

Piper-Rx Application Monitor (*PAM*)

PAM – what, how and why....

PAM Version 1.0

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1 What you need to run PAM

1. An application schema account with the following privileges:
 - ❖ Connect
 - ❖ Resource
 - ❖ DBA
 - ❖ Select any table
 - ❖ Execute any procedure
 - ❖ Select any dictionary
2. A copy of TOAD[®] for Oracle
3. SMTP service available on the target application database
4. Sign-on audit level set to a Responsibility. PAM requires a minimum of Responsibility level to report on application full service activity

2 PAM - technical & legal information

2.1 Open source

The PAM application, including all source code is made available under the terms of the GNU Affero General Public License as published by the Free Software Foundation www.gnu.org/licenses/gpl.html and is subject to the PIPER-RX legal notices and disclaimer. Refer to the disclaimer section of our web site www.piper-rx.com.

2.2 How PAM works

PAM consists of approximately:

- ❖ 12 control and check procedures
- ❖ 11 reporting procedures
- ❖ 20 tables

At a regular intervals, using the **DBMS JOBS** function, a controlling procedure checks to see if there are any checks (procedures) to be run to check the application.

On exception, an alert is registered and an alert message is sent via e-mail using the database **UTL.SMTP** function to the target recipient.

It's that simple!

3 General features

3.1 Install / uninstall

The install process should take no longer than 5 minutes and does not require root level access.

Unlike some tools on the market, the uninstall process will remove all traces of the PAM application by removing PAM pre registered objects.

3.2 No complex setup process

Out of the box, PAM will set many of the alert thresholds based on the applications current activity levels.

All check frequencies are pre set.

3.3 Smart alerting

PAM is an “alert on exception” application. In many cases PAM will generally alert once per day for a given item e.g. when the number of completed requests exceeded its threshold value.

Where an alert related matter is considered fixable, e.g. the Workflow mailer is experiencing issues, PAM will alert until the item is actioned.

In some instances where continued alerting is of limited value add, PAM will slow the alert frequency down (configurable) so as not to cause mail storms or repeated (annoying) advice to the recipient.

PAM E-mail alerts provide instructions on which of the many TOAD[®] Reports Manager based reports to run to gain more information on the alert.

All Individual checks can be turned off if not required.

3.4 Clone protection feature

If the application running PAM is cloned, when the clone is started PAM will auto disable its self thus preventing duplicate e-mail alerts. Re enabling PAM in the cloned environment is a simple process.

3.5 Check frequency scheduler

PAM provides the ability to run individual checks in **N** minute, **N** hour, **N** day, **N** week, **N** month time intervals.

3.6 Time of day

For daily, weekly and monthly checks PAM provides the ability to set the time of day (hour only) that the check will run so you don't accidentally run checks during the working day or during your backup period.

3.7 Time creep function

Many single thread monitors have a tendency for their check and or collection process to time creep; that is, the check or collection process runs a little later each day. PAM's time creep function prevents this from occurring (daily, weekly and monthly scheduled checks only).

3.8 Extensible

PAM is fully extensible; in fact we provide a detailed tutorial with four examples and all the PLSQL you will need to add your own application checks.

3.9 Self managing

We believe monitoring tools should be self managing. PAM will auto purge tables that collect data such as alerts, debug information, application historical activity etc... The amount of data being held in each object is fully configurable.

3.10 Auto thresholds

PAM provides an auto threshold feature for a number of alert checks. We use the current application activity levels to set alert threshold values.

- ❖ PAM will set an initial alert threshold on install so you are ready to go
- ❖ Where there is insufficient on-line history available for setting thresholds for selected alerts, the Auto threshold feature will be disabled. When sufficient on-line history is available the auto threshold will be re enabled.
- ❖ On a periodic basis PAM will reset alert thresholds based on the application activity levels (this feature can be turned off entirely or turned off for individual checks)

Auto thresholds are set for:

- ❖ Application response time
- ❖ Concurrent requests - completed total, error and warning
- ❖ Application connections
- ❖ Self service connections
- ❖ Self service page requests
- ❖ All workflow statuses
- ❖ Workflow mailer items

3.11 APIs

Provides approximately 50 APIs to simplify the management of PAM

3.12 Self checking

The heart beat e-mail feature will alert if any PAM object has become invalid

4 E-mail alerting

4.1 Grouped e-mail alerts

PAM prevents alert e-mail storms by grouping large numbers of the same alerts into a single e-mail. The number of alerts to be grouped is configurable.

