

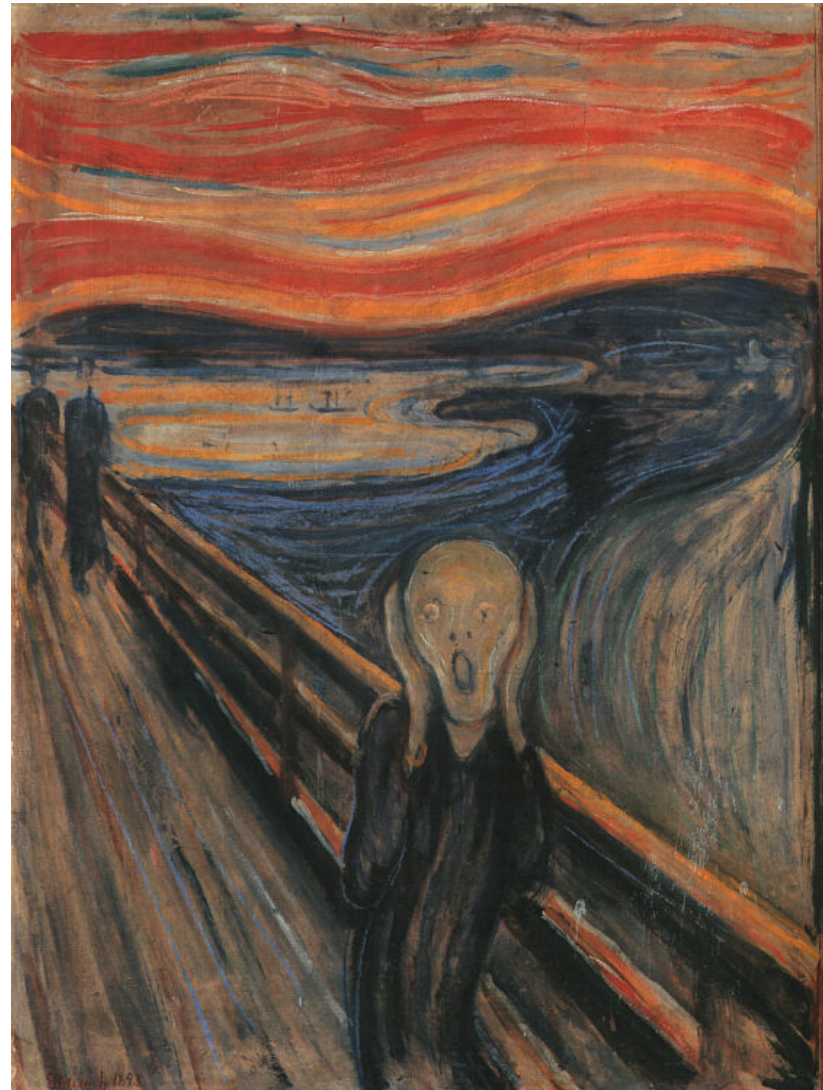


Oxford University TSM Symposium 2005

TSM Client Diagnostics

Andrew M. Raibeck
Tivoli Storage Manager
Development
storman@us.ibm.com

Has this ever happened to you?



Agenda

- Understanding the problem
- Gathering documentation
- Tracing
- Reporting the problem
- Miscellaneous information

The speaker requests:

- Please try to hold questions until the end of the presentation.
- If you have the urge to cut the grass...



Understanding the problem

- Most problems manifest themselves with some kind of error message.
- When you notice or suspect a problem, the best place to start is where the problem is first seen.
- While a problem might first be noticed in a given area, consider the possibility that the root cause can lie elsewhere.

Understanding the problem (2)

- What, if any error messages were issued?
 - Examine the console, dsmsched.log, and dsmdir.log for client messages.
 - Look up the message:
 - Use **dsmdir help**
 - Look in the TSM Messages manual
 - Anatomy of a message:
 - *ANSnnnnx message text*
 - *nnnn*: message number
 - *x*: severity (usually I, W, E, or S)
 - *message text*: The main text of the message
 - Reference information for message also includes:
 - Explanation
 - System action
 - User response
- What else does the console or dsmdir.log show?
- When troubleshooting problems, do not use QUIET.

