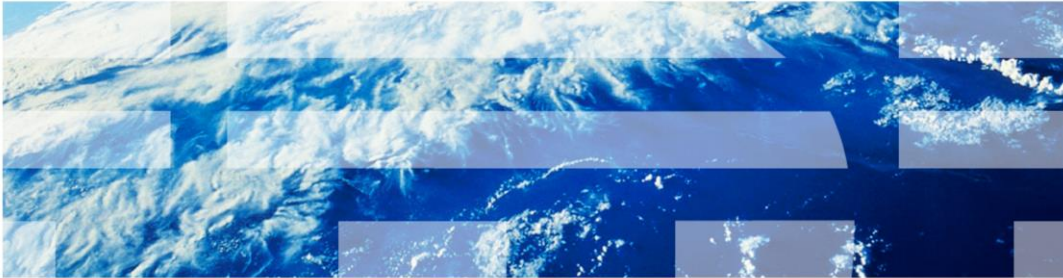


IBM Tivoli Monitoring V6.2.2.2

Troubleshoot System p agents



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IBM Tivoli® Monitoring System p® Agents V6.2.2 Interim Feature 2, Troubleshoot System p agents. This module contains some troubleshooting steps to solve the most common problems with the Tivoli Monitoring System p agents.

Objectives

When you complete this module, you can troubleshoot a Tivoli Monitoring System p agent to solve the most common problems

When you complete this module, you can solve the most common problems with the Tivoli Monitoring System p agents.

Outline

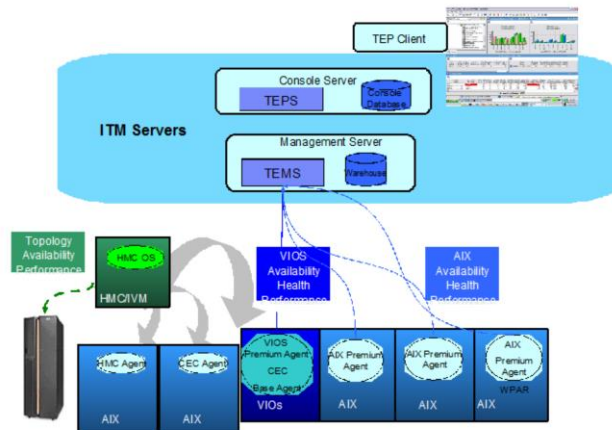
- System p agent: processes and data collection
- Detect malfunctioning
- Solve common problems
- Enable tracing

This module explains the key concepts of the Tivoli Monitoring System p agents. You learn to detect indications that the agent is malfunctioning and solve the most common problems. Finally, you learn how you can enable traces for analysis by Tivoli Support.

System p agent: processes

Tivoli Monitoring System p agents:

- AIX® Premium:
 - Monitors AIX systems
 - kpxagent
 - aixDataProvider-61/53
 - aixDataProvider.pl
- VIOS Premium:
 - Monitors Virtual I/O Server systems
 - kvaagent
 - aixDataProvider-61
 - aixDataProvider.pl
- CEC Base:
 - Monitors systems on a CEC
 - kpkagent
 - cecDataProvider
- HMC Base:
 - Monitors systems managed by Hardware Management Console (HMC)
 - kphagent
 - hmcDataProvider



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Troubleshoot System p agents

