SNA Testcases: Tracing and Submitting

Special Notices

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Note: The information in this document has **not** been verified for AIX 4.1.

About this Document

This document is intended as a guide for the collection and submission of traces and logs for HCON, DLC, and AIXSNA problem determination (PD).

Three major sections are:

1. The AIXSNA Testcase
2. More About Tracing
3. Submitting The Testcase

The AIXSNA Testcase

In general, an AIXSNA testcase (TC) should be created as outlined here; however if requests for specific traces or logs have been made, that output may have to be moved to /var/sna for testcase collection. Call 1-800-call aix if you have questions.

1. Stop AIXSNA if possible.

   ```
   # sna -stop sna -type cancel
   ```

   If this is difficult at your site due to resource availability requirements or if it would mask the problem, then leave active.

2. Clean out all files from /var/sna.

   ```
   # cd /var/sna
   # rm *
   ```

Please move or remove all old files. AIXSNA will recreate files as required.

3. Create the problem.

   Activate all requested traces and logs (see the section "More About Tracing). Reproduce the problem as quickly as possible. Stop all traces and logs as soon as the problem has occurred. The goal is to create the smallest testcase that will allow complete problem analysis.

4. Describe the problem.

   ```
   # vi /var/sna/readme.problem
   ```

   Create a file that describes the problem plus any observations about resource states on both AIX and the other platform that AIXSNA is (attempting to) communicating with. Please note the time when the problem occurred (AIX date command or system clock).

5. Collect the testcase.

   ```
   # cd /var/sna
   # /usr/lpp/sna/bin/getsnapd
   ```

   All the files in /var/sna plus system logs and traces are placed in pd.tar.Z by the getsnapd script. Send this file as a binary image via one of the methods below (see Submitting The Testcase). Please change the file name to <your_item>.tar.Z where <your_item> is the PMR number or xmenu item number opened to report your problem.

   Note: Please do not send a Testcase unless you have an active item.

More About Tracing

Traces are often the key to problem determination. Different types of traces and logs capture different types of problem determination information. This section explains the use of some of the most important traces.

Note: Start all traces and logs before you recreate the problem and stop them all immediately after recreating the problem.

AIXSNA Link Station (LS) Trace:

The link station trace is the most important trace for AIXSNA Problem Determination. A link station trace can be started in the link station profile, from the command line, or from SMIT. The AIXSNA LS trace captures line flow information; this type of information can also be captured in VTAM BUFFER, CCW, or LINE traces or via a "line scope" such as a Sniffer or IBM DataGlance.

From the Link Station Profile:

```
Set the parameter 'Trace Link?' to YES.
Set the parameter 'Trace Size' to LONG.
Set ALL of the Restart parameters to NO.
```

This will start a link station trace every time the link station is started. This is a good way of tracing link activation problems. The trace will be given the same name as the link station and will be placed in the /var/sna directory. Since the trace is started every time the link station is started, previous instances of the trace file will be overwritten unless they are renamed or moved to another directory. From the Command Line:

```
# sna -trace on -l <link_station_name>   to start a LS trace.
# sna -trace off -l <link_station_name>   to stop a LS trace.
```

The LS trace can be started just before reproducing the problem and stopped just after. Set 'Trace Link = no' and all restart parameters to 'no' in this LS profile to avoid the LS trace being overwritten when the LS restarts.

```
From SMIT:
   smit sna
      Problem Determination Aids
         Control SNA Traces
            Start and Stop Selected SNA Traces
               specify the Link Station name and hit enter.
```

The AIXSNA LS trace either traces everything or nothing; tracing can not be limited to a specific session or LU.

AIXSNA LS traces can be formatted with the AIX trcrpt command; however a more useful formatter is provided with AIXSNA. The following command will result in three ASCII output files; a summary (-s) file named <raw.trace>.sum, a detailed (-d) file named <raw.trace>.det, and a file showing the data in hex format named <raw.trace>.hex.

```
# snaformat -l <raw.trace> -s -d -h
```

If you want to see physical link level flows (XID, SNRM, RR, etc.) include the (-p) flag.