Check the usual suspects

- For network problems, check the network.
 - Many performance problems are often due to using Auto-Negotiate instead of full duplex on the NIC.
- If you changed any options, did you make sure to restart your client services?
 - When using the CAD to manage the scheduler, this is usually not necessary.
- If any policy changes were made on the server, was the policy set activated?
- Are you connecting to the correct TSM server?
- Are INCLUDE/EXCLUDE statements coded correctly?
- Is a client options set or scheduler option overriding a local client setting?
- Does your login account have sufficient permissions?

Narrow the scope of the problem (1)

- Is the problem recreatable?
 - Recreating the problem is 80% of the battle.
 - This should be step #1 in diagnosing any problem.
- Does the problem occur...
 - ...on one, some, or all machines?
 - ...on one, some, or all operating systems?
 - ...for one, some, or all files?
 - ...for one, some, or all nodes?
 - ...on one, some, or all parts of the network?
 - ...with the CLI, GUI, and/or Web client?
 - ... in the same place each time?

Narrow the scope of the problem (2)

- If the problem is recreatable, try minimizing the circumstances under which it can occur.
 - Use a minimal options file:
 - commmethod
 - tcpserveraddress
 - nodename
 - If the problem occurs for a file during incremental backup, can you recreate with just a selective backup of the file?
 - If the problem occurs during a scheduled event, can you recreate by running the command manually?

Check the TSM server

- Sometimes the TSM server may have helpful information.
- Check the activity log from the time the client connected through the time of the failure.
 - Be sure to account for possible time-of-day clock differences between the client and server. Hint: running `DSMC Q SESSION` will show you the current server date and time.
- Try to put together a timeline of events that led up to the problem.