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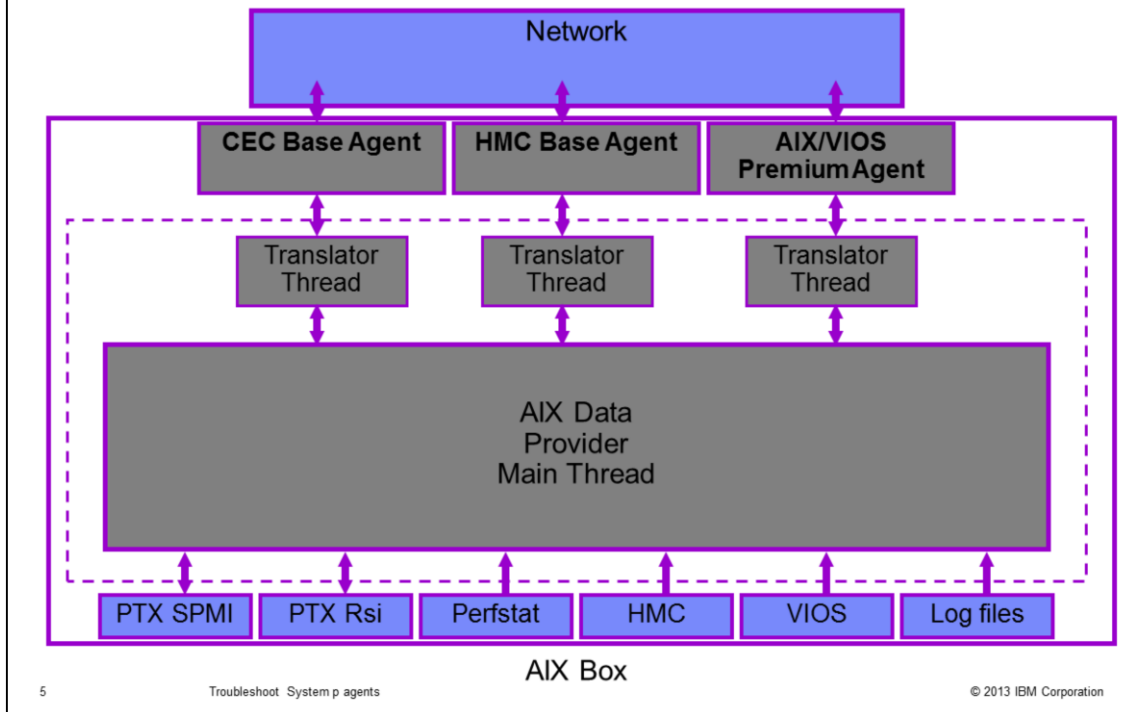
There are four types of Tivoli Monitoring agents for System p; and each has its set of agent and data provider processes to collect metrics. The AIX Premium agent is designed to monitor AIX systems. It collects metrics specifically for this operating system, in contrast to the UNIX OS agent, which monitors general UNIX metrics. The VIOS Premium agent monitors a Virtual I/O Server system. The CEC Base agent monitors a CEC system and the LPAR that are defined on it. And the HMC Base agent is designed to monitor a Hardware Management Console and the systems that it manages.

The data provider processes are child processes of their respective agent processes and are responsible for collecting the data. At any time, for one agent, only one instance of the agent process and data provider process must be running. The only exception here is the HMC Base agent, which is a multi-instance agent that can monitor one instance per HMC monitored.

Some agents have a data provider Perl script, which is a child of the data provider process. This Perl data provider runs while the data is being collected. The data provider process is a permanent process.

If the agent process is running, but not the data provider process, this condition is an indication that the agent is running in a troubled state.

System p agent: data collection



The Tivoli Monitoring System p agents use several mechanisms to collect data, depending on the attribute group. The most important ones are SPMI (System Performance Measurement Interface) and RSI (Remote Statistics Interface). These mechanisms are also the interfaces that are the most error-prone, and often cause a lack of data in the Tivoli Enterprise Portal.

Another important factor is the communication with the HMC. This connection is required by the VIOS Premium, CEC Base, and HMC Base agent to collect data from the managed systems.

Detect malfunctioning

- Data provider process refused to start
Shared memory corruption/lock
- Agent process or data provider lock up or stopped running
Bug in System p agent or System Performance Measurement Interface (SPMI) layer
- *<defunct>* processes are present in process list
Bug in SPMI layer, or data provider exited abnormally due to shared memory corruption/lock
- Workspaces have empty tables or zero values
Data provider exited abnormally due to shared memory corruption/lock, or SSH connection with Hardware Management Console (HMC) is failing
- Workspaces are returning incorrect data
Bug in System p agent or SPMI layer, or remote LPAR is providing incorrect data due to SPMI bug
- CEC agent shows LPAR as Unmonitored
The data provider cannot query the *xmtopas* process on the remote LPAR
- The System p agent does not show dynamically added devices
Working as designed; agent needs to be restarted

When you see one of these symptoms, the agent is not functioning normally:

The data provider process refuses to start. This situation mostly indicates that the underlying shared memory is corrupted or locked.