To format only the flows for a specific LU use "-i iod=<value>"; for example to see summary and hex reports for all the flows between OAF and DAF 01 and 07 (or LFSID's involving 07):

```
# snaformat -l <raw.trace> -s -h -i iod=00007 iod=00107
```

AIXSNA Logs

AIXSNA logs can be controlled from the command line or from SMIT. For problem determination on a specific problem it is often simpler to use the command line. Anything that works from the command line can also be executed from a shell script. For continuous logging of a specific type of information it is often simpler to use SMIT.

AIXSNA Logging Impact:

AIXSNA has a minimal default level logging which can not be terminated. The following will invoke the minimal trace and log impact on a given system.

```
# trcstop
# sna -trace off
# sna -setlogs -e -zs 200000 -zi 0 -zf 0 -w 2
```

It is suggested that most customers invoke additional logging for normal operations; this suggested level has little impact on processing and will provide useful information if an AIXSNA problem is reported.

```
# sna -setlogs -e -zs 1500000 -zi 0 -zf 0 -w 5
# sna -trace only -e ras opint
```

For problem determination efforts it is often simpler if all AIXSNA traces and logs are directed to one log file and the "system log" (-s) is used for the SNA service log. LS traces can not be directed to the SNA service log file, /var/sna/snaservice.[n].

API traces started with the sna command will be directed to snaservice log when the "system log" (-s), rather than the "SNA log" (-e), is active. Since the "system log" uses AIX trace channel zero you can not start additional instances of the AIX trace (i.e. any trace called will fail with a 0454-072 message). AIXSNA API traces can not be invoked via the sna command unless the "system log" (-s) is active. An API traces can be invoked via the AIX trace command with the appropriate hookid's when the "SNA log" (-e) is active. AIX trace command output goes to /var/adm/ras/trcfile.

```
# trace -aj 271,390
```

- To stop an AIX trace: # trcstop
- To list all AIX trace hooks: # trcrpt -j

AIXSNA hookid's:

```
271 AIXSNA API
390 AIXSNA CPI-C
27A AIXSNA events
27B AIXSNA errors
325 MPTN: "AnyNet"
281 SNA LU0 or GSNA API trace
282 SNA Network Management API
```

DLC hookid's:

```
1CD                 Ethernet Driver
1CE    tokdd        Token Ring Driver
1CF    C327DD       3270 Connection Adapter DD
224    MPQPDD       MPQP Driver
225    X25DD        X.25 Driver
227                 X.25 Performance
22C    MPADD        Single Port Multiprotocol Adapter
245                 SDLC Driver Performance
246                 SDLC Driver monitor
263    FDDIdd       FDDI Driver
280    HIADD        SYSMSLA - HCON over DFT
350    CATDD        ESCON SNA Channel
358    BLKMUXDD     Block MUX SNA Channel
```

AIXSNA API traces:

If your problem is API related this trace should be collected at the same time as a LS trace or a pc_trace event trace. It is also helpful if you include a description of the application (or even a small code fragment) with the problem description in /var/sna/readme.problem file. Also please identify the application by product name and vendor. Many applications include logging facilities which may be helpful in API level problem determination.

```
# sna -trace on -a on   // AIXSNA API trace //
# sna -trace on -c on   // AIXSNA CPI-C trace //
# sna -trace on -g on   // AIXSNA GSNA API trace //
```

AIXSNA AnyNet trace:

If you have an AnyNet problem use the following.

```
# sna -trace on -anynet short
```

AIXSNA Event Trace:

This trace can be configured to collect information on many types of AIXSNA internal events. Detailed help is available via the F1 key in SMIT.

```
# smit sna
   Problem Determination Aids
      Control SNA Traces
         Start and Stop Selected SNA Traces
            Event trace (list events)
```

The event trace can be very helpful in problem determination, however most events will rapidly fill and wrap the sna service log. The following events will have little impact on processing and will provide useful information if an AIXSNA problem is reported.

```
# sna -trace only -e ras opint
```

Other events should only be logged while attempting problem determination on a specific AIXSNA problem. As an example, the following traces would be helpful for a CPI-C application level problem.

```
# sna -setlogs -s -zs 5000000 -w 5
# sna -trace on -l your_LS -a on -c on -e 'ras opint pc_trace'
```

AIXSNA Flow Trace:

The flow trace logs entry and exit of AIXSNA functions. Customer should only activate this trace if requested by IBM AIXSNA support.

