



CHAPTER 2

Cisco PVM Tracing

Cisco PVM provides tracing functions for its collection adapters and server components. These tracing log files may be used to troubleshoot application issues.

Trace File Overview

Cisco PVM trace files are located in the `[/[CiscoPVM Installation directory]/server/tmp]` directory. The default location is `/opt/CSCOpvm/server/tmp`. Each time an adapter or server component is started, a trace file is created. Cisco PVM offers configurable trace levels. The default trace level, 2, provides partial trace information. For troubleshooting purposes, the trace level may be set to any value 0-10 as noted below.

Table 2-1 Trace Files

Trace Level	Result
0	Tracing is off
1	Includes fatal system or application faults
2	Includes information on any error condition that has occurred. This is the default level.
3	Includes information on potential errors, exceptions, or abnormal conditions.
4	Includes major informative tracking messages.
5	Includes minor informative tracking messages.
6-10	Verbose mode. Provides detailed and informative tracking messages



Caution

Increasing the trace level beyond the default trace level may impact system performance.

Trace File Configuration

Cisco PVM tracing can be configured using the adapter configuration files located in the `[installation directory]/server/etc/agentconfig` directory.

Sample output:

```
-rw-r--r-- 1 pvmadm dba 2293 Dec 6 2005 AlarmOidMap
-rw-r--r-- 1 pvmadm dba 331 Jan 20 2006 sp_CiscoART_agent.config
```

```

-rw-r--r-- 1 pvmadm dba 792 Oct 27 2006 sp_CiscoNAM_826_agent.config
-rw-r--r-- 1 pvmadm dba 806 Oct 27 2006 sp_CiscoNAM_827_agent.config
-rw-r--r-- 1 pvmadm dba 796 Oct 27 2006 sp_CiscoNAM_828_agent.config
-rw-r--r-- 1 pvmadm dba 476 Dec 8 2005 sp_CiscoSwitch_823_agent.config
-rw-r--r-- 1 pvmadm dba 476 Dec 8 2005 sp_CiscoSwitch_824_agent.config
-rw-r--r-- 1 pvmadm dba 476 Dec 8 2005 sp_CiscoSwitch_825_agent.config
-rw-r--r-- 1 pvmadm dba 152 Feb 17 2006 sp_deviceImport.config
-rw-r--r-- 1 pvmadm dba 56 Sep 30 2005 sp_hostSync.config
-rw-r--r-- 1 pvmadm dba 264 Jan 18 2006 sp_thresholdMonitor.config
-rw-r--r-- 1 pvmadm dba 530 Jan 26 2006 SystemHealthMonitor.properties

```

To view or edit a components trace level, open the corresponding .config file. For example, to view the configuration for the CiscoNAM_826 adapter, execute the following command:

```
more sp_CiscoNAM_826_agent.config
```

Sample output:

```

LocalSnmpEngID =                ; Local Snmp Engine ID
interCollectionInterval=60      ; time between collections in seconds
ifErrorResendOneByOne = true    ; If resend get request one by one
numOfActorThread = 8            ; set number of threads in thread pool
numOfSNMPEngine = 24           ; num SNMP engine
traceLevel = 2                  ; trace level for the trace file
maxLoadPerAgent = 24           ; the maximum number of NAMs supported by an a
gent
alarmPollInterval = 60         ; Poll interval in seconds for detecting alarm
entry changes
enableTimeMark = true          ; Enable data collection by timemark feature
hostBufferSize = 1000          ; Host ID and Address buffer size, range 1000-9000
maxBulkResponseSize = 70000    ; Maximum number of entries in a GETBULK response
Modify the traceLevel parameter and re-start PVM to have the changes take effect.

```

Trace File Naming and Size Limits

Each time an adapter or server component is started, a trace file is created. The trace files are named for each individual component and use a .trace extension. For example, the ART adapter trace would be named sp_snmp_ciscoART.trace. The following files may be found in the /[CiscoPVM Installation directory]/server/tmp directory. The default location is /opt/CSCOpvm/server/tmp.