The agent or data provider processes failed or stopped running. This issue can be caused by a bug in the System p agent code or a defect in one of the SPMI components.

The process list shows *<defunct>* processes. This situation can be caused when the data provider process starts, but exits abnormally because it cannot access shared memory.

The workspaces in the Tivoli Enterprise Portal for the Tivoli Monitoring System p agents have no data or are returning zero values. This scenario can occur when the data provider process is not running, also because of shared memory corruption or lock. Besides, it can happen when the communications with the HMC are failing because there is a problem with the SSH connection.

The System p agent workspaces are returning incorrect and unrealistic data. There are some System p agent bugs that can cause this problem, but also the SPMI layer can provide incorrect data. The latter can happen for the local LPAR, but also when you are monitoring remote LPAR.

The CEC agent shows the status of the LPAR on the CEC as Unmonitored. This problem can be caused by shared memory corruption or lock on the monitored LPAR, or the *xmtopas* daemon is not running on the monitored LPAR.

After devices are added to the system, they are detected by the agent after you restart the agent. This behavior is working as designed.

Solving common problems (1 of 3)

- Crash of agent or data provider process
 - Apply latest maintenance of Tivoli Monitoring System p agents. Fixes can be found here:
<https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#wiki/Tivoli%20Monitoring/page/System%20P%20Agents>
- Crash of data provider process
 - Caused by defect in System Performance Measurement Interface (SPMI) layer. Latest `perfagent.tools` fileset needs to be installed, available at this web page
 - Fileset information for: `perfagent.tools`
<http://www-01.ibm.com/support/docview.wss?uid=isg1fileset-688016599>
- Data provider process refuses to start (no lockup)
 - Agent has been started first as root, and next by non-root. Some lock files are created in `/tmp` with root permissions: `/tmp/Spmi.lock`. These need to be deleted before the agent can be started again as non-root. Permissions must be `-rwsr--r--`, and owned by the user running the agents

Here are some solutions for the most common problems:

A lockup by the agent or data provider can be solved by making sure that you have the latest version of the System p agent installed.

There can also be cases that the data provider process fails because of a bug in the AIX SPMI layer. To solve such problems, you can apply the latest level of the **perfagent.tools** fileset.

You can face a situation where the data provider refuses to start but no lockup occurred and no core dump is generated. These key factors can indicate incorrect permissions for some of the lock files that are created in `/tmp`. The best solution here is to delete these SPMI lock files from `/tmp`, and try to start the agent again.

Solving common problems (2 of 3)

- System Performance Measurement Interface (SPMI) shared memory is locked or corrupted

Follow this procedure

- System P agents and shared memory corruption
- <http://www-01.ibm.com/support/docview.wss?uid=swg21413594>
 - a) Stop the System P (AIX premium, VIOS or CEC agent)
 - b) List all processes that are using libSpmi.a:
genld -l | grep -p Spmi | grep Proc
 - c) Kill those processes:
genld -l | grep -p Spmi | grep Proc | awk '{print \$2}' | xargs kill
 - d) Repeat step (b). If the processes still show up, individually **kill -9 <pid of the process>**
 - e) Clean up the stale ipcs:
ipcs -a | grep 0x78 | awk '{print \$2}'
 - f) If there are any listed from the ipcs command (step e), remove them by running:
ipcrm -m <id as returned by step i> one at a time
Repeat step e) to confirm there is no ipcs left out.
 - g) Then, run **slibclean**
 - h) Restart System p agents and ensure that data is being retrieved

If you encounter a shared memory lock or corruption, follow the procedure described on the slide. You must apply it on the local LPAR when the agent has trouble collecting data from its own LPAR. Or you can apply it if the agent has difficulties in collecting correct data from a remote monitored LPAR.

