

IBM Tivoli Monitoring V6.2.3

Troubleshooting guidelines in the missing or incorrect historical data scenario



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This presentation has steps for troubleshooting the missing or incorrect historical data scenario. In this scenario, the Tivoli® Monitoring product cannot correctly manage short-term historical data with unexpected outcomes on the Tivoli Enterprise Portal interface.

Assumptions

Before you proceed, the module designer assumes that you have these skills and knowledge:

- Tivoli Monitoring general architecture
- The troubleshooting approach that is based on the RAS1 logs
- Completion of the module, *IBM Tivoli Monitoring V6.2.3, Historical data collection data flow*, which describes how to configure the historical data collection

To complete this module, you need to know the general architecture of the IBM Tivoli Monitoring products and be familiar with the troubleshooting approach based on the RAS1 tracing and logging.

Objectives

When you complete this module, you can troubleshoot issues with the historical data collection

Note: This module does not cover the issues that are related to warehouse management

When you complete this module, you can troubleshoot the scenario where the monitoring product cannot collect and store historical data and has unexpected outcomes in the Tivoli Enterprise Portal interface.

Configuration files and their locations

- AGENTS:
 - On Windows®: <install path>\TMAITM6\logs\<install path>\TMAITM6\logs\<hostname>.LGx (x=1,2) (Operation Log)
 - On UNIX® or Linux®: <install path>/logs/<hostname>_pc_<hextimestamp>-nn
<install path>/logs/<hostname>.LGx (x=1,2) (Operation Log)
 - On z/OS®: Rklvlog/Rkpdlog
- Tivoli Enterprise Portal Server:
 - On Windows: <install path>\CNPS\KFWENV
 - On UNIX or Linux: <install path>/config/cq.ini
- Tivoli Enterprise Monitoring Server:
 - On Windows: <install path>\CMS\KBBENV
 - On UNIX or Linux: <install path>/config/<tems name>_ms_<tems name>.config
 - On z/OS: hlq.mlq.RKANPAR(KDSENV)
- Tivoli Enterprise Managed Agent (TEMA):
 - On Windows: <install path>\TMAITM6\<pc>env
 - On UNIX or Linux: <install path>/config/<pc>.ini
 - On z/OS: hlq.mlq.RKANPAR(K<pc>ENV)

This slide shows the physical location of the Tivoli Monitoring configuration files on supported OS platforms.

Details are provided for the three main components: Tivoli Enterprise Portal Server, Tivoli Enterprise Monitoring Server, and the agent.

RAS1 log files and their locations

- AGENTS:

- On Windows: <install path>\TMAITM6\logs\- On UNIX or Linux: <install path>/logs/<hostname>_pc_<hextimestamp>-nn
- On zOS: Rklvlog/Rkpdlog

- Tivoli Enterprise Monitoring Server and Tivoli Enterprise Portal Server:

- On Windows: <install path>\logs\- On UNIX or Linux: <install path>/logs/<hostname>_pc_<hextimestamp>-nn
- On zOS: Rklvlog/Rkpdlog (Tivoli Enterprise Monitoring Server only)

- Tivoli Enterprise Portal Browser:

- On Windows: C:\Documents and Settings\Administrator\ApplicationData\IBM\Java\Deployment\log\Plugin142.trace
- On UNIX or Linux: None

- Tivoli Enterprise Portal Desktop:

- On Windows: <install path>\cnp\logs\kcjras1.log
- On UNIX or Linux: <installpath>/logs/kcjras1.log

This slide shows the physical location of the RAS1 log files on supported OS platforms. Details are provided for the three main components: Tivoli Enterprise Portal Server, Tivoli Enterprise Monitoring Server, and the agent.

