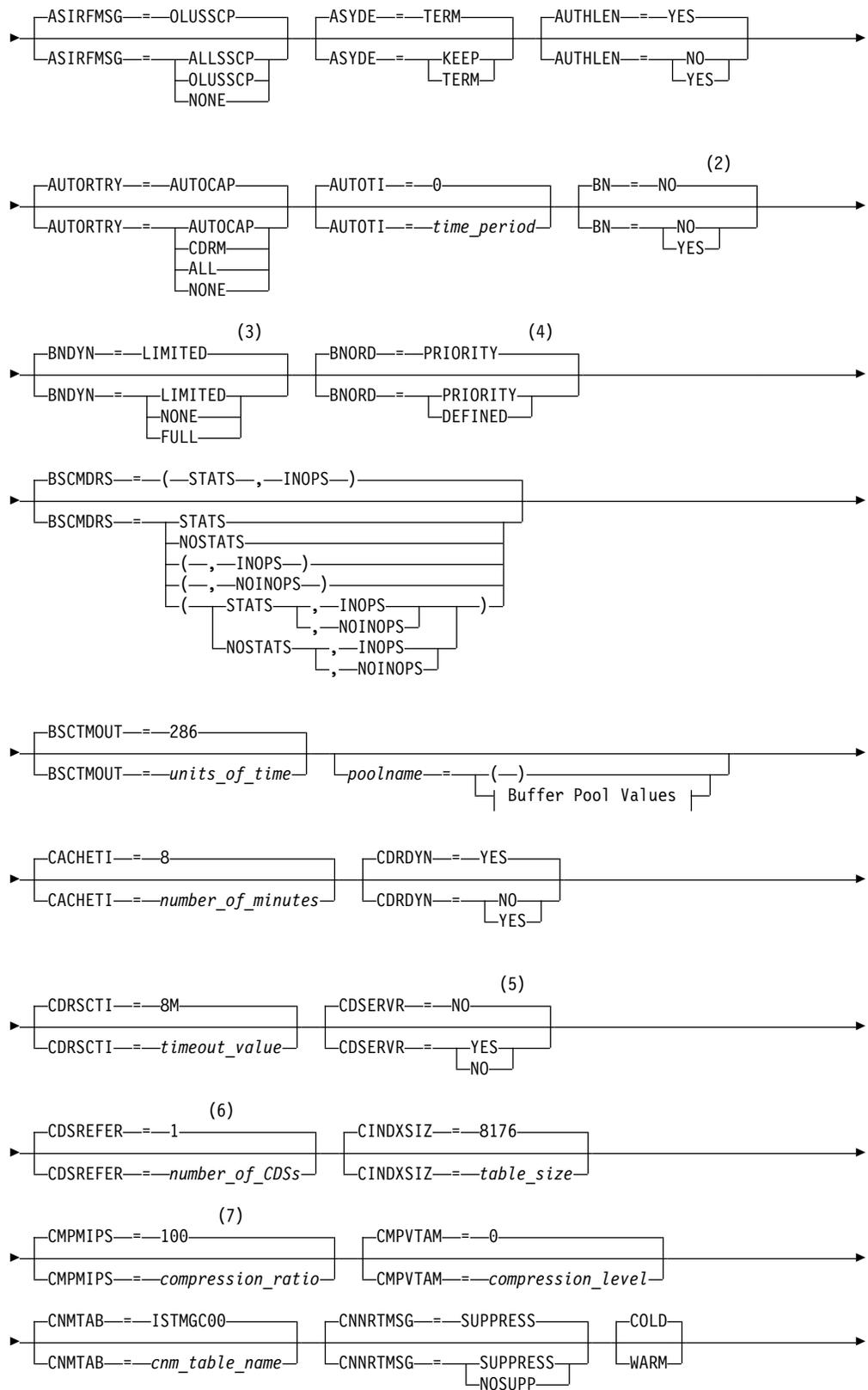
▶▶—START— *procname*—,—,—,—(—| Options |—)—————▶▶

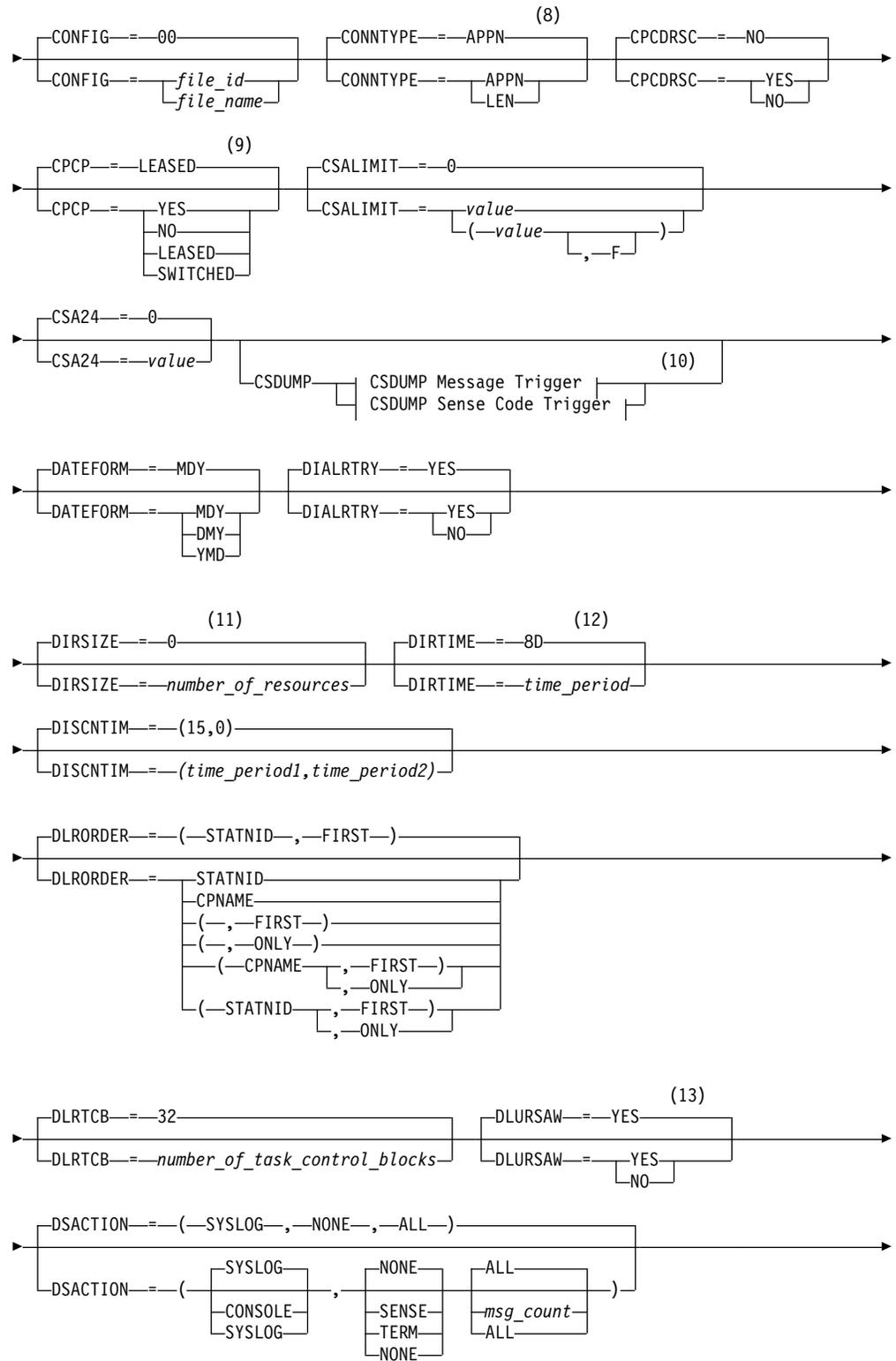
Note:

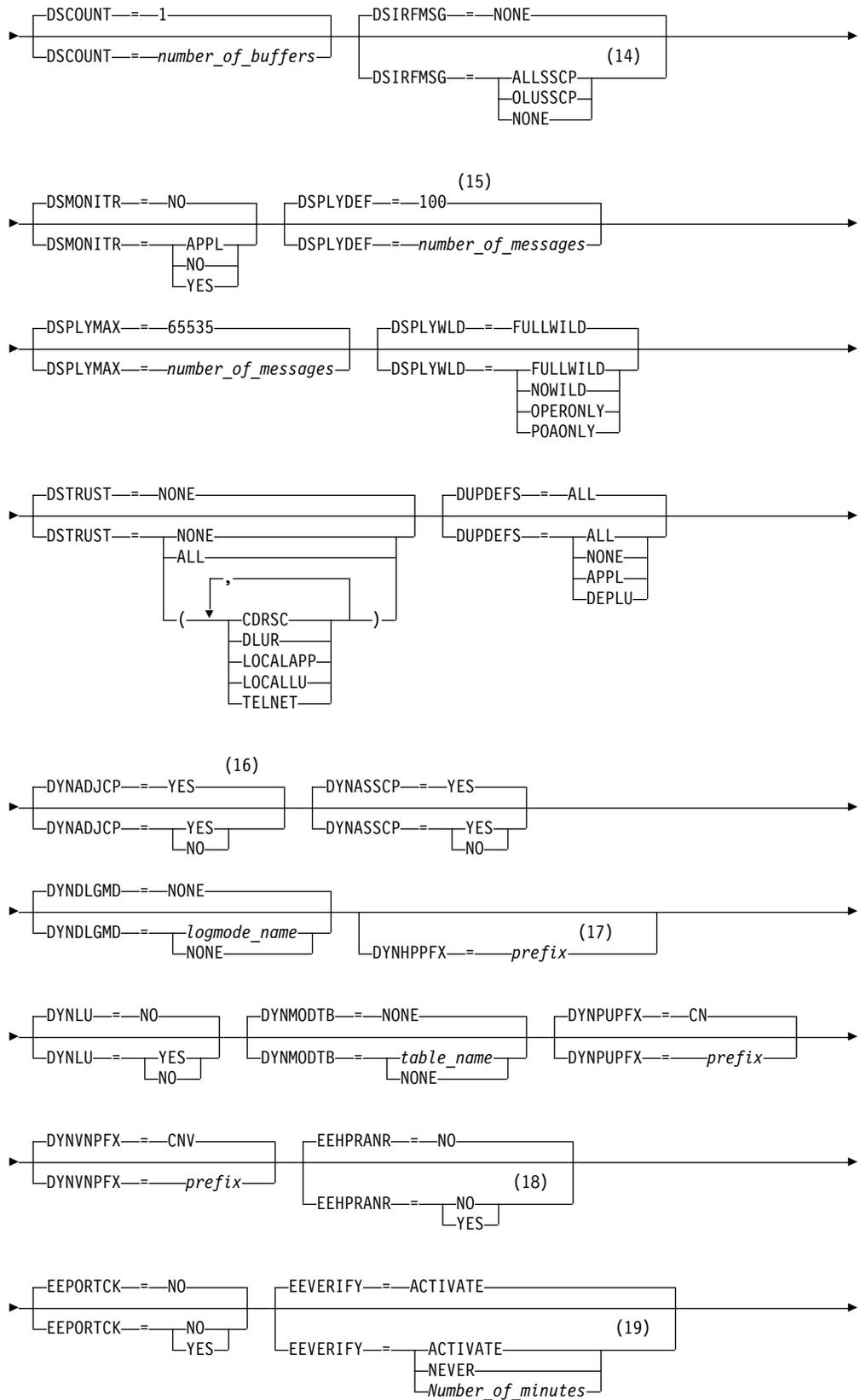
1. The start options are listed in this information alphabetically; however, you can code them in any order.
2. Precede the option list with three commas and enclose the group of options in parentheses.
3. Start options that are entered on the START command must be separated by commas. Do not leave any blanks between options.

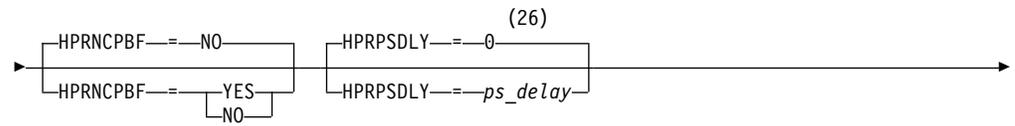
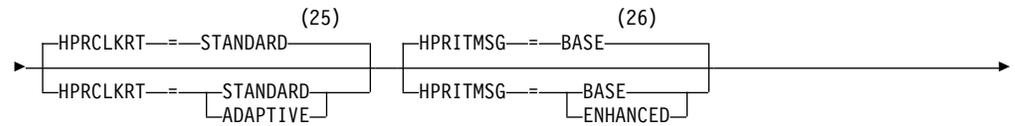
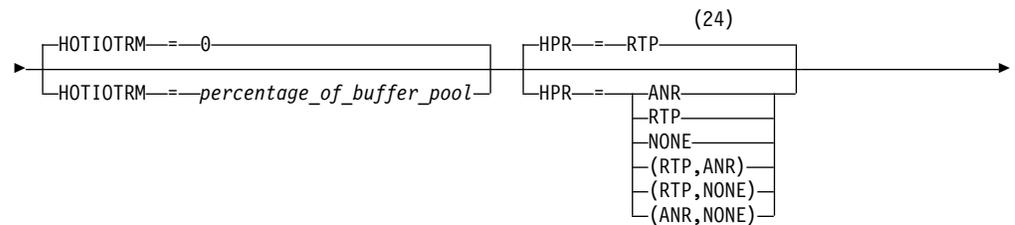
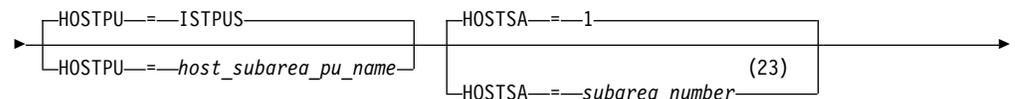
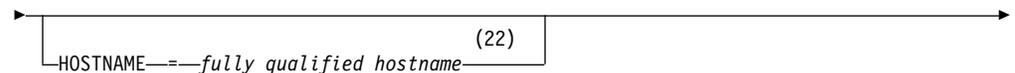
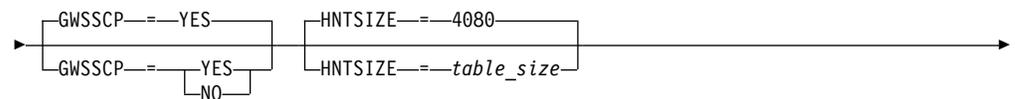
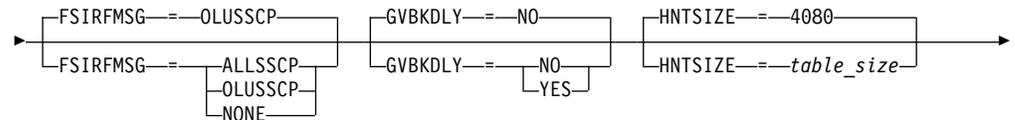
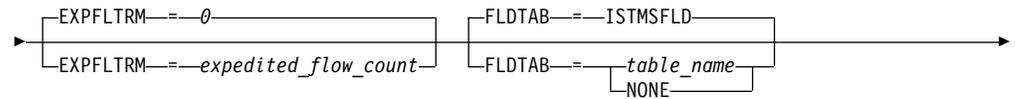
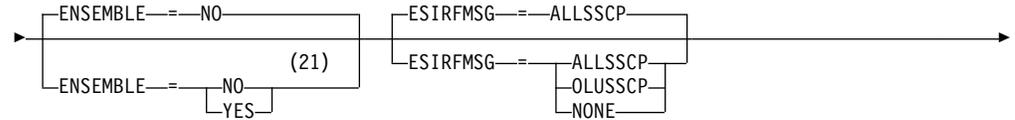
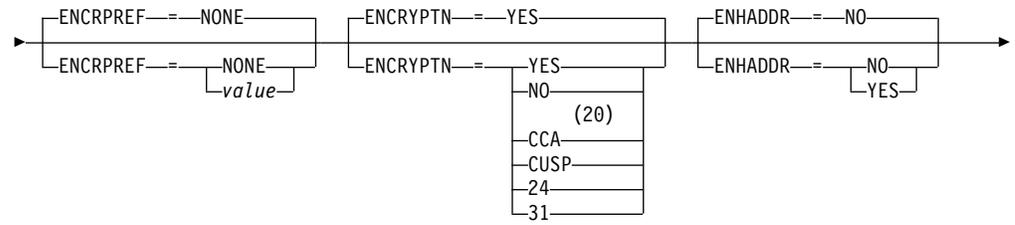
Options:

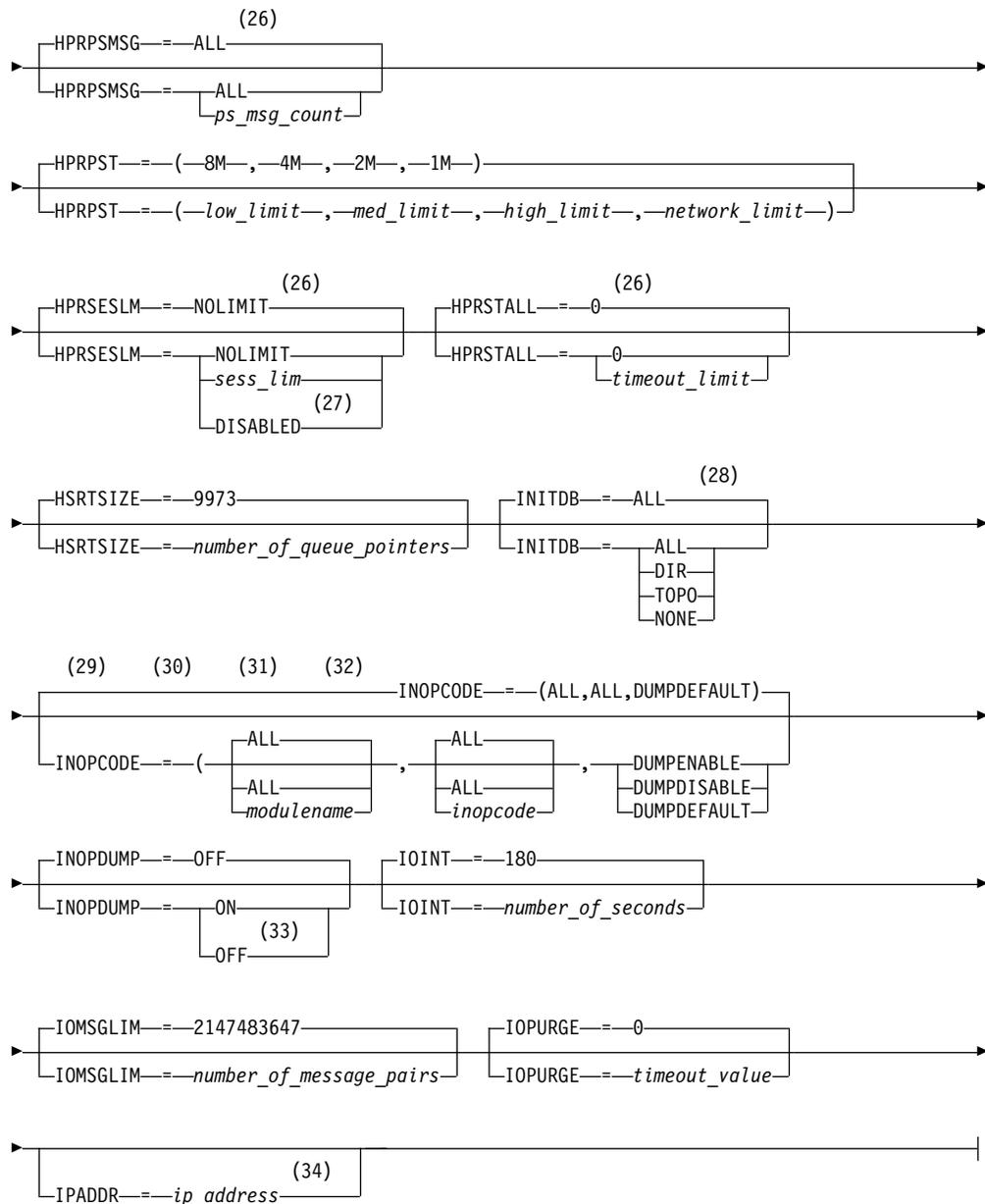










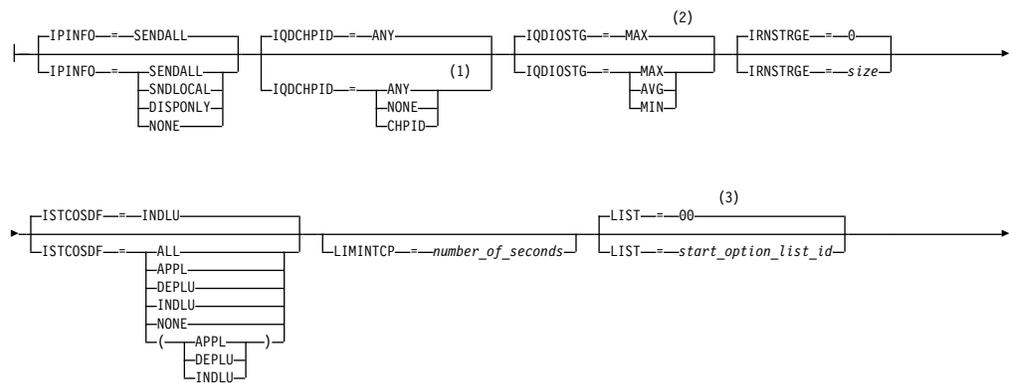


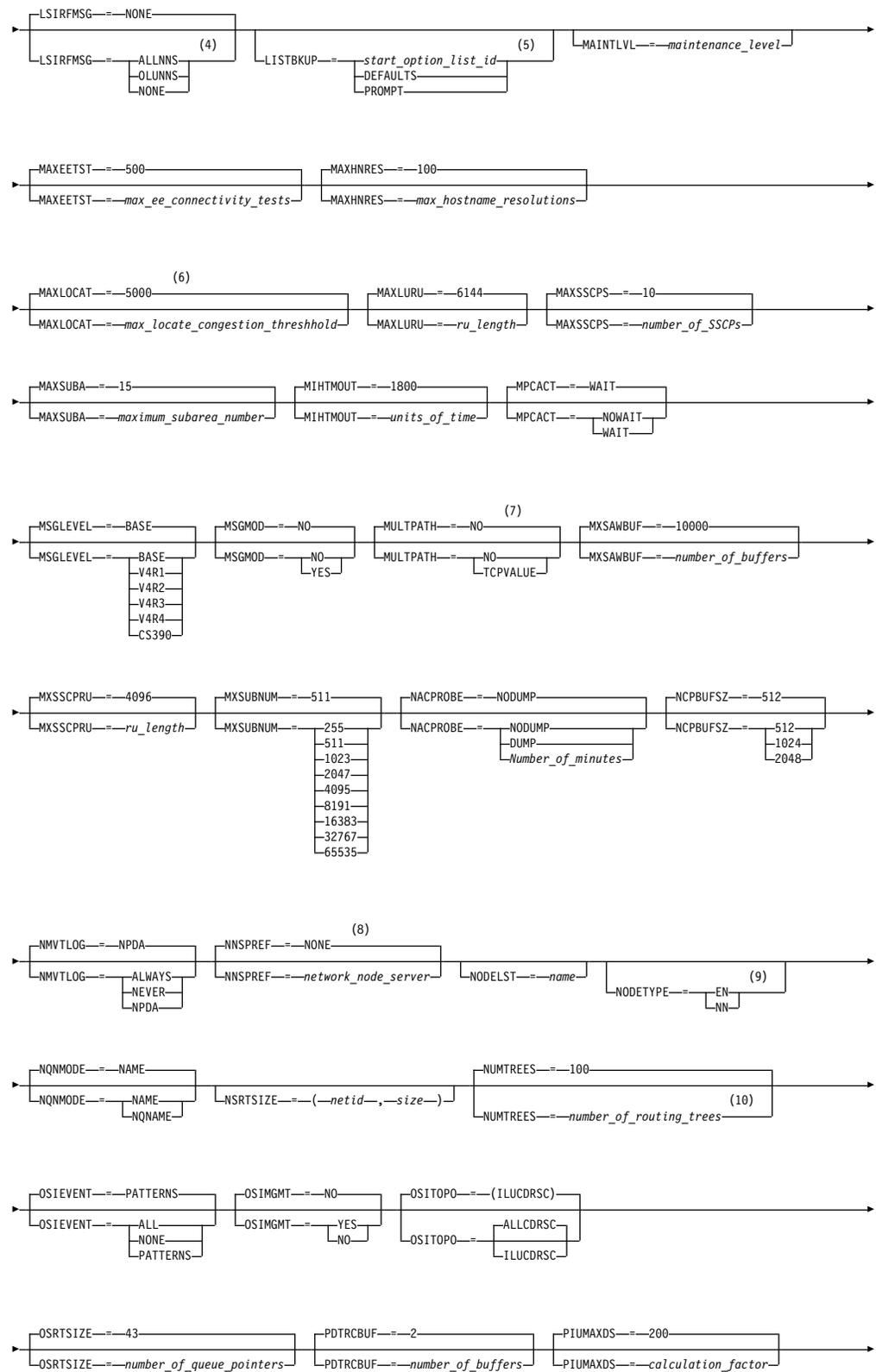
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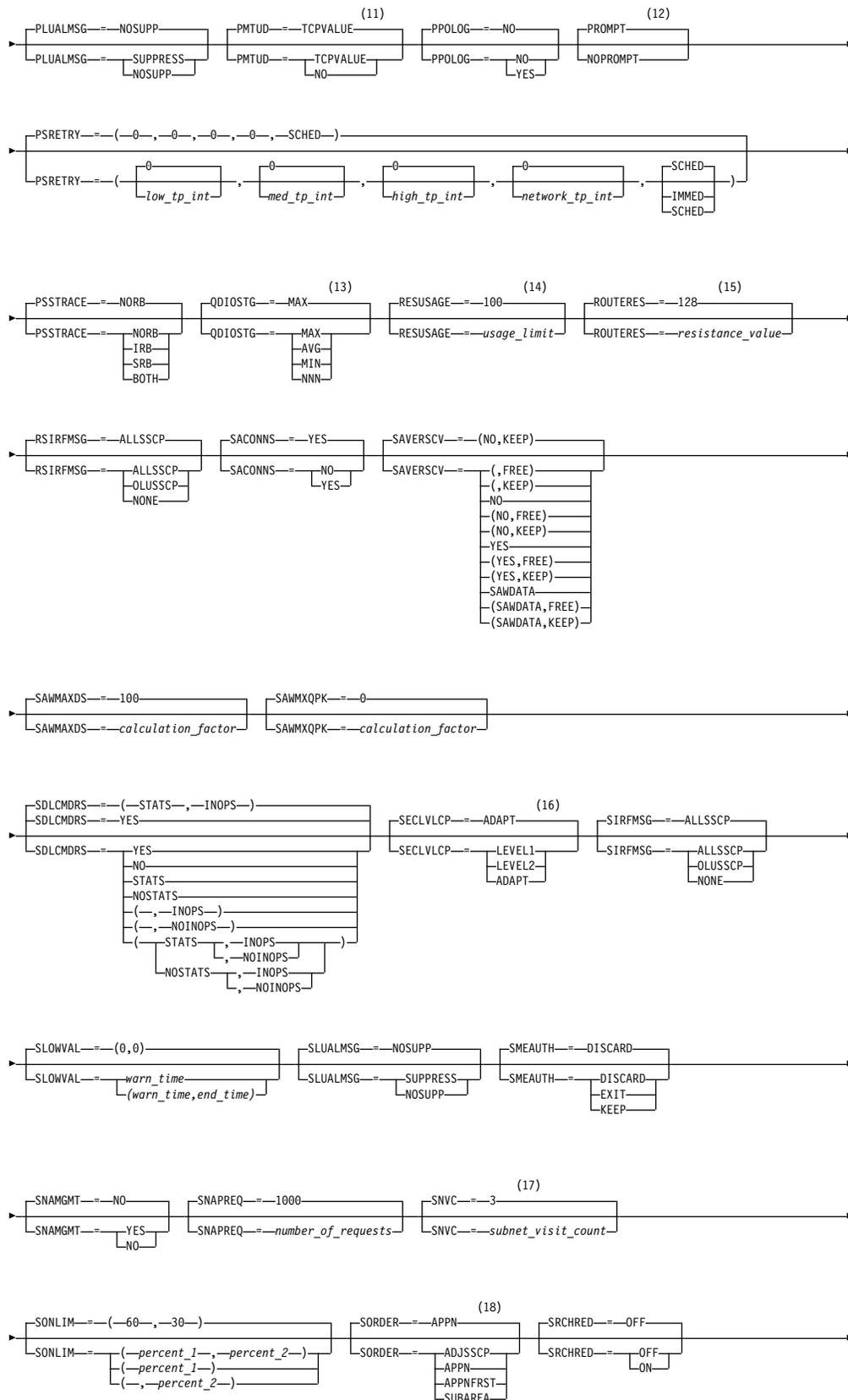
- 1 APPNCOS is meaningful only if the NODETYPE start option is also used.
- 2 BN is meaningful only if the NODETYPE=NN start option is also used.
- 3 BNDYN is meaningful only if the BN=YES start option is also used.
- 4 BNORD is meaningful only if the BN=YES start option is also used.
- 5 CDSERVR is meaningful only if the NODETYPE=NN start option is also used.
- 6 CDSREFER is meaningful only if the NODETYPE=NN and CDSERVR=NO start options are also used.
- 7 The CMPMIPS start option is meaningful only if the value for CMPVTAM is greater than 1.

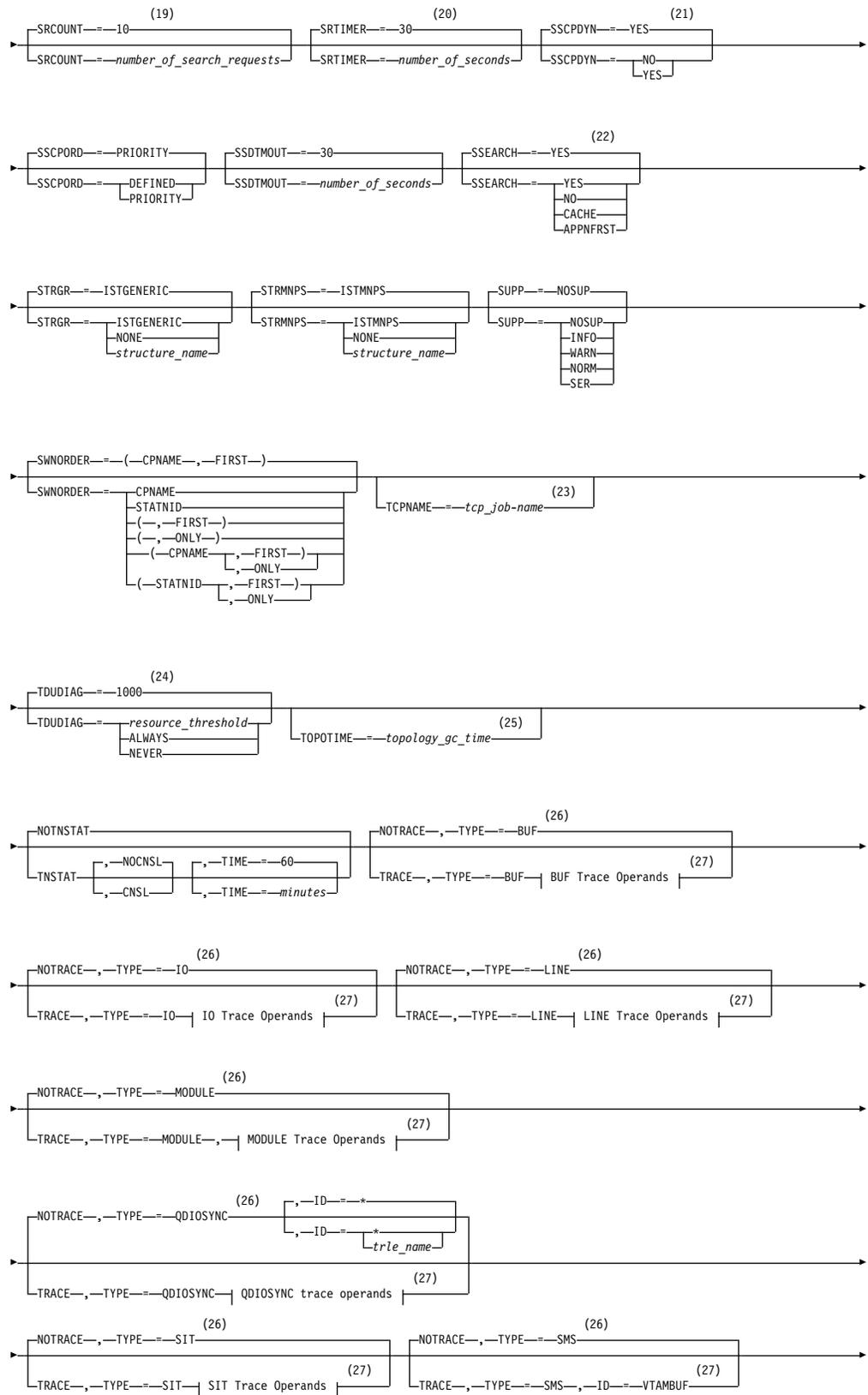
- 8 CONNTYPE is meaningful only if the NODETYPE start option is also used.
- 9 CPCP is meaningful only if the NODETYPE start option is also used.
- 10 Specify the CSDUMP start option twice to set both message and sense code triggers.
- 11 DIRSIZE is meaningful only if the NODETYPE=NN start option is 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 DSPLYMAX start option value is less than 100, that value is the default for DSPLYDEF.
- 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.

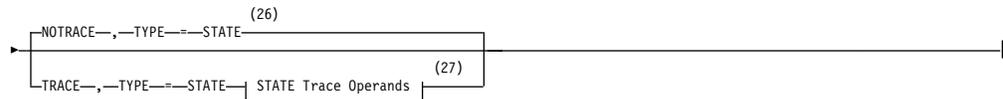
- 28 INITDB is meaningful only if the NODETYPE=NN start option is also used.
- 29 When specifying an InOpCode for the second parameter, always specify three digits by including any leading zeros.
- 30 If an InOpCode is specified for the second parameter, the first parameter cannot be ALL.
- 31 INOPCODE 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.