Solving common problems (3 of 3)

- Workspaces have empty tables or zero values
 - Verify whether SSL keys have been exchanged between Hardware Management Console (HMC) and the AIX LPAR/VIOS
 - Is `topas -C` returning data?
 - Check with this AIX command whether `xmtopas` is providing metrics:
`xmpeek -l`
 - Check the data in the Performance Object Status workspaces, and verify whether there are attribute groups that are not ACTIVE or are in error
 - Data collection is timing out because the underlying API is taking too much time to obtain the data. Time-out and caching settings need to be modified in agent configuration
 - CDP_DP_CACHE_TTL
 - CDP_DP_SCRIPT_TIMEOUT
 - CDP_COLLECTION_TIMEOUT
- Remote LPAR is providing incorrect data
 - `xmtopas` process needs to be running on remote LPAR
 - Check whether the System Performance Measurement Interface (SPMI) interface on the remote LPAR can be accessed:
`xmpeek -l <remote LPAR>`
 - update `perfagent.tools` to the latest level on remote LPAR
 - Clear shared memory on remote LPAR

If you have System p agent workspaces that have empty tables, or the tables are filled with zero values, you must check several things. First, check whether SSL keys are matching between the HMC and the LPAR. You can see the manuals to set it up correctly. Something that can also contribute to problems is the behavior of the `topas -C` command. If this command does not return any data or wrong data, the agent workspace is empty or provides wrong data. Another way to check whether `xmtopas` is providing any data is by running the `xmpeek -l` command. If this command gives **Rsi** errors, then you have a problem.

Some attribute groups might encounter problems collecting data; but it does not necessarily mean that SPMI is failing. When you check the Performance Object Status workspace and one or more attribute groups are not listed as ACTIVE, or have an error, the workspaces that are configured for these attribute groups are empty. In that case, you must check the logs to determine the reason why these attribute groups are failing.

Finally, workspaces can be empty when data collection is timing out and the cache expired. There can be numerous reasons for this problem; but sometimes changing the timeout and cache parameters can help.

If remote LPAR are failing to provide correct data, check first whether the `xmtopas` daemon is running on the remote LPAR. You can also check the data that the `xmtopas` daemon in the remote LPAR provides by running the command `xmpeek -l <remote LPAR>`. If this command does not return data, it can indicate that `xmtopas` daemon is not running on the remote LPAR. Another cause can be that the SPMI layer is misbehaving because of corrupted or locked shared memory, or a bug. In that case, you can try clearing shared memory or bring `perfagent.tools` to the latest level.

Enable tracing

- For V6.2.2.2 agents:
 1. Edit \$CANDLEHOME/config/xx.ini file where xx is:
 - px - AIX Premium agent
 - pk - CEC Base agent
 - va - VIOS Premium agent
 - ph - HMC Base agent
 2. Modify KBB_RAS1=ALL
 3. Restart the agent
 4. Traces are written to these files:
 - <host name>_xx_kxxagent_HEXtimestamp-nn.log
 - <host name>_xx_<data provider>_HEXtimestamp-nn.log
- For older agents see the CommonTracing web page:
<http://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#SystemPAgents-CommonTracing>

After all the previous points are checked and applied, but the agent is still not behaving correctly, you can read the log files. Mostly however, the logs are not sufficient to identify the source of any problems, and you must enable tracing. Enable tracing by setting KBB_RAS1 to the ALL level in the appropriate agent configuration file. After you restart the agent, the detailed traces are written to the log files. The detailed trace information can help to identify the problem source.

Review

- System p agent: processes and data collection
- Detect malfunctioning
- Solve common problems
- Enable tracing

Process review. If you troubleshoot a problem with the Tivoli System p agents, you must understand the processes and how they are collecting data, know how you can detect any malfunctioning of the agent, know how to solve common problems, enable traces in case you cannot solve the problems with the agent. Then, look into the log files to find out what is going wrong exactly.

Summary

Now that you completed this module, you can troubleshoot a Tivoli Monitoring System p agent to solve the most common problems

Now that you completed this module, you can investigate a Tivoli Monitoring System p agent to solve the most common problems, and enable traces, if needed.

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