Troubleshooting strategy for the error scenario

- The history data collection allows you to collect and store data in short-term history files (on Tivoli Enterprise Monitoring Server or on agent)
 - You can see this data on specific views of the Tivoli Enterprise Portal console
- The data that is collected in the first 24 hours is stored in short-term history files
 - The older data is recorded in the Data Warehouse component (not in the scope of this module)
- For issues with historical data collection, perform these checks:
 - The Historical data collection is configured and started successfully (stage 1)
 - The Historical data are produced and available for further processing (stage 2)

The history data collection feature allows you to collect and store data in short-term history files on the Tivoli Enterprise Monitoring Server or on the agent. Then, you can retrieve such data and view it in a specific view of the Tivoli Enterprise Portal interface. The data that is collected in the first 24 hours is stored in short-term history files; data older than 24 hours are recorded in the Data Warehouse component. This second component is not in the scope of this module.

When you encounter issues with the historical data collection, you must check to see whether the historical data collection is properly configured and started, which is stage 1. Then, you ensure that the historical data is collected and stored so that you can retrieve and use it, which is stage 2.

Trace settings

- Tivoli Enterprise Portal Server:
KBB_RAS1=ERROR (UNIT:ctsql IN,ER)
- Tivoli Enterprise Monitoring Server:
KBB_RAS1=ERROR (UNIT:kpxreqds ALL) (UNIT:kpxrpcrq ALL)
(UNIT:kfasphst ALL) (UNIT: kpxhsloc ALL) (UNIT:krabhsco ALL)
- AGENT:
KBB_RAS1=ERROR (UNIT:kra ALL)

The error scenario involves all of the three main components: the Tivoli Enterprise Portal Server, which places the data request; the Tivoli Enterprise Management Server, which manages and drives the request; and the agent, which performs the data collection. Each of these components must be instrumented with specific traces, as shown in this slide. The traces that are activated on Tivoli Enterprise Management Server allow you to track the interactions between the Tivoli Enterprise Management Server and the persistent data files.

Step 1: Data collection request completes

- Tivoli Enterprise Monitoring Server: Uadvisor situation started correctly
1090922163004125KRAIRA000 Starting UADVISOR_KNT_WTLOGCLDSK
<1179648077,2263877552> for KNT.WTLOGCLDSK.
- Tivoli Enterprise Monitoring Server and TEMA establish a connection
(2009.266 01.30.04-145C:kpxreqds.cpp,474,"Update") Request
<1179648077> to node Primary:LAB232157:NT now has status 1
- Tivoli Enterprise Monitoring Server requests to start collection
(2009.266 01.30.04-1C94:kpxrpcrq.cpp,365,"PrintSelf") RPC
request <1179648077> to node Primary:LAB232157:NT address
ip:#9.168.114.50[38213]
(2009.266 01.30.04-1C94:kpxrpcrq.cpp,173,"requestStart")
StartAgent instruction UTF8: 0, len:
31[HIST()LSTDATE(1090922163004000)]
(2009.266 01.30.04-1C94:kpxreqds.cpp,474,"Update") Request
<1179648077> to node Primary:LAB232157:NT now has status 3
(2009.266 01.30.04-1C94:kpxrpcrq.cpp,269,"requestStart") RPC
StartAgent completed

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During step 1, the data collection request is started, and after processing, comes to a positive end. The operational logs (.lg0/lg1) are useful to verify that the configured historical collections started. Then, the historical collection is started for an attribute group, and a Uadvisor situation on the attribute group is started.

This log is useful because you can see which historical collections are active. There is a data collection behind each historical data collection start, like the online collection. Tivoli Enterprise Management Server establishes a connection to the agent. After the connection to the agent completes, the collection on the connected agent can begin.