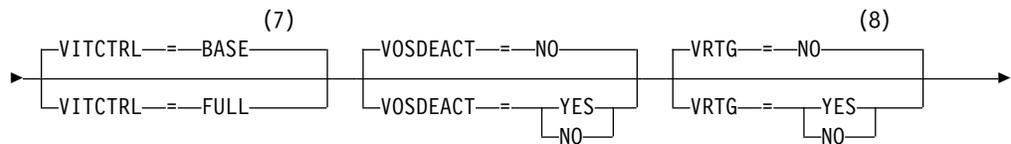
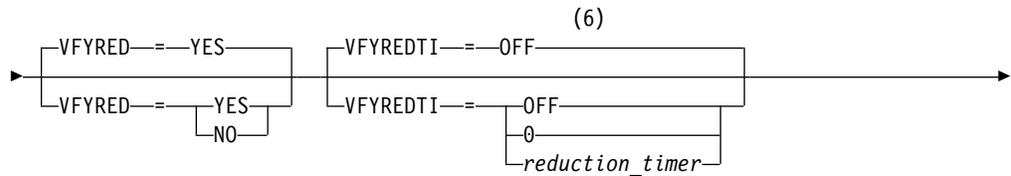
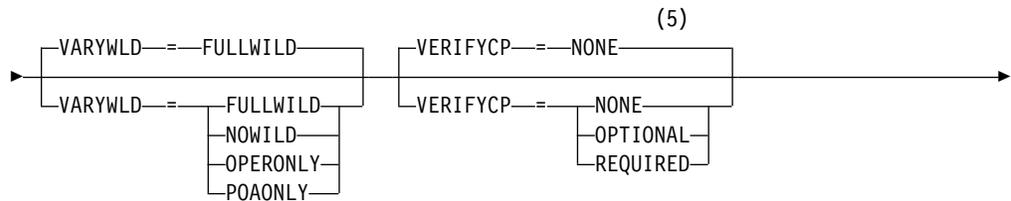
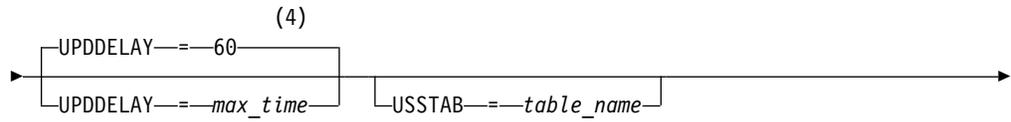
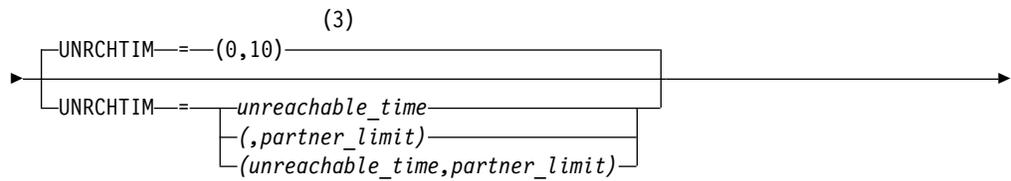
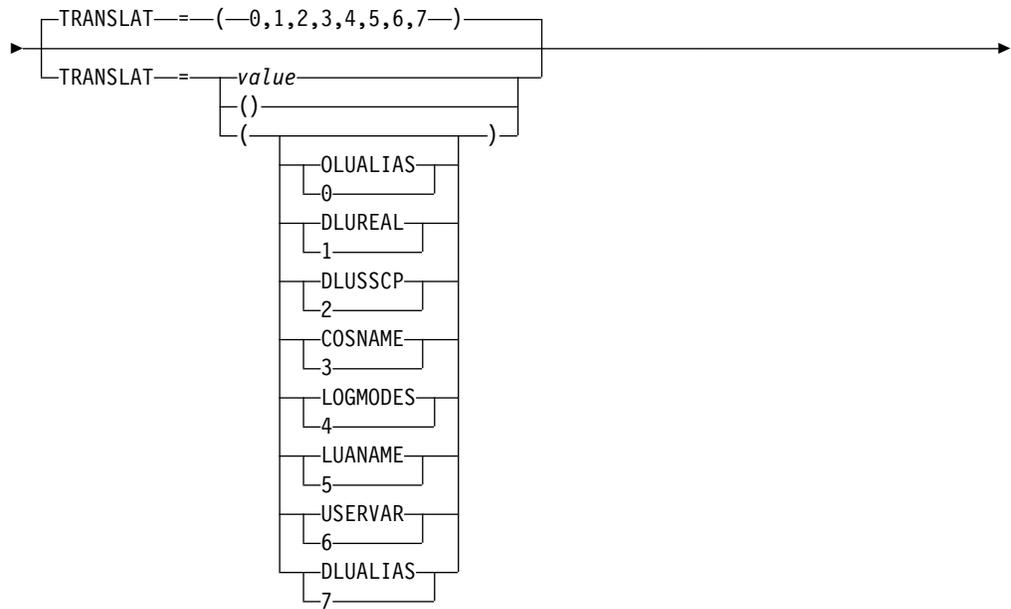
Notes:

- 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

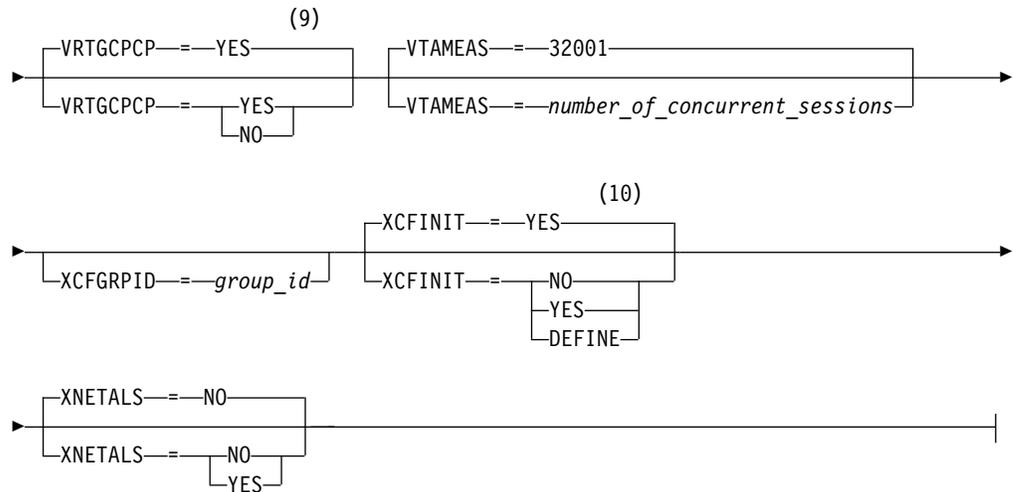
the READSTORAGE parameter on the LINK or INTERFACE statement in the TCP/IP profile. See z/OS Communications Server: IP Configuration Reference for more details.

- 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.

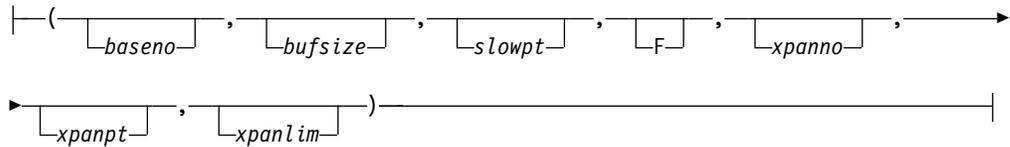




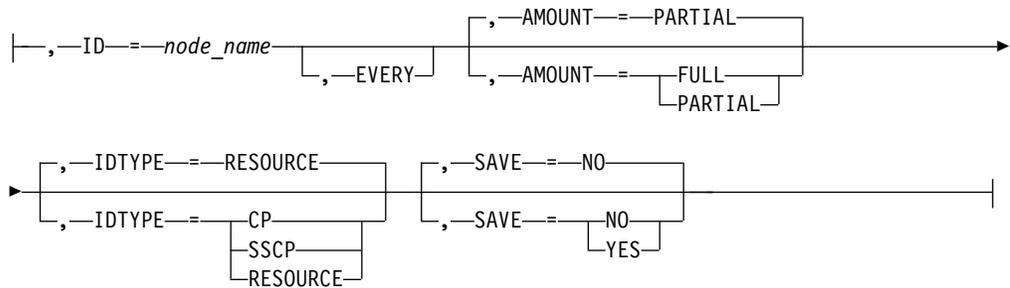
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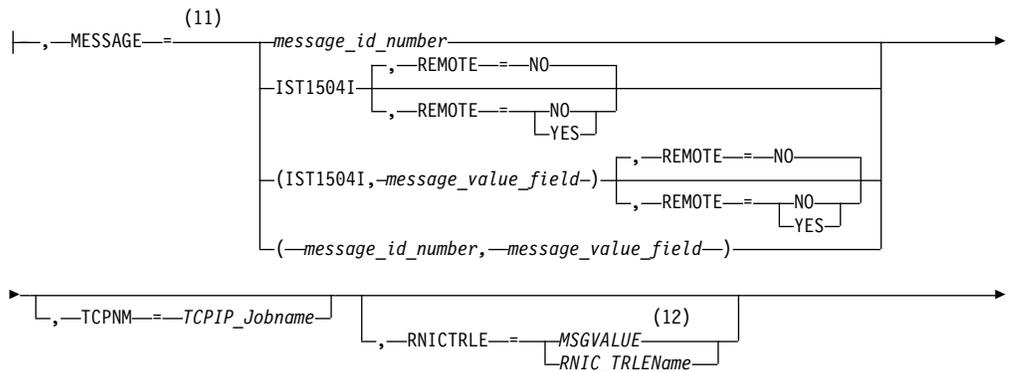
Buffer Pool Values:



BUF Trace Operands:

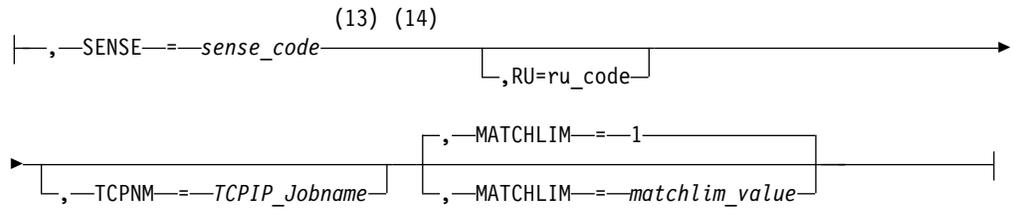


CSDUMP message trigger:

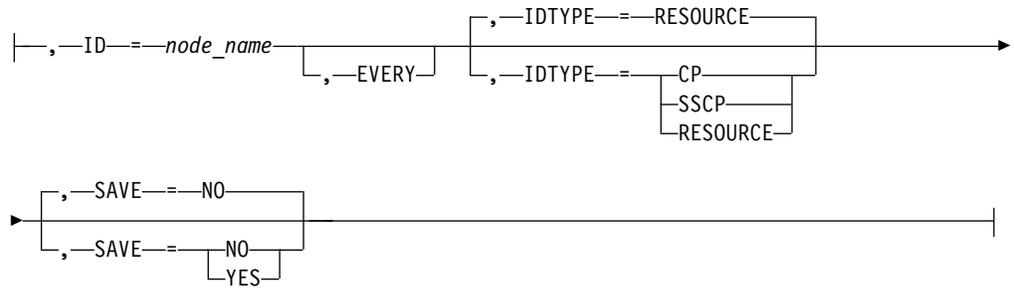




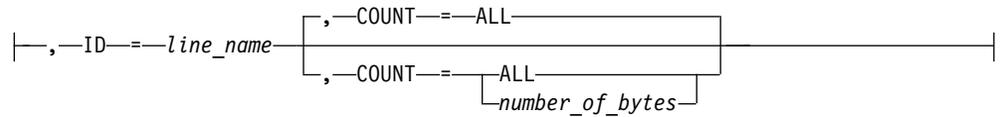
CSDUMP sense code trigger:



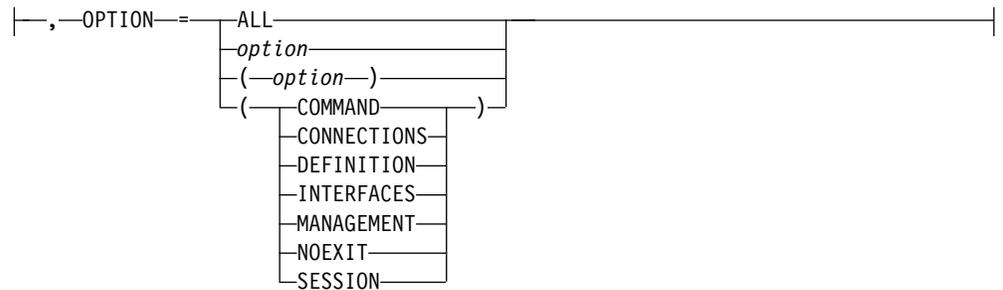
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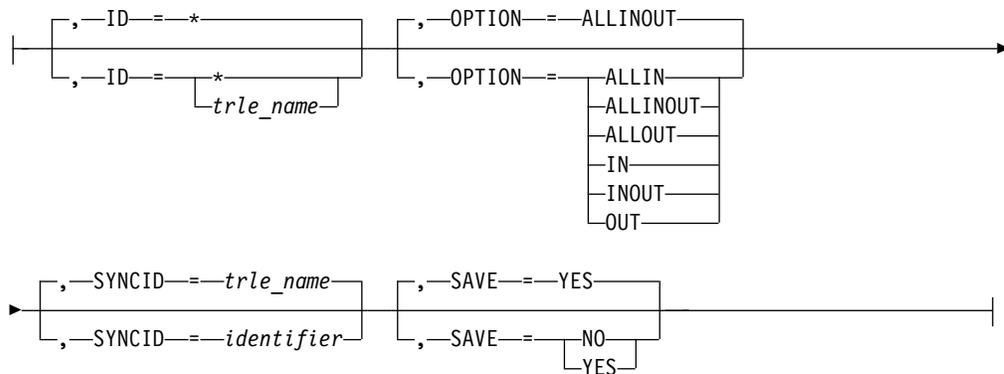
LINE Trace Operands:



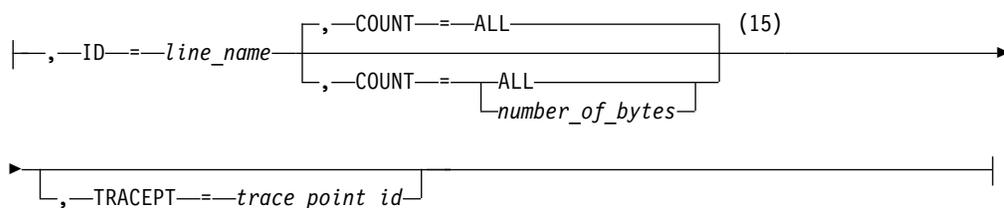
MODULE Trace Operands:



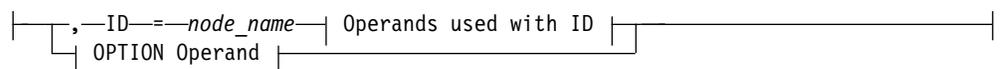
QDIOSYNC trace operands:



SIT Trace Operands:



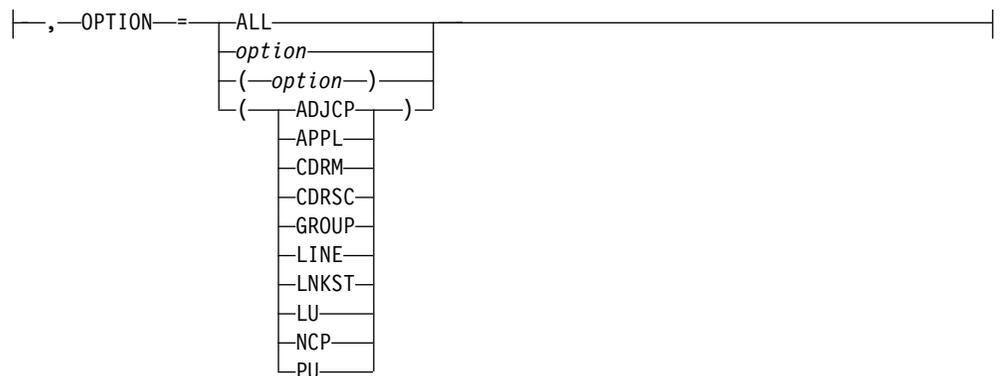
STATE Trace Operands:



Operands used with ID:



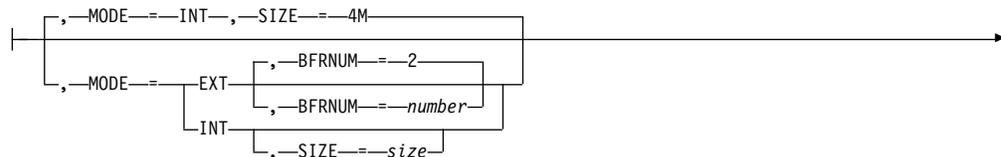
OPTION Operand:

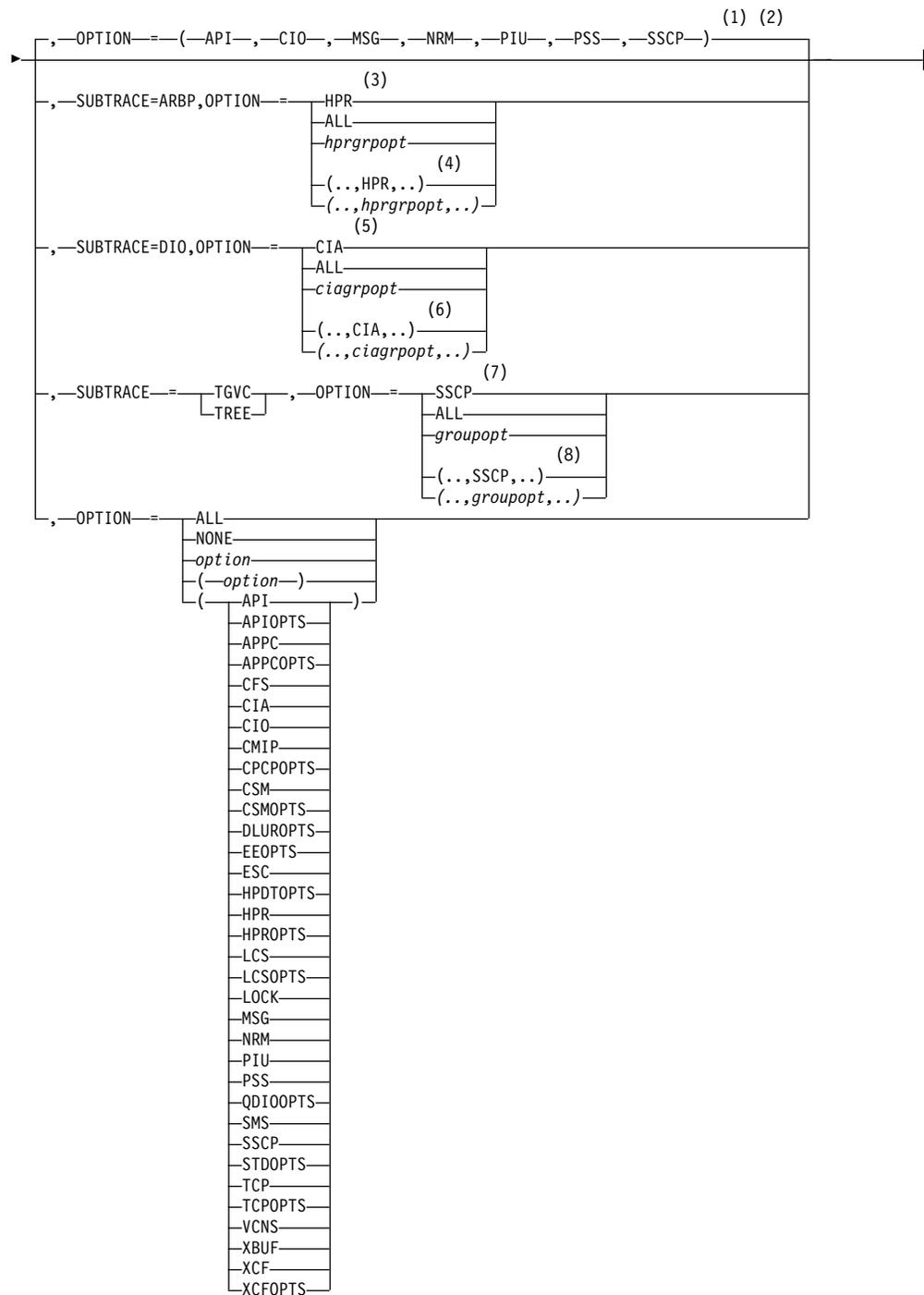


Notes:

- 1 NOTRACE,TYPE=VTAM is accepted but ignored. Tracing is started with the default trace table size and the default options. The NOTRACE,TYPE=VTAM start option processing is affected by the level of VIT control being used (as specified by the VITCTRL start option). See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.
- 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 VITCTRL start option will only affect the TRACE or NOTRACE start option if it is specified prior to the TRACE or NOTRACE TYPE=VTAM (MODE=INT) start option.
- 8 VRTG is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 9 VRTGCPCP is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 10 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).
- 11 When the same parameter is entered multiple times on a CSDUMP message trigger, only the last occurrence is accepted.
- 12 MSGVALUE is valid only when the MESSAGE operand is used and specifies either message IST2391I or IST2406I.
- 13 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.
- 14 When the same parameter is entered multiple times on a CSDUMP sense trigger, only the last occurrence is accepted.
- 15 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` is a default VIT option, but `PSS` 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, HPDTPPTS, 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, CPCOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, 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.

IQD CHPID modifications

While the IUTIQDIO MPC group is currently active, any modifications to the IQDCHPID option have the following effects:

- Modified from ANY (or CHPID) to NONE - no effect on current usage but blocks subsequent activations
- Modified from NONE to ANY (or CHPID) - no effect on current usage but allows subsequent activations
- Modified from CHPID_X to CHPID_Y - no effect on current usage

Note: VTAM uses the CHPID value only when building the IUTIQDIO MPC group. To change CHPIDs for an active MPC group, the following must be done:

1. All TCP/IP iQDIO (HiperSocket) devices must be stopped.
2. Make any necessary HCD/IOCDS changes.
3. Verify that new subchannel devices are varied online.
4. Verify that the MPC group has deactivated (with no usage, it times out after approximately two minutes).
5. Modify IQDCHPID=CHPID (to new CHPID).
6. Restart the TCP/IP iQDIO device or devices.

Note: In order to use iQDIO communications, the processor must have the necessary hardware support. If the processor does not support iQDIO communications, then modifications to this start option will not be accepted and the IQDCHPID option will not be displayed (displayed as ***NA***).

Abbreviations

Operand	Abbreviation
START	S
AMOUNT=FULL	AMT=F

Operand	Abbreviation
AMOUNT=PARTIAL	AMT=P
DATEFORM	DATEFRM
EVERY	E
MSGLEVEL	MSGLVL
OPTION	OPT
OPTION=COMMAND	OPT=CMD
OPTION=CONNECTION	OPT=CON
OPTION=DEFINITION	OPT=DEF
OPTION=INTERFACES	OPT=INT
OPTION=MANAGEMENT	OPT=MGMT
OPTION=SESSION	OPT=SES
PLUALMSG=NOSUPP	PLUALMSG=NOSUP
PLUALMSG=SUPPRESS	PLUALMSG=SUPP
SECLVLCP=LEVEL1	SECLVLCP=LVL1
SECLVLCP=LEVEL2	SECLVLCP=LVL2
SLUALMSG=NOSUPP	SLUALMSG=NOSUP
SLUALMSG=SUPPRESS	SLUALMSG=SUPP
TRANSLAT=COSNAME	TRANSLAT=3
TRANSLAT=DLU_ALIAS	TRANSLAT=7
TRANSLAT=DLUREAL	TRANSLAT=1
TRANSLAT=DLUSSCP	TRANSLAT=2
TRANSLAT=LOGMODES	TRANSLAT=4
TRANSLAT=LUANAME	TRANSLAT=5
TRANSLAT=OLU_ALIAS	TRANSLAT=0
TRANSLAT=USERVAR	TRANSLAT=6

When using an abbreviation in place of an operand, code the abbreviation exactly as shown in the table. For example, when coding the abbreviation for PLUALMSG=SUPPRESS, code only PLUALMSG=SUPP.

Purpose

VTAM is started with the START command.

You can enter the START command only at the master or a secondary system console.

Operands

procname

Procedure name for the command.

procname can be specified as either *startname.ident* or *startname*, where *startname* is the name of the JCL procedure used to start VTAM and *ident* is an optional identifier.

procname used for this command determines the *procname* used for all MODIFY commands as follows:

- If *procname* in the START command was specified as *startname.ident*, where *startname* is the VTAM start procedure and *ident* is the optional identifier, then either *startname.ident* or *ident* can be specified for *procname*.
- If *procname* in the START command was *startname*, then *startname* must be specified for *procname*.

Therefore, if you use NET as the optional identifier on this command, you can consistently use NET as *procname* for all VTAM commands.

options

VTAM start options supplied by the system programmer. The VTAM operator can enter one or more options. For a description of the start options, see z/OS Communications Server: SNA Resource Definition Reference.

If more than one line is necessary for the start options, enter a comma and a closing parenthesis after the last option.

The values established by the start options go into effect when VTAM is started and remain in effect until VTAM is halted. Many of the options, however, can be modified with the MODIFY VTAMOPTS command while VTAM is running. You can use the DISPLAY VTAMOPTS command to display the values of the start options.

Examples

```
s net,,, (list=01) s net,,, (list=01)
...
IST020I VTAM INITIALIZATION COMPLETE FOR level
IST1349I COMPONENT ID IS dddd-ddddd-ddd
IST1348I VTAM STARTED AS nodetype
```

For further information about these messages, see z/OS Communications Server: SNA Messages.

Chapter 3. SNA Resource Definition Reference

Summary of start options

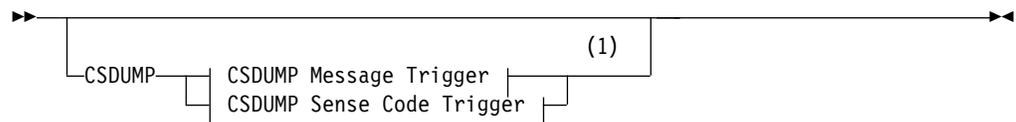
Traces and dumps start options

Table 2. Start options that affect traces and dumps. These start options (excluding CSDUMP, INOPCODE, and TRACE) can be displayed as a group with the DISPLAY VTAMOPTS,FUNCTION=TRACDUMP command.

Start option	Description
CSDUMP	Specifies a sense code trigger, message trigger, or both, that will cause a dump to be taken when the sense code or the message is issued
INOPCODE	Whether to dump VTAM for specific INOP conditions when INOPDUMP is enabled for the resource
INOPDUMP	Whether a resource is eligible to initiate a VTAM dump under certain INOP conditions
PSSTRACE	Whether to record IRB and SRB entries in the VTAM internal trace table when the PSS trace option is in effect
SNAPREQ	The number of requests for VTAM buffers between snapshot dumps
TRACE	Which traces to start at VTAM initialization
NACPROBE	Specifies whether VTAM takes an FFST™ probe dump when VTAM does not complete the CLOSE ACB processing for an application timely. The title of the dump is "NACCT -- CLOSE TIMER EXPIRED FOR <i>applname</i> ". Alternatively, you can use this option to specify the time interval at which VTAM takes an FFST probe dump when VTAM does not complete the CLOSE ACB processing for another application timely.
VITCTRL	Specifies the level (BASE or FULL) of control of all VIT trace options for TRACE TYPE=VTAM,MODE=INT processing.

Descriptions of start options

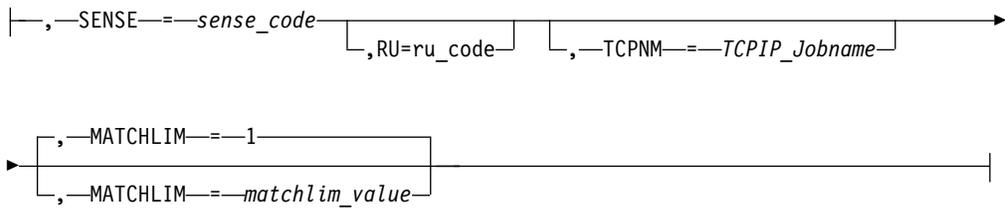
CSDUMP start option



Notes:

- 1 Specify the CSDUMP start option twice to set both message and sense code triggers.

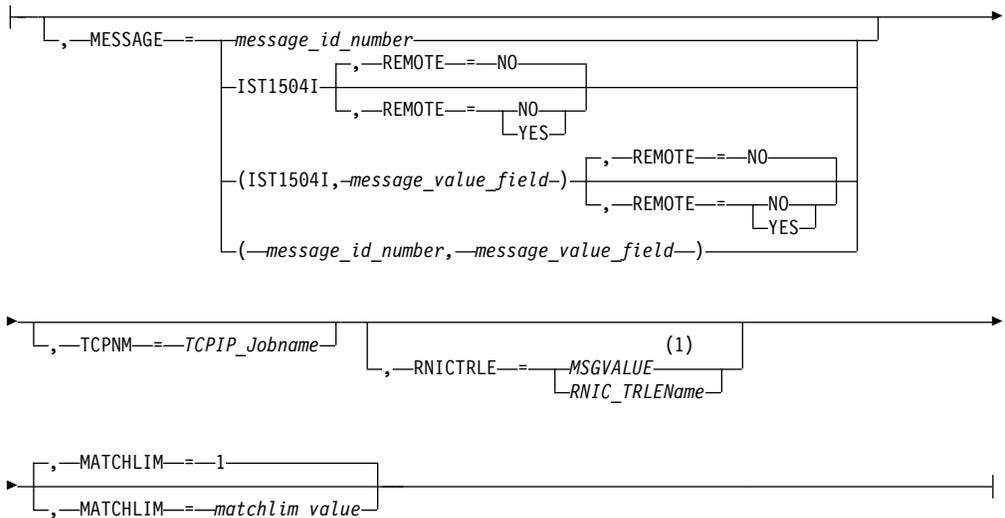
CSDUMP sense code trigger:



Rules:

1. When an error message is received on any parameter of the CSDUMP start option, the remaining parameters for this CSDUMP start option are ignored. You are required to re-enter the complete CSDUMP start option.
2. When the same parameter is entered multiple times on a CSDUMP sense code trigger, only the last occurrence is accepted.

CSDUMP message trigger:



Notes:

- 1 MSGVALUE is valid only when the MESSAGE operand is used, and MESSAGE specifies either message IST2391I or IST2406I.

Rules:

- When an error message is received on any parameter of the CSDUMP start option, the remaining parameters for this CSDUMP start option are ignored. You are required to re-enter the complete CSDUMP start option.
- When the same parameter is entered multiple times on a CSDUMP message trigger, only the last occurrence is accepted.

You can use the CSDUMP start option to set up a trigger that invokes a dump of the current address space when a particular sense code or message is issued. You can set only one sense code and one message trigger simultaneously; you cannot set two different message or sense code triggers at the same time. You can change a message trigger or a sense code trigger using the MODIFY CSDUMP command.

Either the MESSAGE operand or the SENSE operand must be specified after the CSDUMP start option or the CSDUMP start option is invalid.

Note: When the VITCTRL start option has a setting of FULL, the following conditions apply:

- When activating a CSDUMP trigger, the VIT option set STD_OPTS is enabled.
- The MSG VIT option cannot be disabled when a CSDUMP trigger is active.

MATCHLIM=*matchlim_value*

Specifies that the CSDUMP trigger is to be disabled after the *matchlim_value* value matches the value specified on the message trigger. The *matchlim_value* value is an integer in the range 1-255. The default is 1.

MESSAGE=*message_id_number*

Specifies the ID number of the message that triggers a dump. Message numbers must be in the format ISTxxxI, ISTxxxL, ISTxxxE, ISTxxxE, or IVTxxxL.

Rule: If the start option MSGLEVEL=BASE is specified, or if MSGLVL=BASE is specified in a USS operator message table, then the message displayed on the console is the pre-version 4 VTAM message. If you specify CSDUMP with a message trigger, the message ID number is checked before it is swapped to the base *message_id_number* value. Therefore, the *message_id_number* value used with the CSDUMP command must be the version 4 VTAM message number for CSDUMP to match the *message_id_number* value and take the dump. See *z/OS Communications Server: SNA Messages* for a list of the base messages and their corresponding version 4 VTAM numbers.

MESSAGE=(*message_id_number,message_value_field,...*)

Specifies the message variable text that can be used to trigger a dump. Instead of just matching a message number, this field causes the trigger to be more specific. If variable text is specified, then a dump is taken only when the message and variable text match. If a variable text field is blank, then it is considered to be a wildcard. See *z/OS Communications Server: SNA Messages* for more information about message text for VTAM operator messages.

Rules:

1. Use an underscore as a substitute for a space in the message text fields that contain variable values. You do not need to pad the end of the variable to fill out the text field; however, in a few rare cases messages can contain text fields (mostly numbers) in which the variable is right justified and does not completely fill the variable length. In these cases, when you are specifying the CSDUMP operand, the *message_value_field* value must be padded to the left with underscores. For example, the first variable in the IST1461I message is a 3-byte field which is right justified. If a 2-byte number is displayed, an underscore must precede the number in the command in order for the dump command to function correctly. See the following example:

```
CSDUMP,MESSAGE=(IST1461I,_21)
```

2. Each message has a fixed number of *message_value_field* values. Each *message_value_field* value has a maximum length.
3. The specified number of *message_value_field* values must be less than or equal to the number of *message_value_field* values in the specified message.
4. The specified length of the *message_value_field* value must be less than or equal to the maximum length of the specified *message_value_field* value.

Leading *message_value_field* values can be skipped using a comma (,) for each *message_value_field* value. The trailing *message_value_field* values are not required.

See z/OS Communications Server: SNA Messages to determine the number of message value fields and their maximum lengths.

REMOTE

Specifies whether to request a dump of the remote VTAM when an XCF link connecting the two VTAMs becomes inoperative. You can specify this operand only when you specify MESSAGE=IST1504I.

REMOTE=NO

A dump of the remote VTAM is not requested when an XCF link becomes inoperative. This is the default behavior.

REMOTE=YES

A dump of the remote VTAM is requested when an XCF link becomes inoperative. The remote VTAM must be z/OS V1R9 or later for the dump to be taken.

RNICTRLE

Specifies that a diagnostic dump of an 10GbE RoCE Express feature needs to be taken under certain conditions. The RNICTRLE operand can be used only with the MESSAGE trigger.

RNICTRLE=MSGVALUE

MSGVALUE is valid only when the MESSAGE operand is used, and MESSAGE specifies either message IST2391I or IST2406I. Specifying the MSGVALUE keyword allows VTAM to collect diagnostic dump information for the 10GbE RoCE Express feature identified in these messages.

RNICTRLE=RNIC_TRLEName

The format of *RNIC_TRLEName* must be IUTyxxxx, where xxxx is the Peripheral Component Interconnect Express (PCIe) function ID (PFID) that identifies the 10GbE RoCE Express feature, and y is the port number used on the 10GbE RoCE Express interface. The value of y can be 1 or 2.

Usage

The 10GbE RoCE Express diagnostic dump is taken in addition to any other dumps that CSDUMP produces. After the 10GbE RoCE Express diagnostic dump is produced, recovery of the 10GbE RoCE Express feature is attempted.

Notes: No 10GbE RoCE Express diagnostic dump is taken in either of the following cases:

- The TRLE is not active when CSDUMP produces the dump.
- A specific TRLE value is coded for RNICTRLE but the TRLE is not an RDMA over Converged Ethernet (RoCE) TRLE.

Rules:

- When the 10GbE RoCE Express feature operates in a dedicated RoCE environment, the diagnostic dump deactivates the 10GbE RoCE Express feature, and causes an inoperative condition for all users.
- When the 10GbE RoCE Express feature operates in a shared RoCE environment, the diagnostic dump only affects the TCP/IP stack that configured the PFID value included in the value of RNIC_TRLEName. Other TCP/IP stacks that use the same RoCE Express feature are not affected.

Guideline: Ensure that multiple 10GbE RoCE Express interfaces are active with the same physical network ID to avoid loss of connections during a CSDUMP operation. For more information, see High availability considerations in z/OS Communications Server: IP Configuration Guide.

RU=ru_code

Specifies the response unit code that contains the sense code specified. The RU operand can be used only with the SENSE operand. If the RU operand is specified, then the dump is triggered only if the RU and SENSE codes occur together. The RU code must be 2, 4, or 6 characters in length.

See z/OS Communications Server: SNA Data Areas Volume 1 for valid RU codes or see SNA Formats.

SENSE=sense_code

Specifies the sense code that will trigger a dump. This value must be 8 characters in length.

See z/OS Communications Server: IP and SNA Codes for valid sense codes.

TCPNM=TCPIP_Jobname

Specifies that a dump of the TCPIP job should be taken when the corresponding sense or message trigger occurs. The current address space is also specified. The *TCPIP_Jobname* value must be 1-8 characters in length

Examples:

- Set the message trigger to take the dump:
CSDUMP,MESSAGE=IST1386I
- Set the message trigger to take the dump of the current address space and the dump of the TCPIP job:
CSDUMP,MESSAGE=IST1386I,TCPNM=TCPCS
- Set the message trigger with the message and first *message_value_field* value to take the dump:
CSDUMP,MESSAGE=(IST169I,react)
- Set the message trigger with the message and first two *message_value_field* values to take the dump:
CSDUMP,MESSAGE=(IST169I,react,pua)
- Set the message trigger with the message and first and fifth *message_value_field* values to take the dump:
CSDUMP,MESSAGE=(IST252I,rct,,,pua)
- Set the sense code trigger to take a dump of the current address space:
CSDUMP,SENSE=08090000
- Set the message trigger and the sense trigger to take a dump:
CSDUMP,MESSAGE=(IST169I,react,pua),
CSDUMP,SENSE=08090000
- Set the sense code to take a dump of the current address space and a dump of the TCPIP job:
CSDUMP,SENSE=08090000,RU=818641,TCPNM=TCPCS
- Set the message trigger with the message and remote option to take a dump of the current address space and the remote VTAM connected through an XCF link to another VTAM:
CSDUMP,MESSAGE=IST1504I,REMOTE=YES

VITCTRL start option



Specifies the level of control the VTAM operator has for controlling the internal recording of certain default VTAM Internal Trace (VIT) options. By default, VTAM starts these VIT options: API, PIU, SSCP, MSG, NRM, PSS and CIO. The VITCTRL setting also controls the command processing of the DISPLAY TRACE command, and the MODIFY TRACE and MODIFY NOTRACE commands for TYPE=VTAM,MODE=INT.

You can change the value of VITCTRL with the MODIFY VTAMOPTS command while VTAM[®] is running. Changing the VITCTRL setting effects the processing of the next DISPLAY TRACE, MODIFY TRACE or MODIFY NOTRACE command but it has no effect on the current setting of the VIT options.

VITCTRL=BASE

Specifies that the operator cannot modify the settings of certain default VIT options using the MODIFY TRACE or the MODIFY NOTRACE commands or by start options for internal trace recording. This is the default value.

When VITCTRL=BASE is specified, VTAM manages the default VIT options as follows:

- The VIT options other than PSS remain active regardless of any other changes made with MODIFY TRACE, MODIFY NOTRACE or with the TRACE start option. The use of the PSS VIT option can be changed by the operator.
- Individual default options other than PSS are not listed in the DISPLAY TRACE output unless the user has explicitly activated the individual VIT options. The current setting of the PSS VIT option is always displayed in the DISPLAY TRACE command output.

VITCTRL=FULL

Specifies that the operator can modify the settings of all VIT options using the MODIFY TRACE and MODIFY NOTRACE commands or by start options for TYPE=VTAM,MODE=INT processing.

VTAM manages the default VIT options as follows:

- The operator can enable or disable one or more of the default VIT options using the MODIFY TRACE or MODIFY NOTRACE commands. This includes the MODIFY NOTRACE,OPT=ALL command which disables all VIT options, including the default options.
- When defining a CSDUMP message or code trigger, the VIT options that are contained in the option set STD_OPTS (API, PIU, SSCP, MSG, NRM, CIO, and PSS) are enabled by default. When a CSDUMP message or code trigger is active, the VIT MSG option cannot be disabled by the MODIFY NOTRACE command.
- The current setting of the VIT options are always included in the DISPLAY TRACE command output.
- When activating any VIT option set, all of the options contained in the STD_OPTS option set are also activated.