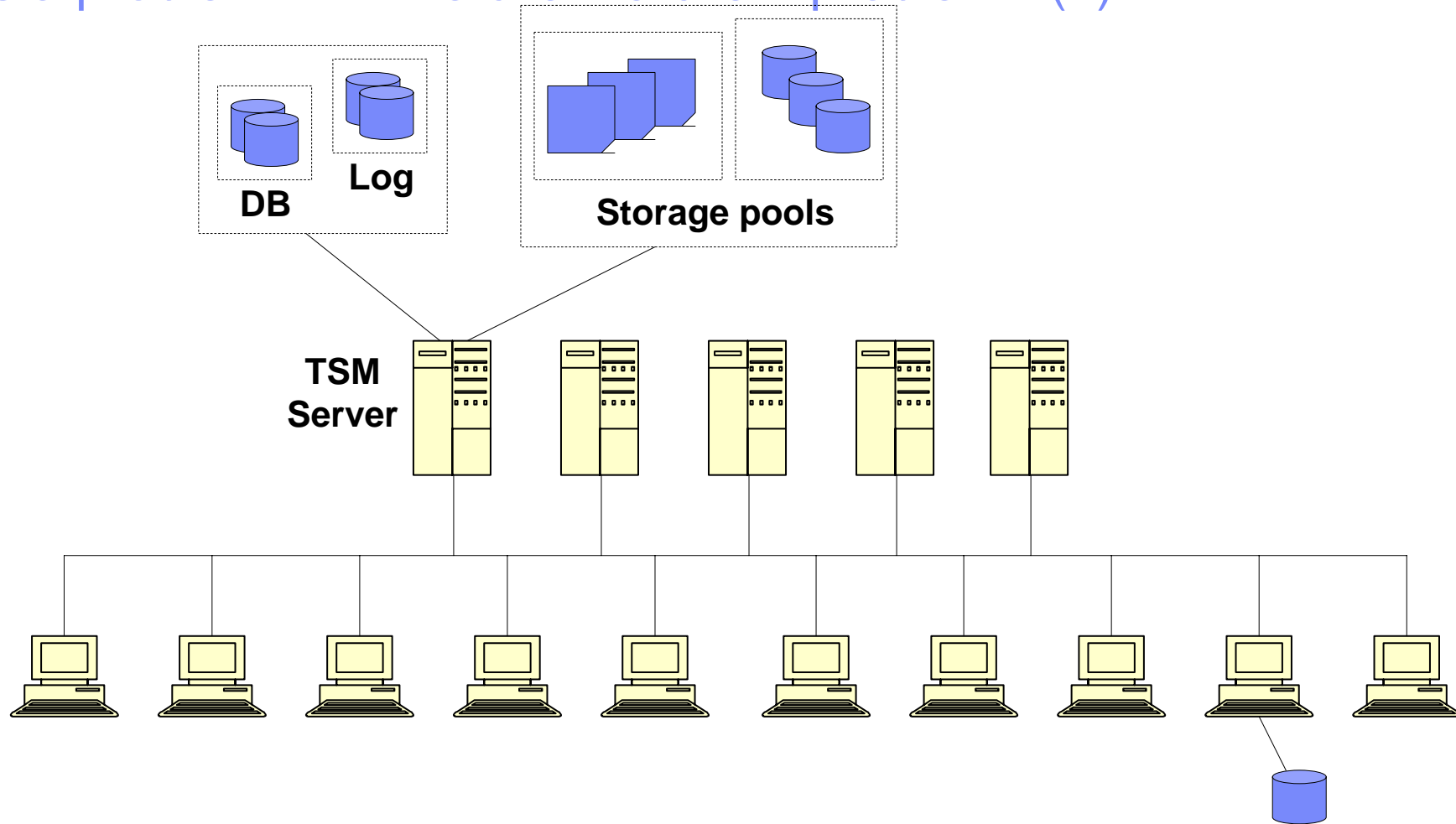
Obtain a history of the problem

- When did the problem start to occur?
- Did the operation ever work correctly, or has it always failed?
- If the operation worked correctly before, what (if anything) changed in the environment?
 - TSM Client settings
 - Client machine changes
 - Server settings
 - Server machine changes
 - Network settings
 - Procedural changes

Is this a known problem?

- Review the README files, which include known problems and limitations, as well as a list of APARs that have been fixed.
- Check whether you are running the latest client version. If not, check the latest client README file to see if your problem is described.
- Check the product manuals to see whether the behavior is intentional.
- Try posting ADSM-L to see if another user has experienced the same problem.
- Additional resources in "Where to get more information".

Is a problem with the client a client problem? (1)



Is a problem with the client a client problem? (2)

- While the problem may manifest itself in the client, the root cause could be elsewhere:
 - Other client software
 - Client hardware
 - Network
 - TSM server
 - Virus or worm?
 - User

Gathering documentation

- Client items (as appropriate)
 - Error log (dsmerror.log)
 - Scheduler log (dsmsched.log)
 - Web client log (dsmwebcl.log)
 - API log (dsierror.log)
 - Options file(s)
 - dsm.opt
 - dsm.sys if UNIX
 - inclexcl file
 - Trace

Gathering documentation (2)

- Application dump (useful when the client crashes)
 - For Windows, collect dsmcrash.log and dsmcrash.dmp. Note that drwtsn32.log and user.dmp files are of no value.
- Memory dump (useful when the client hangs)
 - For Windows, add the following DWORD registry value to HKLM\SYSTEM\CurrentControlSet\Services\i8042prt\Parameters:
 - Name: **CrashOnCtrlScroll**
 - Value: 1
 - Reboot. Then if you get a hang, you can press and hold the right CTRL key, then press SCROLLLOCK twice to get a memory dump (this will crash your system!). Send in memory.dmp file for analysis.
- List of all software installed on the client system
- dsminfo.txt file created by **dsmc query systeminfo**

Gathering documentation (3)

- Server items (as appropriate)
 - Client options set (Q CLOPT)
 - Server activity log (Q ACTLOG)
 - Server options (Q OPT)
 - Server settings (Q STATUS)
 - Client node settings (Q *nodename* F=D)
 - Client schedule settings (Q *domain schedname* F=D)
 - Policy set information
 - Q MG *domain policy* F=D
 - Q CO *domain policy* F=D

Obtaining a SERVICE trace

- Stop the client.
- Add the following to dsm.opt:
 - TRACEMAX *n*
 - $0 \leq n \leq 4294967295$
 - *n* is in MB
 - TRACEFILE *filename*
 - TRACEFLAGS SERVICE
 - TRACESEGSIZE *n*
 - $0 \leq n \leq 1000$
 - *n* is in MB
- Recreate the problem.
- Stop the client.
- Remove the trace options.
- Starting with 5.3, you can now manipulate tracing while the client is running.

Tracing while the client is running

- The 5.3 client (except for NetWare) has been enhanced with the ability to enable, modify, and disable tracing while the client is running.
- Implemented with a new utility, **dsmtrace**.
- Useful when:
 - The problem is currently occurring and you do not want to stop the client in order to activate tracing.
 - The problem occurs during the beginning or end of an operation, but you do not want to trace the entire operation.