Step 2: Historical data is collected at agent side

- TEMA: Collection that is associated to Uadvisor situation is started
 (2009.266 01.30.04-2110:kraafmgr.cpp,642,"Start") **Start received**
 UADVISOR_KNT_WTLOGCLDSK <1179648077,0> on *.WTLOGCLDSK
 (2009.266 01.30.04-2110:kraafmgr.cpp,646,"Start") Value of
 instruction <HIST() LSTDATE(1090922163004000)>
 (2009.266 01.30.04-2110:kraafmgr.cpp,674,"Start") **Start complete**
 UADVISOR_KNT_WTLOGCLDSK <1179648077,2263877552> on *.WTLOGCLDSK,
 status = 0
- TEMA: Collection historical data are written on persistent data store file
 (2009.266 01.35.04-242C:kraahbin.cpp,204,"WriteMetaFile") Metafile
 name is <D:\ibm\ITM\TMAITM6\logs\WTLOGCLDSK.hdr>
 (2009.266 01.35.04-242C:kraahbin.cpp,279,"WriteMetaFile") Exit
 (2009.266 01.35.04-242C:kraahbin.cpp,308,"WriteRow") _buffer_size:
 384. Application data size: 356
 (2009.266 01.35.04-242C:kraahbin.cpp,349,"WriteRow") Using timestamp
 of 1090922163504
 (2009.266 01.35.04-242C:kraahbin.cpp,356,"WriteRow") *INFO: History
 Record TimeZone Offset +25200
 (2009.266 01.35.04-242C:kraahbin.cpp,459,"WriteRow") Wrote 4 rows
 history data, UADVISOR_KNT_WTLOGCLDSK KNT.WTLOGCLDSK,
 <1179648077,2263877552>.

During this step, the collection that is associated to the Uadvisor situation is started on the agent side. After the collection on the agent is completed and the data is available, the next step is to write it on a physical file to keep it permanently. This action is done by following the attribute group metafile that drives the historical data store task. As a result, some rows (in this case, four rows) are written on the short history file. The **Wrote n Rows** string is the key point to look at to ensure that your historical collection is completed and produced some data. In this specific case, four rows of data are stored on file **WTLOGCLDSK**.

Step 3: Tivoli Enterprise Portal Server issues the historical request

- Tivoli Enterprise Portal Server: SQL query is created

```
(2009.266 02.04.16-
1F50:ctsqlstatement.cpp,212,"SQLStatement::SQLStatement")
HUB_LAB232157(60): SELECT WTLOGCLDSK.WRITETIME,
WTLOGCLDSK.ORIGINNODE, WTLOGCLDSK.INSTCNAME,
.....
WTLOGCLDSK.DSKPCTFRSP, WTLOGCLDSK.TIMESTAMP FROM KNT.WTLOGCLDSK AT (
'HUB_LAB232157' ) HISTORY() WHERE ( (WTLOGCLDSK.WRITETIME >= ?) AND
(WTLOGCLDSK.WRITETIME <= ?) ) AND ( (WTLOGCLDSK.ORIGINNODE = ?) AND
SYSTEM.PARMA("TIMEOUT", "600", 3) )
```

- Tivoli Enterprise Portal Server: SQL query variables are resolved with values

```
(2009.266 02.04.16-1F50:ctsqlstatement.cpp,237,"SQLStatement::SQL
Statement") HUB_LAB232157(60): Values: '1090922160417000'
'1090922170417000' 'Primary:LAB232157:NT'
```

In this step, you issue a request for retrieving a set of historical data. The mechanism is similar for the real-time data. First, an SQL query gets created at the Tivoli Enterprise Portal Server level. The HISTORY () clause is the relevant part, which helps distinguish a query for historical data from a query for online data, where the HISTORY() clause is not present. Then, this SQL query is resolved with values to determine the interval range of interest for the data collection.