Notes:

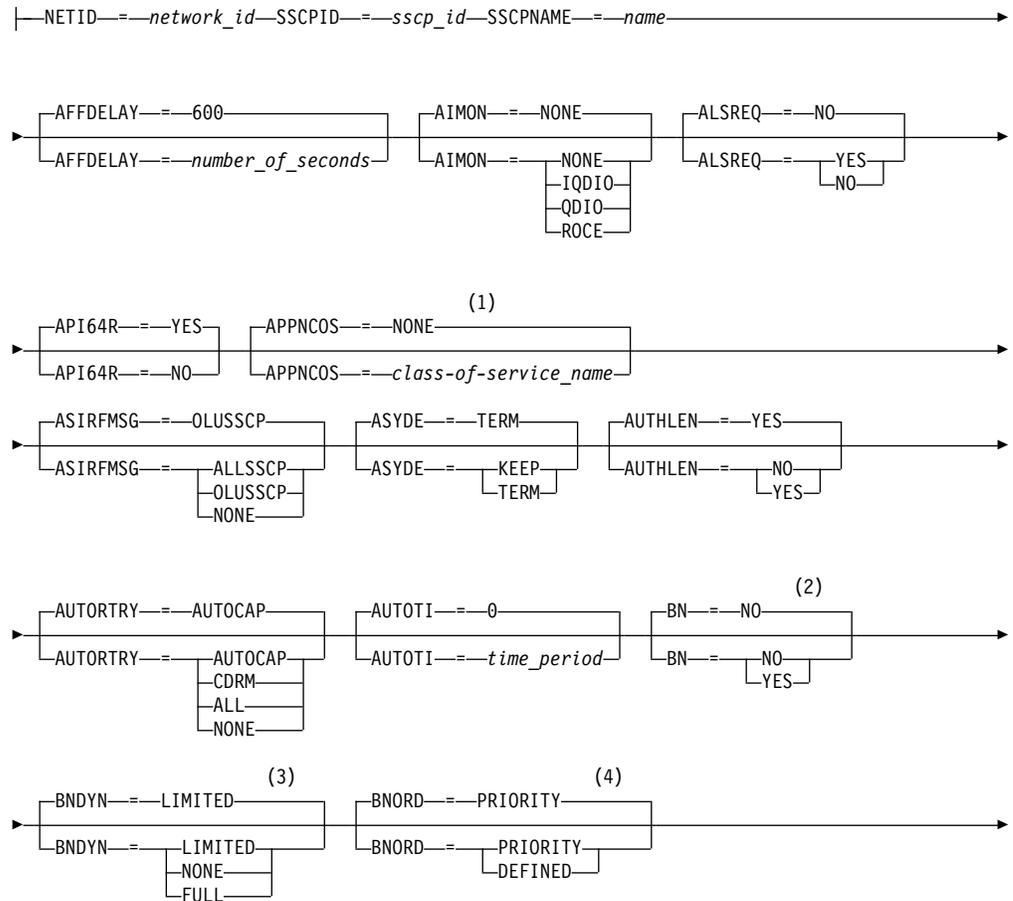
- The default VIT trace options are defined as the VIT option set STDOPTS (standard option). The default VIT options are the recommended set of trace options to use.
- Disabling any of the default VIT options can trigger a health check notification (CSV TAM_VIT_OPT_STDOPTS) and impacts VTAM serviceability.

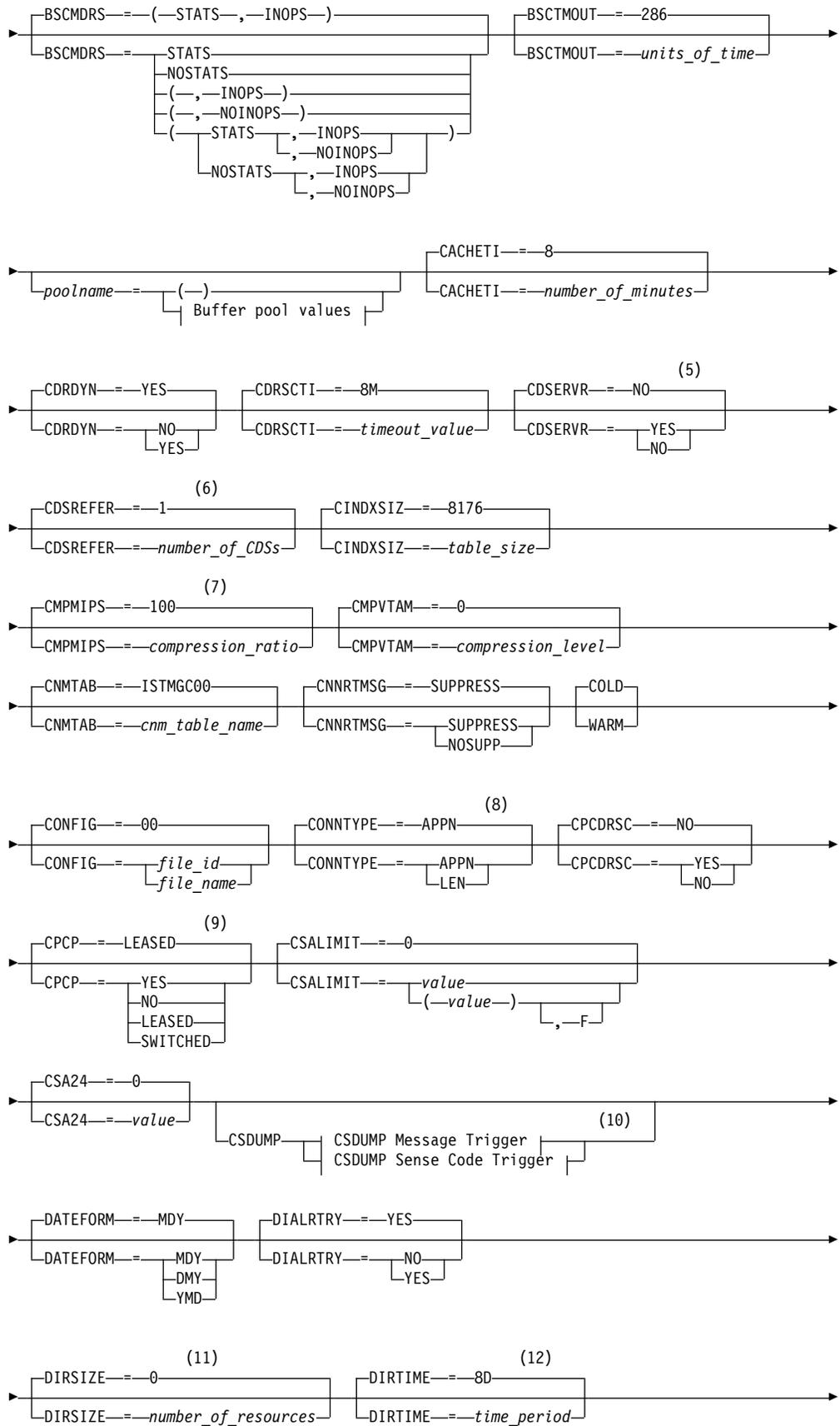
For more detail about the implications of the two levels of VIT control, see z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT.

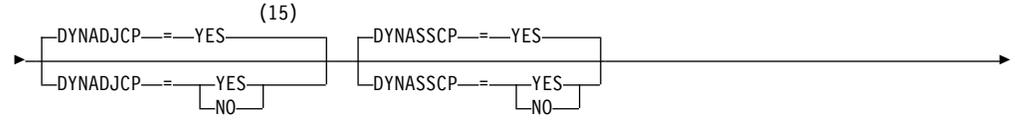
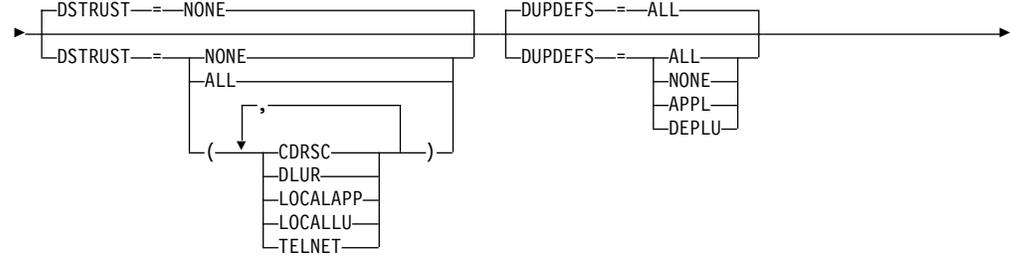
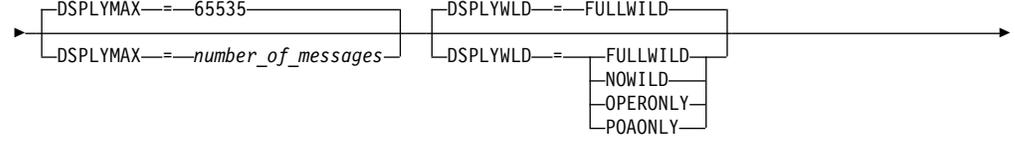
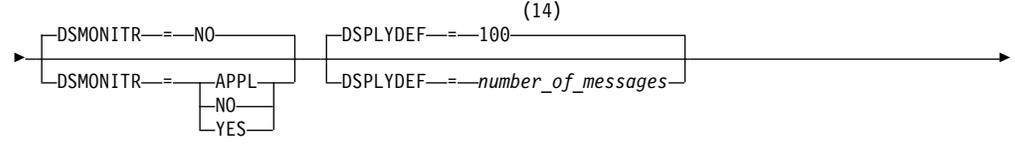
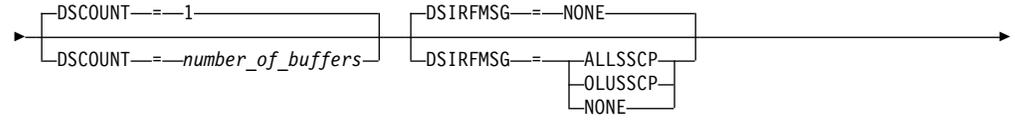
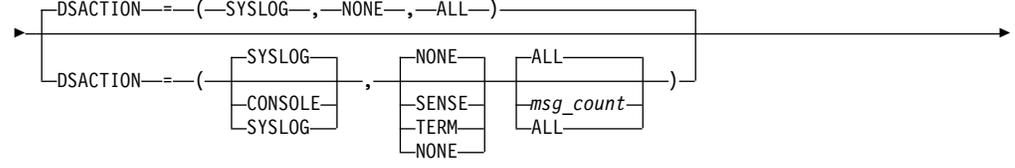
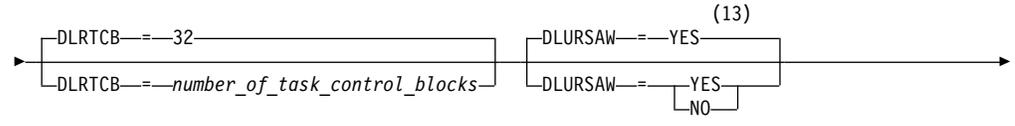
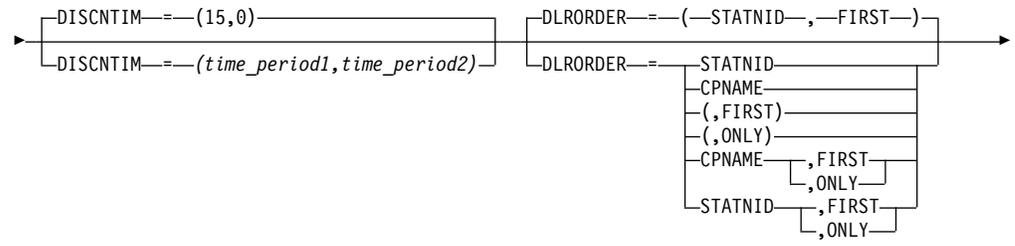
VTAM start options

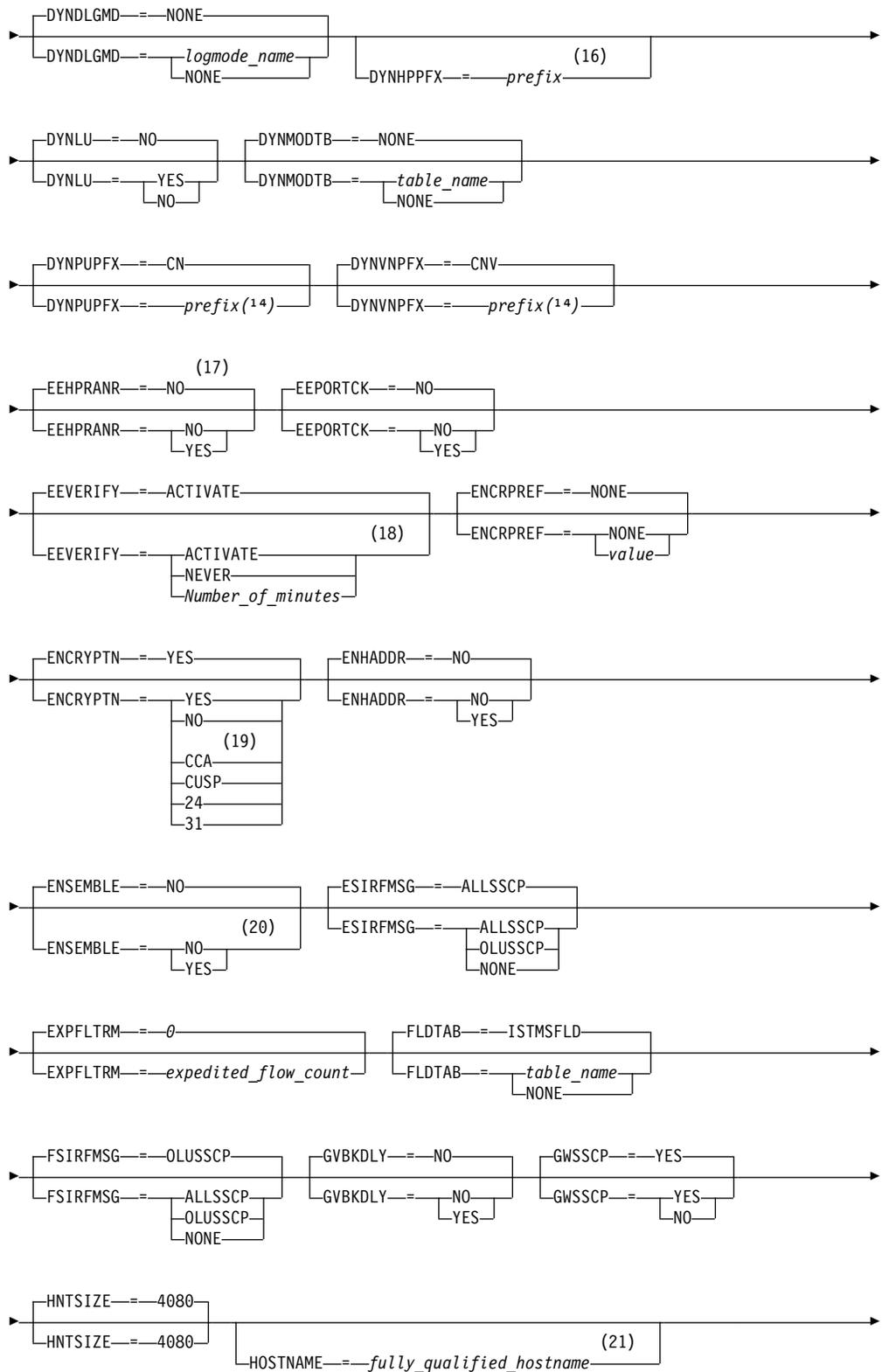
Start options syntax diagrams

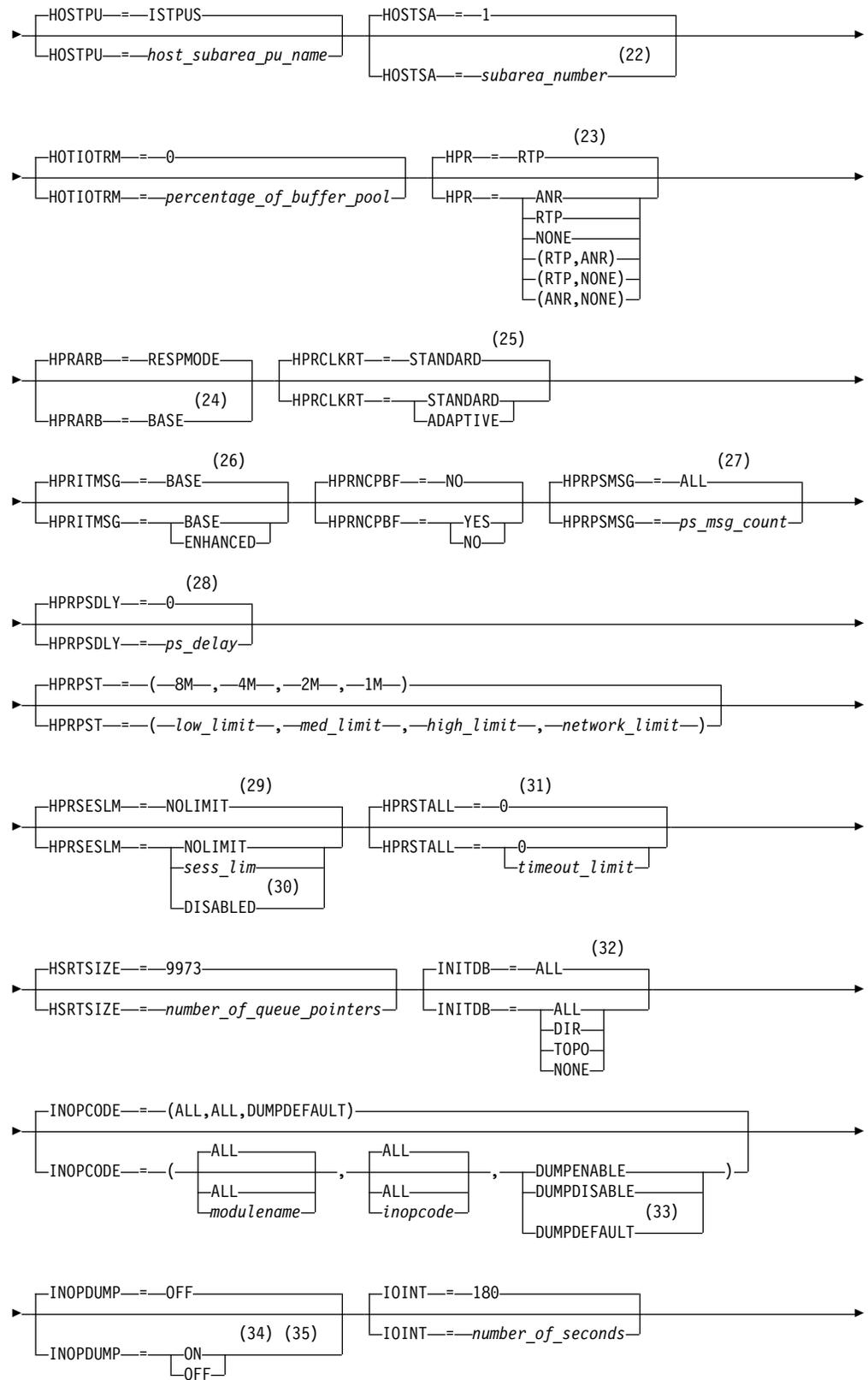
Options:

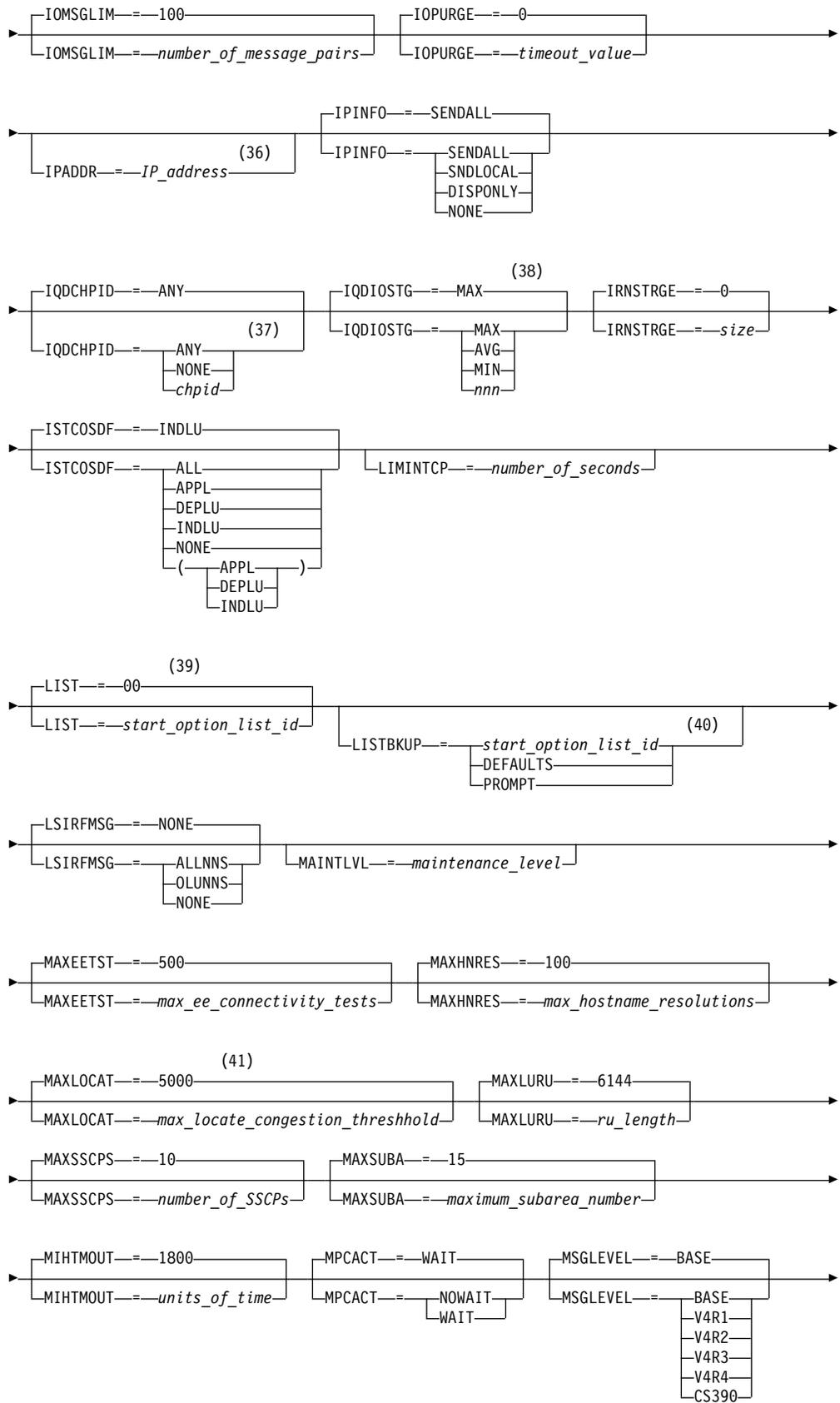


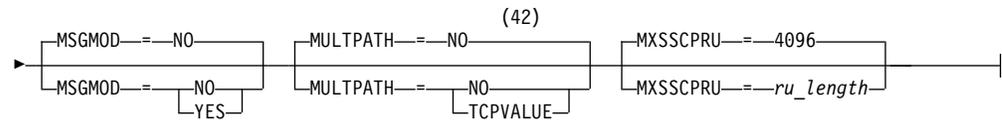










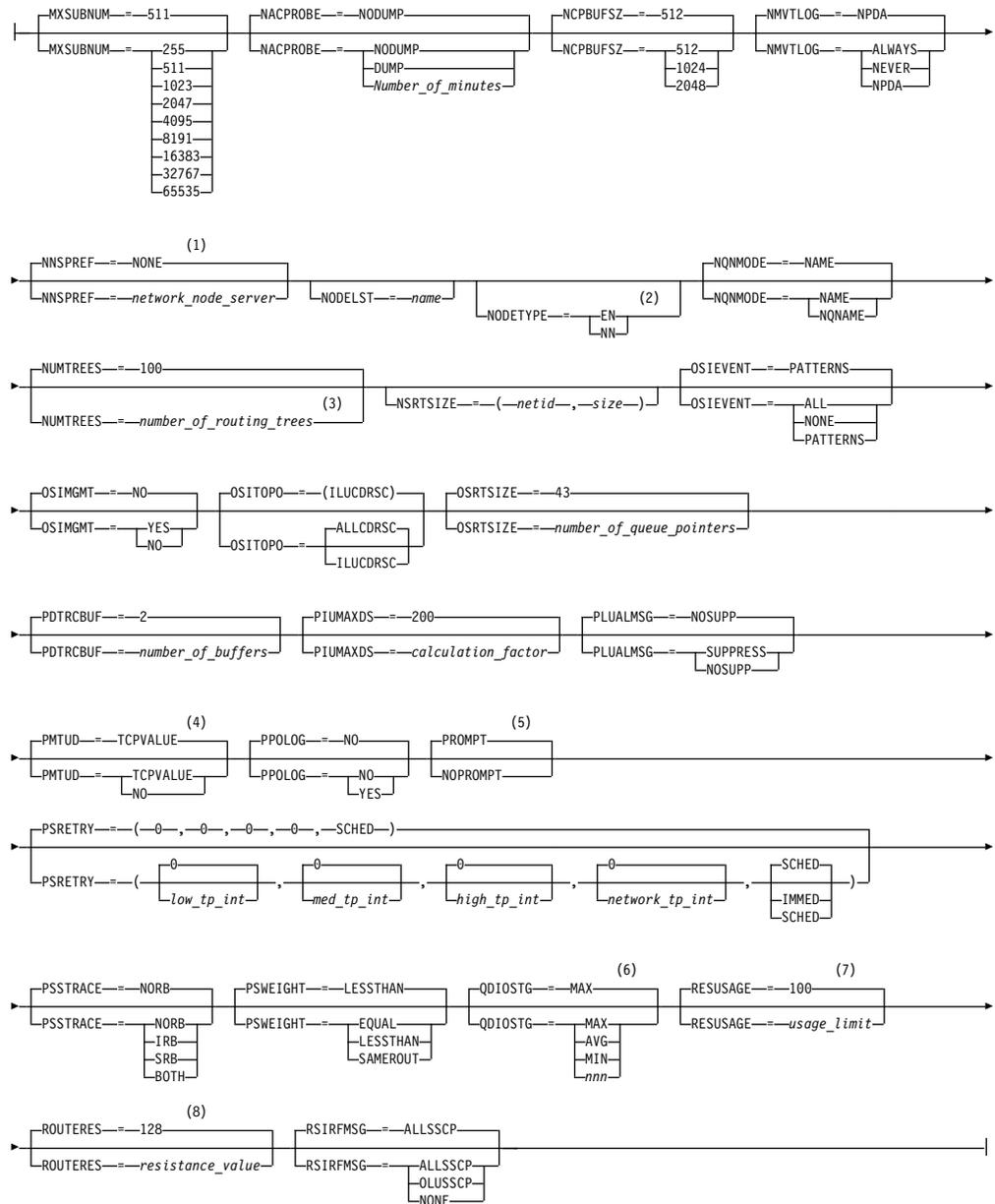


Notes:

- 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 CDSERVR is meaningful only if the NODETYPE=NN start option is also used.
- 6 CDSREFER is meaningful only if the NODETYPE=NN and CDSERVR=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 If the DSPLYMAX start option value is less than 100, that value is the default for DSPLYDEF.
- 15 DYNADJCP is meaningful only if the NODETYPE start option is also used.
- 16 Two character prefix.
- 17 EEHPRANR is meaningful only when the NODETYPE=NN start option is also used.
- 18 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.
- 19 ENCRYPTN=CCA needs to be coded when Triple Des Encryption is desired.
- 20 The ENSEMBLE setting is used to either permit or deny connectivity to the intraensemble data network (IEDN) and the intranode management network (INMN) by allowing or denying activation of OSX and OSM interfaces.
- 21 HOSTNAME is meaningful only if the NODETYPE start option is also used.
- 22 HOSTSA specifies the subarea number of this VTAM. If HOSTSA is not coded, then a default subarea number of 1 is used.
- 23 HPR is meaningful only if NODETYPE is also used.
- 24 This start option was provided by APAR OW36113 for use in migration to VTAM V4R5. Do not use this option unless you use the default value of RESPMODE.

- 25 HPRCLKRT=ADAPTIVE is meaningful only for Enterprise Extender configurations that have a defined capacity of 1 Gb or higher access speeds.
- 26 This option is meaningful only if VTAM provides RTP-level HPR support.
- 27 This option is meaningful only if VTAM provides RTP-level HPR support.
- 28 This option is meaningful only if VTAM provides RTP-level HPR support.
- 29 This option is meaningful only if VTAM provides RTP-level HPR support.
- 30 HPRSESLM=DISABLED is meaningful only on interchange nodes.
- 31 This option is meaningful only if VTAM provides RTP-level HPR support.
- 32 INITDB is meaningful only if the NODETYPE=NN start option is also used.
- 33 INOPCODE has no effect unless INOPDUMP is active for the resource when an inoperative condition is detected.
- 34 INOPDUMP status is propagated to resources that are defined within a transport resource list entry when the entry is activated and the TRLE InOpDump status has not been explicitly set.
- 35 The INOPCODE start option provides more granular control of the INOPDUMP function. Refer to the INOPCODE in this section and the DISPLAY INOPCODE command in z/OS Communications Server: SNA Operation for additional details.
- 36 IPADDR is meaningful only if the NODETYPE start option is also used.
- 37 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 this System z system. Although this option can be modified (and the modification will immediately be displayed) while the IUTIQDIO MPC group is currently active, any modifications will have the effects: 1) Modified from ANY (or CHPID) to NONE has no effect on current usage but blocks subsequent activations; 2) Modified from NONE to ANY (or CHPID) has no effect on current usage but allows subsequent activations; 3) Modified from CHPID_X to CHPID_Y has no effect on current usage. VTAM only uses the CHPID value when building the IUTIQDIO MPC group. To change CHPIDs for an active MPC group, the steps must be done: 1) All TCP/IP iQDIO (HiperSockets™) devices must be stopped; 2) Make any necessary HCD/IOCDS changes; 3) Verify that new subchannel devices are varied online; 4) Verify that the MPC group has deactivated (with no usage, it times out after approximately two minutes); 5) Modify IQDCHPID=*chpid* (to new CHPID); 6) Restart the TCP/IP iQDIO device or devices. In order to use iQDIO communications, the processor must have the necessary hardware support. If the processor does not support iQDIO communications, then modifications to this start option will not be accepted and the IQDCHPID option will not be displayed (displayed as ***NA***).
- 38 This option only affects iQDIO devices that use a MFS of 64k. The smaller frame sizes will always use 126 SBALs.
- 39 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.
- 40 LISTBKUP can be coded in a start option file only. If you enter it on the START command or at an operator prompt, VTAM will ignore it.
- 41 MAXLOCAT is meaningful only if NODETYPE is specified.

42 MULTIPATH is meaningful only if the NODETYPE start option is also specified.

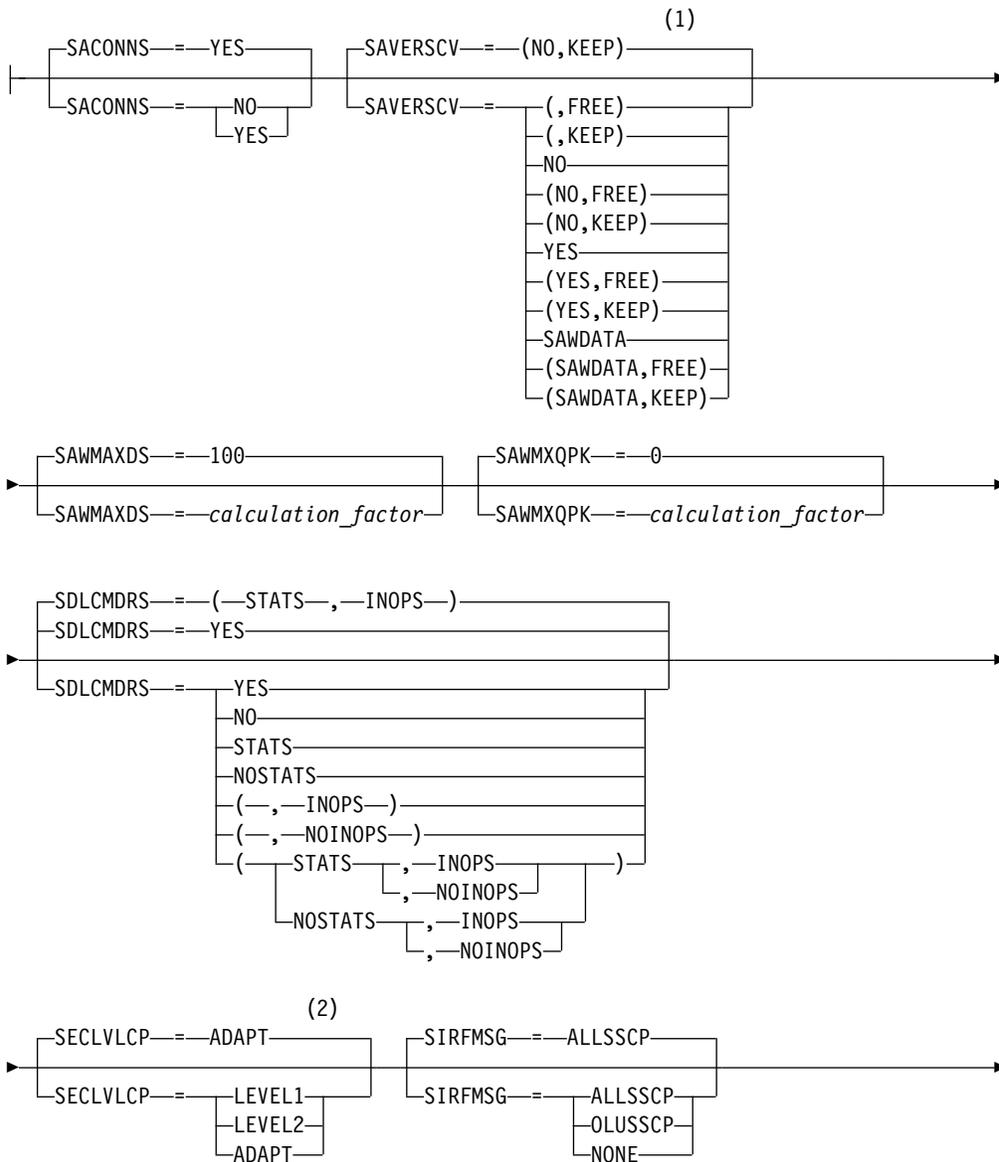


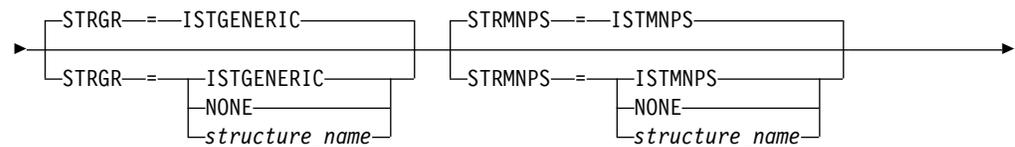
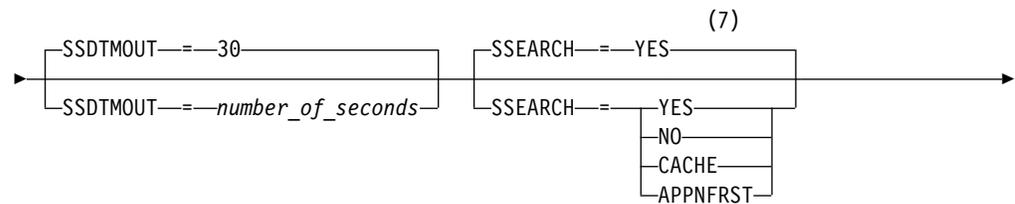
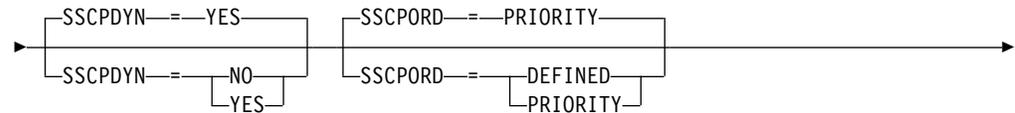
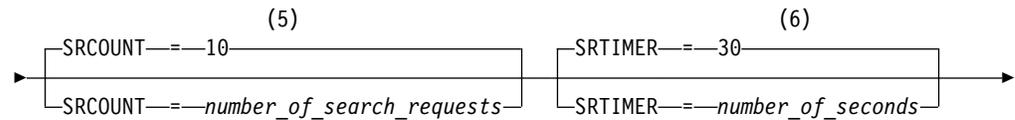
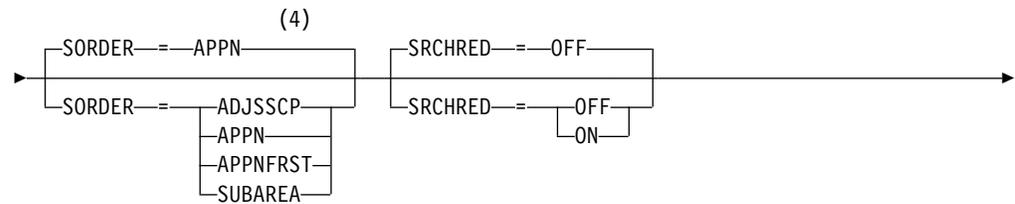
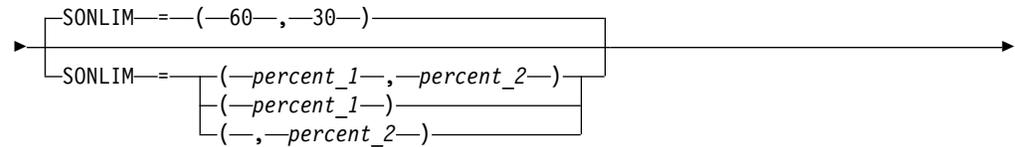
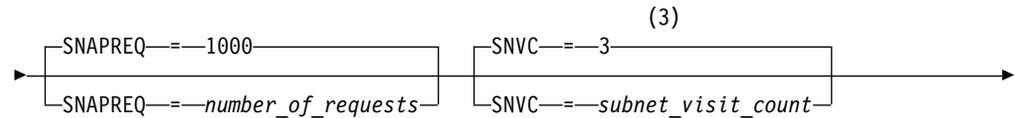
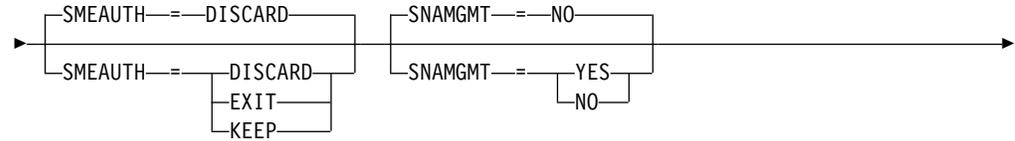
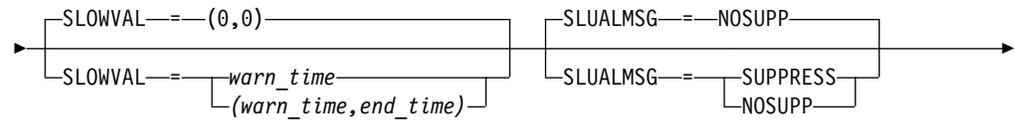
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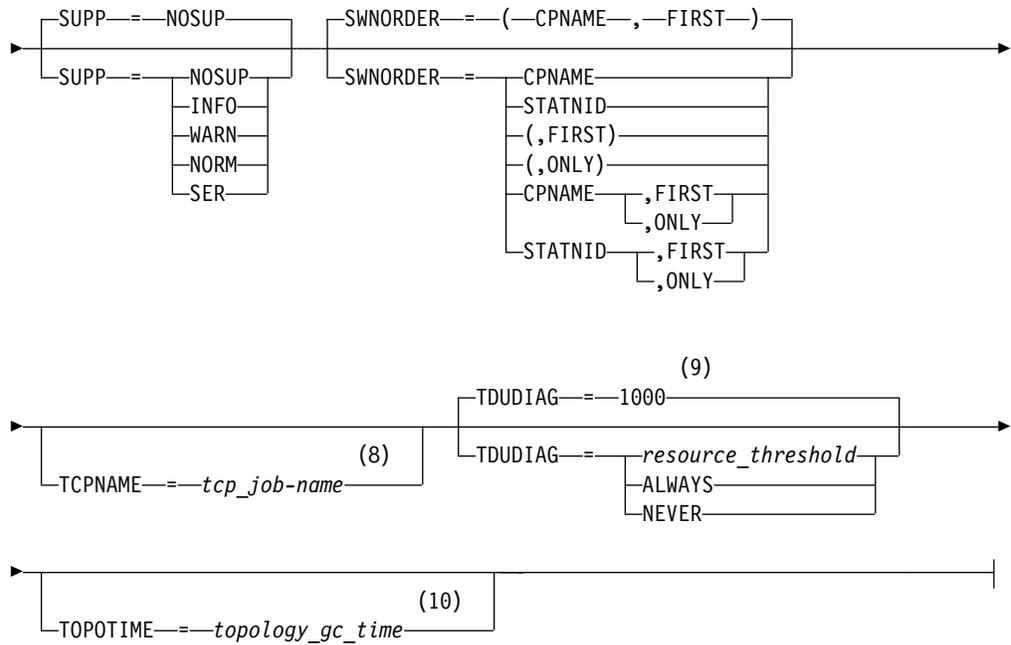
- 1 NNSPREF can be specified only if NODETYPE=EN is specified during VTAM START processing.
- 2 NODETYPE enables APPN function. The combination of HOSTSA, NODETYPE, and SACONNS determines the configuration (subarea node, interchange node, migration data host, network node, or end node).
- 3 NUMTREES is meaningful only if the NODETYPE=NN start option is also used.
- 4 PMTUD is meaningful only if the NODETYPE start option is also used.
- 5 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.

