ORACLE DATA SHEET

Oracle Enterprise Manager for TimesTen In-Memory Database

ORACLE TimesTen

Oracle Enterprise Manager for TimesTen In-Memory Database provides comprehensive real-time performance analysis and database availability monitoring for your TimesTen databases. Together with Oracle Enterprise Manager Cloud Control 13c, they provide a complete, cost effective and easy to use solution for monitoring and managing TimesTen database systems.

KEY FEATURES

- Real-time performance and availability monitoring
- Database and Instance administration
- Automate backups and database restore
- Cache and replication activity reporting
- SQL cache and transaction monitoring
- Threshold and event management

KEY BENEFITS

- Comprehensive database monitoring and notification
- Simplify the administration of databases and instances
- Leverage Cloud Control infrastructure for mass deployment
- Monitor and manage your complete Oracle IT infrastructure from a single console

Enterprise Manager for TimesTen Overview

Oracle Enterprise Manager for TimesTen In-Memory Database is a plug-in software component deployed as an Oracle Enterprise Manager Agent, running on the same server as that of the TimesTen software. The plug-in provides database administrators the ability to administer and manage the TimesTen instances and databases such as starting and stopping TimesTen services, loading and unloading databases to and from memory, and backing up and restoring databases. In addition, the users can monitor TimesTen database activities, memory and disk usages, workload performance statistics and configuration information. This plug-in is available for TimesTen In-Memory Database, and TimesTen Application-Tier Database Cache.

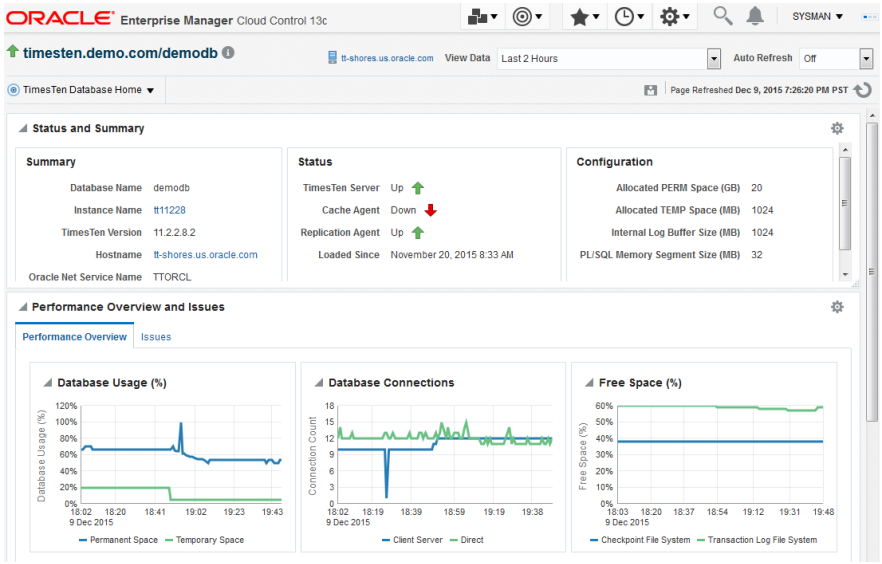

Figure 1. Enterprise Manager for TimesTen In-Memory Database

Enterprise Manager for TimesTen can be used to monitor and administer TimesTen instances and databases. Configuration and performance metrics are automatically collected in real-time and stored in the management repository, thereby enabling

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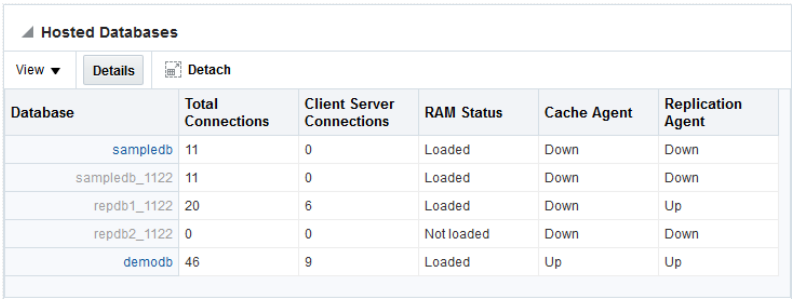
historical analysis and trending. Users can analyze database performance through various historical views such as last 2 hours, last 24 hours, last 7 days and last 31 days. Historical metrics can also be used to establish a baseline for database performance under normal conditions.