Sample output:

```

-rw-r--r-- 1 pvmadm dba 1254 Sep 25 12:20 sp_deviceImport.out
-rw-r--r-- 1 pvmadm dba 12240 Sep 25 12:20 sp_deviceImport.trace
-rw-r--r-- 1 pvmadm dba 318 Sep 25 12:20 sp_hostSync.out
-rw-r--r-- 1 pvmadm dba 2693 Sep 25 12:20 sp_hostSync.trace
-rw-r--r-- 1 pvmadm dba 572 Sep 25 12:20 sp_snmp_ciscoART.out
-rw-r--r-- 1 pvmadm dba 756 Sep 25 12:20 sp_snmp_ciscoART.trace
-rw-r--r-- 1 pvmadm dba 1006 Sep 24 18:46 sp_snmp_ciscoNAM_826_0.trace
-rw-r--r-- 1 pvmadm dba 1520707 Sep 25 11:55 sp_snmp_ciscoNAM_826_1.trace
-rw-r--r-- 1 pvmadm dba 926 Sep 25 12:19 sp_snmp_ciscoNAM_826.out
-rw-r--r-- 1 pvmadm dba 1004 Sep 24 18:46 sp_snmp_ciscoNAM_827_0.trace
-rw-r--r-- 1 pvmadm dba 926 Sep 25 12:19 sp_snmp_ciscoNAM_827.out
-rw-r--r-- 1 pvmadm dba 1004 Sep 24 18:46 sp_snmp_ciscoNAM_828_0.trace
-rw-r--r-- 1 pvmadm dba 913 Sep 24 17:46 sp_snmp_ciscoNAM_828_1.trace
-rw-r--r-- 1 pvmadm dba 926 Sep 25 12:19 sp_snmp_ciscoNAM_828.out
-rw-r--r-- 1 pvmadm dba 850 Sep 24 17:46 sp_snmp_ciscoSwitch_823_0.trace
-rw-r--r-- 1 pvmadm dba 1036 Sep 25 12:20 sp_snmp_ciscoSwitch_823.out
-rw-r--r-- 1 pvmadm dba 0 Sep 20 12:54 sp_snmp_ciscoSwitch_824_0.trace
-rw-r--r-- 1 pvmadm dba 1014 Sep 25 12:20 sp_snmp_ciscoSwitch_824.out
-rw-r--r-- 1 pvmadm dba 680 Sep 24 17:46 sp_snmp_ciscoSwitch_825_0.trace
-rw-r--r-- 1 pvmadm dba 1014 Sep 25 12:20 sp_snmp_ciscoSwitch_825.out
-rw-r--r-- 1 pvmadm dba 504 Sep 25 12:20 sp_thresholdMonitor.out

```

```
-rw-r--r-- 1 pvmadm dba      1032 Sep 25 12:20 sp_thresholdMonitor.trace
-rw-r--r-- 1 pvmadm dba      5836 Sep 25 12:22 SystemHealthMonitor.out
```

Displaying Trace Files

Cisco PVM trace files can be viewed in a user-friendly format using the `sp_tracereader` tool. The tool provides information on its usage when executed with the `-h` (Help) option.

```
cd [install directory]/server/bin
```

```
./sp_tracereader -h
```

Sample output:

Usage:

```
sp_tracereader [-l <level>] [-c <category in hex>] [-o <objname>]
                  [-m <options>] [-d <delimit string>]]
```

The following example prints only trace records of level fatal or error

```
sp_tracereader -l 2
sp_tracereader -m tpm -d " <--> "
```

Options can be any characters of `thplcfonm`

t - time, h - host, p - port, l - level, c - category, f - filename
o - source class, n - line number, m - message

-d prints the info separated by delimit string

This example prints only trace records with component (object) name `sp_eventlog`

```
sp_tracereader -o sp_eventlog
```

To view the static content of a trace file using the `tracereader` tool, execute the following command from the `/opt/CSCOpvm/server/tmp` directory:

```
cat <trace file name> | sp_tracereader | more
```

Sample output:

```
<----- < 1>Fri Sep 21 18:34:28 2007 ----->
hostname : safi.trendium.com
port      : 0
level     : 2
category  : 1
filename  : DeviceActor.cpp
line no   : 936
obj name  : sp_snmp_ciscoSwitch
trace msg: MaxPerPduVarSize is not set in configuration file, default value 5
is used
<----- < 2>Mon Sep 24 17:26:04 2007 ----->
hostname : safi.trendium.com
port      : 0
level     : 2
category  : 1
filename  : DeviceActor.cpp
line no   : 936
obj name  : sp_snmp_ciscoSwitch
trace msg: MaxPerPduVarSize is not set in configuration file, default value 5 is used
```

To view the changing contents of a trace file as PVM is processing, execute the following command from the `/opt/CSCOpvm/server/tmp` directory:

```
tail -f <trace file name> | sp_tracereader
```

Using PVM Tracing To Troubleshoot

To utilize the tracing functions to troubleshoot application issues, you must:

- a. Identify the appropriate trace file(s).
- b. Change the trace level to verbose.
- c. Restart the component.
- d. Review the trace content for information which will aid in troubleshooting.