- 6 QDIOSTG defaults to MAX for 64-bit (z/Architecture) machines and MIN for non 64-bit machines.
- 7 RESUSAGE is meaningful only if the NODETYPE=NN start option is also used.
- 8 ROUTERES is meaningful only if the NODETYPE=NN start option is also used.

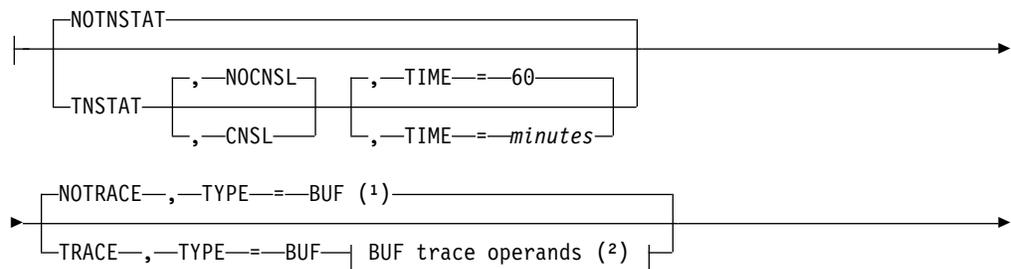


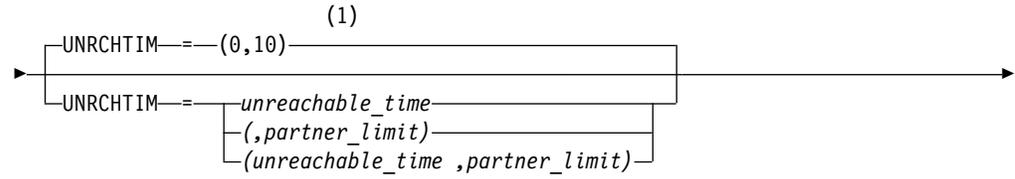
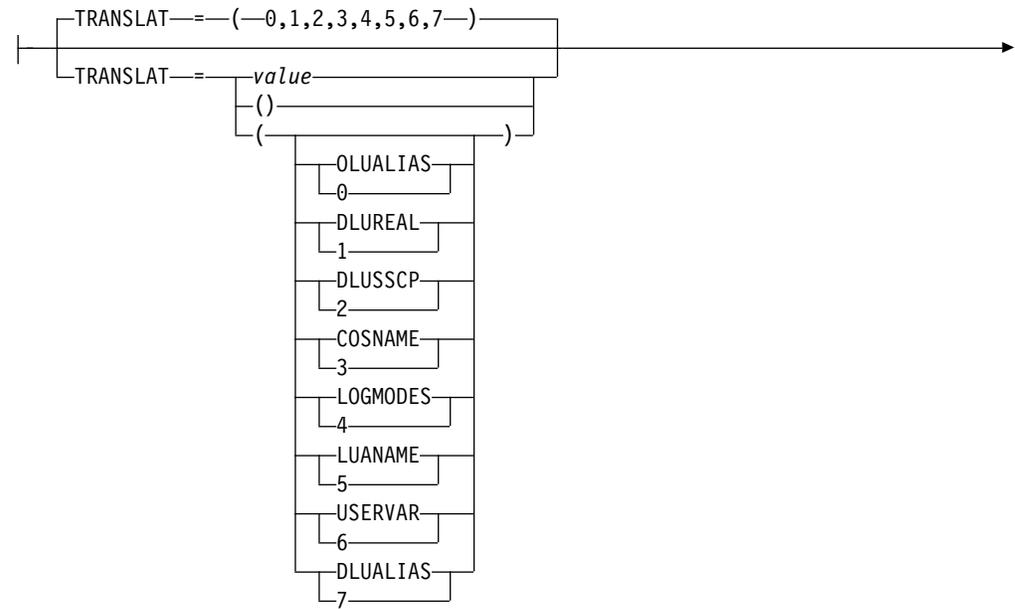
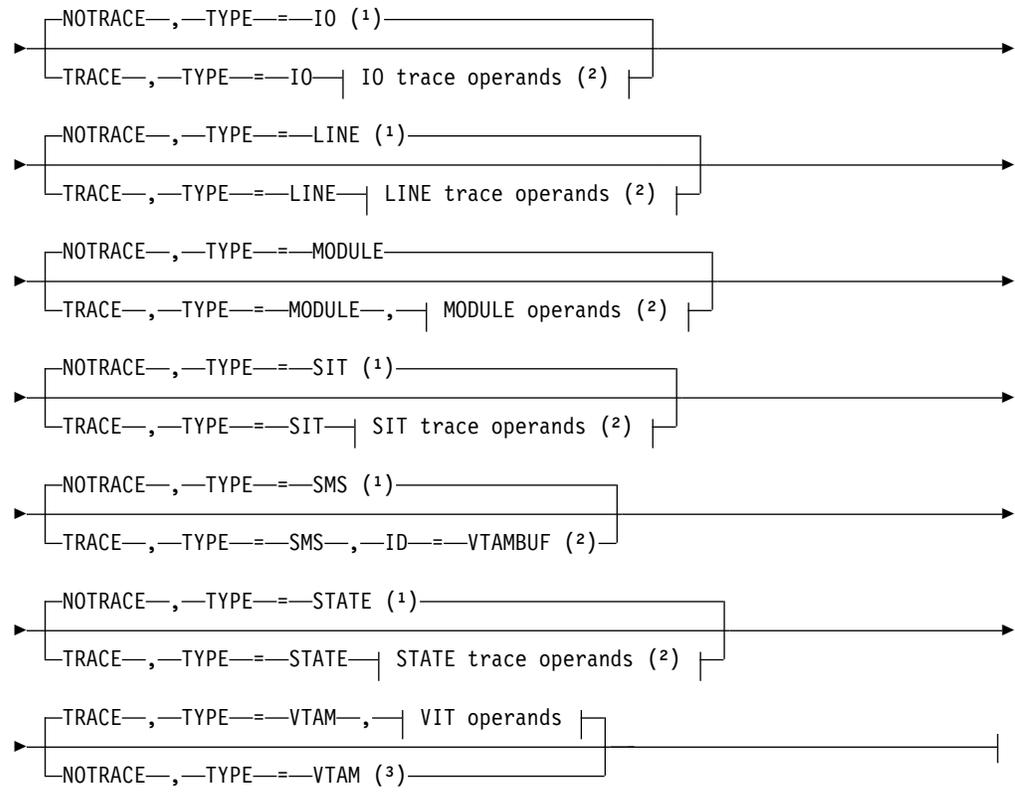


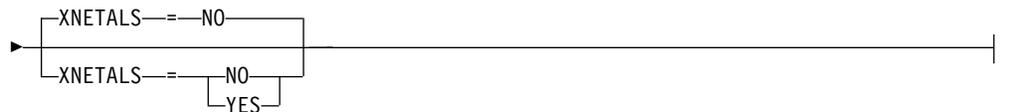
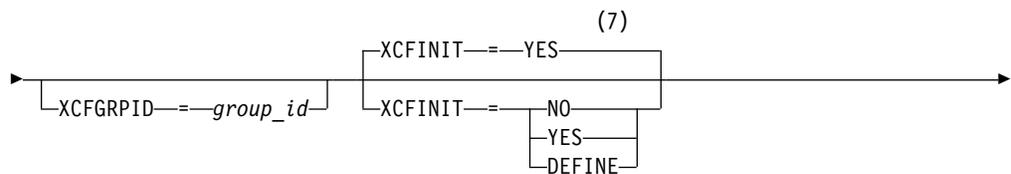
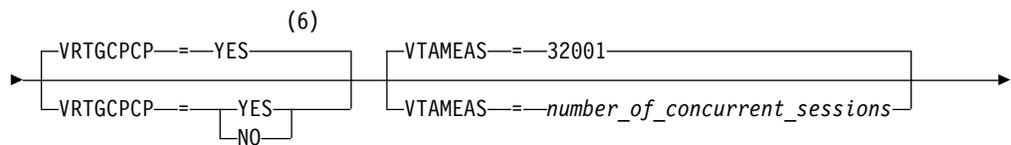
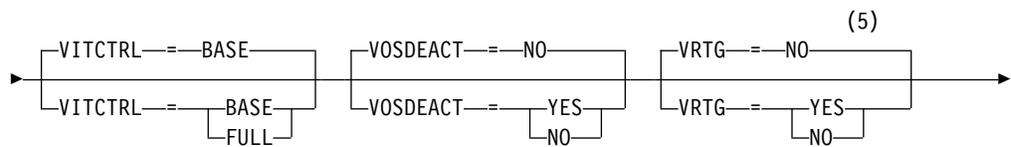
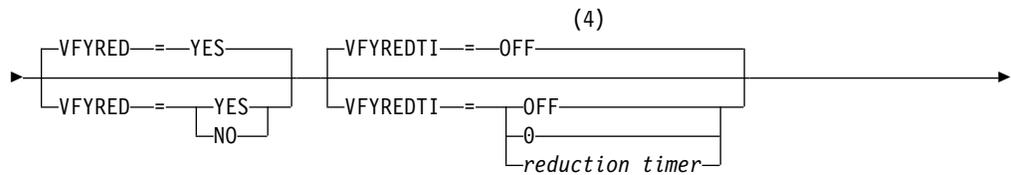
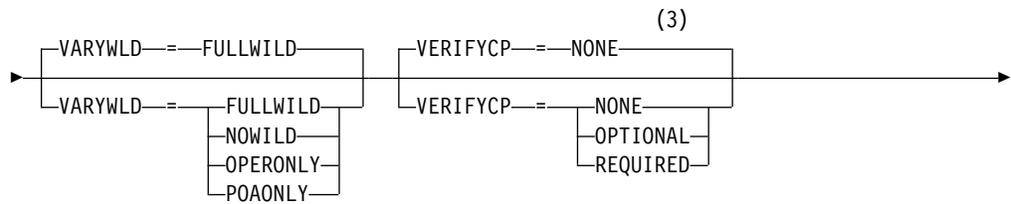
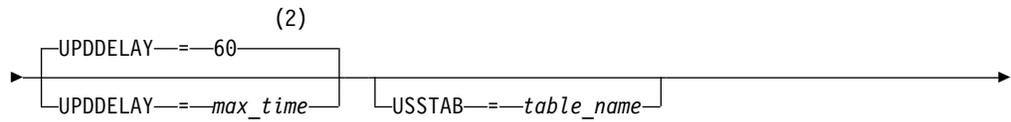


Notes:

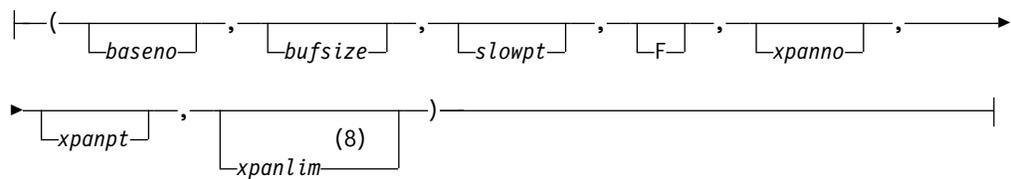
- SAVERSCV is meaningful only if NODETYPE is also used.
- The SECLVLCP start option is meaningful only if the NODETYPE and VERIFYCP start options are also used.
- SNVC is meaningful only if the BN=YES start option is also used.
- SORDER is meaningful only in an interchange node or a migration data host.
- SRCOUNT is meaningful only if the SRCHRED=ON start option is also used.
- SRTIMER is meaningful only if the SRCHRED=ON start option is also used.
- SSEARCH is meaningful only if the NODETYPE=NN start option is also used.
- TCPNAME is meaningful only if the NODETYPE start option is also used.
- TDUDIAG is meaningful only if the NODETYPE=NN start option is also being used.
- TOPOTIME is meaningful only if the NODETYPE start option is also used.



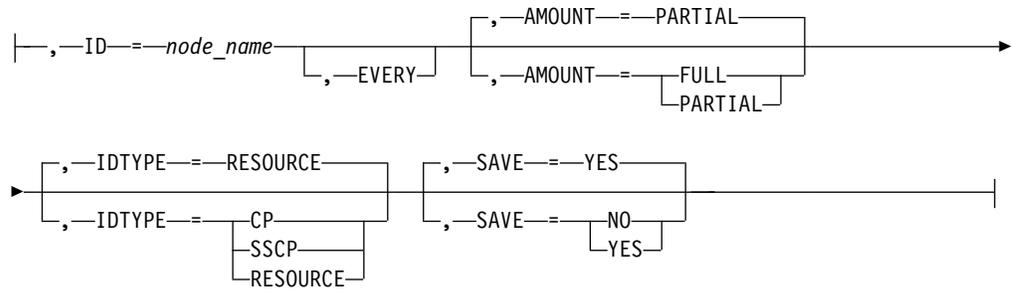




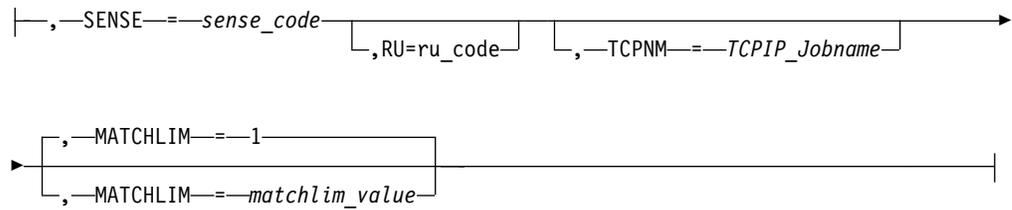
Buffer pool values:



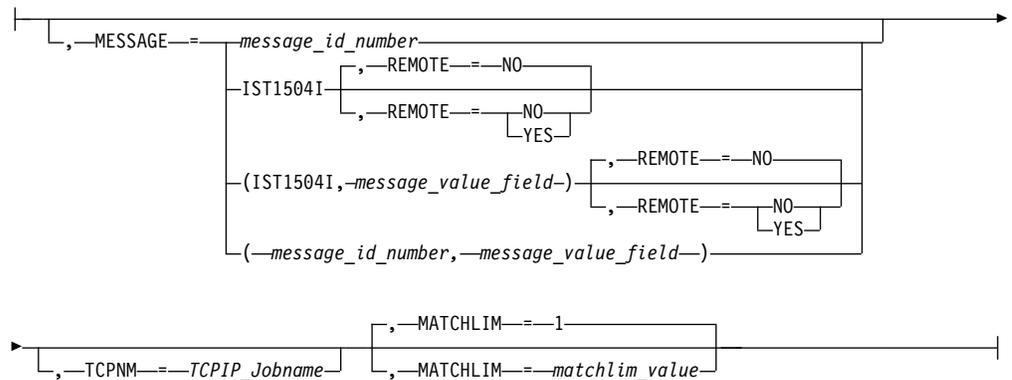
BUF trace operands:



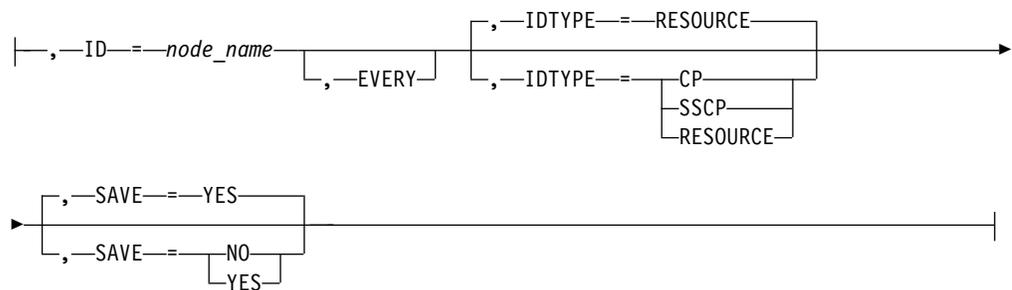
CSDUMP sense code trigger:



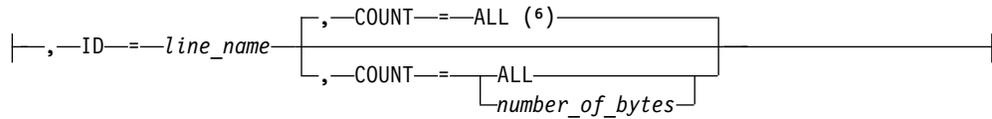
CSDUMP message trigger:



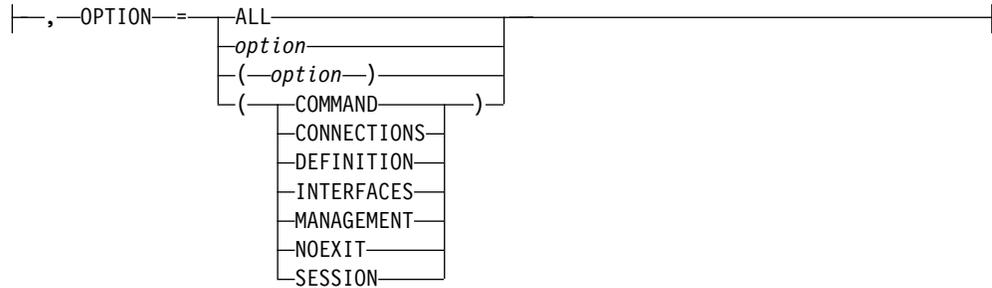
IO trace operands:



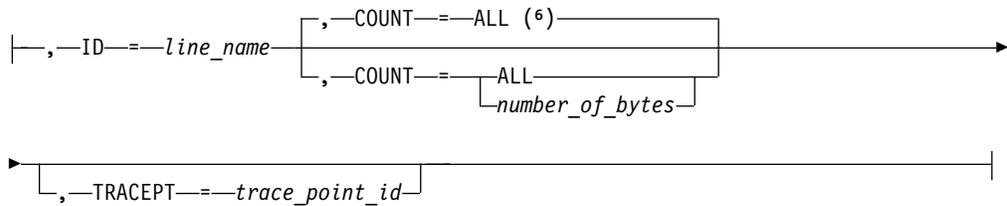
LINE trace operands:



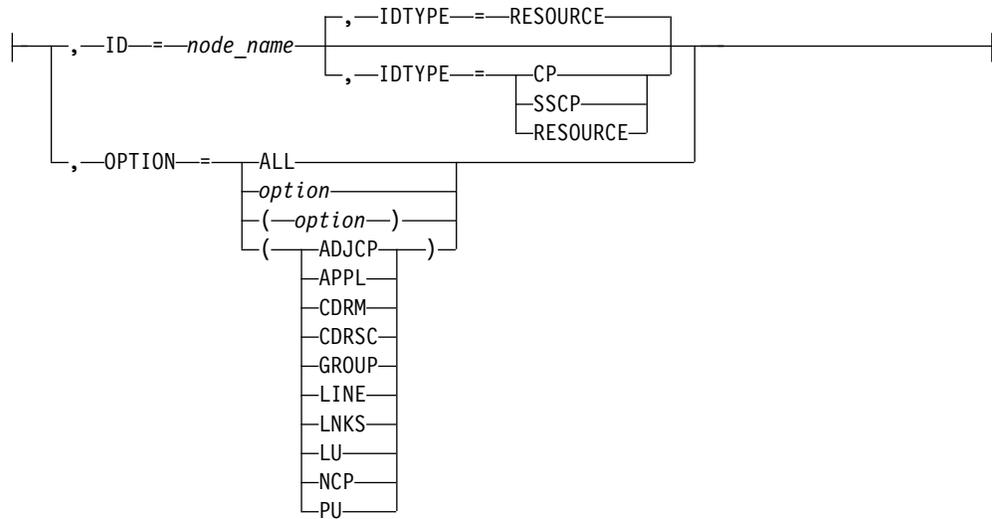
MODULE operands:



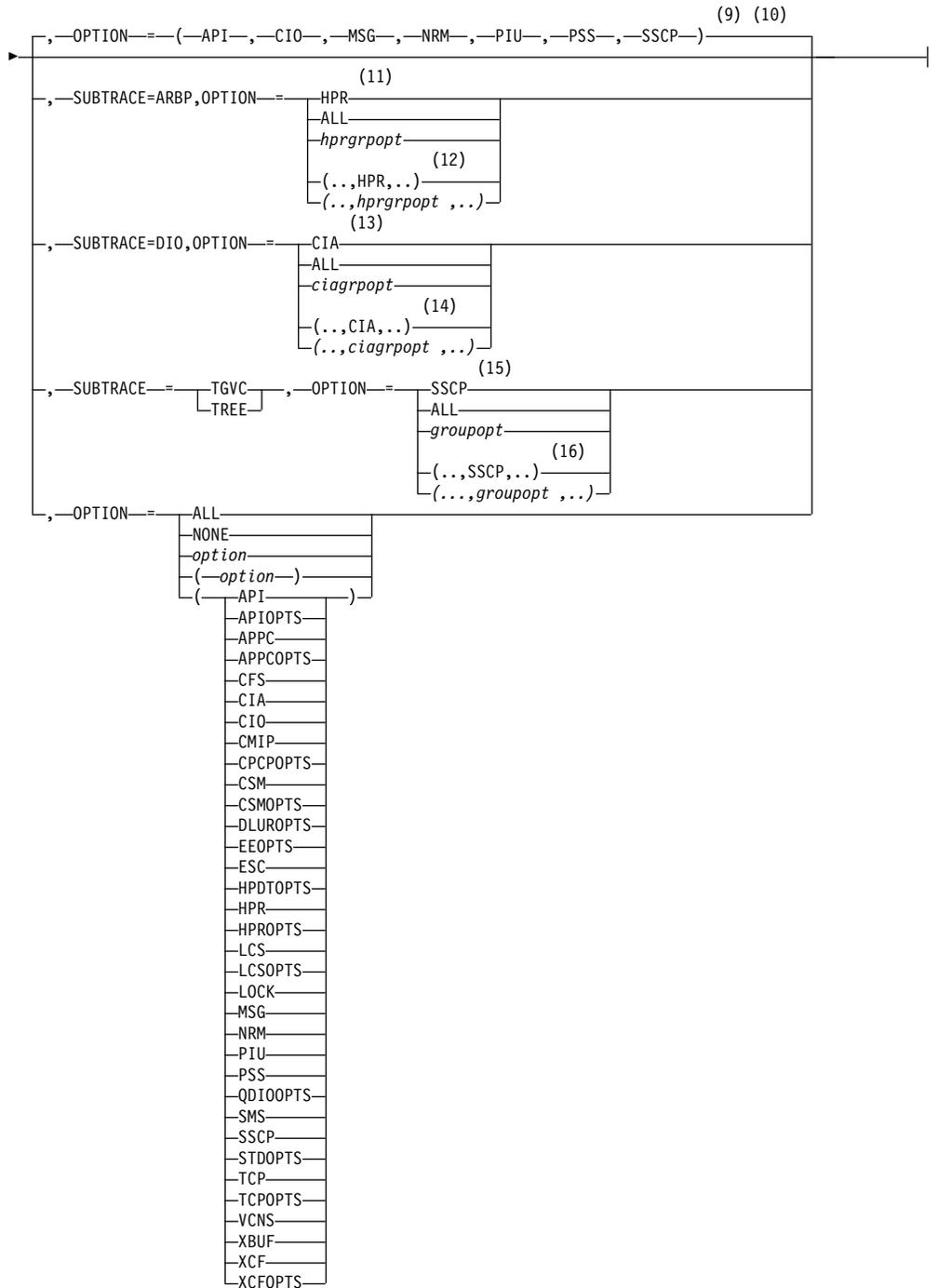
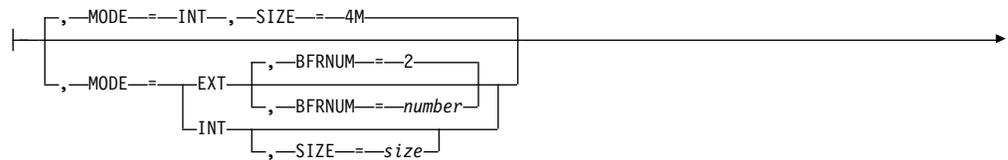
SIT trace operands:



STATE trace operands:



VIT operands:

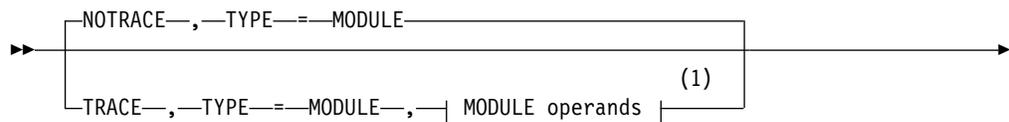


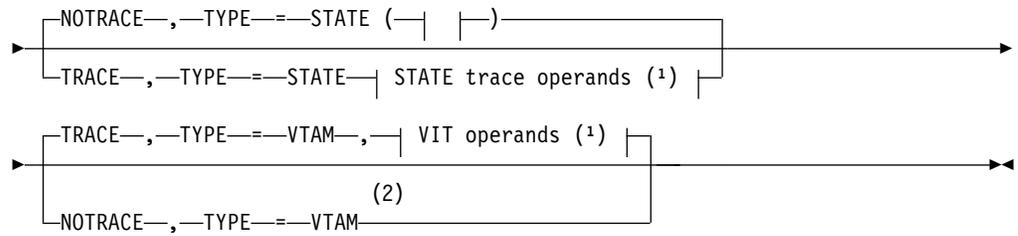
Notes:

- 1 UNRCHTIM is meaningful only if the NODETYPE start option is also used.
- 2 UPDDELAY is meaningful only if the OSIMGMT=YES start option is also used.

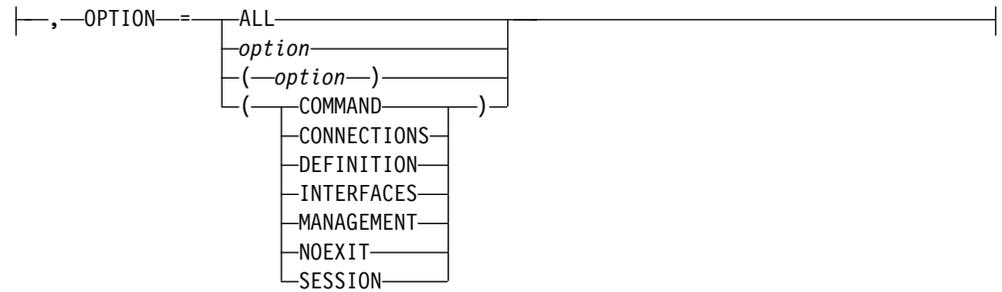
- 3 The VERIFYCP start option is meaningful only if the NODETYPE start option is also used.
- 4 VFYREDTI is meaningful only if the NODETYPE=NN start option is also used.
- 5 VRTG is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 6 VRTGCPCP is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 7 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 allowed 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).
- 8 The IOBUF pool (IO00, IO) is the only buffer pool where all seven values can be specified. For all other buffer pools, the *xpanlim* field is not supported. If you specify the *xpanlim* field for any buffer pool other than the IOBUF pool (IO00, IO), even if the field is null, you get an IST1072I message.
- 9 The default options apply only to MODE=INT.
- 10 PSS can be turned off.
- 11 When SUBTRACE=ARBP is specified, if a single OPTION value is coded, it 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.
- 12 If multiple trace options are coded in parentheses, either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent must be coded inside the parentheses when SUBTRACE=ARBP is coded.
- 13 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.
- 14 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.
- 15 When SUBTRACE=TGVC or SUBTRACE=TREE is coded, if a single OPTION value is coded, it must be 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.
- 16 If multiple trace options are coded in parentheses, either SSCP or one of the group options (*groupopt*) must be coded inside the parentheses when SUBTRACE=TGVC or SUBTRACE=TREE is coded.

TRACE for MODULE, STATE (with OPTION), or VTAM internal trace

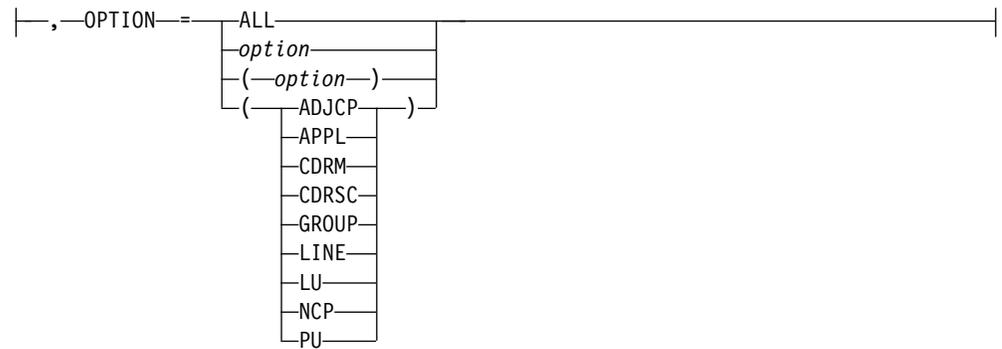




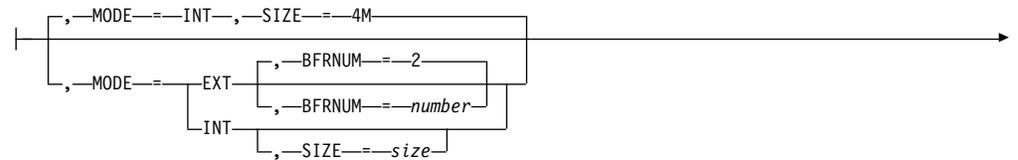
MODULE operands:

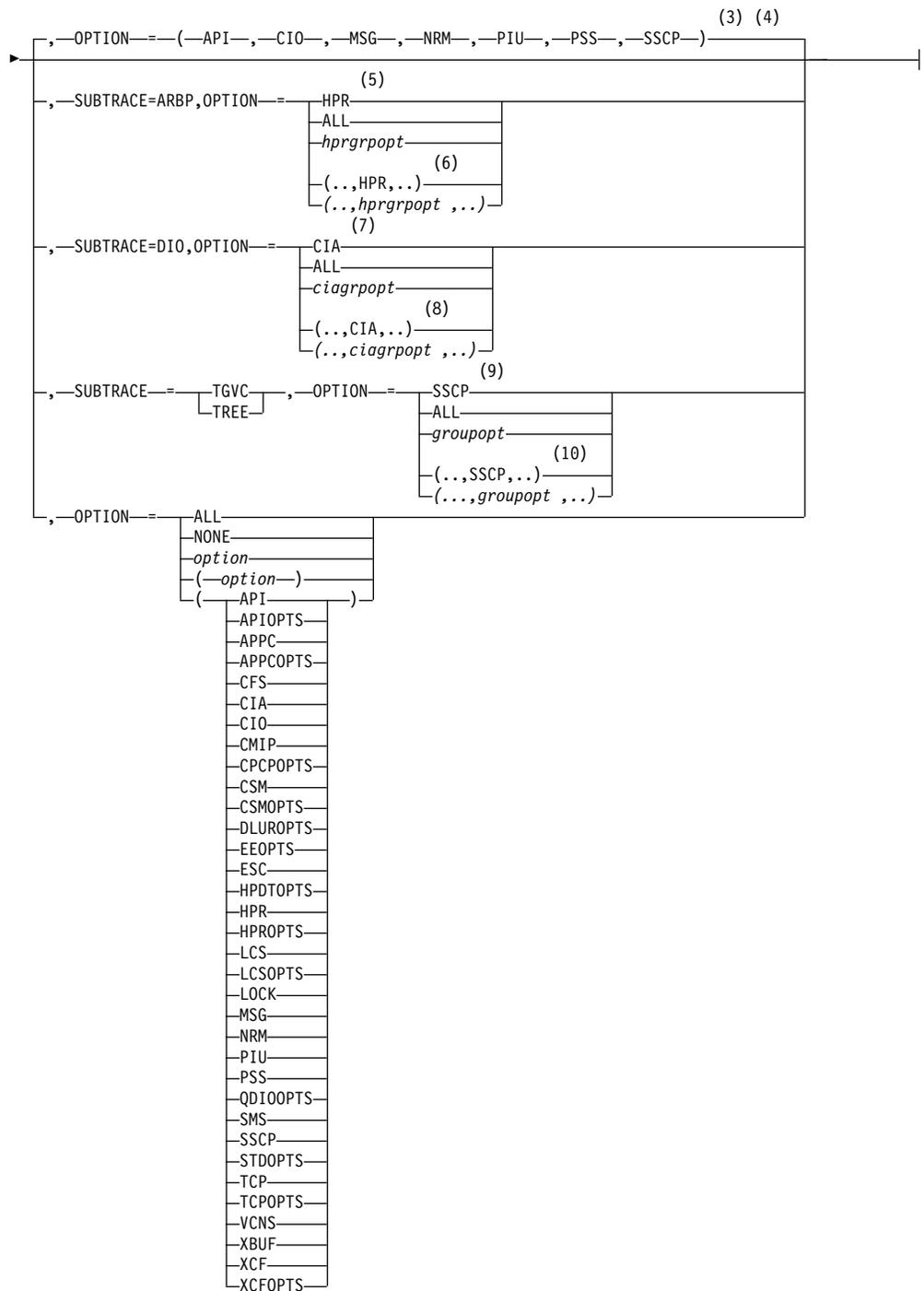


STATE trace operands:



VIT operands:





Notes:

- 1 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.
- 2 The NOTRACE,TYPE=VTAM and TRACE,TYPE=VTAM,MODE=INT start option processing is affected by the current level of VIT control being used (as specified by the VITCTRL start option).
- 3 The default options apply only to MODE=INT.