Single Centralized Instance View

Using a single centralized Instance view, users can monitor and manage all of their TimesTen databases. The *Instance Home* view provides a summary of the Instance's health along with configuration information that includes TimesTen software version, status of the instance services, and status of all databases under that instance. Users may also drill down to specific database for more details. Additionally, Instance level services can be stopped and restarted from within the same console.



Database	Total Connections	Client Server Connections	RAM Status	Cache Agent	Replication Agent
sampledb	11	0	Loaded	Down	Down
sampledb_1122	11	0	Loaded	Down	Down
repdb1_1122	20	6	Loaded	Down	Up
repdb2_1122	0	0	Not loaded	Down	Down
demodb	46	9	Loaded	Up	Up

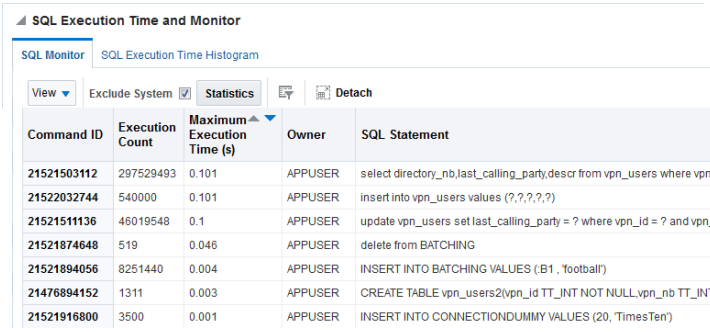
Figure 2. TimesTen Instance Home – Hosted Databases

CAPTURE PERFORMANCE METRICS IN KEY AREAS:

- Cache operations
- Checkpoint history
- Connection rates
- Disk usage
- Locks
- Log activity
- Memory Usage
- Replication
- SQL command cache
- Transaction monitor
- Workloads

Database Usage and SQL Monitoring

The *TimesTen Database Home* view provides a summary of the database being monitored, including configuration details and status of database services. Users can monitor database activities such as the number of connections, in-use database size, disk space usages for transaction logging and database checkpoints, etc. For performance troubleshooting, the SQL section provides information for the most executed SQL statements, average statement execution time, and the long running queries in the application workload. The plug-in also supports management functions such as database restart, load and unload databases to and from memory, set and modify database policy, start and stop database services, all from the same console.



Command ID	Execution Count	Maximum Execution Time (s)	Owner	SQL Statement
21521503112	297529493	0.101	APPUSER	select directory_nb,last_calling_party,descr from vpn_users where vpn_id = ? and vpn_nb= ?
21522032744	540000	0.101	APPUSER	insert into vpn_users values (?,?,?,?,?)
21521511136	46019548	0.1	APPUSER	update vpn_users set last_calling_party = ? where vpn_id = ? and vpn_nb = ?
21521874648	519	0.046	APPUSER	delete from BATCHING
21521894056	8251440	0.004	APPUSER	INSERT INTO BATCHING VALUES (:B1 , 'football')
21476894152	1311	0.003	APPUSER	CREATE TABLE vpn_users2(vpn_id TT_INT NOT NULL,vpn_nb TT_INT NOT NULL,directory_r
21521916800	3500	0.001	APPUSER	INSERT INTO CONNECTIONDUMMY VALUES (20, 'TimesTen')

Figure 3. TimesTen Database Home - SQL Monitor

Database Performance

There are seven categories of database performance metrics for real-time analysis: application connections, SQL statements, application workload, transactions, lock contention, transaction logs and database checkpoints. Users can monitor deadlocks by looking for open transactions that compete and wait for the same locks; view transaction commit and rollback rates for insights on transaction throughput. TimesTen databases are fully persisted to disk storage for database restart and recovery purposes; users can monitor database checkpoint and transaction logging rate to help detect potential I/O contention. The *Database Performance* view can also be used to identify inefficient application code by monitoring the frequency of connect and disconnect, ratio of SQL statement prepare versus execution, etc.

