

APM Database Maintenance Guidelines

Review Draft

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Table of Contents

1. Introduction
 2. Guiding Principles
 3. Database Retention and Data Maintenance
 4. Out of Scope
 5. Recommended Database Maintenance Tasks
 6. Initial Steps in Defects/Stats Aggregation Cases
 7. Etcetera
 8. Appendix 1: List of Tables by Categories
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1. Introduction

Many APM sites have a tremendous amount of customer data used to generate various reports. This is likely a result of the following:

- Large application triage maps
- High number of defects/defects meta-data.
- Many users, user groups, and hourly session data.

As a result, proactive and continuous database maintenance/optimization is crucial for long-term APM stability. This technical note supplements the official documentation on best practices in this area. It is hoped to be a living document. Your feedback and suggestions are welcomed to improve future versions.

2. Guiding Principles

- An ideal APM database:
 - Runs with minimum errors and problems
 - Has optimal performance for database reads, writes, updates, and deletes.
 - Can handle current and future database needs.
 - Has minimal data loss/corruption.
- Supplement the activities presented below with
 - Best practices outlined in the Postgres/Oracle database administration manuals. (See References below for more detail.)
 - The APM DBA proactively performs database optimization/maintenance.
 - Creating a run book of APM database operations and best practices.

3. Data Retention and Database Maintenance

For the first time ever in one place, this section summarizes the configurable and non-configurable database settings. (See Appendix 1 for the specific tables used.)

This section attempts to clarify which categories are and are not covered by database retention settings.

Database categories with configurable retention settings

The bulk of the APM database is **statistical data**. This is kept for user and user groups at hourly/daily/weekly/monthly/yearly level for each business service, business transaction, and transaction. The data retention settings for these as well as for inactive users can be found on the APM CE GUI Setup>Domain page.

Data Retention Settings		
Make Users Inactive after:	<input type="text" value="730"/>	days
Keep Hourly User Statistics for:	<input type="text" value="3"/>	days
Keep Daily User Statistics for:	<input type="text" value="15"/>	days
Keep Weekly User Statistics for:	<input type="text" value="26"/>	weeks
Keep Hourly User Group Statistics for:	<input type="text" value="3"/>	days
Keep Daily User Group Statistics for:	<input type="text" value="15"/>	days
Keep Weekly User Group Statistics for:	<input type="text" value="26"/>	weeks

Some thought should be given in setting these values. Setting some values too low (particularly inactive users) can grow quickly a database and make it sluggish. Setting a value too high (such as the statistics values) could impact daily aggregation and those aggregations dependent on it (such as weekly aggregation).

Defects also has configurable data retention setting. This is done though the APM CE GUI Setup > Incident Settings page.

Incident Management Settings		Valid Values
Evaluation Interval:	<input type="text" value="5"/> minutes	5 - 60
Delete Defects after :	<input type="text" value="7"/> days	1 - 730

Events is the third area with configurable data retention settings. To set this, access the APM CE GUI System > Events page, and then click on the Event Manager tab.

Event Manager | Events

Maximum Number of Events to Keep:

Delete Events After: days

Event Email Notification:

Session Map data are in partition tables which get dropped according to the Session timeout value. The default value is 60 (minutes). This can be configured through the APM CE GUI Administration -> Business Applications -> General (under specific application)-> Session Timeout page.

So, the four types of data are configurable are tang_events, session partitions, defects and stats. These are the only tables which have retention settings as part of the design

Business Application: Default Application

You can modify the general configuration of an existing business application or click one of the I

General

Name: Default Application

Description:

Type:

Authentication Type:

Case Sensitive URL Path:

Case Sensitive Login Names:

Session Timeout: minutes (5 or greater)

User Processing Type:

Character Encoding:

The following are other configurable changes:

1. In the <EM_HOME>tess-default.properties/tess-customer-properties, there is a setting that impacts how long **concurrent session data** is kept in the APM database:

Concurrent session data is removed from the database when it is older than this value (2-24)

concurrentSessionData.purgeAfter_Months=3

Notes:

- Some customers generate a lot of inactive users. If this is the case, please open up a support case, to get the script to purge a large number of inactive users.
- Scripts to soft-delete other tables may be created on a case by case basis.

Database categories with non-configurable retention settings

There are other tables that are not configurable by design and do not include soft delete record fields at the present time. These include the following:

- Appmap

- Quartz (Report Scheduler)
- Audit Records
- Daily/Hourly Aggregation logs
- Service Start Times
- Hourly Defect Re-aggregation
- Session Usage Data

There are many other tables in this category that should never be deleted. These include most of the configuration settings found in the APM CE GUI such as Domain settings.