- 4 PSS is a default VIT option, but PSS can be turned off.
- 5 When SUBTRACE=ARBP is specified, if a single OPTION value is coded, it 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.
- 6 If multiple trace options are coded in parentheses, either HPR or one of the group options (*hprgrpopt*) that include HPR as an individual option equivalent must be coded inside the parentheses when SUBTRACE=ARBP is coded.
- 7 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.
- 8 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.
- 9 When SUBTRACE=TGVC or SUBTRACE=TREE is coded, if a single OPTION value is coded, it must be 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, CPCOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, TCPOPTS, and XCFOPTS.
- 10 If multiple trace options are coded in parentheses, either SSCP or one of the group options (*groupopt*) must be coded inside the parentheses when SUBTRACE=TGVC or SUBTRACE=TREE is coded.

Specifies whether VTAM starts or cancels a specific type of trace.

If you code the TRACE option, code the TYPE qualifier immediately after TRACE.

You can change the value of TRACE with the MODIFY TRACE command while VTAM is running.

BFRNUM=number

Specifies the number of 8K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Integers 0 or 2–50 can be specified. The default is 2. Two times the number of processors in the central processing unit (CPU) should ensure that enough buffers are available.

When an integer of 2–50 is specified, VTAM accumulates approximately 8K of external trace data prior to sending the data to GTF.

If zero is specified or there is no buffer available for the trace record, VTAM sends each trace record to GTF as it is recorded. This incurs a significant system overhead, and should be avoided.

MODE

Specifies that the VTAM internal trace is to record its data on an internal, wraparound table (MODE=INT) and optionally, on an external trace file (MODE=EXT).

MODE applies only to TYPE=VTAM.

You can record trace data internally and externally simultaneously. If you want, you can have different sets of trace options active for internal and

external recording. If you are using VITCTRL=BASE mode, VTAM always runs with MODE=INT and the default trace options, whether you request tracing or not. If you are using VITCTRL=FULL mode with MODE=INT, you can disable any or all VIT options.

You must run specific operating system utilities to trap, format, and view external trace output. See *z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures* for more information about use of these operating system utilities.

Do not specify MODE=EXT and SIZE on the same command.

MODE=INT

Specifies that the VTAM internal trace is to record its data on an internal, wraparound table.

MODE=EXT

Specifies that the VTAM internal trace is to record its data on an external trace file as well as on an internal, wraparound table. You can record external trace data using the generalized trace facility (GTF). GTF must be active when you initiate traces. You can format output using IPCS.

See *z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures* for a more detailed description of formatting and printing trace output.

NOTRACE

Specifies that VTAM cancels the trace requested by the TYPE operand. Code a separate NOTRACE start option to stop each trace.

For **TYPE=VTAM**, the processing is affected by the current level of VIT control being used (as specified by the VITCTRL start option).

- If you are using VITCTRL=BASE, the NOTRACE start option is accepted but ignored.
- If you are using VITCTRL=FULL, the following situations occur:
 - With no CSDUMP start option defined, no VIT options are started for internal mode tracing.
 - With a CSDUMP start option, the VIT option set STDOPTS is enabled.

See *z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT* for more information on VIT control levels.

OPTION=(option,option,...option)

Applies to TYPE=MODULE, TYPE=STATE and TYPE=VTAM.

You can abbreviate this operand as OPT.

You can code one or more of the options listed for each TYPE operand.

Note: Each trace option can affect the performance of your host and the VTAM network. Be sure to understand the effect this function can have on performance in your environment before specifying OPTION=ALL.

For **TYPE=MODULE**, OPTION specifies the modules for which tracing is to be started.

For **TYPE=STATE**, OPTION specifies the types of resources for which resource states are to be recorded. The data is recorded using the mode (internal or external) specified for the SSCP VIT option.

For **TYPE=VTAM**, OPTION is a listing of the VTAM functions that you want to trace.

When VTAM encounters an exception condition involving an API, NRM, PIU, SSCP, or SMS function, it generates a trace record whether or not you have activated that option.

Note: VTAM manages and displays the setting of the API, CIO, MSG, NRM, PIU and SSCP VIT options for internal recording (MODE=INT) based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.

ALL

Applies to TYPE=MODULE, TYPE=STATE and TYPE=VTAM.

For **TYPE=MODULE**, OPTION=ALL starts the tracing of all the modules shown on the OPTION operand for which TYPE=MODULE apply.

For **TYPE=STATE**, OPTION=ALL starts the tracing of resource states for all of the resource types shown on the OPTION operand for which TYPE=STATE apply.

For **TYPE=VTAM**, OPTION=ALL specifies that the VTAM internal trace (VIT) is to be started for all of the VTAM internal functions for which the VIT is available, including VCNS trace functions. It is equivalent to specifying all of the internal trace types. Exception trace entries continue to be recorded.

For **TYPE=MODULE**, you can also specify the following options:

OPTION=COMMAND

Starts tracing modules involved in command processing.

OPTION=CONNECTIONS

Starts tracing modules involved in setting up connections between nodes.

OPTION=DEFINITION

Starts tracing modules involved in resource definition processing.

OPTION=INTERFACES

Starts tracing modules involved in the interface with the host SSCP or the host CP.

OPTION=MANAGEMENT

Starts tracing modules involved in network management.

OPTION=NOEXIT

Specifies that module exits are not traced for modules associated with other OPTION values for TYPE=MODULE. Module exits are not traced for any modules until a subsequent MODIFY NOTRACE,TYPE=MODULE,OPTION=NOEXIT command is issued.

Starting a module trace for any OPTION with TYPE=MODULE starts the tracing of the module exits also, unless you specify OPTION=NOEXIT.

OPTION=SESSION

Starts tracing modules involved in session establishment.

For **TYPE=STATE**, you can also specify the following options:

OPTION=ADJCP

Starts tracing the states of all adjacent control points.

OPTION=APPL

Starts tracing the states of all application programs.

OPTION=CDRM

Starts tracing the states of all CDRMs.

OPTION=CDRSC

Starts tracing the states of all CDRSCs.

OPTION=GROUP

Starts tracing the states of all line groups.

OPTION=LINE

Starts tracing the states of all lines.

OPTION=LU

Starts tracing the states of all logical units.

OPTION=NCP

Starts tracing the states of all NCPs.

OPTION=PU

Starts tracing the states of all physical units.

For **TYPE=VTAM**, you can also specify the following options:

API

Helps you determine whether an application program is causing a problem. API entries are written for RPL macros, RPL exit routines, user exit routines, and user posts.

APIOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose potential non-LU 6.2 application program problems. Specifying APIOPTS is equivalent to specifying all of the following VIT options: API, MSG, NRM, PIU, PSS, SMS, and SSCP.

APPC

Helps you determine whether an LU 6.2 application is causing a problem. LU 6.2 entries are written for the following items:

- APPCCMD macro invocations

- User posts and exit scheduling by LU 6.2 code

- Calls to a security manager for security processing

- Message unit transmissions between LU 6.2 components

APPCOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose potential LU 6.2 application program problems. Specifying APPCOPTS is equivalent to specifying all of the following VIT options: API, APPC, MSG, NRM, PIU, PSS, SMS, and SSCP.

CFS

Helps you assess and manage your coupling facility structure.

CIA

Helps isolate problems indirectly related to channel IO by tracing additional data near the time of channel IO activity.

CIO

Helps isolate problems related directly to channel I/O (CIO). CIO entries are written for attentions, error recovery, interruptions, HALT I/O SVC, and START I/O SVC.

CMIP

Indicates whether a CMIP problem is in VTAM or in a CMIP application program.

This option traces:

- Calls from CMIP application programs to the management information base (MIB) application programming interface
- Calls to the read-queue exit of the CMIP application program
- Topology updates from VTAM resources

CPCPOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose potential CP-CP session problems. Specifying CPCPOPTS is equivalent to specifying all of the following VIT options: API, APPC, MSG, NRM, PIU, PSS, SMS, and SSCP.

CSM

Traces the parameter list information that flows across the communications storage manager (CSM) interface for the following events:

- Requests to obtain a buffer
- Requests to free a buffer
- Requests to assign additional tokens to the buffer
- Requests to change the ownership of a buffer
- Requests to change the pageable state of a buffer
- Requests to copy data to or from a CSM buffer or a user data area
- Buffer pool expansion
- Buffer pool contraction

Note: For installations using high performance data transfer (HPDT), the use of the CSM trace should be restricted to times when diagnostic information is needed. Using this option on a regular basis minimizes the performance benefits provided by HPDT services.

CSMOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose potential communications storage manager (CSM) problems. Specifying CSMOPTS is equivalent to specifying all of the following VIT options: API, APPC, CIO, CSM, MSG, NRM, PIU, PSS, SMS, SSCP, and XBUF.

DLUROPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose dependent LU requester (DLUR) problems. Specifying DLUROPTS is equivalent to specifying all of the following VIT options: API, APPC, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.

EEOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose Enterprise Extender (EE) problems. Specifying EEOPTS is equivalent to specifying all of the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, and TCP.

ESC

Helps you track, in detail, the flow of requests for a given process.

HPDPTOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose high performance data transfer (HPDT) problems. Specifying HPDPTOPTS is equivalent to specifying all of the following VIT options: CIA, CIO, HPR, MSG, PIU, PSS, SMS, and SSCP.

HPR

Helps you isolate problems related to High-Performance Routing (HPR). Events include invocation of the HPRCTL macroinstruction, invocation of the HPR timer control macroinstruction, any LU-LU session data sent across a rapid transport protocol (RTP) connection, a network layer packet (NLP) sent or received, a dispatch of the RTP context manager (RCM) PAB, a dispatch of a RTP PAB, an error detected by RTP, and a route setup sent or received.

HPROPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose High-Performance Routing (HPR) problems. Specifying HPROPTS is equivalent to specifying all of the following VIT options: API, APPC, CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.

LCS

Helps you isolate problems occurring during data transfers from an IBM 3172 Interconnect Controller to VTAM. The LCS option enables tracing of data that VTAM receives from an IBM 3172 Interconnect Controller at four levels: LCSX (cross-channel), LCSP (port or adapter), LCSS (service access point of the adapter) and LCSL (line).

LCSOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose LAN channel station (LCS) problems. Specifying LCSOPTS is equivalent to specifying all of the following VIT options: CIO, LCS, MSG, NRM, PIU, PSS, SMS, and SSCP.

LOCK

Helps you determine when VTAM modules get and release locks.

MSG

Helps you correlate other VIT internal entries with the console messages even if the console sheet is lost. MSG entries are written for all messages to the VTAM operator.

NONE

Specifies that no traces are active.

NRM

Helps you follow the services of the network resource management component. These include the assignment of, references to, and the deletion of certain VTAM resources such as node names, network addresses, and control blocks. NRM entries are written for all I/O and buffer contents traces.

PIU

Helps you isolate problems to hardware, to the NCP, or to VTAM. PIU entries are written for all I/O to and from VTAM, which can be an advantage over I/O and buffer content traces.

PSS

Helps you track the flow of requests through VTAM. PSS entries are

written for the VTAM macros that invoke and control PSS, and for scheduling and dispatching VTAM routines.

QDIOOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose queued direct I/O (QDIO) problems. Specifying QDIOOPTS is equivalent to specifying all of the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.

SMS

Helps you isolate problems caused by storage shortages. When used with the SSCP or PSS trace options, it can also help you isolate internal VTAM problems. SMS entries are written when SMS macros are used to request or release fixed-length or variable-length buffers. SMS entries are also written when VTAM expands or attempts to expand a buffer pool.

SSCP

Helps you isolate problems to a specific VTAM component or module. SSCP entries are written for the request or response units (RUs) sent between VTAM components.

STDOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose problems related to high CPU, session services, Open/Close ACB, and DLCs such as MPC and CTC. Specifying STDOPTS is equivalent to specifying all of the following VIT options: API, CIO, MSG, NRM, PIU, PSS and SSCP.

TCP

Helps you trace Enterprise Extender events.

TCPOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose problems related to TCP/IP. Specifying TCPOPTS is equivalent to specifying all of the following VIT options: CIA, CIO, MSG, NRM, PIU, PSS, SMS, SSCP, and TCP.

VCNS

Helps you determine whether a VCNS application is causing a problem. VCNS entries are written for VCNSCMD macro invocations, user posts, and exit scheduling by VCNS code, and work element transmissions between VCNS components.

XBUF

Records information contained within the extended buffer list, particularly in regard to information on CSM usage by VTAM. This option traces the contents from the application supplied extended buffer list as well as the internal buffer list that VTAM uses to carry the extended buffer list information.

Note: For installations using high performance data transfer (HPDT), the use of the XBUF trace should be restricted to times when diagnostic information is needed. Using this option on a regular basis minimizes the performance benefits provided by HPDT services.

XCF

Helps you trace XCF communication.

XCFOPTS

A grouping of multiple VIT options that includes all of the individual VIT options usually required to diagnose cross-system coupling facility (XCF)

problems. Specifying XCFOPTS is equivalent to specifying all of the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, and XCF.

SIZE=size

Applies only when you specify TYPE=VTAM,MODE=INT. The size operand specifies the number of megabytes to be allocated for the internal trace table. Valid values are in the range 4M - 2048M. The VTAM internal trace table is allocated in 64-bit common (HVCOMMON) storage.

Restriction: If you specify a SIZE value that is larger than the default value, z/OS performs paging on portions of the VIT table. Before you specify a large SIZE value, ensure that you have sufficient real or auxiliary storage to contain the entire VIT. Failure to ensure sufficient storage might result in an auxiliary storage shortage. If an SVC dump is taken that includes common storage, the size of the dump data set also increases. You must also take the increase in the size of the dump data set into consideration.

SUBTRACE

Specifies that SUBTRACE can be used to turn on a subset of trace entries under a trace option. Of the SUBTRACE types defined, subtrace TREE and TGVC are defined under the SSCP trace option, subtrace ARBP is defined under the HPR trace option, and subtrace DIO is defined under the CIA trace option.

Recommendation: All of the SUBTRACE options are defaulted to off. They can generate a large number of records in the VTAM trace and can incur a significant overhead, but may be necessary in some cases for diagnostic purposes. It is not recommended to activate them at VTAM start time. If used, the SUBTRACE options should be turned off when the necessary trace output has been obtained.

SUBTRACE=ARBP

Specifies the ARB (Adaptive Rate Based) algorithm performance trace records that are to be generated. The OPTION operand is required when SUBTRACE is specified and HPR must be one of the trace options specified when SUBTRACE=ARBP is coded. After subtrace ARBP is activated, the following trace records will be generated for the ARB algorithm processing: ARBR (Generated when ARB Responsive Mode algorithm is used) and ARBB (Generated when ARB Base Mode algorithm is used).

SUBTRACE=DIO

Specifies that Direct IO related trace records are to be generated. The OPTION operand is required when SUBTRACE is specified and CIA must be one of the trace options specified when SUBTRACE=DIO is coded. After subtrace DIO is activated, the following trace records may be generated for QDIO and Hipersockets processing: QAPL, QDIP and QSRB.

SUBTRACE=TGVC

Specifies that APPN transmission group vector (TGVC) trace records are to be generated. The OPTION operand is a required keyword when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TGVC is coded. After subtrace TGVC is activated, the following trace records will be generated for various TG Vector requests: TGVC, TGV2. If large amounts of data are being traced, additional TGVC records (plus subsequent TGV2 records) may occur.

SUBTRACE=TREE

Specifies the APPN routing tree trace records that are to be generated. The

OPTION operand is required when SUBTRACE is specified and SSCP must be one of the trace options specified when SUBTRACE=TREE is coded. After subtrace TREE is activated, the following trace records will be generated for routing trees used by APPN route computation: TRRT, TRR2, TRR3, TRR4, TRR5, HLST, and HLS2.

TYPE=MODULE

Specifies whether a module trace is started or stopped for the types of modules listed on the OPTION operand.

TYPE=STATE

Specifies whether a resource state trace is started or stopped to monitor changes in the state of the type of resources listed on the OPTION operand.

TYPE=VTAM

Specifies the VTAM internal trace (VIT).

Use IBM Health Checker for z/OS to check whether various VTAM internal trace parameters have been set to values that reflect best practices. For more details about IBM Health Checker for z/OS, see z/OS Communications Server: IP Diagnosis Guide.

Chapter 4. SNA Diagnosis, Volume 2: FFST Dumps and the VIT

Using the VTAM internal trace

Most VTAM traces show the information flow between the VTAM program and other network components. However, the VTAM internal trace (VIT) provides a record of the sequence of events *within* VTAM. These internal events include the scheduling of processes (for example, POST, WAIT, and DISPATCH), the management of storage (for example, VTALLOC), and the flow of internal PIUs between VTAM components.

Together with the operator console listing and a dump, output from the VIT can help you reconstruct sequences of VTAM events and find internal VTAM problems more easily.

This topic includes the following information:

- “VIT control levels”
- “Activating the VIT” on page 128
- “Trace options for the VIT” on page 129
- Internal and external trace recording for the VIT
- Recording SNAP traces
- “Deactivating the VIT” on page 137
- Extracting VIT information from a dump
- Using module names to isolate VTAM problems

VIT control levels

VTAM provides two levels of operator control for managing the VIT in internal mode. You can select what level of control is appropriate for your environment. The level of controls primarily affect certain default VIT options (API, CIO, MSG, NRM, PIU, and SSCP). This set of options represent the minimum required options for diagnosing VTAM problems. You can choose one of following two levels of control:

- **Base Control**

You can choose to allow VTAM to enforce that certain default VIT options remain active at all times. This is the default setting. With this level of control, you cannot use the MODIFY NOTRACE command or the NOTRACE start option to disable these VIT options. If you attempt to disable these VIT options, VTAM accepts the command or start option but immediately re-enables the VIT options.

When using this "base" level of control, VTAM does not always display the setting of these default VIT options as output to the DISPLAY TRACE, MODIFY TRACE and MODIFY NOTRACE commands. The settings are not considered user controllable and are therefore only displayed if you have explicitly enabled the VIT option by using the TRACE start option or the MODIFY TRACE command. If you later explicitly disable the VIT option by using the MODIFY NOTRACE command, the VIT option is no longer displayed but remains enabled.

- **Full Control**

You can choose the ability to disable individual VIT options at any time by using the MODIFY NOTRACE command or the NOTRACE start option.

When using this full level of control, VTAM always displays the current setting of these default VIT options as output to the DISPLAY TRACE, MODIFY TRACE and MODIFY NOTRACE commands.

If you use the VIT in external mode, you always can disable all VIT options.

Result: Disabling any of the default VIT options for internal VIT processing can trigger a health check notification (CSV_{TAM}_VIT_OPT_STDOPTS) and impacts VTAM serviceability.

Selecting the level of VIT Control

You can specify the level of VIT control you want by using the VITCTRL VTAM start option.

VITCTRL=BASE

Specifies that the operator cannot modify the settings of VIT options API, PIU, SSCP, MSG, NRM and CIO by using the MODIFY TRACE and MODIFY NOTRACE commands or by start options for TYPE=VTAM,MODE=INT processing. In addition, the PSS start option is also started by default, but the operator can modify the use of the PSS VIT option by using the MODIFY TRACE or MODIFY NOTRACE command.

This is the default value.

VITCTRL=FULL

Specifies that the operator can modify the settings of all VIT options by using the MODIFY TRACE and MODIFY NOTRACE commands or by start options for TYPE=VTAM,MODE=INT processing.

See VTAM start options in z/OS Communications Server: SNA Resource Definition Reference for additional details.

Interaction of VIT option sets and "Full" VIT Control mode processing

If you specify any VIT option set for internal VIT processing on the TRACE start option or on a MODIFY TRACE command, and you are operating in VITCTRL=FULL mode, VTAM also activates the STDOPTS VIT option set.

For example, the APIOPTS option set includes the API, MSG, NRM, PIU, PSS, SMS, and SSCP VIT options. If you specify MODIFY TRACE,TYPE=VTAM,MODE=INT,OPT=(APIOPTS), VTAM enables tracing for those VIT options, but also for the CIO VIT option, because CIO is part of the STDOPTS option set.

You can disable VIT tracing in this example by using any of the following methods:

- Issue the **MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=ALL** command.
- Issue the **MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=END** command.
- Issue two MODIFY NOTRACE commands:

- Issue the **MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=APIOPTS** command. This command disables all VIT options in APIOPTS option set that are not also in the STDOPPTS option set (basically the SMS VIT option).
- Issue the **MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=STDOPPTS** command. This command disables the remaining VIT options.

Note: When a CSDUMP message or code trigger is active, the VIT MSG option cannot be disabled by the MODIFY NOTRACE command.

Example behavior

Use this table to compare and contrast the two levels of VIT control for VIT processing in internal mode.

Action	"Base" VIT control	"Full" VIT control
Start VTAM without TRACE,TYPE=VTAM start option.	<ul style="list-style-type: none"> • VTAM initializes the VIT with the STDOPPTS set of VIT options. • DISPLAY TRACE output displays "PSS" as the only active VIT option 	<ul style="list-style-type: none"> • VTAM initializes the VIT with the STDOPPTS set of VIT options. • DISPLAY TRACE output displays all seven default VIT options as being active.
Start VTAM with TRACE,TYPE=VTAM,MODE=INT,OPT=(APIOPTS) start option.	<ul style="list-style-type: none"> • VTAM activates the VIT with all the VIT options defined in the APIOPTS option set, plus the CIO VIT option from the default set. • DISPLAY TRACE output displays all the VIT options in the APIOPTS option set as active, but does not display CIO. 	<ul style="list-style-type: none"> • VTAM activates the VIT with all the VIT options defined in the APIOPTS option set, plus the CIO VIT option from the default set. • DISPLAY TRACE output displays all the VIT options in the APIOPTS option set, plus the CIO option, as active.
Start VTAM with TRACE,TYPE=VTAM,MODE=INT,OPT=(NRM,PIU)	<ul style="list-style-type: none"> • VTAM initializes the VIT with the following set of VIT options: API, CIO, MSG, NRM, PIU, SSCP and PSS. • DISPLAY TRACE output displays "NRM PIU PSS" as the active VIT options. 	<ul style="list-style-type: none"> • VTAM initializes the VIT with just the NRM and PIU VIT options. • DISPLAY TRACE output displays "NRM PIU" as the active VIT options.
Assuming the STDOPPTS VIT options are active by default, issue MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=(PSS,SSCP,API)	<ul style="list-style-type: none"> • Before the MODIFY command, DISPLAY TRACE output indicates only the "PSS" option is active. • VTAM turns off the PSS VIT option as part of MODIFY processing, but the SSCP and API options remain active. • The output for the MODIFY NOTRACE command indicates that no VIT options are active. 	<ul style="list-style-type: none"> • Before the MODIFY command, DISPLAY TRACE output indicates all the STDOPPTS options as active. • VTAM turns off the specified VIT options as part of MODIFY processing. • The output for the MODIFY NOTRACE command indicates that "CIO MSG NRM PIU" options are active.

Action	"Base" VIT control	"Full" VIT control
Assuming the STDOPPTS VIT options are active by default, issue MODIFY NOTRACE,TYPE=VTAM,MODE=INT,OPT=ALL	<ul style="list-style-type: none"> • Before the MODIFY command, DISPLAY TRACE output indicates only the "PSS" option is active. • VTAM turns off the PSS VIT option as part of MODIFY processing, but the remaining default options are unaffected. • The output for the MODIFY NOTRACE command indicates that no options are active ("NONE"). 	<ul style="list-style-type: none"> • Before the MODIFY command, DISPLAY TRACE output indicates all the STDOPPTS options as active. • VTAM turns off all VIT options as part of the MODIFY processing. • The output for the MODIFY NOTRACE command indicates that no options are active ("NONE").

Activating the VIT

You must activate the VIT to record the trace data of the specific events.

- When VTAM is operating with VITCTRL=BASE, you do not need to activate the trace data for the following events, because the data is always automatically recorded in the internal table:
 - API
 - CIO
 - MSG
 - NRM
 - PIU
 - PSS (You can deactivate this internal trace option to stop automatic recording)
 - SSCP

Specifying **TRACE TYPE=VTAM,MODE=INT,OPT=STDOPPTS** is the equivalent of taking the default for internal VIT tracing. Except for PSS events, the events remain enabled for tracing for internal VIT even if you specify the events on a MODIFY NOTRACE command.

- When VTAM is operating with VITCTRL=FULL, use one of the following options to enable tracing for the default VIT options:
 - Specify no TRACE start option when starting VTAM. VTAM will by default enable tracing for the STDOPPTS events for internal VIT.
 - Specify **TYPE=VTAM,MODE=INT,OPTION=STDOPPTS** for the TRACE start option when starting VTAM or as the operand on a MODIFY TRACE command. This is the equivalent of explicitly coding **TYPE=VTAM,MODE=INT,OPT=(API,CIO,MSG,NRM,PIU,PSS,SSCP)**.
 - Specify **TYPE=VTAM,MODE=INT,OPTION=<any VIT option set>** for the TRACE start option when starting VTAM or as the operand on a MODIFY TRACE command. VTAM enables tracing for both the events defined in the specified VIT option set and for all the events in the STDOPPTS option set.

For example, the APIOPTS option set includes the API, MSG, NRM, PIU, PSS, SMS, and SSCP VIT options. If you specify **MODIFY TRACE,TYPE=VTAM,MODE=INT,OPTION=(APIOPTS)**, VTAM enables tracing for those VIT options, but also for the CIO VIT option, because CIO is part of the STDOPPTS option set.

| If you specify any other value for the TRACE start option, or on the MODIFY
| TRACE command, VTAM enables just the events that you specified on the
| OPTION operand.

To activate the internal trace, do one of the following actions:

- If you have not started VTAM and you are starting VTAM and the VIT at the same time, use the TRACE start option and specify the following operands:
 - TYPE=VTAM
 - OPTION=*VIT_option*
See “Trace options for the VIT” for information about how to specify the OPTION operand to select VIT options.
 - MODE=*VIT_mode*
See Internal and external trace recording for the VIT for information about how to specify the OPTION operand to select VIT options.
- If you have already started VTAM, use the MODIFY TRACE command and specify the following operands:
 - TYPE=VTAM
 - OPTION=*VIT_option*
See “Trace options for the VIT” for information about how to specify the OPTION operand to select VIT options.
 - MODE=*VIT_mode*
See Internal and external trace recording for the VIT for information about how to specify the OPTION operand to select VIT options.

Notes:

- To prevent the VIT table from being overwritten, VTAM disables the internal VIT when it issues SDUMP and when an FFST probe is tripped.
- The minimum trace table size is 4 megabytes. If the trace option default values are running, the table might wrap many times.
- CIDCTL FIND macro invocations that are invoked during the process of sending or receiving data are not traced with CDHF or CDNF trace entries unless they result in a nonzero return code.
- If you want to use VIT to record 32, 64, 96, or 128 bytes of user-generated information in an SNAP trace, see Recording SNAP traces.

Trace options for the VIT

You can specify the OPTION operand in the TRACE start option or in the MODIFY TRACE command. Deactivate the VIT before you attempt to change an option; otherwise, the options that are currently in effect will remain in effect. See “Deactivating the VIT” on page 137 for more information about deactivating the VIT.

Table 3 on page 130 describes the options that you can specify on the OPTION operand. Select one or more of these options to indicate the VTAM functions you want to trace.

Table 3. Trace options of the *OPTION* operand

Option	Description
API option (for application programming interfaces)	<p>This option helps you determine whether an application program is causing a problem. API entries are written for RPL macros, RPL exit routines, user exit routines, and user posts.</p> <p>Trace data for this option is always automatically recorded in the internal table.</p>
APIOPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose potential application program problems. Specifying the APIOPTS option is equivalent to specifying all the following VIT options: API, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>
APPC	<p>This option helps you determine whether an LU 6.2 application is causing a problem. LU 6.2 entries are written for APPCCMD macro invocations, user posts, and exit scheduling by LU 6.2 code, calls to a security manager for security processing, and message unit transmissions between LU 6.2 components.</p>
APPCOPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose potential LU 6.2 application program problems. Specifying the APPCOPTS option is equivalent to specifying all the following VIT options: API, APPC, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>
CFS option (for coupling facility interfaces)	<p>This option helps you determine problems with the VTAM interface with the MVS coupling facility. CFS entries are written when VTAM issues MVS macros to request services related to the coupling facility.</p>
CIA option (for channel input and output auxiliary)	<p>This option helps you isolate problems related to channel I/O CIA entries. This option presents the remaining trace records from the CIO option.</p>
CIO option (for channel input and output)	<p>This option helps you isolate problems related to channel I/O. CIO entries are written for attentions, error recovery, interruptions, HALT I/O SVC, and START I/O SVC.</p>
CMIP option (for Common Management Information Protocol Services)	<p>Setting the CMIP option enables the following traces:</p> <ul style="list-style-type: none"> • Calls from CMIP application programs to the management information base (MIB) application programming interface (API) • Calls to the read-queue exit of the CMIP application program • Topology updates from VTAM resources <p>You can use the CMIP option to help you determine whether there is a problem in VTAM or in a CMIP application program.</p>
CPCPOPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose potential CP-CP session problems. Specifying the CPCPOPTS option is equivalent to specifying all the following VIT options: API, APPC, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>

Table 3. Trace options of the *OPTION* operand (continued)

Option	Description
CSM option (for communications storage manager events)	<p>This option traces the parameter list information that flows across the CSM interface and key internal events (such as pool expansion and contraction) for functions that manipulate buffer states. You can trace and analyze the usage history of a buffer.</p> <p>You can also use the CSM trace when VTAM is not operational. An external trace is generated using the VTAM GTF event ID to write trace records directly to GTF in the same format as those recorded using VIT.</p>
CSMOPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose potential communications storage manager (CSM) problems. Specifying the CSMOPTS option is equivalent to specifying all the following VIT options: API, APPC, CIO, CSM, MSG, NRM, PIU, PSS, SMS, SSCP, and XBUF.</p>
DLUROPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose dependent LU requester (DLUR) problems. Specifying the DLUROPTS option is equivalent to specifying all the following VIT options: API, APPC, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>
EEOPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose Enterprise Extender (EE) problems. Specifying the EEOPTS option is equivalent to specifying all the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, and TCP.</p>
ESC option (for execution sequence control)	<p>This option helps you track, in detail, the flow of requests for a given process.</p>
HPDTPROPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose high-performance data transfer (HPDT) problems. Specifying the HPDTPROPTS option is equivalent to specifying all the following VIT options: CIA, CIO, HPR, MSG, PIU, PSS, SMS, and SSCP.</p>
HPR option (for High-Performance Routing)	<p>This option helps you isolate problems related to High-Performance Routing.</p>
HPROPTS option	<p>This option is a collection of multiple VIT options that includes all the individual VIT options required to diagnose High-Performance Routing (HPR) problems. Specifying the HPROPTS option is equivalent to specifying all the following VIT options: API, APPC, CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>
LCS option (for local area network (LAN) channel stations)	<p>This option helps you isolate problems that occur when an IBM 3172 Interconnect Nways Controller is activating, deactivating, or transferring data. The LCS option enables tracing of data that VTAM receives from an IBM 3172 Interconnect Nways Controller at four levels: LCSX (channel), LCSP (port or adapter), LCSS (SAP), and LCSL (line).</p>
LCSOPTS options	<p>This option is a collection of multiple VIT options that includes all of the individual VIT options required to diagnose LAN channel station (LCS) problems. Specifying the LCSOPTS option is equivalent to specifying all the following VIT options: CIO, LCS, MSG, NRM, PIU, PSS, SMS, and SSCP.</p>

Table 3. Trace options of the *OPTION* operand (continued)

Option	Description
LOCK option (for locking and unlocking)	This option helps you determine when VTAM modules obtain and release locks.
MSG option (for messages)	<p>Specify this option to accomplish the following tasks:</p> <ul style="list-style-type: none"> • Correlate other VIT entries with the console messages, even if you lose the console sheet. MSG entries are written for all messages to the VTAM operator. • Match the console log to a surge of activity shown in the VIT. OPER entries are written for all VTAM commands issued at an operator console. <p>Trace data for this option is always automatically recorded in the internal table.</p>
NRM option (for network resource management)	<p>This option helps you follow the services of the network resource management component. These services include the assignment of, references to, and the deletion of certain VTAM resources such as node names, network addresses, and control blocks. NRM entries are written for SRT macros issued by VTAM modules.</p> <p>Trace data for this option is always automatically recorded in the internal table.</p> <p>CIDCTL FIND macro invocations used during the process of sending or receiving data are not traced with CDHF or CDNF trace entries unless they result in a nonzero return code.</p>
PIU option (for path information unit flows)	<p>This option, like the I/O and buffer contents traces, helps you isolate problems to hardware, to the NCP, or to VTAM. Unlike I/O and buffer contents traces, this option causes PIU entries to be written for all PIUs that flow internal and external to VTAM.</p> <p>Trace data for this option is always automatically recorded in the internal table.</p>
PSS option (for process scheduling services)	This option helps you track the flow of requests through VTAM. PSS entries are written for the VTAM macros that invoke and control PSS, scheduling, and dispatching VTAM routines.
QDIOOPTS options	This option is a collection of multiple VIT options that includes all of the individual VIT options required to diagnose queued direct I/O (QDIO) problems. Specifying the QDIOOPTS option is equivalent to specifying all the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, and SSCP.
SMS option (for storage management services)	This option helps you isolate problems caused by storage shortages. When you specify this option with the SSCP or PSS trace option, it can also help you isolate internal VTAM problems. SMS entries are written when SMS macros are used to request or free fixed-length or variable-length buffers. SMS entries are also written when VTAM expands or attempts to expand a buffer pool.

Table 3. Trace options of the OPTION operand (continued)

Option	Description
SSCP option (for system services control point request scheduling and response posting)	<p>This option helps you isolate a VTAM problem to a specific VTAM component or module. SSCP entries are written for the request/response units (RUs) sent between VTAM components. This option also records information for the APPN CP.</p> <p>Trace data for this option is always automatically recorded in the internal table.</p>
STDOPTS option	<p>This option is a collection of multiple VIT options that includes all of the individual VIT options required to diagnose problems related to high CPU, session services, Open/Close ACB, and DLCs such as multipath channel (MPC) and channel-to-channel (CTC). Specifying the STDOPTS option is equivalent to specifying all the following VIT options: API, CIO, MSG, NRM, PIU, PSS and SSCP. STDOPTS is the default trace options.</p> <p>When VTAM is operating in VITCTRL=FULL mode, recording for the events in the STDOPTS VIT option set is also enabled when any other group option set is enabled. Additionally during VTAM start processing with both a CSDUMP and VITCTRL=FULL start option defined, recording for the events in the STDOPTS VIT option is enabled.</p>
TCP option (for use with Enterprise Extender)	<p>This option is used for recording activity related to Enterprise Extender. The trace options record IP address management and timer activity.</p>
TCPOPTS option	<p>This option is a collection of multiple VIT options that includes all of the individual VIT options required to diagnose problems related to TCP/IP. Specifying the TCPOPTS option is equivalent to specifying all the following VIT options: CIA, CIO, MSG, NRM, PIU, PSS, SMS, SSCP, and TCP.</p>
VCNS option (for VCNS application programming interfaces)	<p>This option helps you determine whether a VCNS application is causing a problem. VCNS entries are written for VCNSCMD macro invocations, user posts, exit scheduling by VCNS code, and work element transmissions between VCNS components.</p>
XBUF option (for applications that use the extended buffer list for sending and receiving data)	<p>This option traces the contents of the extended buffer list (XBUFLST). Records are produced to trace these contents from the application-supplied extended buffer list and the internal buffer list that VTAM uses to carry the extended buffer list information. These records store relevant information contained with the extended buffer list, particularly information about CSM usage by VTAM.</p>
XCF option (for VTAM use of the cross-system coupling facility)	<p>Specify this option to track VTAM use of the XCF (cross-system coupling facility) MVS macro interface. Each VTAM use of an XCF macro has a VIT entry.</p>
XCFOPTS option	<p>This option is a collection of multiple VIT options that includes all of the individual VIT options required to diagnose cross-system coupling facility (XCF) problems. Specifying the XCFOPTS option is equivalent to specifying all the following VIT options: CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, and XCF.</p>

The VIT always traces the exception conditions listed in Table 4 on page 134 and all the default VIT options listed under “Activating the VIT” on page 128.