Step 4: Tivoli Enterprise Monitoring Server starts history read data request

Tivoli Enterprise Monitoring Server manages the history read request (rpc call)

```
(2009.266 02.04.16-2E6C:kpxreqds.cpp,474,"Update") Request
<1873809319> to node Primary:LAB232157:NT now has status 1

(2009.266 02.04.16-2C44:kpxrpcrq.cpp,365,"PrintSelf") RPC request
<1873809319> to node Primary:LAB232157:NT address
ip.pipe:#9.168.114.50[10111]

(2009.266 02.04.16-2C44:kpxrpcrq.cpp,173,"requestStart")
StartAgent instruction UTF8: 0, len:
220[HISTREAD(TABLE(WTLOGCLDSK)APPL(KNT)COLS(TIMESTAMP:164,DSKPCTF
RSP:160,DSKQUELEN:156,PCTDSKTIME:152,PCTDSKWRM:148,PCTDSKRDTM:14
4,TOTALSIZE:140,PCFREE:136,PCUSED:132,FREEMGBTES:128,INSTCNAME:64
,ORIGINNODE:0,WRITETIME:180))]

(2009.266 02.04.16-2C44:kpxreqds.cpp,474,"Update") Request
<1873809319> to node Primary:LAB232157:NT now has status 3

(2009.266 02.04.16-2C44:kpxrpcrq.cpp,269,"requestStart") RPC
StartAgent completed.
```

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In this part of the flow, the historical data request gets issued as an RPC call from Tivoli Enterprise Management Server to the target agent. As in a normal request of real-time data, you can track the current state by looking at the status values. The HISTREAD clause means that the table of data of interest is read from a file.

Step 5: The agent processes the request

- TEMA: Request of history data read is received

```
(2009.266 02.04.16-2F1C:kraafmgr.cpp,642,"Start") Start received
<1873809319,0> on *.READHIST
```

```
(2009.266 02.04.16-2F1C:kraafmgr.cpp,646,"Start") Value of
instruction
<HISTREAD (TABLE (WTLOGCLDSK) APPL (KNT) COLS (TIMESTAMP:164, DSKPCTFRSP
:160, DSKQUELEN:156, PCTDSKTIME:152, PCTDSKWRTM:148, PCTDSKRDTM:144, T
OTALSIZE:140, PCFREE:136, PCUSED:132, FREEMGBTES:128, INSTCNAME:64, OR
IGINNODE:0, WRITETIME:180))>
```

- TEMA: Source file and metafile are located

```
(2009.266 02.04.16-2F1C:krarhagt.cpp,195,"SetFileNames") Setting
Datafile <D:\ibm\ITM\TMAITM6\logs\WTLOGCLDSK>,
```

```
Metafile <D:\ibm\ITM\TMAITM6\logs\WTLOGCLDSK.hdr>
```

```
(2009.266 02.04.16-2F1C:kraafmgr.cpp,674,"Start") Start complete
<1873809319,1229981629> on *.READHIST, status = 0
```

```
(2009.266 02.04.16-1B04:krabhsco.cpp,629,"KRA_OpenHistoryFiles")
Opened source file D:\ibm\ITM\TMAITM6\logs\WTLOGCLDSK
```

- TEMA: Data is returned

```
(2009.266 02.04.16-1B04:kraadspt.cpp,254,"sendDataToProxy")
Sending 20 rows for KPX.READHIST, <1873809319,1229981629>.
```

The request for data-read of the historical data gets to the agent side. The agent locates the header file (with extension `hdr`) containing the data definitions of the files that it must read. Then, it opens the source file where the historical data is physically located. Finally, it returns it as several rows to Tivoli Enterprise Monitoring Server.

Step 6: Tivoli Enterprise Monitoring Server forwards the data to Tivoli Enterprise Portal Server

- Tivoli Enterprise Monitoring Server receives the data
(2009.266 02.04.16-20C4:kpxrprcq.cpp,743,"IRA_NCS_Sample") Rcvd 20 rows sz 196 tbl *.READHIST req <1873809319,1229981629> node <Primary:LAB232157:NT>
(2009.266 02.04.16-20C4:kpxreqds.cpp,474,"Update") Request <1873809319> to node Primary:LAB232157:NT now has status 7
- Tivoli Enterprise Portal Server gets the data
(2009.266 02.04.16-29A8:ctsqlaccesssql1.cpp,1001,"CTSQLEvaluatorSQL1_i::AccessElement:pullSequenceWithTimeout") HUB_LAB232157(60): Rows returned: 20

During this step, Tivoli Enterprise Monitoring Server receives the 20 rows that the agent sent and marks the request with status=7, which means that the data arrived correctly. Then, Tivoli Enterprise Management Server passes back the 20 rows to Tivoli Enterprise Portal Server, which closes the initial SQL query for historical data.

