



IBM Cognos TM1 & Planning Analytics

Interpreting TM1Top

& Operations Console Output

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1. Important Links

[Using the TM1 Top Utility](#)

[Using the IBM Cognos TM1 Operations Console](#)

[IBM Cognos TM1 Server Monitor Plug-in for Apache JMeter](#): The IBM Cognos TM1 Server Monitor Plug-in for Apache JMeter is a plugin for the Apache JMeter performance testing tool. It allows its user to monitor TM1 server activity in real-time while running an Apache JMeter performance test or to view and analyze existing TM1Top log files.

Activity Monitoring, Logging & Server Health Monitoring with Planning Analytics Workspace (PAW):

https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_configure_server_admin_settings.html,

https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_monitor_server_health.html

2. Understanding TM1 Thread Processing States

TM1Top displays the current processing state of each thread in the State column. A thread can be in one of the following processing states:

State	Description
Idle	Thread is currently not processing.
Run	<p>Indicates the thread is actively running. Also displays the lock mode and object being accessed by the thread in the following format:</p> <p>Run: <i>Lock Mode-(Object Name)-Object Type</i></p> <p>Where:</p> <ul style="list-style-type: none"> • Lock Mode is one of the possible object lock modes; R, IX, or W. For more information, see Understanding TM1 Lock Modes. • Object Name is the name of the last TM1 object that was being acted on by the API function displayed in the Function field. • Object Type is a numeric value representing the type of TM1 object.
Commit	Thread is currently committing changes to the objects it was accessing.
Rollback	Indicates the thread encountered a conflict while committing and could not proceed. The thread will automatically re-try until the conflict is resolved.
Wait	<p>Thread is currently waiting for a specific condition to complete. Displayed in the format:</p> <p>Wait: <i>Wait Status - (Object Name) - Object Type</i></p> <p>Where:</p> <ul style="list-style-type: none"> • Wait Status can be one of the following conditions: <ul style="list-style-type: none"> • WR - (WaitForWriterEvent) Thread is waiting for R-locks to be released so it can obtain a W-lock on the object. • IXR - (WaitForIXReaderEvent) Thread is waiting for a W-lock to finish so it can get either an R-lock or an IX-lock on an object. • IXC - (WaitForIXConflictEvent) Thread is requesting an IX-lock, but is waiting for another thread with an IX-lock on the same

State	Description
	<p>object to finish and release the lock.</p> <ul style="list-style-type: none"> • IXCur - (WaitForIXCurrentEvent) Thread is requesting an IX-lock for an object, but is waiting for a thread with a R-lock on the same object to release its lock. • WC - (WaitForCompletionEvent) Thread is waiting for another thread to complete and release its locks. • DRR - (Data Reservation Release) Thread is waiting for a Data Reservation to be released. • <i>Object Name</i> is the name of the last TM1 object that was being acted on by the API function displayed in the Function field. • <i>Object Type</i> is a numeric value representing the type of TM1 object.
Login	A user is currently logging into the TM1 server.

3. Understanding TM1 Lock Modes

TM1® uses a set of three lock modes to control access to TM1 data.

When the TM1 server is running, these locks are applied to individual objects, such as cubes, views, and dimensions, as these objects are accessed.

TM1 Top displays the status of these locks for the objects being used by the current threads running in a TM1 server. Lock status is displayed by TM1 Top under the State, Obj Lock Status, and Total Lock Status fields.

The lock modes for TM1 objects are described in the following table.

Lock Mode	Description
R	R-lock (read lock) - A shared lock that allows many threads to read from an object at the same time, but does not allow another thread to modify or write to this object until all R-locks have been released.
IX	IX-lock (intent-to-write-lock) - A lock that reserves the right for a thread to obtain a W-lock on an object when all R-locks have been released. Only one thread at a time is allowed to have an IX-lock on an object.
W	W-lock (write lock) - An exclusive lock that allows only one thread at a time to access and write changes to an object. No other thread can read or modify this object until the W-lock has been released.

4. Identifying a locked object

In some cases (depending on the process or activity or cause of the lock), TM1Top or TM1 Operations Console may indicate a Write or IX lock without displaying the name of the object that is locked or even the procedure that may be requiring the object or locking it. For example, if a TI-process executes sub-processes, Operations Console and TM1 top will typically show the last sub-process that was triggered/run, even though the sub-process may have already finished and processing is continuing. TM1 provides the following functionality to debug and troubleshoot object contention and locking:

4.1 Lock debugging & troubleshooting with TM1 version < 10.2.2

Caveat: this log option for TM1 < Version 10.2.2 is very verbose and should be used only temporarily (for troubleshooting purposes only).

1. In the TM1 Server data directory, edit file `tm1s-log.properties` in a text editor, and add the following line: **`log4j.logger.TM1.Lock=DEBUG`**
(the TM1 Server does not need to be restarted)
2. Reproduce the problem. Once done, open `tm1server.log` and search for the any lines that contains "Waiting for lock", for example:
TM1.Lock Waiting for lock 0x0000000007D22940
Then search for any occurrence of object ID "0x0000000007D22940" in the log. Some lines like this should be found:
*TM1.Lock Lock 0x0000000007D22940(0x0000000007D22010) granted, Mode 1, Name
OBJECT_NAME*

4.2 Lock debugging & troubleshooting with TM1 version 10.2.2 or higher

This log option for TM1 Version 10.2.2 or higher is not very verbose and may be used in Production environments. This DEBUG logging option was added in TM1 10.2.2 to reduce the amount of logging in the `tm1server.log` file while still showing the name of the locked object.

1. In the TM1 Server data directory, edit file `tm1s-log.properties` in a text editor, and add the following line: **`log4j.logger.TM1.Lock.Exception=DEBUG`**
(the TM1 Server does not need to be restarted)
2. Reproduce the problem. Once done, open `tm1server.log` and search for the any lines that contains "Waiting for lock", for example:
TM1.Lock Waiting for lock 0x0000000007D22940
Then search for any occurrence of object ID "0x0000000007D22940" in the log. Some lines like this should be found:
*TM1.Lock Lock 0x0000000007D22940(0x0000000007D22010) granted, Mode 1, Name
OBJECT_NAME*