Table 4. Exception conditions always traced by the VIT

Option	Exception conditions traced
APPC	<ul style="list-style-type: none"> • ACA and ACI entries when following commands are issued: <ul style="list-style-type: none"> – SEND ERROR – DEALLOC ABNDxxxx – REJECT • ACRC and ACSN entries • Other entries with nonzero return codes (except RPL6RCSC)
CFS	Entries with nonzero return codes
CIO	INOP entry
CMIP option	The following entries, when they have nonzero return codes: <ul style="list-style-type: none"> • MCO1 and MCO2 • MDEL • MDIS • MQRQ • MQRS • MREG • RQE
LCS	LCSL, LCSP, LCSS, and LCSX entries with nonzero reason codes
NRM	CDHF or CDNF entries with nonzero return codes
SMS	Entries with nonzero return codes and EXPN entries if a buffer pool expansion fails
SSCP	CPI, CPO, and CP2
(No option)	All SNAP entries and some exception entries ¹ .
Note: 1. The **** (FFST and PFFST), ABND, BUFF, COPY, CMER, CME2, INOP, LOST, MMG, and MM2 trace records are not activated by specific VIT options. They are activated as a result of exception conditions.	

Table 5 on page 135 and Table 6 on page 136 list the VIT options and the records that they create. For more information, see the list of notes after Table 6 on page 136.

Table 5. VIT options and the records they create (API - LOCK)

VIT options	API	APPC	CFS	CIA	CIO	CMIP	CSM	ESC	HPR	LCS	LOCK
VIT records	AIx IOx RE UEx UP	ACAx ACIx ACPx ACRx ACSN ACUx MUx RACR REML REMQ USx UVx	CFAx CFCx CFDx CFEx CFFC CFLx CFNF CFPx CFRB CFTx CFUS CFVC MNPS	CCR CDSQ C64Q DEVx DRBx ENFx GCEL GCExHCRØVX IDx IOSx IUTx LNKx LSNx MPDx ODPx ODTx PCID PKx PLOQ P64Q QAPL QDIP QSRx RCPI RCPO RPLx RPST RSLK SBAx SIGA SLSx TOKx VHCR XIDx	ADE ATT ERPx HIOx INTx PCIT PCIX RØVX RIOx SIOx	MCO1 MCO2 MDEL MDIS MQRQ MQRS MREG MRGx RQE	ASNx CHGx CNTP CPYx EXPP FIXx FRBx GTBx PAGx	ESC	ARB ARBB ARBR ARPx ARQx ARSx DAPT DRPx HCLK HPRx HPRT NLPx ONLP OOSx RCM RCV REML RSCx RTP RTPx RTSx RVM RXMT	LCSx	LKEX LKSH ULKA UNLK

Table 6. VIT options and the records they create (MSG - XCF)

VIT options	MSG	NRM	PIU	PSS	SMS	SSCP	TCP	VCNS	XBUF	XCF
VIT records	MSGx OPEx QRYL TRNx	BSPx BSSx BSXx CDHx CDNx NIPx PROx RCEx SRTx	DCOx DSCx NRSx PIUx RDSx TSNS 3270 3271	ATSK BTSK DSP DTSK ETSK EXIT IRBx POST QUEx RESM SCHD SRBx VPST VRSM VWAI WAIT XPST	AREL CONT EXPN FBLx FB64 FRES FR64 GBLx GB64 GETS GT64 ORMG POOF QREx RAPx RELS REQx VTAL VTFR	AFSM ALSx AP A2 CCx Clx COx CPI CPO CP2 CPPx CPRx CPWx CRx CSx DBx DLTx ENR GNAx HLSx LDLx MT SPTx TGMx TGVx TOPx TPN2 TPTx TReX TRMx TRRx	IPAD IPGN IPG2 IPG3 IPOG IPO2 IPTC IPTM	CNA CNPx CNRx NSD VCCx VCDQ	XBAx XBlx	XCC2 XCFC XCFJ XCFL XCFM XCFR XCFS XCFX XCJ2 XCL2 XCM2 XCR2 XCS2

Note:

1. The **** (FFST and PFFST), ABND, BUFF, COPY, CMER, CME2, INOP, LOST, MMG, and MM2 trace records are not activated by specific VIT options. They are activated as a result of exception conditions.
2.
 - For CIO record types ATT, ERP, HIO, INT, SIO, with suffix I, X, or T, and INOP, the events are also captured in the NCB (pointed to by NCBCIOMV). The NCB trace table is mapped by NCBCIOAR.
 - For CIA record types INOP, RCPx, RPLx and RPST, the events are also captured in the RUNCB (pointed to by NCBCIOMV).
 - For CIA record type PCIR, the events are also captured in the SRNCB (pointed to by NCBCIOMV).
3. OON and OOX can be generated when the module trace is running.
4. For the IRBx and the SRBx records to be recorded, both the PSS trace option and the PSSTRACE start options must be specified.
5. For APPC record types REMQ and ACSN, the events are also captured in the ISTRAB.
6. Some trace records are generated only when a subtrace is active. These trace records are the HPR option record types ARBB, ARBR, the CIA option record types QAPL, QDIP, QSRx, RSLK, and the SSCP option record types HLSx,

TGVx, TRMx, and TRRx. For more information about subtraces, see z/OS Communications Server: SNA Operation.

Table 7 lists the VIT group options and the individual VIT options that are equivalent for each group option.

Table 7. VIT group options

VIT group option	Equivalent to this set of individual VIT options
APIOPTS	API, MSG, NRM, PIU, PSS, SMS, SSCP
APPCOPTS	API, APPC, MSG, NRM, PIU, PSS, SMS, SSCP
CPCPOPTS	API, APPC, MSG, NRM, PIU, PSS, SMS, SSCP
CSMOPTS	API, APPC, CIO, CSM, MSG, NRM, PIU, PSS, SMS, SSCP, XBUF
DLUROPTS	API, APPC, HPR, MSG, NRM, PIU, PSS, SMS, SSCP
EEOPTS	CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, TCP
HPDTPPTS	CIA, CIO, HPR, MSG, PIU, PSS, SMS, SSCP
HPROPTS	API, APPC, CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP
LCSOPTS	CIO, LCS, MSG, NRM, PIU, PSS, SMS, SSCP
QDIOOPTS	CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP
STDOPTS	API, CIO, MSG, NRM, PIU, PSS, SSCP
TCPOPTS	CIA, CIO, MSG, NRM, PIU, PSS, SMS, SSCP, TCP
XCFOPTS	CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP, XCF

Deactivating the VIT

To deactivate specific VIT options, use the corresponding commands that are listed in Table 8.

Table 8. Deactivating the VIT

To deactivate these user-selected options:	Specify:
Specific options	MODIFY NOTRACE,TYPE=VTAM,OPTION= <i>options</i>
VIT group options	<p>MODIFY NOTRACE,TYPE=VTAM,OPTION=<i>group_option</i></p> <p>Individual VIT options encompassed by each group option specified by the <i>group_option</i> value are deactivated. Internal tracing continues for the default options when base VIT control is being used. Tracing also continues for exception records.</p> <p>For example, issuing a MODIFY NOTRACE,TYPE=VTAM,OPTION=<i>EEOPTS</i> command generates these results:</p> <ul style="list-style-type: none"> • The full set of EEOPTS VIT options (CIA, CIO, HPR, MSG, NRM, PIU, PSS, SMS, SSCP and TCP) are disabled for external VIT recording. • The CIA, HPR, SMS and TCP options are disabled for internal VIT recording, but the remaining options (CIO, MSG, NRM, PIU, PSS, and SSCP) continue to be traced internally because they are part of the STDOPTS default VIT option set. <ul style="list-style-type: none"> – If VTAM is running in VITCTRL=BASE mode, you cannot disable the remaining VIT options for internal VIT recording. – If VTAM is running in VITCTRL=FULL mode, you can issue MODIFY NOTRACE,TYPE=VTAM,OPTION=<i>STDOPTS</i> to disable the remaining events for internal VIT recording. When a CSDUMP message or code trigger is active, the VIT MSG option cannot be disabled by the MODIFY NOTRACE command.

Table 8. Deactivating the VIT (continued)

To deactivate these user-selected options:	Specify:
Subtrace options	<p>MODIFY NOTRACE,TYPE=VTAM,SUBTRACE=<i>subtrace_option</i>, OPTION=<i>vit_option</i> or MODIFY NOTRACE,TYPE=VTAM,SUBTRACE=<i>subtrace_option</i>, OPTION=(<i>..vit_option,..</i>)</p> <p>The subtrace option specified by the <i>subtrace_option</i> value is deactivated. The option specified by the <i>vit_option</i> value must relate to the <i>subtrace_option</i> value in one of the following ways:</p> <ul style="list-style-type: none"> • If you specify SUBTRACE=ARBP, the <i>vit_option</i> value must be HPR or one of the group options that include HPR as an individual option equivalent: DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, or XCFOPTS. • If you specify SUBTRACE=DIO, the <i>vit_option</i> value must be CIA or one of the group options that include CIA as an individual option equivalent: EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, TCPOPTS, or XCFOPTS. • If you specify SUBTRACE=TGVC or SUBTRACE=TREE, the <i>vit_option</i> value must be SSCP or one of the group options (all of which include SSCP as an individual option equivalent): APIOPTS, APPCOPTS, CPCOPTS, CSMOPTS, DLUROPTS, EEOPTS, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, TCPOPTS, or XCFOPTS.
Internal only	<ul style="list-style-type: none"> • MODIFY NOTRACE,TYPE=VTAM,OPTION=END or MODIFY NOTRACE,TYPE=VTAM,OPTION=END,MODE=INT <p>The internal trace table is reallocated to 4 megabytes for the default options. If you are using VITCTRL=BASE, the default VIT options are immediately re-enabled. If you are using VITCTRL=FULL, the default options are disabled.</p> <ul style="list-style-type: none"> • MODIFY NOTRACE,TYPE=VTAM,OPTION=ALL,MODE=INT <p>If you are using VITCTRL=BASE, the existing internal trace table is used for the default options. If you are using VITCTRL=FULL, the existing internal trace table is used but the default options are disabled.</p>
External only	<ul style="list-style-type: none"> • MODIFY NOTRACE,TYPE=VTAM,OPTION=END,MODE=EXT or MODIFY NOTRACE,TYPE=VTAM,OPTION=ALL,MODE=EXT • MODIFY NOTRACE,TYPE=VTAM,MODE=EXT <p>External trace recording is stopped and all 8 K buffers are freed.</p>
Both internal and external	<ul style="list-style-type: none"> • MODIFY NOTRACE,TYPE=VTAM,OPTION=ALL <p>If you are using VITCTRL=BASE, the existing internal trace table is used for the default options. If you are using VITCTRL=FULL, the existing internal trace table is used but the default options are disabled.</p>
<p>Notes:</p> <ol style="list-style-type: none"> 1. Exceptions continue to be recorded internally. 2. If you attempt to stop the VIT using MODIFY NOTRACE, OPTION=END, and the VIT does not stop, specify MODIFY NOTRACE,OPTION=FORCE to stop the VIT. 	

Chapter 5. SNA Messages

IST messages for VTAM network operators IST001I – IST399I

IST315I VTAM INTERNAL TRACE ACTIVE – MODE = *modename*, SIZE = *size unit*

Explanation: This message is part of a group of messages. Possible message groups follow.

- This message group is issued in response to a MODIFY TRACE,TYPE=VTAM command or MODIFY NOTRACE,TYPE=VTAM command .

Note: The IST2445I message will only be displayed when the VITCTRL value of FULL is in effect and is only associated with the VTAM internal trace. The IST2446I message will be displayed when disabling a VIT option contained in the STDOPPTS group with both VITCTRL value of FULL is in effect and an active CSDUMP with either a message or sense code trigger.

```
IST315I VTAM INTERNAL TRACE ACTIVE – MODE = EXT, SIZE = bfrnum BUFFERS
IST199I OPTIONS = {NONE|optionlist}
IST315I VTAM INTERNAL TRACE ACTIVE – MODE = INT, SIZE = size MB
[IST2445I VTAM INTERNAL TRACE CONTROL IS IN FULL MODE]
IST199I OPTIONS = {NONE|optionlist}
[IST2446I DISABLING A VIT OPTION IN STDOPPTS GROUP WHILE CSDUMP ACTIVE]
IST1730I SUBTRACE subtrace ACTIVE UNDER TRACE OPTION traceopt
IST314I END
```

- This message group is issued in response to a DISPLAY TRACES command when TYPE=VTAM or TYPE=ALL is specified on the command.

Note: The IST2445I message will be displayed only when the VITCTRL value of FULL is in effect and is only associated with the VTAM internal trace.

```
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE – MODE = EXT, SIZE = bfrnum BUFFERS
IST199I OPTIONS = {NONE|optionlist}
IST315I VTAM INTERNAL TRACE ACTIVE – MODE = INT, SIZE = size MB
[IST2445I VTAM INTERNAL TRACE CONTROL IS IN FULL MODE]
IST199I OPTIONS = {NONE|optionlist}
IST1730I SUBTRACE subtrace ACTIVE UNDER TRACE OPTION traceopt
IST314I END
```

IST350I

This message identifies the type of information shown in the display. For this message group, *type* is always TRACES,TYPE=VTAM, and the display contains the status of the VTAM internal trace.

IST315I

- *modename* is EXT (external) or INT (internal) and indicates where the VTAM internal trace data is recorded.
 - If **MODE = EXT**:
 - The external trace is writing records to a generalized trace facility (GTF) data set.
 - *bfrnum* specifies the number of 8K GTF buffers that VTAM is using for external trace processing. VTAM will accumulate approximately 8K of external trace data prior to sending the data to GTF via GTRACE. If 0 is indicated then VTAM is sending each trace record (or logical group of trace records) individually to GTF via GTRACE. Running in this mode should be avoided due to the large system overhead involved. It is only provided for backward compatibility reasons.
 - *unit* is always BUFFERS for **MODE = EXT**.
 - If **MODE = INT**:
 - The internal trace is writing records in an internal trace table.
 - *size* specifies the number of megabytes allocated for the internal trace table. When this area has been filled, the table wraps.

IST315I

The default and minimum internal trace table size is 4 (megabytes).

Storage for the internal trace table is obtained from the 64-bit common area.

- *unit* is always MB for **MODE = INT**.

| IST2445I

| VTAM issues this message when a value of FULL is coded for the VITCTRL Start Option in z/OS Communications Server: SNA Resource Definition Reference. VTAM only includes this message when *modename* is INT on message IST315I.

| When VTAM Start Option VIT Control (VITCTRL) is set to FULL, all trace options are under the user's full control. VTAM only starts the default set of VIT options, as defined in the VIT option set STDOPPTS, during VTAM start processing or when another VIT option set is activated for internal mode VIT processing. In addition, *optionlist* in message IST199I contains the current set of VIT options exactly as specified by the user. When a CSDUMP message or code trigger is active the following exceptions apply to a user's full control of the internal VIT:

- For VTAM start processing the VIT option set STDOPPTS will be enabled.
- Cannot disable the VIT MSG option with the MODIFY NOTRACE command. internal VTAM VIT

| IST2446I

| VTAM issues this message when disabling a VIT option contained in the STDOPPTS group with both VITCTRL=FULL in effect and an active CSDUMP with either a message or sense code trigger. See z/OS Communications Server: SNA Resource Definition Reference. VTAM only includes this message when MODE=INT on message IST315I.

| When VTAM Start Option VIT Control (VITCTRL) is set to FULL and there is an active CSDUMP with either a message or sense code trigger then all trace options except for MSG are under the user's full control. In addition, *optionlist* in message IST199I contains the current set of VIT options exactly as specified by the user.

| IST199I

| This message displays the functions being traced. A list of all user-selected options being traced for TYPE=VTAM appears in this message.

- If *modename* is INT on message IST315I, and message IST2445I is displayed, *optionlist* includes the list of user-selected options exactly as specified by the user. If **OPTIONS=NONE**, no user-selected internal trace options are active.
- If *modename* is INT on message IST315I, and message IST2445I is not displayed, *optionlist* displays the list of user-selected options being traced, but additional VTAM default trace options (API, PIU, MSG,SSCP, CIO, and NRM) are also active even if they do not appear in *optionlist*. If **OPTIONS= NONE**, no user-selected internal trace options are active, and only exception conditions and VTAM default trace options are being traced.
- If *modename* is EXT on message IST1315I, *optionlist* includes the list of user-selected options exactly as specified by the user.

optionlist can include the following options:

API

Application program interface

APPC

LU 6.2 communication

CFS

Coupling facility services

CIA

Channel I/O Auxiliary

CIO

Channel I/O

CMIP

CMIP services and the VTAM topology agent

CSM	Communications storage manager
ESC	Execution sequence control
HPR	High performance routing
LCS	LAN channel station
LOCK	VTAM locking services
MSG	Message to operator
NRM	Network resource management
PIU	Path information unit
PSS	Process scheduling services
SMS	Storage management services
SSCP	System services control point
TCP	VTAM to TCP/IP interface events
VCNS	VTAM Common Network Services
XBUF	Extended buffer list
XCF	Cross coupling facility

See the z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures for more information about VTAM internal trace options.

IST1730I

subtrace is the SUBTRACE type currently active. The values for *subtrace* are **TREE** and **ARBP**.

traceopt is the trace option associated with the SUBTRACE type. The values for *traceopt* are **SSCP** and **HPR**.

This message displays an active SUBTRACE type and its associated trace option. The trace option must be specified on the command used to activate or deactivate the subtrace type.

The SUBTRACE type TREE under trace option SSCP traces APPN routing trees used for APPN sessions.

The SUBTRACE type ARBP under trace option HPR traces ARBP entries for all RTP connections utilizing the ARBP algorithm.

System action:

- If this message is in response to a MODIFY TRACE command or a TRACE start option, the VTAM internal trace (VIT) begins.
- If this message is in response to a DISPLAY TRACES command, other processing continues.

| **Operator response:** If the setting of the VITCTRL start option is not correct, issue MODIFY VTAMOPTS to correct the start option value. If the list of VIT options is not the desired set of VIT options, issue the **MODIFY TRACE,TYPE=VTAM** command to set the correct VIT options. If you want to dump the trace records, use your installation-defined procedure or obtain instructions from the system programmer. See z/OS Communications Server:

| SNA Diagnosis Vol 1, Techniques and Procedures for more information on the VTAM internal trace.

System programmer response: None.

Routing code: 2

Descriptor code: 5

IST messages for VTAM network operators IST2000I – IST2446I

| IST2445I VTAM INTERNAL TRACE CONTROL IS IN FULL MODE

| **Explanation:** VTAM issues this message when a value of FULL is coded for the VITCTRL Start Option in z/OS Communications Server: SNA Resource Definition Reference. VTAM® issues this message as part of a group of messages. The first message in the group is IST315I. See the explanation of that message for a complete description.

| **System action:** None.

| **Operator response:** If the VIT options are not what are expected then the operator can choose to issue a MODIFY TRACE command to set the desired values. For additional information refer to the VITCTRL Start Option in z/OS Communications Server: SNA Resource Definition Reference.

| **System programmer response:** None.

| **User response:** None.

| **Problem determination:** None.

| **Source:** z/OS Communications Server SNA

| **Module:** Use the modifiable VTAM start option MSGMOD=YES (*f procname,vtamopts,msgmod=yes* or *f procname,msgmod=yes*) to display the issuing module when a message is issued. See z/OS Communications Server: SNA Operation and z/OS Communications Server: SNA Resource Definition Reference for more information about start options.

| **Routing code:** 2

| **Descriptor code:** 5

| **Automation:** This message is not a candidate for automation.

| IST2446I DISABLING A VIT OPTION IN STDOPPTS GROUP WHILE CSDUMP ACTIVE

| **Explanation:** VTAM issues this message when disabling a VIT option contained in the STDOPPTS group with both VITCTRL=FULL in effect and an active CSDUMP with either a message or sense code trigger. For this scenario all trace options except for MSG may be disabled by the user. It is recommended that all the VIT options in the STDOPPTS group remain enabled while an active CSDUMP waiting on a trigger exists for later problem analysis.

| **System action:** None.

| **Operator response:** If the VIT options are not what are expected, the operator can choose to issue a MODIFY TRACE command to set the desired values, although VTAM will continue to force the MSG trace option to be active as long as an active CSDUMP trigger exists.

| **System programmer response:** None.

| **User response:** None.

| **Problem determination:** Not applicable.

| **Source:** z/OS Communications Server SNA

| **Module:** Use the modifiable VTAM start option MSGMOD=YES (*f procname,vtamopts,msgmod=yes* or *f procname,msgmod=yes*) to display the issuing module when a message is issued. See z/OS Communications Server: SNA Operation and z/OS Communications Server: SNA Resource Definition Reference for more information about start options.

| **Routing code:** 2

| **Descriptor code:** 5

| **Automation:** This message is not a candidate for automation.

| **Example:**

| IST2446I DISABLING A VIT OPTION IN STDOPPTS GROUP WHILE CSDUMP ACTIVE

ISTH messages for IBM Health Checker for z/OS

| **ISTH005I** VTAM Internal Trace (VIT) *vit_opt* option is active. IBM prefers that this option is always active, but if CPU is constrained then you can elect to stop this trace option.

| **Explanation:** Check CSVTAM_VIT_OPT_STDOPPTS ran successfully and found no exceptions. All of the trace options defined in the *vit_opt* option are active.

| In the message text:

| *vit_opt*

| Can be one of the following values:

| **PSS**

| VTAM start option VITCTRL has a value of BASE (either specified or defaulted) and the VIT PSS option is currently active.

| **STDOPPTS**

| VTAM start option VITCTRL has a current value of FULL and the all of the VIT options in the STDOPPTS group are currently active.

| **System action:** The system continues processing.

| **Operator response:** Not applicable.

| **System programmer response:** Not applicable.

| **User response:** Not applicable.

| **Problem determination:** Not applicable.

| **Source:** z/OS Communications Server

| **Module:** ISTHCCK1

| **Routing code:** Not applicable.

| **Descriptor code:** Not applicable.

| **Example:** Not applicable.

| **ISTH006E** VTAM Internal Trace (VIT) option *vit_opt* is not active

| **Explanation:** Check CSVTAM_VIT_OPT_STDOPPTS determined that the VIT *vit_opt* option is not active. IBM suggests that this option should always be active for VIT tracing for optimal problem determination.

| In the message text:

| *vit_opt*

| Can be one of the following values:

| **PSS**

| VTAM start option VITCTRL has a value of BASE (either specified or defaulted) and the VIT PSS option is not currently active.

| **STDOPPTS**

| VTAM start option VITCTRL has a value of FULL and the VIT options in the STDOPPTS group are not all currently active.

| **System action:** The system continues processing.

| **Operator response:** Issue a MODIFY TRACE,TYPE=VTAM,MODE=INT,OPTION=PSS command to activate PSS tracing. You should use the MODIFY NOTRACE command to deactivate the PSS option only if requested to do so by IBM support.

- | See the MODIFY TRACE command information in z/OS Communications Server: SNA Operation for information about the MODIFY TRACE command.
- | See the TRACE for MODULE, STATE (with OPTION), or VTAM internal trace information in z/OS Communications Server: SNA Resource Definition Reference for more information about setting the VIT start option values.
- | **System programmer response:** Not applicable.
- | **User response:** Not applicable.
- | **Problem determination:** To display the VIT trace options that are currently active, issue the D NET,TRACES,TYPE=VTAM command.
- | **Source:** z/OS Communications Server
- | **Module:** ISTHCCK1
- | **Routing code:** Not applicable.
- | **Descriptor code:** 12
- | **Example:** Not applicable.

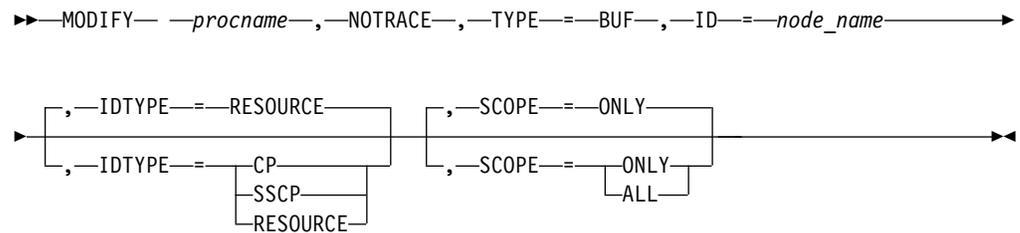
Chapter 6. Quick Reference

VTAM commands

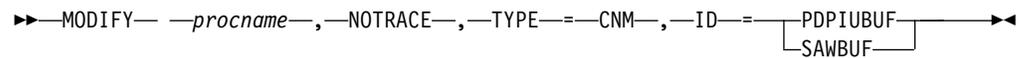
Operator modify commands

F NOTRACE command

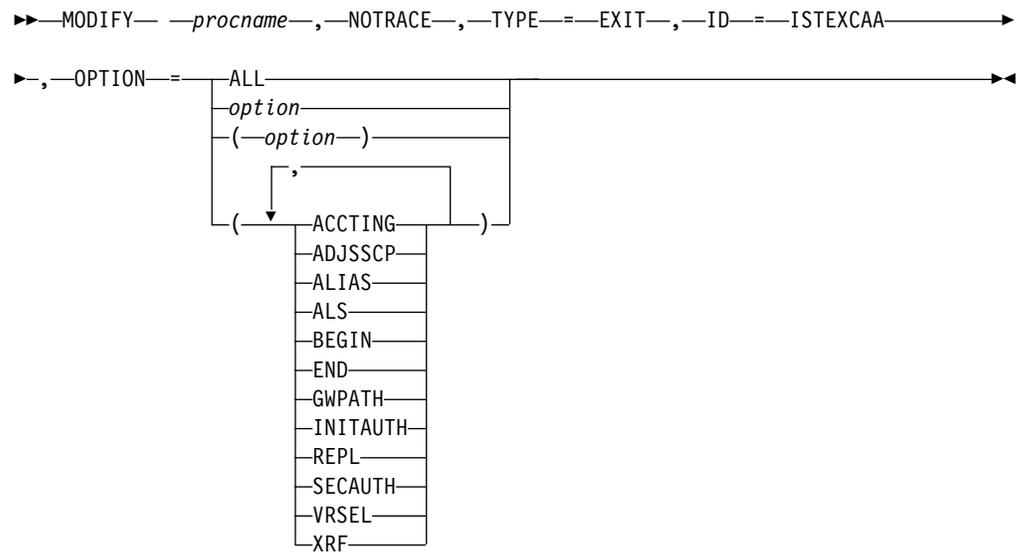
Stop a buffer contents trace:

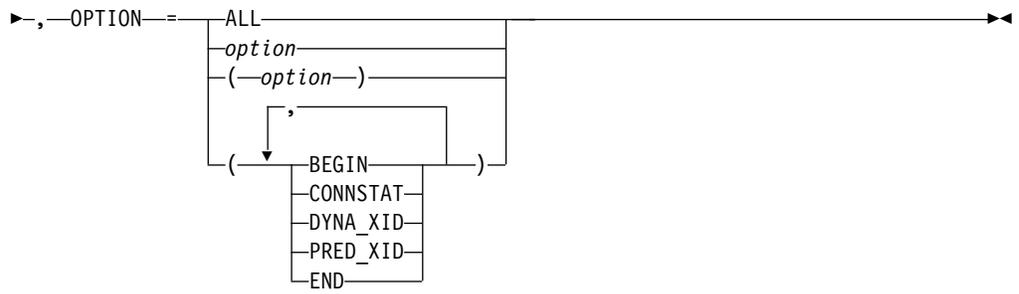


Stop a communication network management trace:

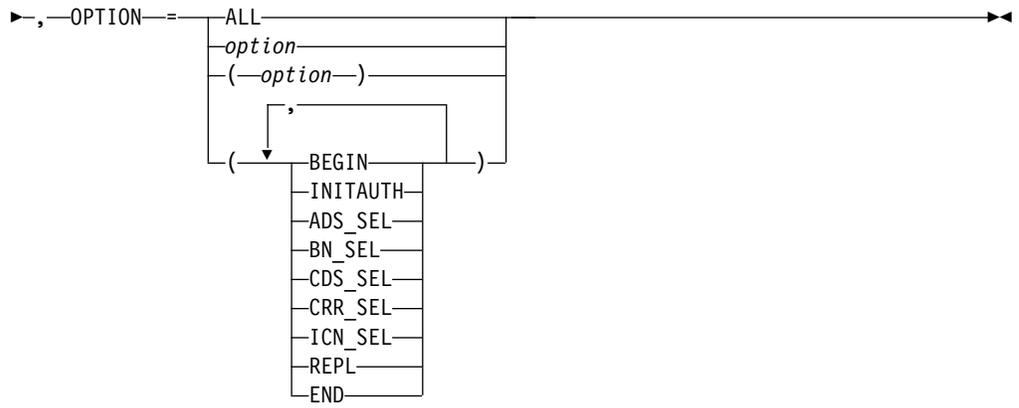


Stop a user Exit buffer trace:



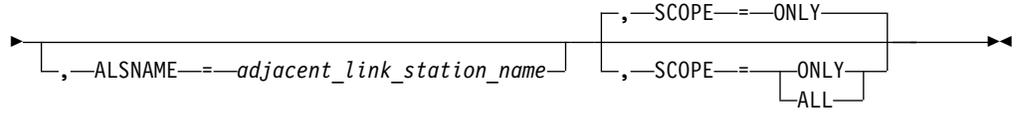


►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—EXIT—, —ID—=—ISTEXCDM—►►



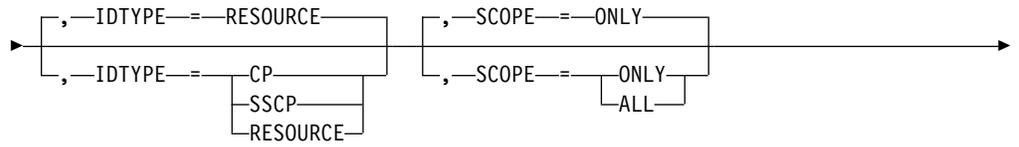
Stop a generalized PIU trace:

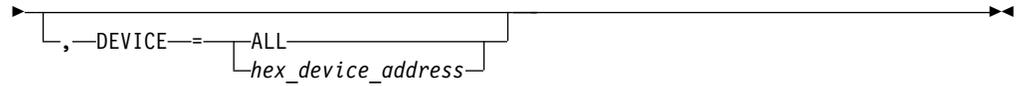
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—GPT—, —ID—=—*node_name*—►►



Stop an input/output trace:

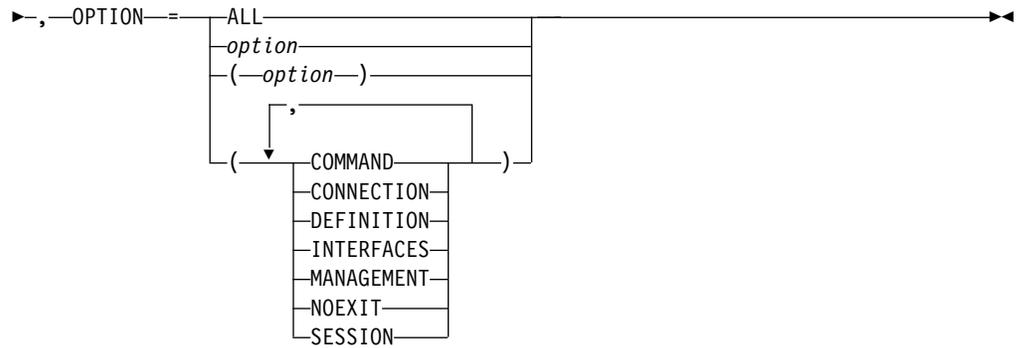
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=—IO—, —ID—=—*node_name*—►►





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` →

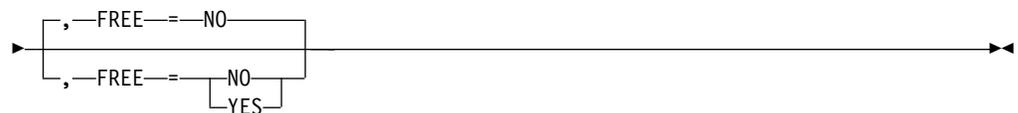
Stop OSA-Express2 diagnostic data synchronization for an OSA-Express2 adapter:

►► `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:

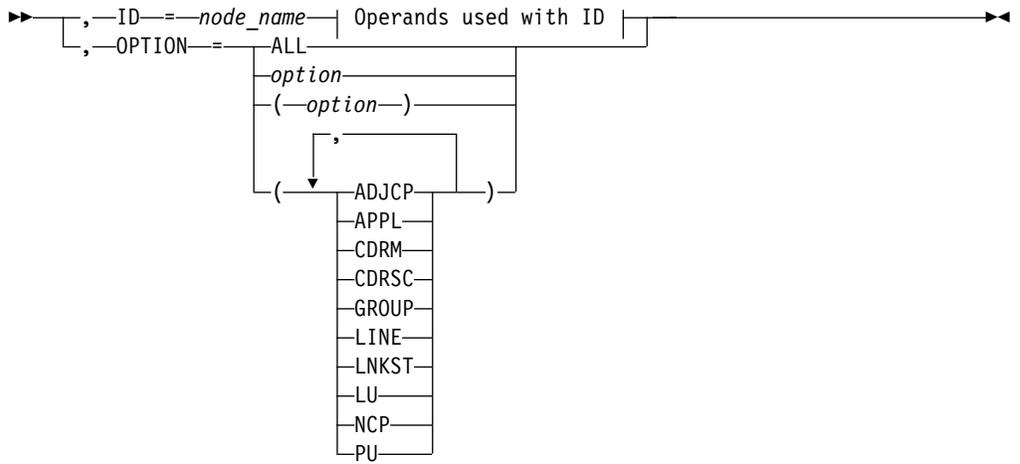
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=*SIT*—, —ID—=*line_name*—►►

Stop an SMS (buffer use) trace:

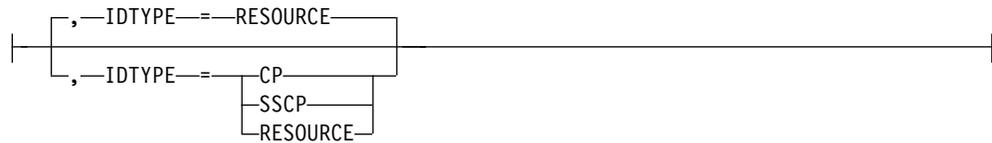
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=*SMS*— [, —ID—=*VTAMBUF*] ►►

Stop a resource state trace:

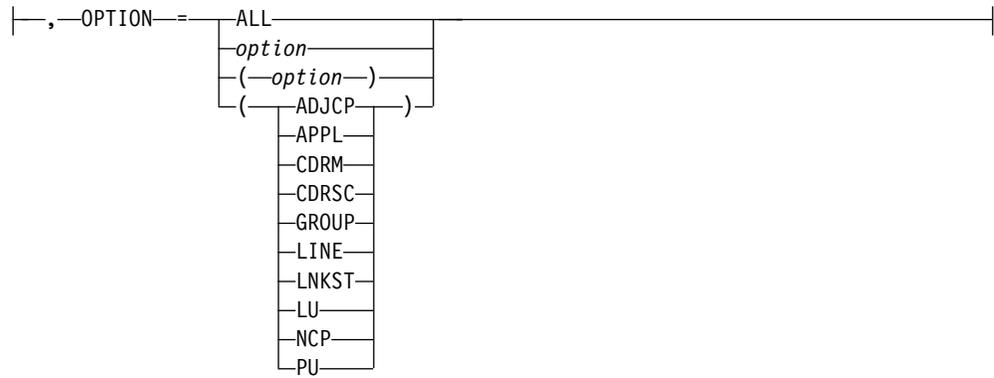
►► MODIFY — *procname* —, —NOTRACE—, —TYPE—=*STATE*—►►



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—►►



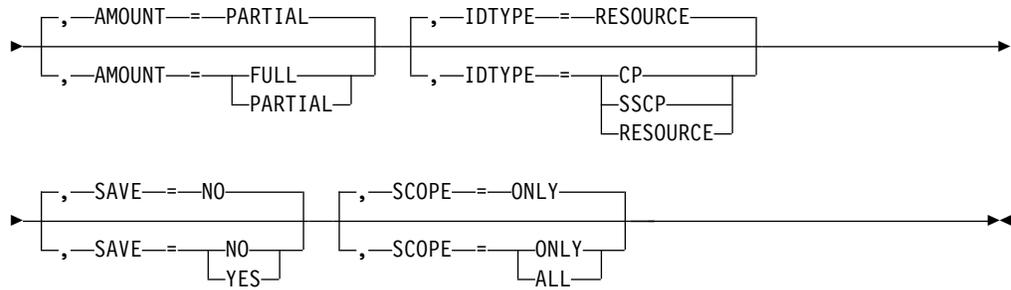
Notes:

- 1 If you do not specify the mode, both internal and external recording are stopped. However, when operating with VITCTRL=BASE 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 XCFPTS.
- 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 (*ciagrpoppt*) that include CIA as an individual option equivalent. The applicable group options are EEOPTS, HPDTPPTS, HPROPTS, QDIOOPTS, TCPOPTS, and XCFPTS.
- 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 (*ciagrpoppt*) 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 XCFPTS.
- 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.
- 10 For internal recording (MODE=INT), VTAM manages and displays the setting of the API, CIO, MSG,NRM, PIU and SSCP VIT options based on the level of VIT control being used. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.