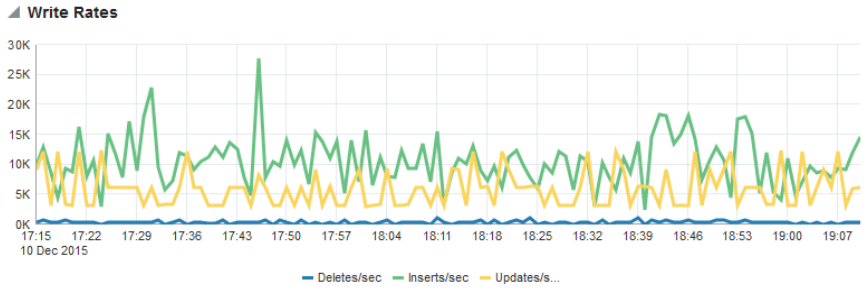


Figure 4. TimesTen Database Performance

ROBUST THRESHOLD ALERTS AND NOTIFICTION

- User-defined thresholds
- Alerts and notifications
- Blackouts
- Customized policies

Automatic Database Backup and Restore

System operators can use the TimesTen plug-in to automate database backup operations with user-specified backup schedules and frequency, with the option to perform full and incremental backups. Backup frequency can be set on an hourly, daily, weekly, or monthly basis, as well as managing the storage usage by specifying the maximum number of backups to retain before recycling older backups. A database can be restored using a specific backup available from the list of backup files.

Cache Synchronization

When using TimesTen as an application-tier cache database for the Oracle Database, users can monitor the transaction flows between the TimesTen database and the Oracle Database to ensure that data synchronization is going smoothly. Detailed metrics for cache groups include transaction propagations and refreshes to and from the Oracle Database, number of pending refreshes from the Oracle Database, number of transaction batches sent to the Oracle Database, and total numbers of rows inserted/updated/deleted for each cache group type.

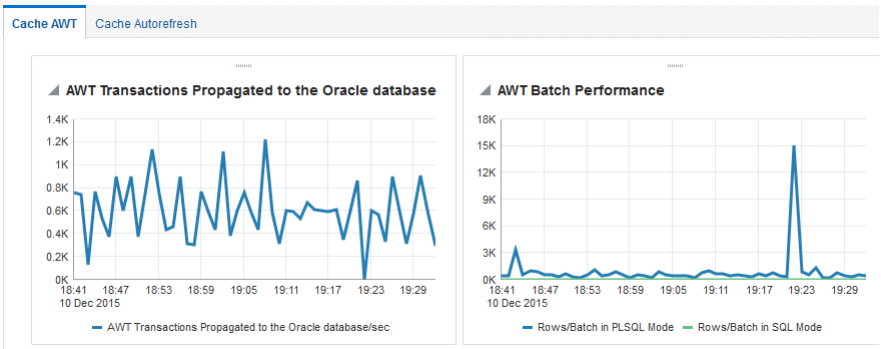


Figure 5. Cache Synchronization Metrics

Replication Monitor

The *Replication Monitor* provides an overview of replication activities on the target database with status and properties of the replication components in the TimesTen instance. Replication performance metrics such as transactions sent/received rates and the pending replication logs can be used to indentify lags between the master and the standby database, and the same metrics can be used to detect data propagation delays between the Asynchronous Write-Through (AWT) cache groups in TimesTen and the Oracle Database.

Robust Threshold Alerts and Notification

To monitor and manage the system by exception, users may define thresholds for generating critical events and notifications. Supported notification types include email, SNMP traps and custom scripts.

Centralize Monitoring Functions

Oracle Enterprise Manager for TimesTen In-Memory Database provides system administrators with a consolidated view of the TimesTen systems within the enterprise. It enables administrators to manage and monitor the health, availability and performance of the TimesTen databases from a central management console.

RELATED PRODUCTS

- TimesTen In-Memory Database
- TimesTen Application-Tier Database Cache
- Oracle Enterprise Manager

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