Using dsmtrace

- Enabling or modifying a trace:

```
dsmtrace Enable <pid> <options>
```

<pid>: client process ID

<options>: client trace options

-PIPENameprefix=<pipe name prefix>

-TRACEFile=<trace file name>

-TRACEFlags=<trace flags>

-TRACEMax=<maximum trace size>

-TRACESegsize=<maximum trace segment size>

Using dsmtrace (2)

- Disabling a trace:

```
dsmtrace Disable <pid>
```

<pid>: client process ID

<options>:

-PIPENameprefix=<pipe name prefix>

Using dsmtrace (3)

- Querying TSM processes:

```
dsmtrace Query Pids [-Filter=[<spec>][*]]
```

<spec>: matches process names beginning with <spec>

*: matches 0 or more characters

Using dsmtrace (4)

- Querying trace status:

```
dsmtrace Query Trace <pid> <options> [-ALI | -ON | -OFF | -BASic]
```

<pid>: client process ID

<options>:

-PIPENAMEprefix=<pipe name prefix>

Describing the problem (1)

- While gathering the previously mentioned documentation is not a pre-requisite to contacting support, it will certainly help make the most of that first phone call to support.
- A good, accurate problem description is important.
 - Bad: “Whenever I run the scheduler, the backup doesn’t work. What’s wrong?”
 - Good: “Whenever I run a scheduled incremental backup of my C: drive, I get error message `ANSnnnx`. But when I run `DSMC INCREMENTAL C:`, it runs just fine. What’s wrong?”

Describing the problem (2)

- In addition to a good description of the problem, be prepared to include:
 - History of the problem.
 - Scope of the problem.
 - Documentation (as described earlier).
 - A detailed step-by-step, mouse-click-by-mouse-click, recreate scenario (whenever possible). For CLI problems, provide **exact** syntax used, and exact text of messages received.

Describing the problem (3)

- Exact client version, e.g., 5.3.0.8
 - If unsure, click “Help/About...” from the GUI or run **dsmc quit**
- Exact server version
 - If unsure, click “File/Connection Information” from the GUI or run **dsmc query session**
- Exact client operating system name, version, and release.

Where to Get More Information (1)

- Required reading:
 - Administrator's Guide (cover-to-cover!)
 - Administrator's Reference
 - Backup-Archive Client manual (cover-to-cover!)
 - Client README files
- Useful redbooks:
 - SG24-6110: Tivoli Storage Manager Version 3.7.3 & 4.1: Technical Guide
 - SG24-6277: Tivoli Storage Manager Version 4.2: Technical Guide
 - SG24-6554: Tivoli Storage Manager Version 5.1: Technical Guide
 - SG24-6638: Tivoli Storage Manager Version 5.3: Technical Guide

Where to Get More Information (2)

- Useful internet sites:
 - IBM TSM support page:
 - <http://www-306.ibm.com/software/sysmgmt/products/support/IBMTivoliStorageManager.html>
 - IBM TSM Problem Determination Guide:
 - <http://publib.boulder.ibm.com/infocenter/tivihelp/index.jsp>
 - Locate **Storage Mangager Messages, Problem Determination, and Performance Tuning**
 - IBM redbooks:
 - <http://www.redbooks.ibm.com>
 - ADSM-L archives:
 - <http://search.adsm.org>
 - <http://my.adsm.org/adsm-l.php>
 - Other search engines
 - <http://www.google.com>
 - <http://groups.google.com>
 - <http://www.altavista.com>
 - <http://www.yahoo.com>

Where to Get More Information (3)

■ ADSM-L

- A list server maintained by Marist College whose membership consists of both customers and IBMers (~1,600 subscribers).
- “Users helping users”.
 - Lots of great collective user experience.
- Not an official support channel for TSM, although several developers monitor it.
- Not funded or maintained by IBM.
- To subscribe, send an e-mail as follows:
 - Address: listserv@vm.marist.edu
 - Subject: N/A
 - Body: **subscribe ADSM-L yourname**
 - Example: subscribe ADSM-L Andy Raibeck

“Raibeck’s Rules”

- **Never** take anything for granted.
 - Trust nobody.
 - Always verify.
- A problem with TSM is not always a TSM problem.
 - Keep an open mind.
- Know your resources!
 - It’s not always what you know, but knowing where to find it.
- The only dumb question is the one that goes unasked.
- The command line is your friend.

Questions?