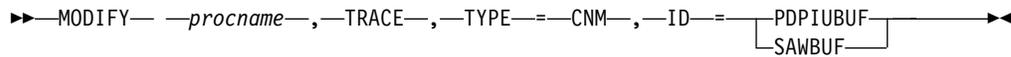
F TRACE command

Start or modify a buffer contents trace:

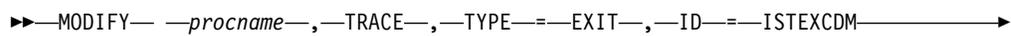
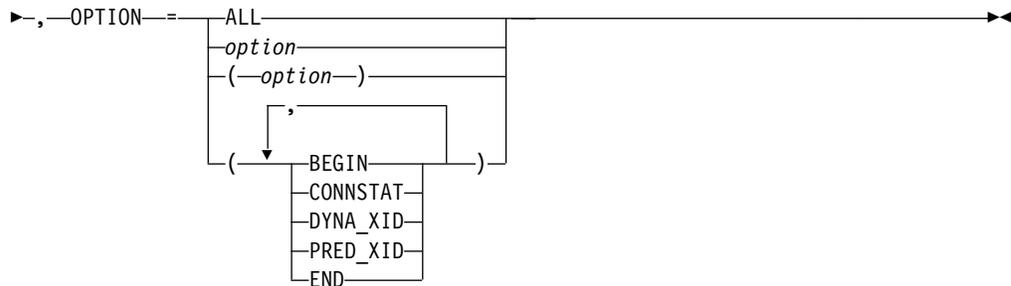
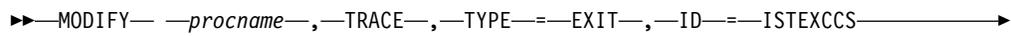
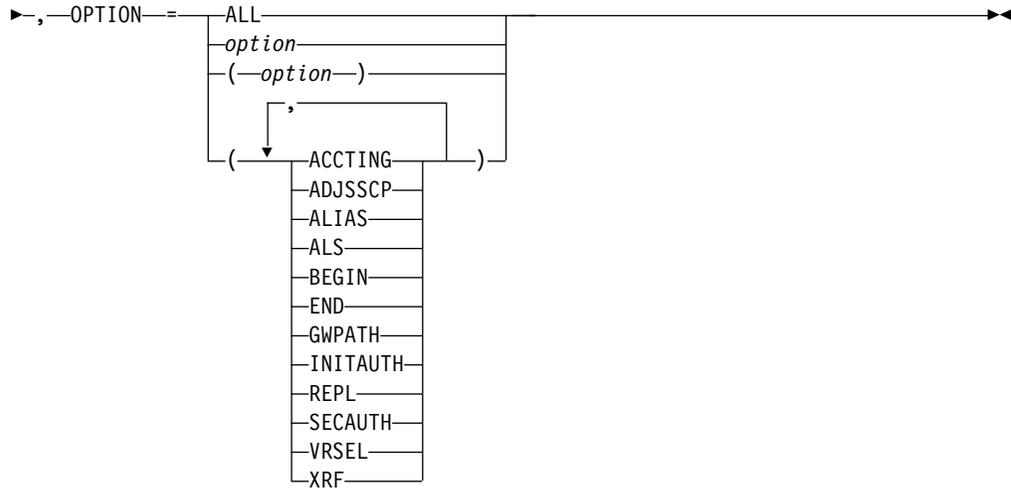
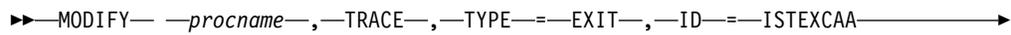
►►—MODIFY— —*procname*—,—TRACE—,—TYPE—==—BUF—,—ID—==—*node_name*—————►

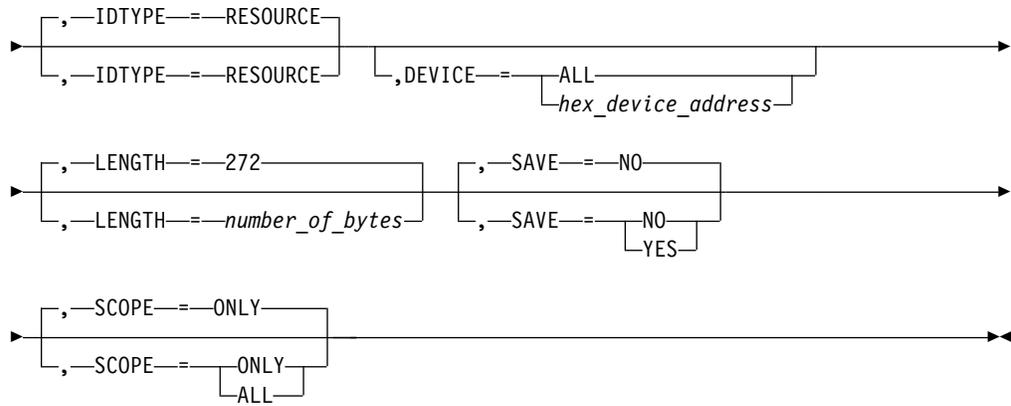


Start or modify a communication network management trace:

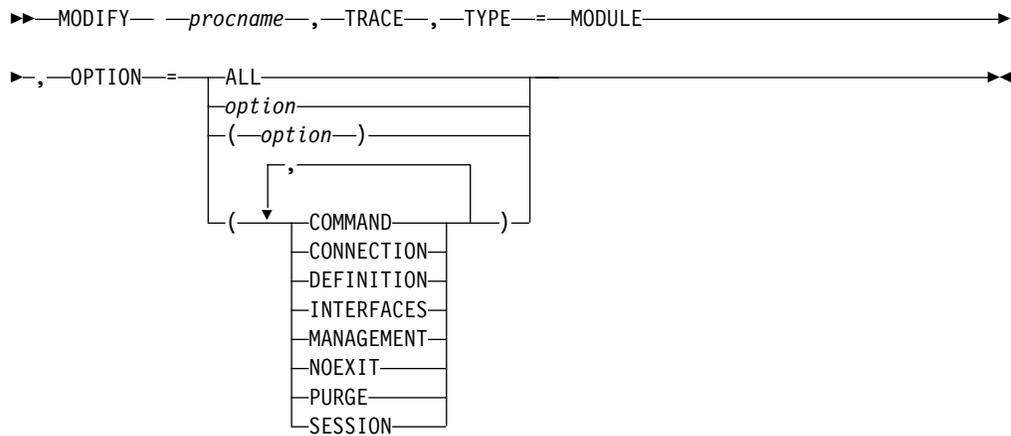


Start or modify a user Exit buffer trace:

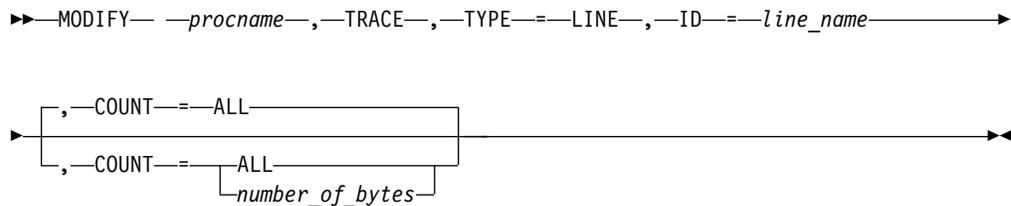




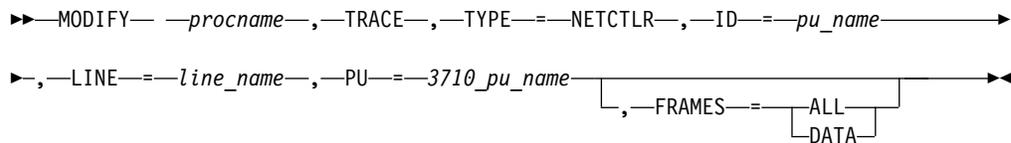
Start or modify a module trace:



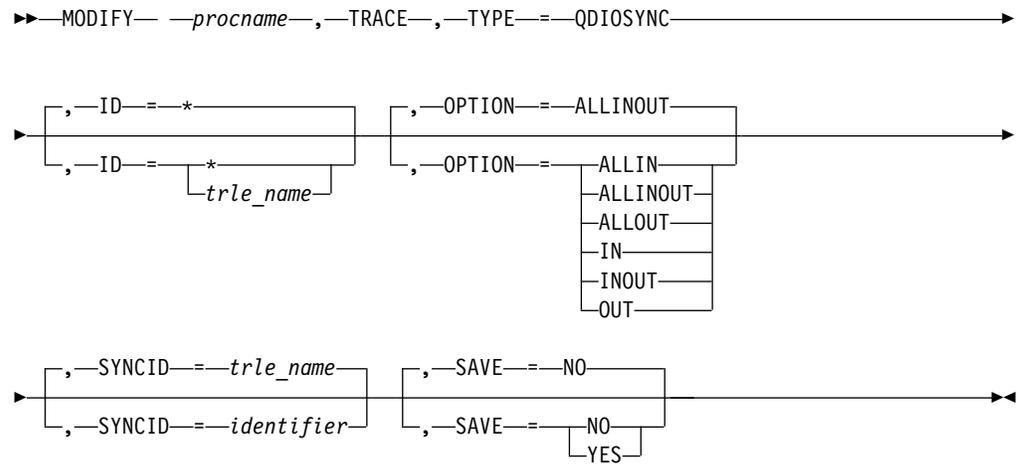
Start or modify an NCP line trace:



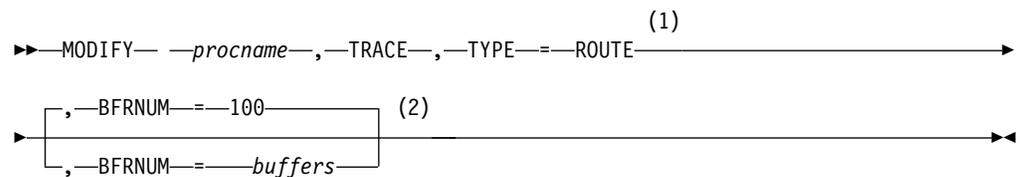
Start or modify a 3710 Network Controller line trace:



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



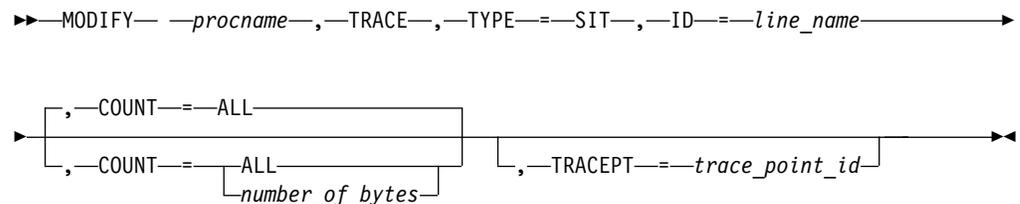
Start the APPN route selection trace in a network node:



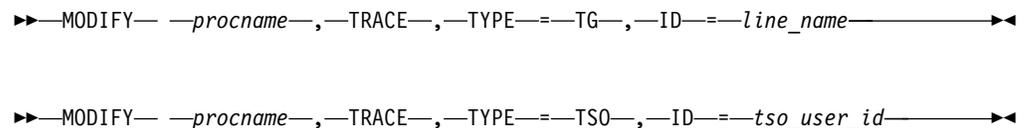
Notes:

- 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:

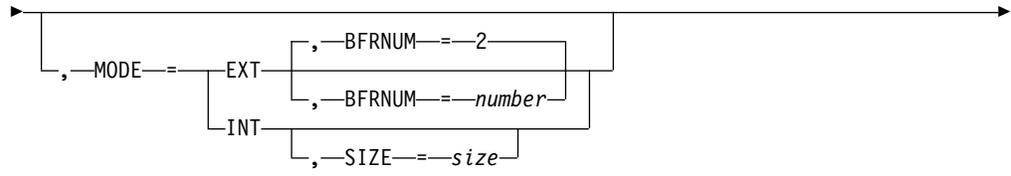


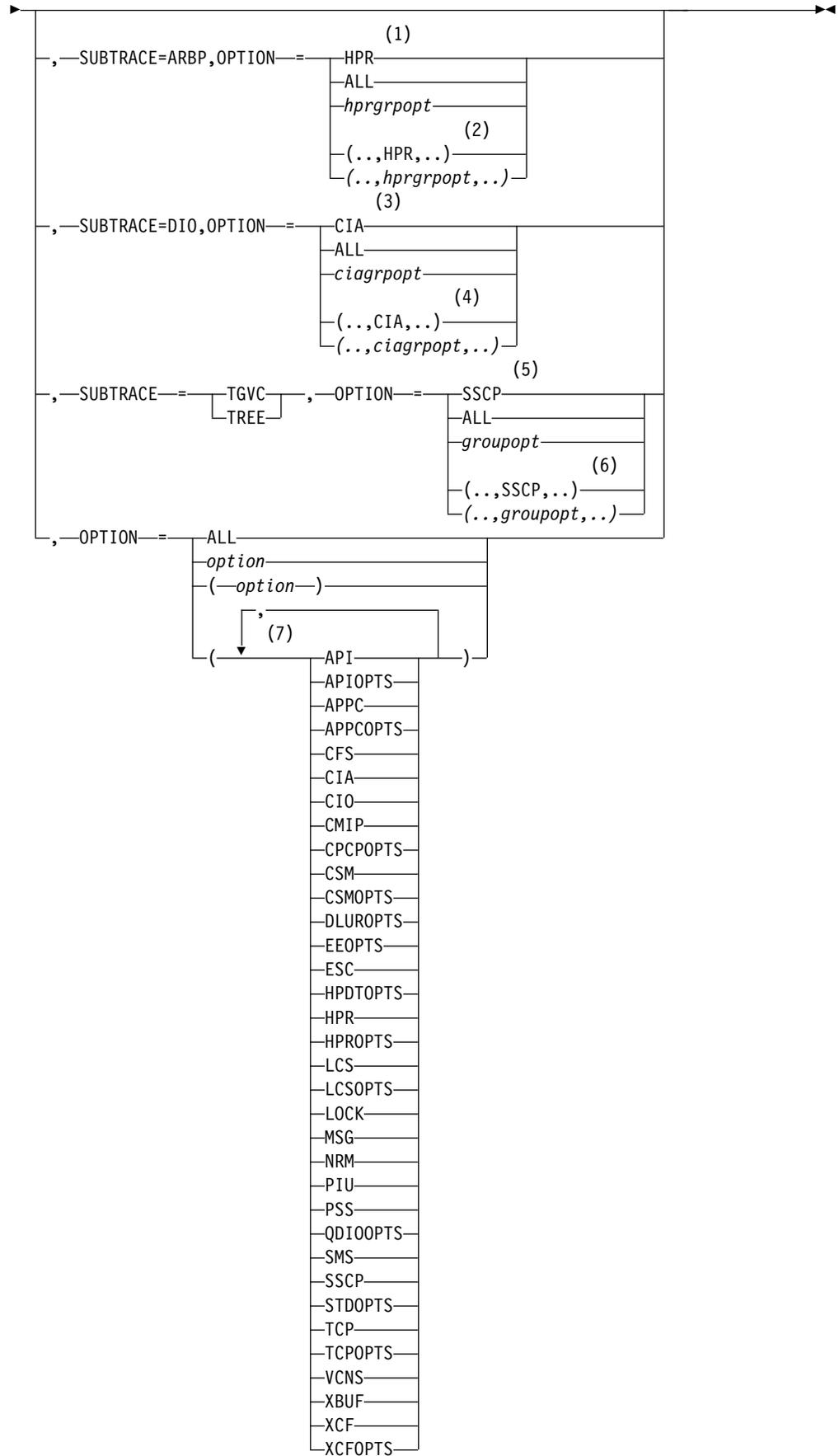
Start or modify a transmission group trace:



Start or modify the VTAM internal trace:







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.
- 7 If you are operating in VIT Control FULL mode and you specify any of the group options (*groupopt*), the STDOPPTS group option is also started. See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for more information on VIT control options.

Start options

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

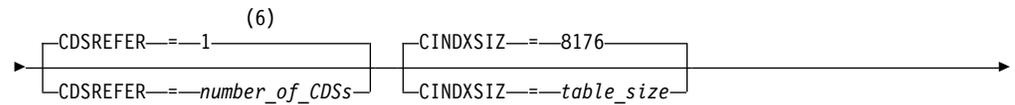
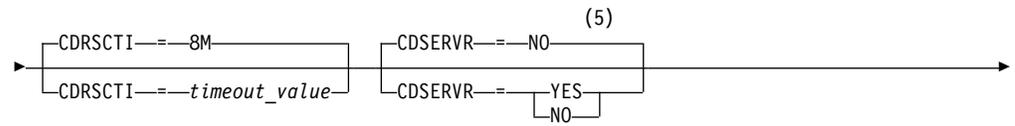
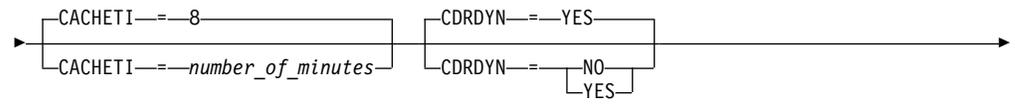
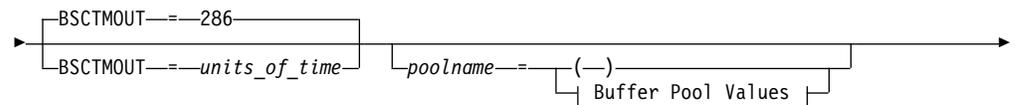
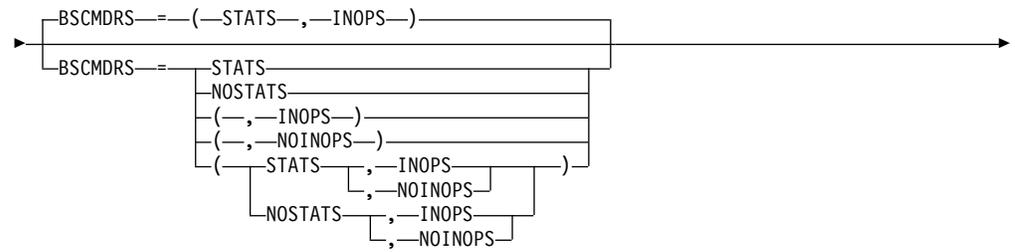
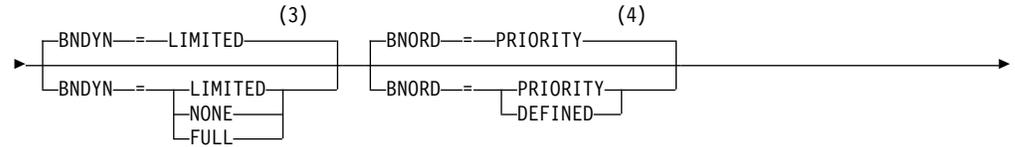
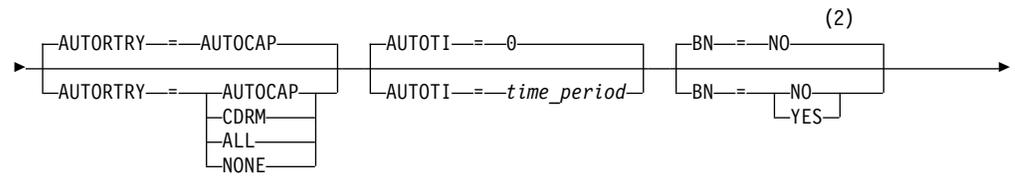
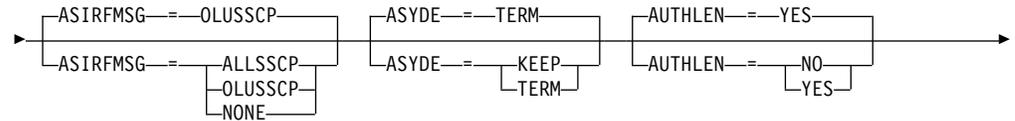
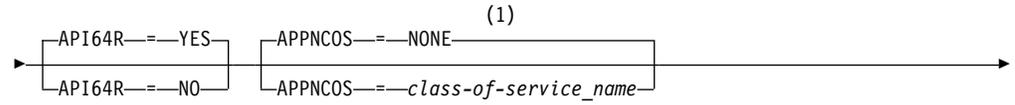
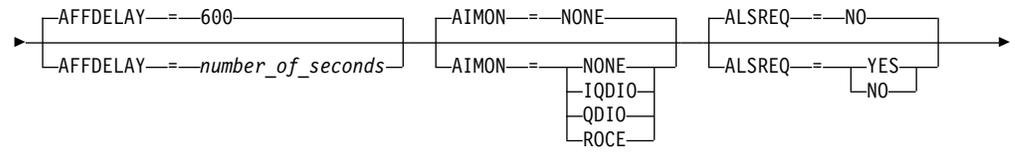
Precede the option list with three commas and enclose the group of options in parentheses.

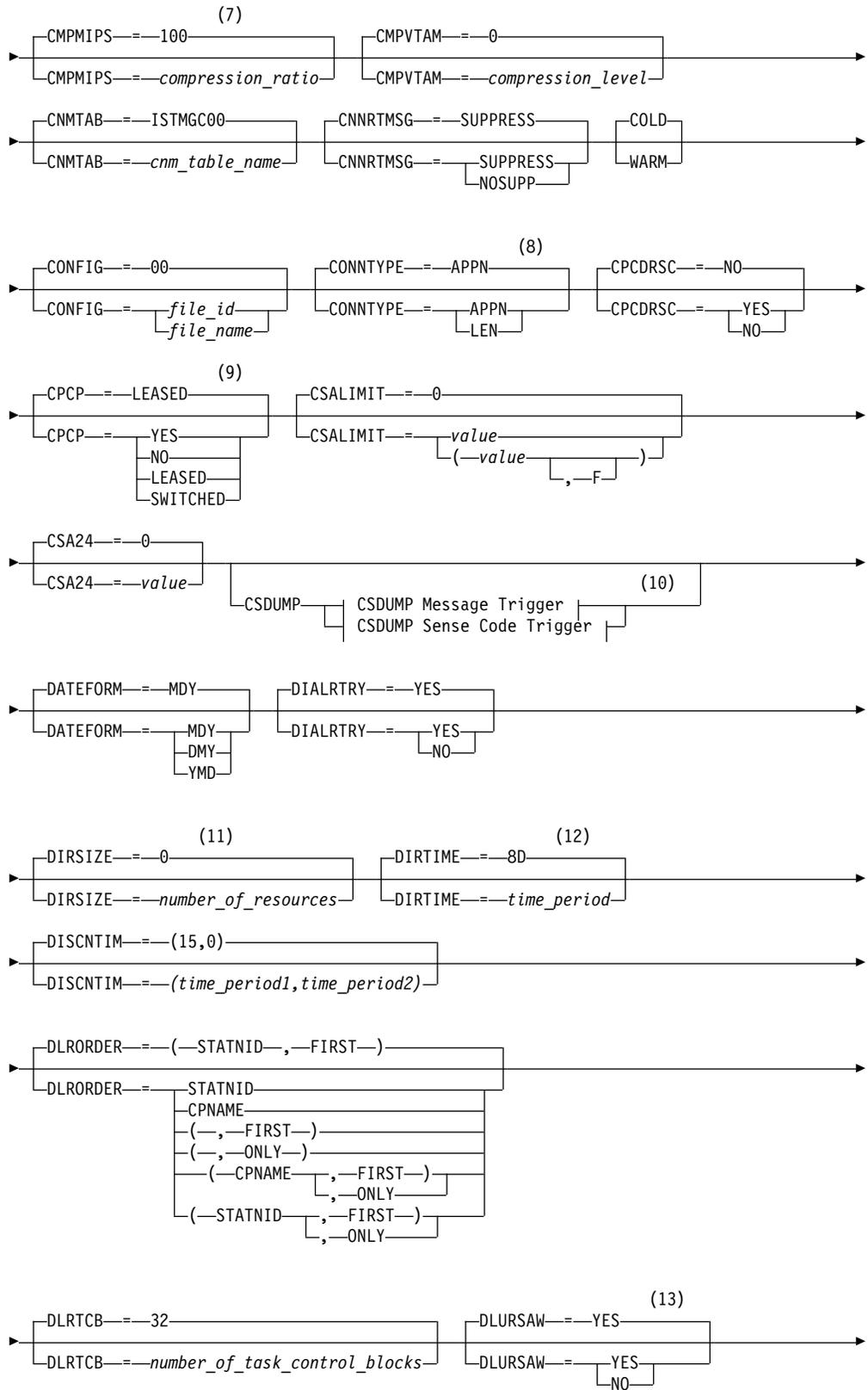
Start options that are entered on the START command must be separated by commas. Do not leave any blanks between options.

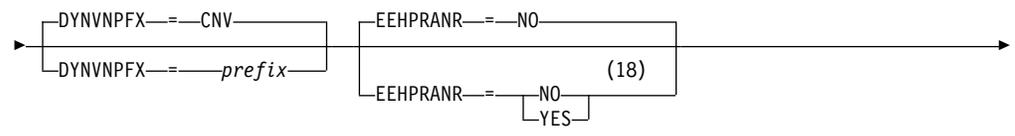
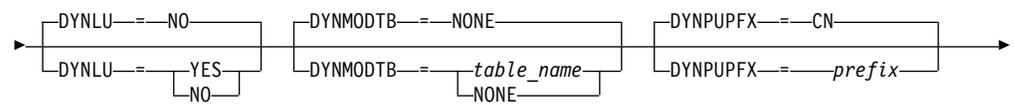
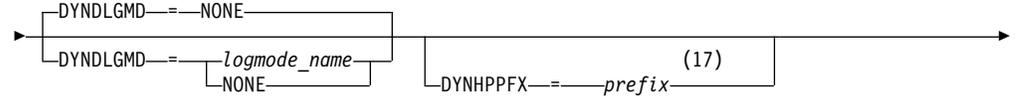
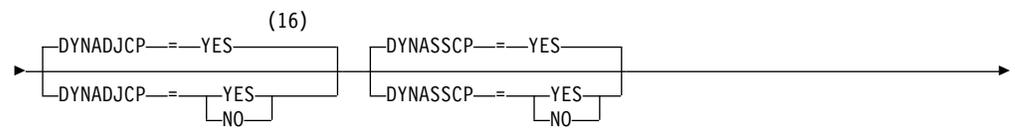
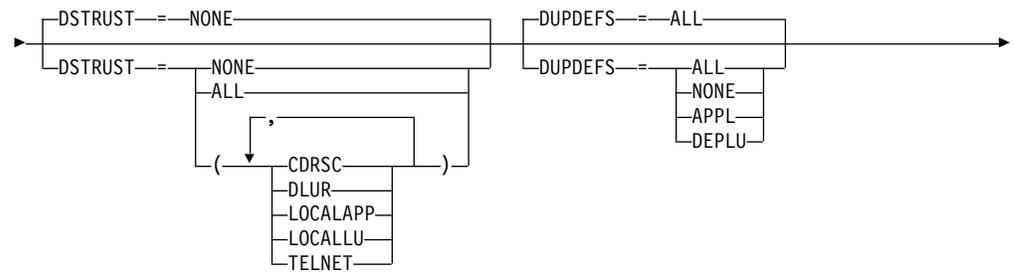
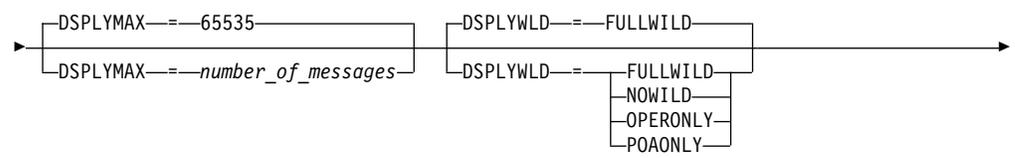
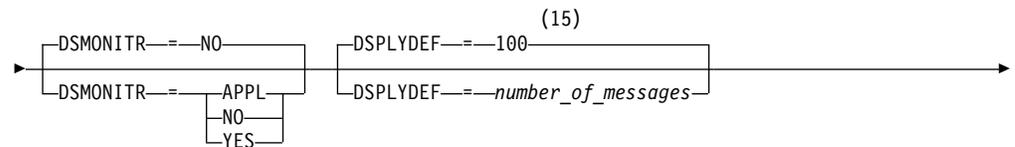
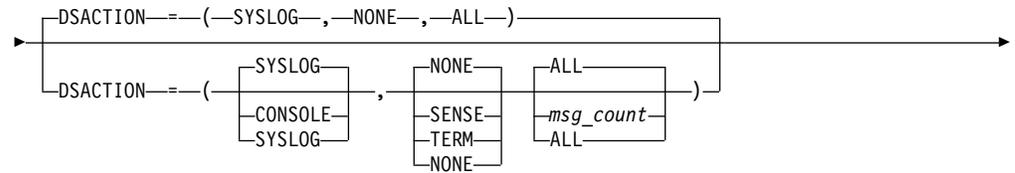
For more information on the START command, see z/OS Communications Server: SNA Operation.

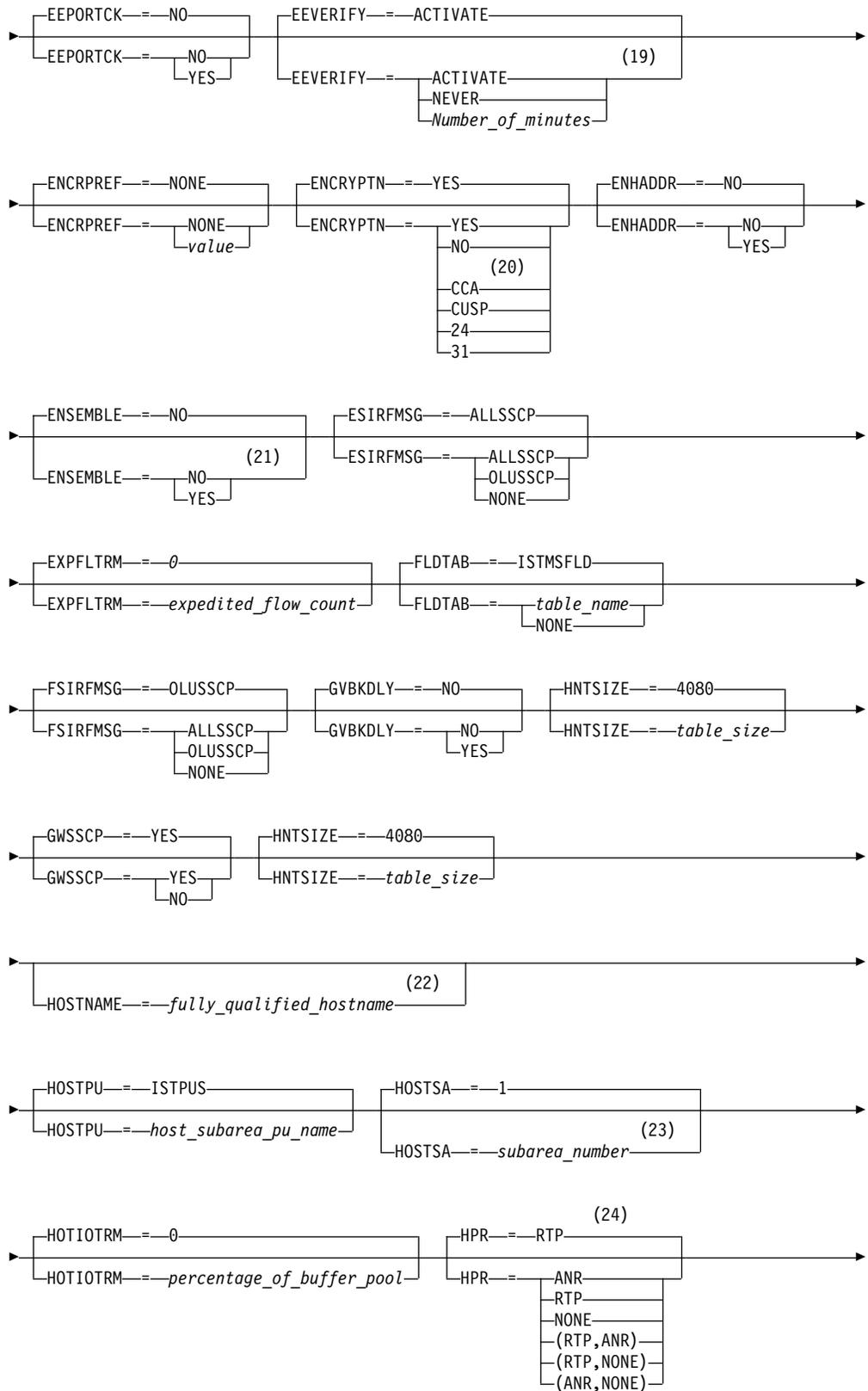
Options:

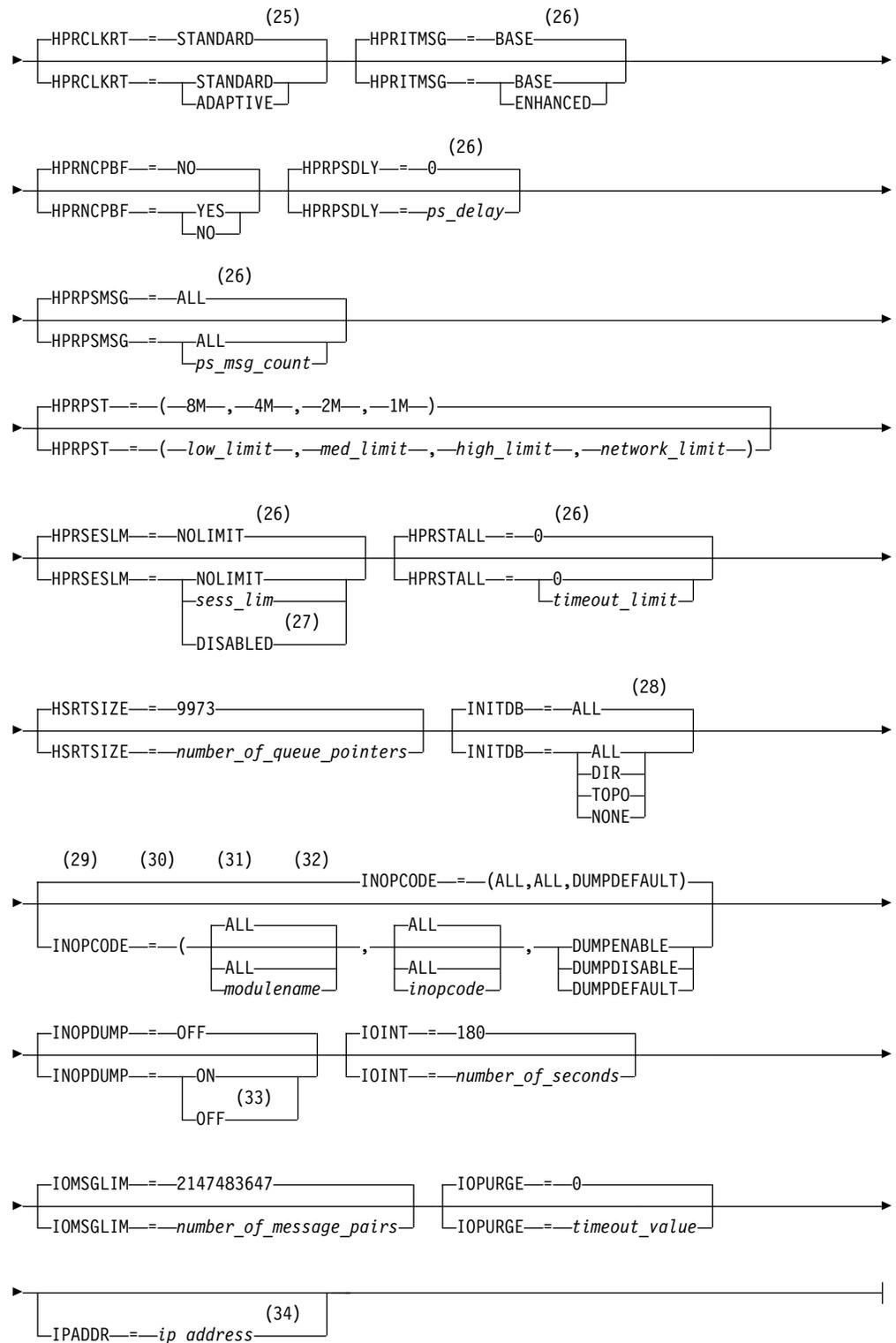
|—NETID—=—network_id—SSCPID=—sscp_id—SSCPNAME=—name—————→