4.2 Multiple destinations routing

PAM provides the ability to send different alerts to different recipients e.g. workflow alerts to the workflow administrator, user alerts to the Applications administrator etc...

4.3 Heart beat e-mail

If everything is running well you will not receive PAM alert e-mails. Because of this PAM provides a heart beat e-mail to let you know PAM is still working. The heart beat e-mail lists the number of alerts generated between heart beats and any PAM object errors that may have been occurred.

4.4 What to do with the E-mail notification

Each alert e-mail provides detailed information on the nature of the alert and what to do to find out more information about the issue

5 Application performance

PAM monitors the overall application performance by measuring a single application response time indicator (the runtime of the concurrent program FNDOAMCOL). Over the years it has been found this performance measure provides a realistic high-quality indicator as to the application's general condition.

PAM also records the response time history providing accurate activity level profiling.

As part of the PAM install process PAM loads any historical performance activity into the PAM response time history table thus providing valuable information from day 1.

6 User Activity

6.1 Aged application accounts

PAM alerts when there are unused accounts that are candidates for end dating. PAM provides the processes needed to exclude appropriate accounts from the aged account check.

6.2 End dated accounts

There are a number of accounts such as SYSTEM and GUEST that should not, under normal circumstances, be end dated. PAM will alert if any of the monitored accounts have been end dated.

6.3 Expired accounts

It would, for example, create a number of issues if the SYSTEM account was closed. PAM will alert if any of the monitored accounts have expired.

6.4 Current connections

A large number of connected users may place higher loads on the application, and application architectural components. PAM will alert if the number of connected users exceeds the threshold value.

6.5 Unsuccessful logons

PAM will alert when any account has had more than three (configurable) unsuccessful login attempts on an account by account basis. PAM will continue to alert if there are more unsuccessful attempts on individual accounts during the course of the day.

6.6 Self service sessions

A large number of connected users may place higher loads on the application, and application architectural components. PAM will alert if the number of concurrent self service sessions exceeds the threshold value.

6.7 Self service page requests

PAM will alert if the number of page requests exceeds the threshold value. This will help alert you when your web servers are being put under increasing load by application users.

6.8 Self service session limits

Nothing is more annoying than having to regularly reconnect your session due to session timeouts caused by low session limits, particularly if you are a customer. PAM will alert if any self service session has exceeded either its time or page limits.

7 Concurrent managers

7.1 Concurrent manager status

PAM alerts when the concurrent managers are down and you have not turned them off. (There is no real value in being continually alerted every 5 min that the managers are down when you have turned them off!) PAM will also send an alert if a manager shutdown request has been issued.

7.2 Pending request

PAM alerts when the number of pending requests exceeds the calculated threshold value for any given concurrent manager. The calculation is based on the number of concurrent manager processes the manager has been assigned.

7.3 Long running requests

PAM alerts when requests have been running longer than “normal” based on runtime stats collected by the OEBS application. Individual programs can be excluded from this check via the program exceptions feature.

8 Concurrent Requests

8.1 Aged on-hold requests

PAM provides a gentle reminder to cleanup all those old requests that have been on-hold for long periods

8.2 Completed requests

PAM alerts when the number of completed requests exceeds a threshold value.

8.3 Completed error / warning

PAM alerts when the number of error or warning requests exceeds a threshold value.

9 Concurrent Programs

PAM provides a fully configurable concurrent program monitor. You decide what programs should be monitored (but PAM does provide a starter list).

9.1 Monitored programs

There are many “normal” maintenance programs that should be run such as purge concurrent requests. PAM will alert when a monitored program either does not exist or has been placed on-hold.

9.2 Completed error or warning

PAM alerts when a monitored program completes with a status of error or warning.

9.3 Alert when submitted

Pam alerts when a monitored program has been submitted (such as a concurrent manager shutdown)

9.4 Duplicate requests

A duplicate request is defined as the same user submitting two or more of the same program with the same arguments. It should not include on-hold and scheduled requests.