4. Out of Scope

This document does not cover the following:

- A comprehensive tutorial on Postgres or Oracle Database Administration.
- An overview of the APM database schema or internals

5. Recommended Database Maintenance Tasks

When opening up support cases, customers usually report the following symptoms that may be indications of defect/statistical aggregation failure.

Postgres

http://wiki.postgresql.org/wiki/Disk_Usage

<http://stackoverflow.com/questions/10006294/simplify-an-postgres-sql-query-for-listing-table-and-index-sizes>

Oracle

http://www.dba-oracle.com/t_script_oracle_table_size.htm

6. Etcetera

Related TTs

The following are some of the Team Tracks Associated with these issues

Credits & Acknowledgements

Thanks to Sivasankari Gnanasekaran for her patient explanation on database retention/maintenance.

References

Some of the above information was directly pulled from these resources:

Sivasankari Gnanasekaran, Bi-weekly CEM-CSE Meeting Minutes April 16th, 2014.

Sivasankari Gnanasekaran APM Database Categories

The following documentation was not reviewed in creating this document and is provided for the convenience of the reader.

<http://www.postgresql.org/docs/9.3/interactive/> is an example of on-line Postgres database administration documentation.

http://docs.oracle.com/cd/E16655_01/index.htm is an example of on-line Oracle database administration documentation.

Appendix 1: List of Tables by Categories

Database Tables with configurable retention settings	
1. Statistics	ts_st_ts_all_dly ts_st_ts_all_int ts_st_ts_all_mly ts_st_ts_all_wly ts_st_ts_usgrp_int ts_st_ts_usgrp_mly ts_st_ts_usgrp_wly ts_st_ts_usgrp_dly ts_st_ts_us_dly ts_st_ts_us_int ts_st_ts_us_mly ts_st_ts_us_wly ts_st_tsgrp_all_dly ts_st_tsgrp_all_int ts_st_tsgrp_all_mly ts_st_tsgrp_all_wly ts_st_tsgrp_usgrp_dly ts_st_tsgrp_usgrp_int ts_st_tsgrp_usgrp_mly ts_st_tsgrp_usgrp_wly ts_st_tsgrp_us_dly ts_st_tsgrp_us_int ts_st_tsgrp_us_mly ts_st_tsgrp_us_wly ts_st_tu_all_dly ts_st_tu_all_int ts_st_tu_all_mly ts_st_tu_all_wly ts_st_tu_usgrp_dly ts_st_tu_usgrp_int ts_st_tu_usgrp_mly ts_st_tu_usgrp_wly ts_st_tu_us_dly ts_st_tu_us_int ts_st_tu_us_mly

	ts_st_tu_us_wly
2. Defects	ts_defect_meta_values ts_defects ts_tran_comp_details
3. Session maps	ts_us_sessions_map
4. TIM Events	tang_events
5. User/Usergroup	ts_user_logins_map ts_usergroup_users_map ts_users
6. Reports	ts_cached_reports
Database Tables with non-configurable retention settings	
1. Appmap	apm_agent apm_edge apm_metric_path apm_owner apm_vertex apm_vertex_logical_equivalence apm_vertex_type
2. Quartz (Reports Scheduler)	qrtz_blob_triggers qrtz_calendars qrtz_cron_triggers qrtz_fired_triggers qrtz_job_details qrtz_job_listeners qrtz_locks qrtz_paused_trigger_grps qrtz_scheduler_state qrtz_simple_triggers qrtz_trigger_listeners qrtz_triggers
3. Analysis (Audit, Aggregation, Services, Session Maps)	ts_audit_record_props ts_audit_records ts_daily_aggregation_log ts_hourly_aggregation_log ts_services_start_times ts_defects_reaggr_intervals ts_session_usage_daily ts_session_usage_interval ts_session_usage_monthly ts_session_usage_weekly
4. Tables that should not be deleted.	ts_roles

	ts_report_types
	ts_report_type_param_values
	ts_report_param_keys
	ts_monitor_types
	ts_introscope_ems
	ts_locks
	ts_introscope_configs
	ts_impact_settings
	ts_entity_service
	tang_config
	ts_domains
	ts_sm_groups
	ts_sm_web_servers
	ts_operators
	ts_operator_role_map
	ts_defect_importances
	ts_tran_importances
	ts_app_auth_types
	ts_app_types
	ts_tran_types
	ts_attributes
	ts_protocols