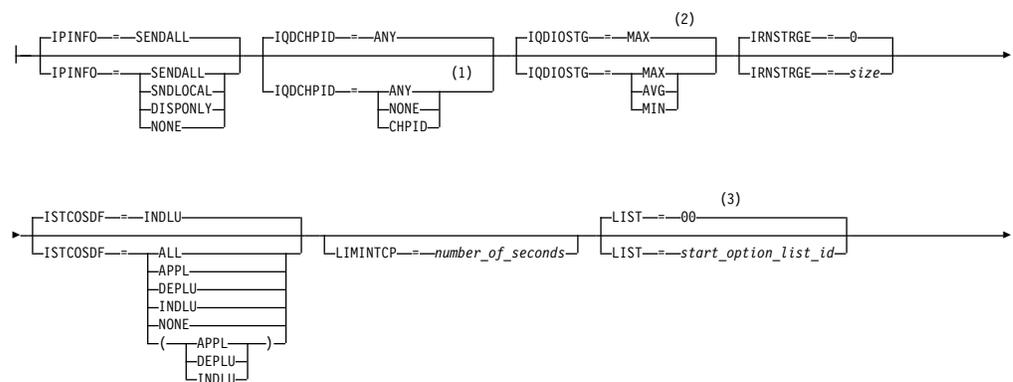


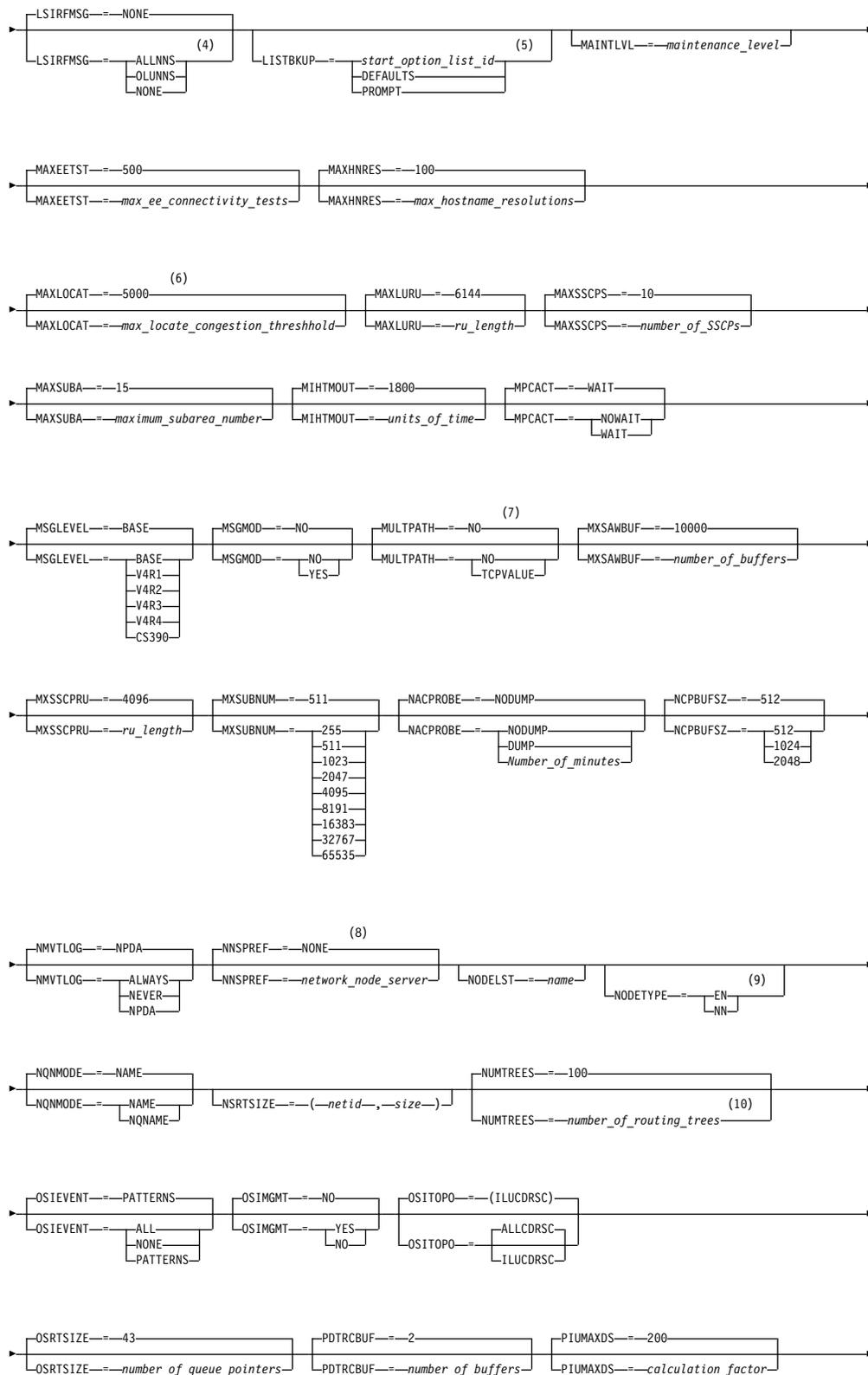
Notes:

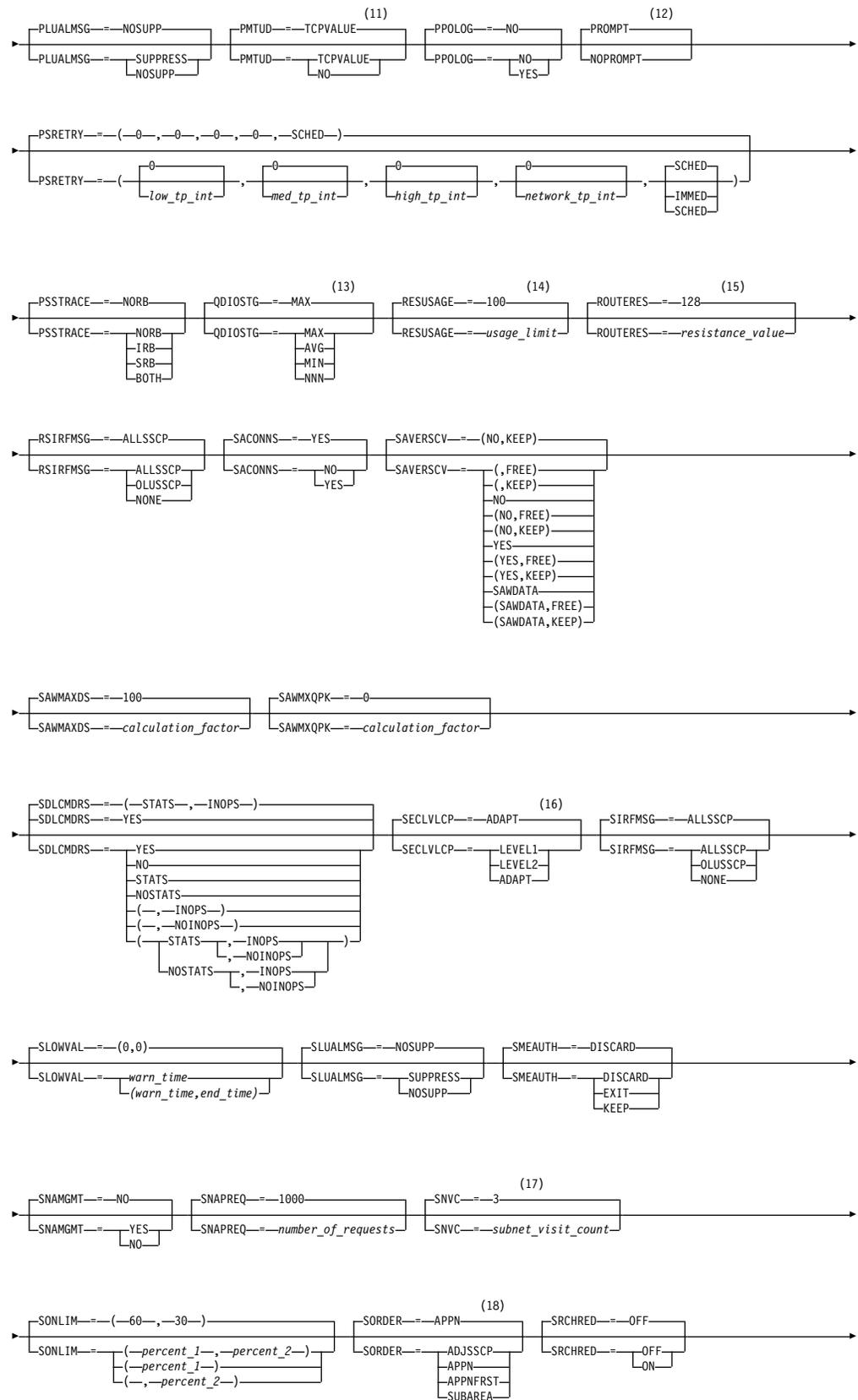
- 1 APPNCOS is meaningful only if the NODETYPE start option is also used.
- 2 BN is meaningful only if the NODETYPE=NN start option is also used.
- 3 BNDYN is meaningful only if the BN=YES start option is also used.

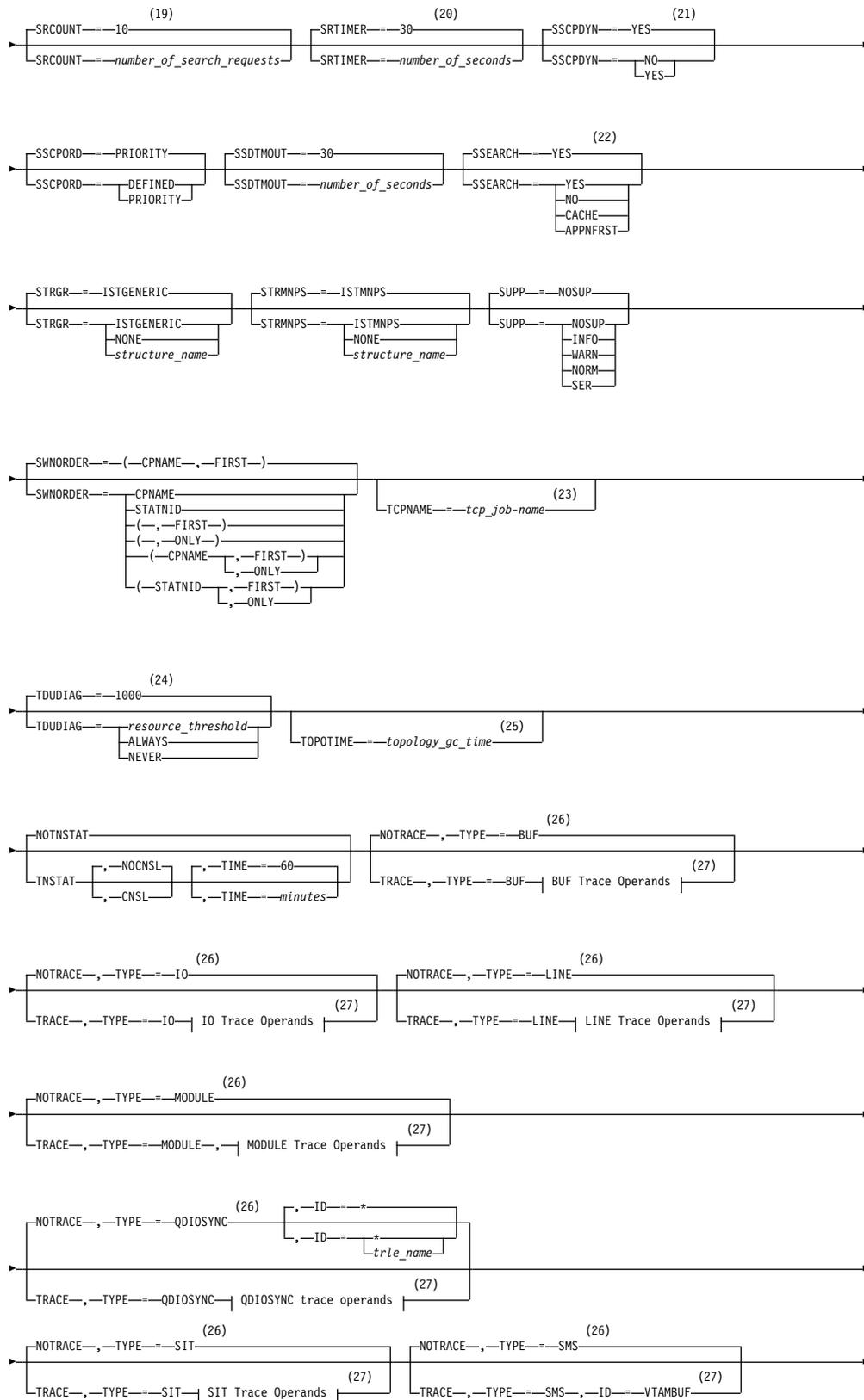
- 4 BNORD is meaningful only if the BN=YES start option is also used.
- 5 CDSERVER is meaningful only if the NODETYPE=NN start option is also used.
- 6 CDSREFER is meaningful only if the NODETYPE=NN and CDSERVER=NO start options are also used.
- 7 The CMPMIPS start option is meaningful only if the value 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 DSPLYMAX start option value is less than 100, that value is the default for DSPLYDEF.
- 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.

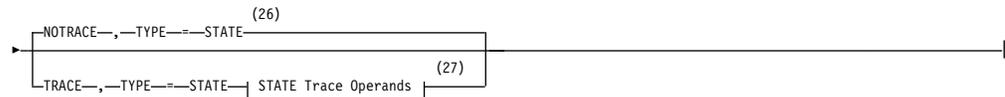
- 23 HOSTSA specifies the subarea number of this VTAM. If HOSTSA is not coded, then a default subarea number of 1 is used.
- 24 HPR is meaningful only if NODETYPE is also used.
- 25 HPRCLKRT=ADAPTIVE is meaningful only in Enterprise Extender configurations that have a defined capacity of 1 Gb (gigabit) 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.









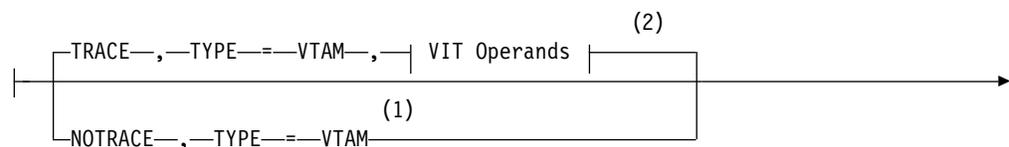


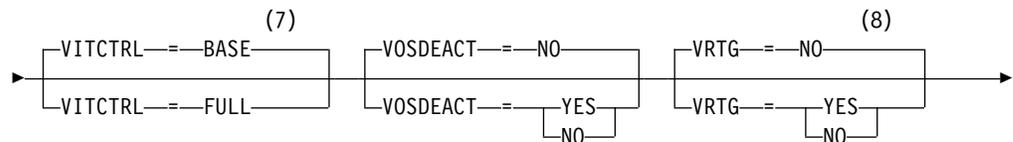
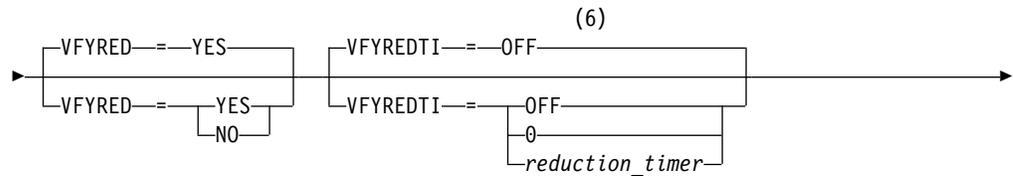
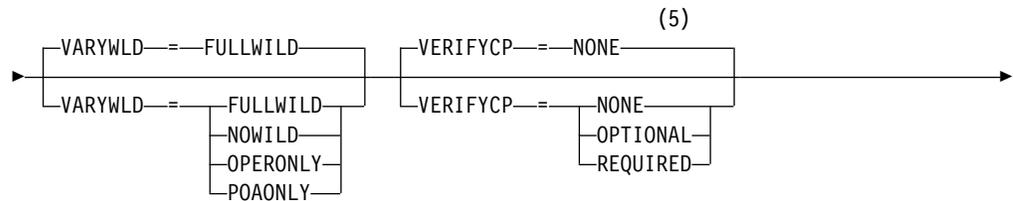
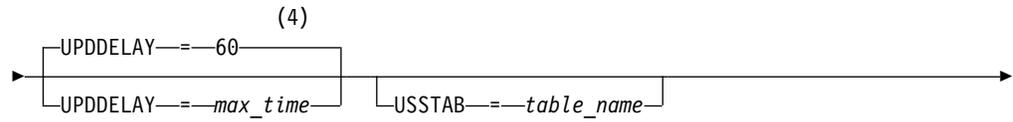
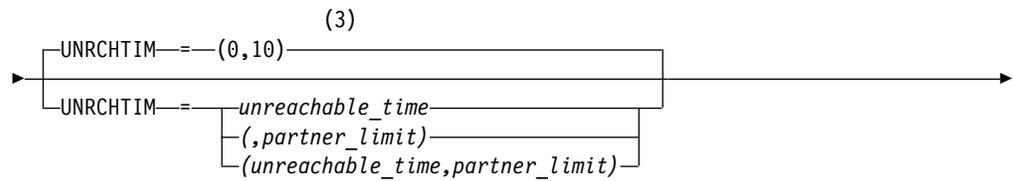
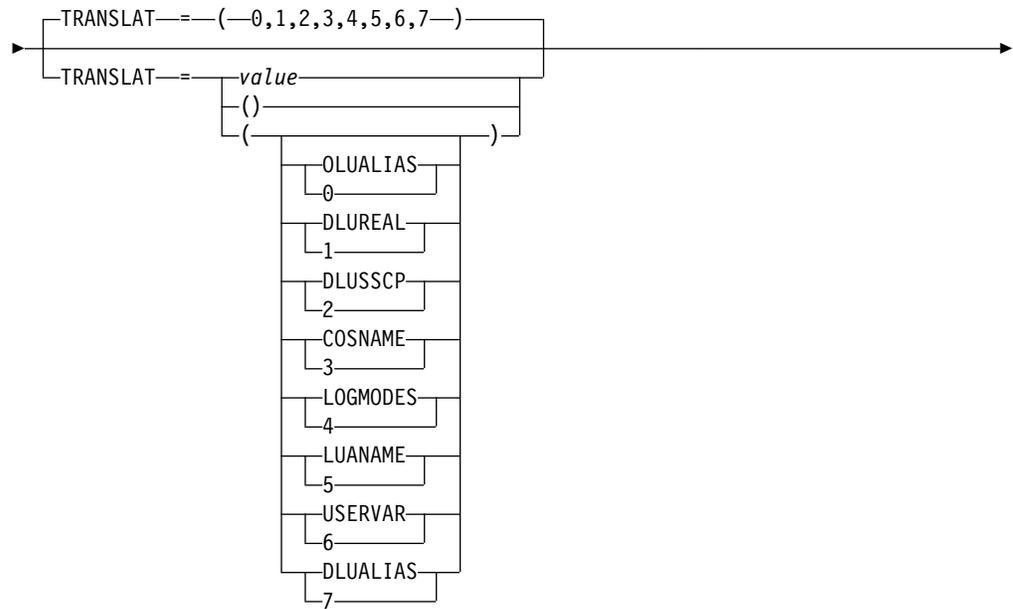
Notes:

- 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

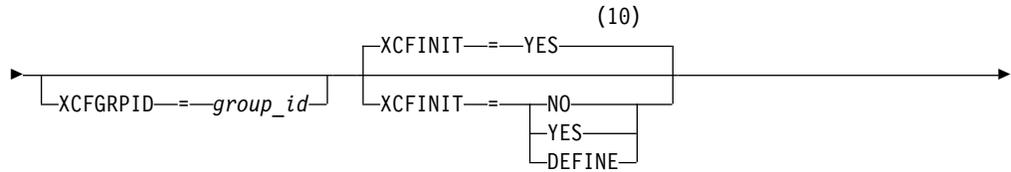
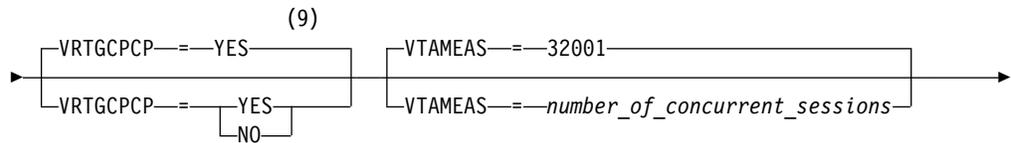
the READSTORAGE parameter on the LINK or INTERFACE statement in the TCP/IP profile. See z/OS Communications Server: IP Configuration Reference for more details.

- 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.

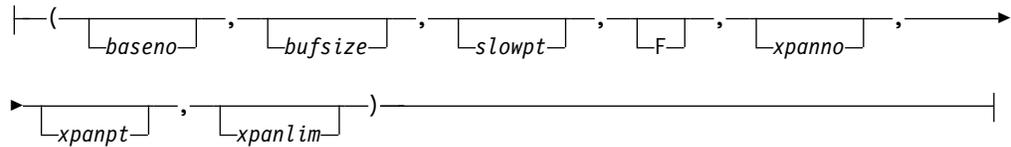




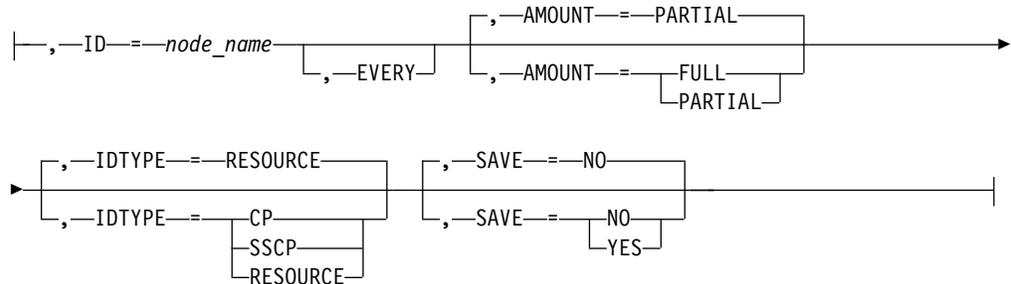
I



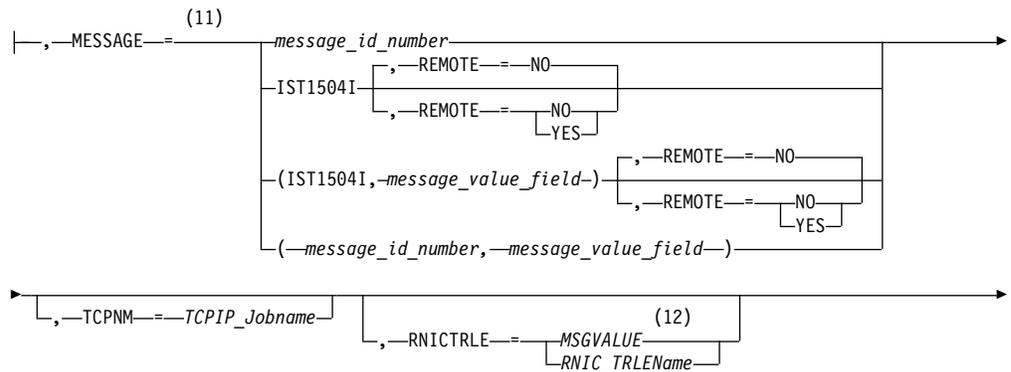
Buffer Pool Values:



BUF Trace Operands:

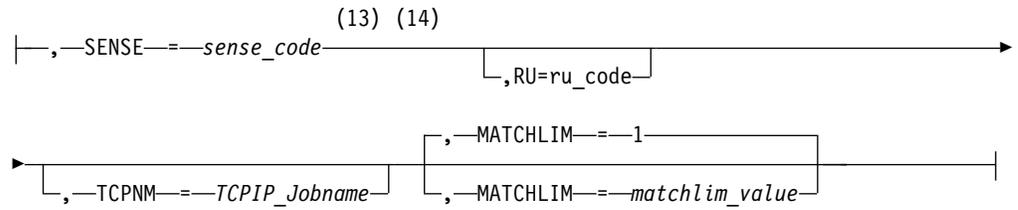


CSDUMP message trigger:

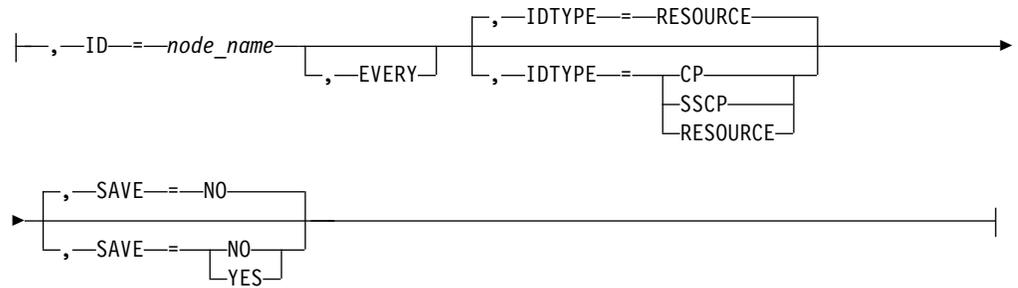




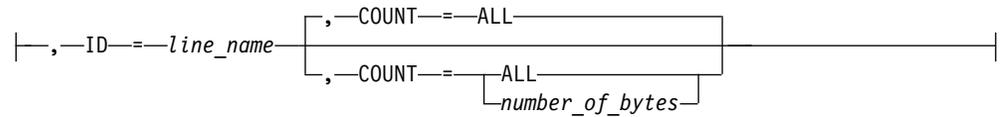
CSDUMP sense code trigger:



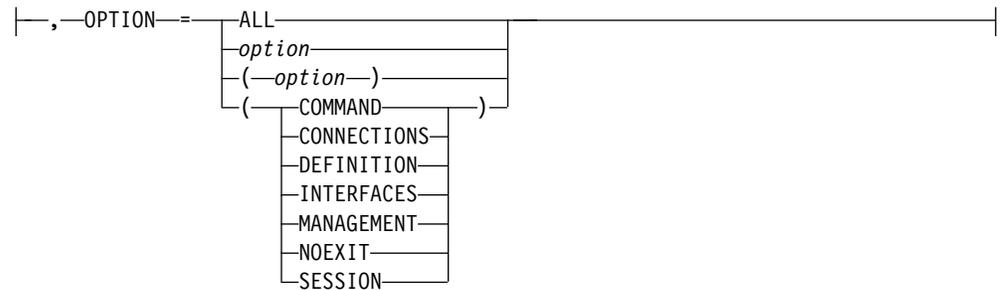
IO Trace Operands:



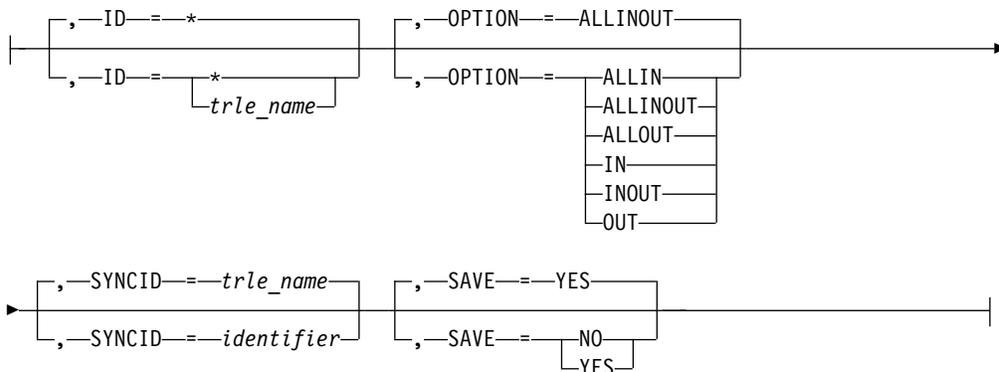
LINE Trace Operands:



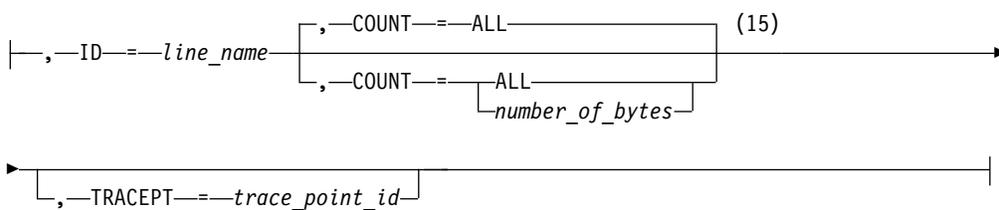
MODULE Trace Operands:



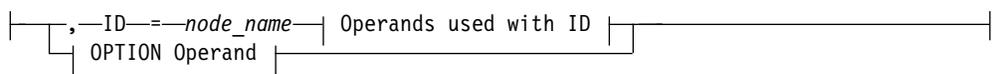
QDIOSYNC trace operands:



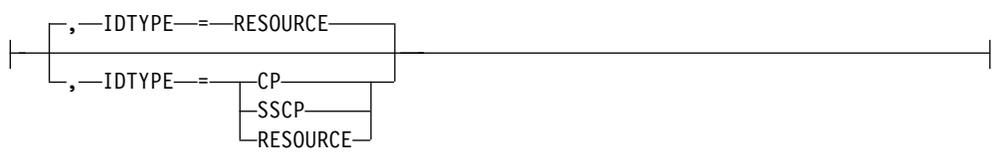
SIT Trace Operands:



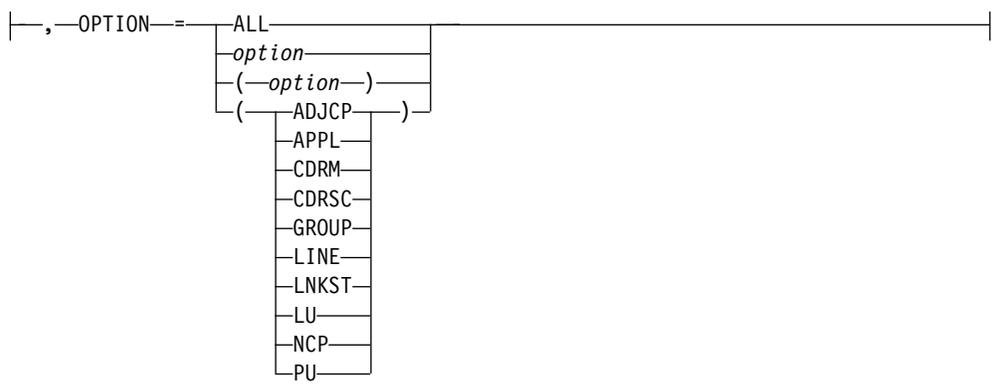
STATE Trace Operands:



Operands used with ID:



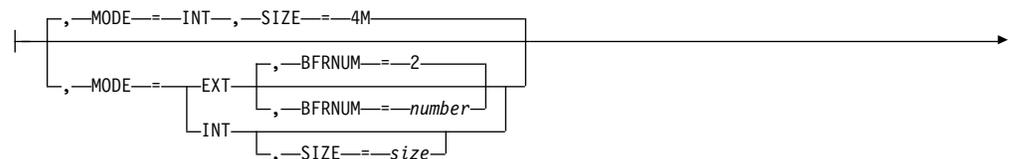
OPTION Operand:

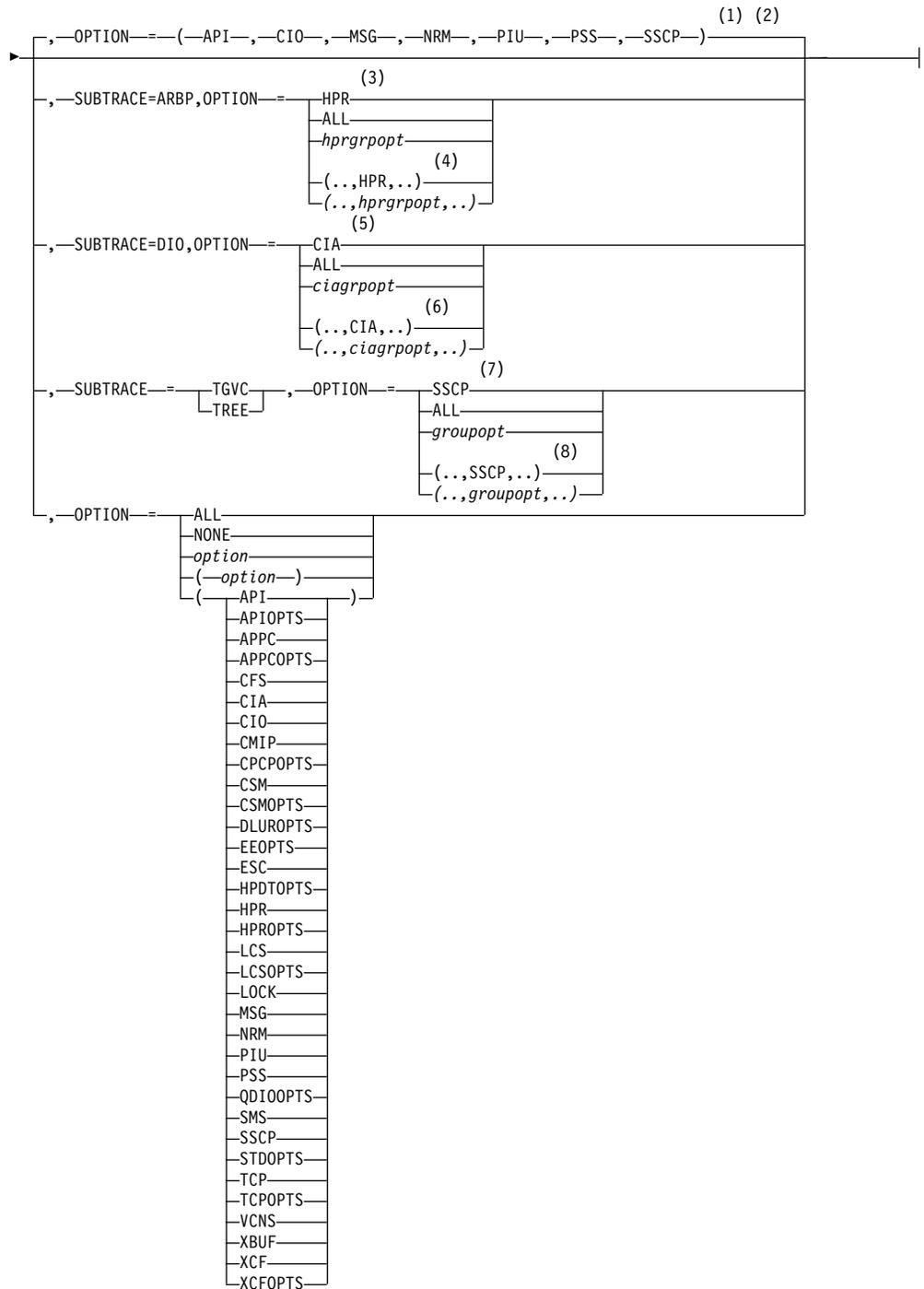


Notes:

- 1 NOTRACE,TYPE=VTAM is accepted but ignored. Tracing is started with the default trace table size and the default options. The NOTRACE,TYPE=VTAM start option processing is affected by the level of VIT control being used (as specified by the VITCTRL start option). See z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT for details.
- 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 VITCTRL start option will only affect the TRACE or NOTRACE start option if it is specified prior to the TRACE or NOTRACE TYPE=VTAM (MODE=INT) start option.
- 8 VRTG is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 9 VRTGCPCP is meaningful only if the NODETYPE and HOSTSA start options are also used.
- 10 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).
- 11 When the same parameter is entered multiple times on a CSDUMP message trigger, only the last occurrence is accepted.
- 12 MSGVALUE is valid only when the MESSAGE operand is used and specifies either message IST2391I or IST2406I.
- 13 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.
- 14 When the same parameter is entered multiple times on a CSDUMP sense trigger, only the last occurrence is accepted.
- 15 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 is a default VIT option, but PSS 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, HPDTPPTS, 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, HPDTPPTS, HPROPTS, LCSOPTS, QDIOOPTS, STDOPPTS, 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.

Chapter 7. IBM Health Checker for z/OS User's Guide

Communications Server checks (IBMCS)

CSVAM_VIT_OPT_STDOPTS

Description:

Checks to see whether the VTAM Internal Trace (VIT) group option STDOPTS is active.

Reason for check:

IBM suggests that the VIT STDOPTS group option always be activated, since it is almost always required when servicing a VTAM problem.

z/OS releases the check applies to:

z/OS V2R1 and later.

User override of IBM values:

The following sample shows the defaults for customizable values for this check. Use this sample to make permanent check customizations in an HZSPRMxx parmlib member used at IBM Health Checker for z/OS startup. If you just want a one-time only update to the check defaults, omit the first line (ADDREPLACE POLICY) and use the UPDATE statement on a MODIFY hzsproc command. Note that using non-POLICY UPDATES in HZSPRMxx can lead to unexpected results and is therefore not recommended.

```
ADDREPLACE POLICY[(polycname)] [STATEMENT(name)]
UPDATE
CHECK(IBMCS,CSVAM_VIT_OPT_STDOPTS)
DATE('date_of_the_change')
REASON('Your reason for making the update.')
ACTIVE
SEVERITY(LOW)
INTERVAL(ONETIME)
```

Debug support:

No

Verbose support:

No

Parameters accepted:

No

Reference:

For more information on defining VTAM Internal Trace parameters, see TRACE for MODULE, STATE (with OPTION) or VTAM internal trace in *z/OS Communications Server: SNA Resource Definition Reference*.

Messages:

This check issues the following exception messages:

- Isth006E

See *z/OS Communications Server: SNA Messages*.

SECLABEL recommended for multilevel security users:

SYSLOW - see *z/OS Planning for Multilevel Security and the Common Criteria* for information on using SECLABELS.

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