AIXSNA Component Trace:

The component trace limits AIXSNA internal tracing to specific AIXSNA components (daemons). Customer should only activate this trace if requested by IBM AIXSNA support.

AIXSNA Mbuf Trace:

Use this trace if you believe you have a problem with mbuf's caused by AIXSNA. Please read both the AIX tuning and AIXSNA tuning faxes and review the buffer pool tuning information before collecting an AIXSNA mbuf trace. Titles are:

- Network Tuning (call 1-800-call-aix request document "network.tuning.tcp".)
- SNA Services/6000 Tuning and Performance Tips (Call 1-800-4fax, requests document # 1529.)

```
# sna -trace on -mbuf on
```

AIX SYSTEM LOG

The AIX system log is often useful in AIXSNA problem determination and is collected by the getsnapd script. You can format the system log with the errpt command. A short format shows one line per logged event.

```
# errpt
ERROR_ID TIMESTAMP  T CL RESOURCE_NAME  ERROR_DESCRIPTION
E9376250 0429095696 P S  lu0server      CONFIGURATION
E9376250 0429095596 P S  lu0server      CONFIGURATION
1581762B 0426012696 T H  hdisk1         DISK ERROR
C14C511C 0426012596 T H  scsi0          ADAPTER ERROR
```

A detailed format can then be collected for only the events after a specific timestamp displayed in the short format. For example if we are only interested in the lu0server events:

```
# errpt -s 0429095596 -a
```

The system error log should be periodically reviewed and cleared to keep the log to a reasonable size.

```
# errclear 0
```

See InfoExplorer for details.

AIX Script Command

The AIX script command is useful if you want to capture all I/O for standard input, standard output, and standard error as descriptive information. Recording is stopped by issuing <Ctrl><D> from the command line.

For example to report a problem with the verifysna command:

```
# script /var/sna/readme.problem
# verifysna -R
# <Ctrl><D>
# echo y |/usr/lpp/sna/bin/getsnapd
```

See InfoExplorer for details.

Collecting a Testcase

AIXSNA includes a shell script that collects useful AIXSNA Problem determination information and AIX system information. All files in /var/sna are collected so please remove all files from /var/sna prior to recreate the problem.

```
# /usr/lpp/sna/getsnapd
```

Answer "yes" to the "stop traces" question. The script may take several minutes to complete. All information will be in the /var/sna/pd.tar.Z file. Please send file pd.tar.Z as a binary image named <your_item_number>.tar.Z. For example if you have PMR 1X234 B567 open for your problem, send the file as 1x234b567.tar.Z.

Documentation

Most aixsna commands output "help" if issued without requisite arguments. To view "help" issue the following:

```
# sna -trace
# sna -setlogs
# snaformat
```

Details for sna commands and profile fields are available in smit help (F1) or in AIXSNA manuals:

```
SC31-8211   SNA Server for AIX: User's Guide
SC31-8213   SNA Server for AIX: Configuration Reference
SC31-8214   SNA Server for AIX: Commands Reference
SC31-8215   SNA Server for AIX: Diagnosis Guide and Message
```

AIX commands are documented in InfoExplorer.

Most AIX SNA manuals are available as both hardcopy and softcopy. AIXSNA manuals use a DynaText browser that is not compatible with InfoExplorer. A CD with the browser and softcopy manuals is distributed with all new AIXSNA licenses. Softcopy manuals and the browser are also available on the Web at

```
http://www.raleigh.ibm.com/asf/asfprod.html
```

Submitting The Testcase

Several methods of submitting testcases are documented in the FAX "AIX Support Family -- Sending Testcases", which is available from SupportLine or from 1-800-IBM-4FAX, document number 1762.

Reader's Comments

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Problem Report or Item #: Branch Office or Customer #:

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