PAM alerts when duplicate requests are detected, identifying who and what has been submitted. One or more concurrent programs can be excluded from this check, such as request sets and request set stages etc... these are excluded out of the box.

10 Daily activity monitor

PAM monitors the total daily activity of the application completed on the prior day and records the activity. The daily activity is also collected retrospectively on install and also if the collection has not been run for a period of time. In this way you have the history to add value from day one and no missing data.

The daily activity data collected includes:

- ❖ Number of requests
- ❖ Number of error and warning requests
- ❖ The amount of log and out file space being generated
- ❖ The number of full and self service connections including some basic connection statistics
- ❖ Application response time statistics for the day

Great stuff for activity profiling...

11 Database activity

Time to re-iterate **PAM is not a database monitor**; there are plenty of good Oracle database monitors on the market.

However, this being said, there are a number of database related items that are of interest to the pure applications administrator and outside the typical DBA administrator field. These are:

11.1 Invalid objects

PAM will alert if any application registered or PAM object has become invalid since the last invalid object check. PAM does not continually alert for the same invalid object. In the unlikely event that several thousand objects become invalid (it does happen) PAM will generate a single alert showing the number of invalid objects.

It is not for the administrator to identify why the object became invalid or to recompile the object. However, it is very helpful to know of any newly invalidated objects. For example, if a new AR object becomes invalid, the administrator can be fore warned that any left field issue related to AR may be associated with the newly invalidated object.

11.2 Index maintenance

Indexes on dynamic tables such as *fnd_concurrent_requests* and *wf_item_activity_statuses* should be rebuilt on a regular basis. PAM provides an index rebuild alert to remind you that your selected indexes have not been rebuilt in **N** months. Further indexes can be added to the index check in addition to those provided out of the box.

11.3 DB free space

PAM will alert if any tablespace free space drops below a threshold percentage. Unlike most tools PAM will only alert when tablespace shrinks. Individual tablespaces can be excluded from this check.

12 General Application

12.1 Sign-on audit level

PAM will alert if the sign-on audit level changes from the defined setting. PAM requires a minimum of Responsibility level to report on full service activity.

12.2 Maintenance mode

PAM will alert if the application has been placed maintenance mode. Once in maintenance mode users are unable to connect to the application. PAM's maintenance mode check is a good example of the smart alerting; once maintenance mode has been detected, the check frequency will be slowed for the duration of the maintenance period.

13 Workflow Activity

13.1 Workflow Activity

Unlike most OEBS application activity (e.g. concurrent requests) Workflow only stores limited instantaneous historical activity and therefore must be treated differently.

PAM periodically records the workflow status counts and alerts if any of the individual workflow statuses exceeds their threshold value. The recorded activity can be used for activity profiling.

PAM also alerts if the workflow mailer is having trouble. The alert is based on the number of mail items waiting to be sent.

13.2 Too many workflow background processes

PAM will alert if your site is running too many workflow background processes. This is a very common problem in the industry and is a complete waste of resources.

13.3 Long running workflows

PAM alerts when selected (configurable) workflows have been running longer than they should.

To make this feature usable, PAM provides a unique feature to filter out all those old workflows that have been hanging around for years and have not been actioned.

13.4 Old workflows

Once every couple of months PAM will provide an alert identifying the number of “OLD” workflows, just to let you know they are still there and need cleaning up.

14 SLA Renegotiation Trigger

All large IT departments have or should have SLAs that we have negotiated with the business that they will held accountable for. PAM provides a number of trigger points to trigger an SLA renegotiation.

The way the SLA renegotiation trigger works is that, by way of example, in general you can continue to maintain the performance SLA whilst the number of active users stays say, below 300 or the number of concurrent requests per day stays below 10,000. You cannot be expected to hold SLA levels if the business decides to add several hundred more users or a new application module like HR to your application. When the PAM SLA trigger values are exceeded it is time to renegotiate your SLA.

15 Reports

15.1 Configuration reports

PAM provides over 20 configuration reports to help with setup and to report on the current PAM settings and exception lists.

15.2 Alert action reports

PAM provides over 20 action reports. These reports are designed to provide additional information when an alert is raised.

15.3 Additional reports

PAM provides over 20 reports that give additional information on all areas associated with application activity monitoring.

16 Disclaimer

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