Step 7: Workspaces are filled with data

Recording Time	Server Name	Logical Disk Name	Free Megabytes	% Used	% Free	Total Size	% Disk Read Time	% Disk Write Time	% Disk Time	Disk Queue Length (Requests)	Avg Disk I/O/second	Timestamp
2/20/2009 16:35:00	Primary_LAB232157.NT	C:	1,463	86	14	10,237	0	0	0	0	0	2/20/2009 16:35:03
2/20/2009 16:35:00	Primary_LAB232157.NT	D:	30,978	53	47	66,080	0	0	0	0	0	2/20/2009 16:35:03
2/20/2009 16:35:00	Primary_LAB232157.NT	E:	7,436	94	6	131,062	0	0	0	0	0	2/20/2009 16:35:03
2/20/2009 16:35:00	Primary_LAB232157.NT	Total	39,877	81	19	207,379	0	0	0	0	0	2/20/2009 16:35:03
2/20/2009 16:40:00	Primary_LAB232157.NT	C:	1,462	86	14	10,237	0	0	0	0	0	2/20/2009 16:40:02
2/20/2009 16:40:00	Primary_LAB232157.NT	D:	30,979	53	47	66,080	0	0	0	0	0	2/20/2009 16:40:02
2/20/2009 16:40:00	Primary_LAB232157.NT	E:	7,436	94	6	131,062	0	0	0	0	0	2/20/2009 16:40:02
2/20/2009 16:40:00	Primary_LAB232157.NT	Total	39,878	81	19	207,379	0	0	0	0	0	2/20/2009 16:40:02
2/20/2009 16:45:00	Primary_LAB232157.NT	C:	1,462	86	14	10,237	0	0	0	0	0	2/20/2009 16:45:02
2/20/2009 16:45:00	Primary_LAB232157.NT	D:	30,979	53	47	66,080	0	0	0	0	0	2/20/2009 16:45:02
2/20/2009 16:45:00	Primary_LAB232157.NT	E:	7,436	94	6	131,062	0	0	0	0	0	2/20/2009 16:45:02
2/20/2009 16:45:00	Primary_LAB232157.NT	Total	39,878	81	19	207,379	0	0	0	0	0	2/20/2009 16:45:02
2/20/2009 16:50:00	Primary_LAB232157.NT	C:	1,461	86	14	10,237	0	0	0	0	0	2/20/2009 16:50:03
2/20/2009 16:50:00	Primary_LAB232157.NT	D:	30,977	53	47	66,080	0	0	0	0	0	2/20/2009 16:50:03
2/20/2009 16:50:00	Primary_LAB232157.NT	E:	7,436	94	6	131,062	0	0	0	0	0	2/20/2009 16:50:03
2/20/2009 16:50:00	Primary_LAB232157.NT	Total	39,877	81	19	207,379	0	0	0	0	0	2/20/2009 16:50:03

On this slide, you see the four rows of data returned. The Tivoli Enterprise Portal view shows the 20 rows of data returned, circled on the slide. You can easily determine that there is historical data available for a view by looking at the hourglass symbol on the upper left corner of the window. Another good indication is the **Recording Time** column that is specific to the historical data tables.

Summary

Now that you completed this module, you can troubleshoot issues with the historical data collection with incorrect or empty outcomes in the related view on the Tivoli Enterprise Portal

Now that you completed this module, you can troubleshoot the scenario where the monitoring product cannot collect and store historical data.

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