Choosing the Correct Trace File

Using [Table 2-2](#), select the component/area to monitor. All trace files are located in the [installation directory]/ server/tmp directory.

```
cd /opt/CSCOpvm/server/tmp
ls -l
e.
```

Table 2-2 Troubleshooting Using PVM Tracing

Component	Trace File Name	Used for Troubleshooting
NAM Adapters	<code>sp_snmp_ciscoNAM_826_0.trace</code> <code>sp_snmp_ciscoNAM_827_0.trace</code> <code>sp_snmp_ciscoNAM_828_0.trace</code> <code>sp_snmp_ciscoNAM_828_1.trace</code>	NAM adapter collection
ART Adapter	<code>sp_snmp_ciscoART.trace</code>	ART collection
Switch Adapter	<code>sp_snmp_ciscoSwitch_823_0.trace</code> <code>sp_snmp_ciscoSwitch_824_0.trace</code> <code>sp_snmp_ciscoSwitch_825_0.trace</code>	Switch adapter collection
Threshold Monitor	<code>sp_thresholdMonitor.trace</code>	Evaluation of thresholds, raising alerts

Sample output:

```
-rw-r--r-- 1 pvmaadm dba      1254 Sep 25 12:20 sp_deviceImport.out
-rw-r--r-- 1 pvmaadm dba    12240 Sep 25 12:20 sp_deviceImport.trace
-rw-r--r-- 1 pvmaadm dba      318 Sep 25 12:20 sp_hostSync.out
-rw-r--r-- 1 pvmaadm dba    2693 Sep 25 12:20 sp_hostSync.trace
-rw-r--r-- 1 pvmaadm dba     572 Sep 25 12:20 sp_snmp_ciscoART.out
-rw-r--r-- 1 pvmaadm dba     756 Sep 25 12:20 sp_snmp_ciscoART.trace
-rw-r--r-- 1 pvmaadm dba    1006 Sep 24 18:46 sp_snmp_ciscoNAM_826_0.trace
-rw-r--r-- 1 pvmaadm dba 1520707 Sep 25 11:55 sp_snmp_ciscoNAM_826_1.trace
-rw-r--r-- 1 pvmaadm dba     926 Sep 25 12:19 sp_snmp_ciscoNAM_826.out
-rw-r--r-- 1 pvmaadm dba    1004 Sep 24 18:46 sp_snmp_ciscoNAM_827_0.trace
-rw-r--r-- 1 pvmaadm dba     926 Sep 25 12:19 sp_snmp_ciscoNAM_827.out
-rw-r--r-- 1 pvmaadm dba    1004 Sep 24 18:46 sp_snmp_ciscoNAM_828_0.trace
-rw-r--r-- 1 pvmaadm dba     913 Sep 24 17:46 sp_snmp_ciscoNAM_828_1.trace
-rw-r--r-- 1 pvmaadm dba     926 Sep 25 12:19 sp_snmp_ciscoNAM_828.out
-rw-r--r-- 1 pvmaadm dba     850 Sep 24 17:46 sp_snmp_ciscoSwitch_823_0.trace
-rw-r--r-- 1 pvmaadm dba    1036 Sep 25 12:20 sp_snmp_ciscoSwitch_823.out
-rw-r--r-- 1 pvmaadm dba         0 Sep 20 12:54 sp_snmp_ciscoSwitch_824_0.trace
```

```

-rw-r--r-- 1 pvmadm dba      1014 Sep 25 12:20 sp_snmp_ciscoSwitch_824.out
-rw-r--r-- 1 pvmadm dba       680 Sep 24 17:46 sp_snmp_ciscoSwitch_825_0.trace
-rw-r--r-- 1 pvmadm dba      1014 Sep 25 12:20 sp_snmp_ciscoSwitch_825.out
-rw-r--r-- 1 pvmadm dba       504 Sep 25 12:20 sp_thresholdMonitor.out
-rw-r--r-- 1 pvmadm dba     1032 Sep 25 12:20 sp_thresholdMonitor.trace
-rw-r--r-- 1 pvmadm dba     5836 Sep 25 12:22 SystemHealthMonitor.out

```

Setting the Trace Level To Include Maximum Information

Set the trace level to 10 to include maximum information.

```
cd [install directory]/server/etc/agentconfig
```

```
vi <trace file name>
```

Sample output:

```

LocalSnmpEngID =                ; Local Snmp Engine ID
interCollectionInterval=60      ; time between collections in seconds
ifErrorResendOneByOne = true    ; If resend get request one by one
numOfActorThread = 8            ; set number of threads in thread pool
numOfSNMPEngine = 24           ; num SNMP engine
traceLevel = 2                  ; trace level for the trace file
maxLoadPerAgent = 24            ; the maximum number of NAMs supported by an agent
alarmPollInterval = 60         ; Poll interval in seconds for detecting
alarm entry changes
enableTimeMark = true          ; Enable data collection by timemark feature
hostBufferSize = 1000          ; Host ID and Address buffer size, range 1000-9000
maxBulkResponseSize = 70000    ; Maximum number of entries in a GETBULK response

```

Set the traceLevel parameter to 10 and save the configuration file.

Viewing the Trace File Contents

Re-start the Cisco PVM application and allow the components to run for a few minutes in order to collect some messages in the trace file.

