

PAM software / tutorial packs - FAQs

PIPER-Rx **A**pplication **M**onitor - **PAM**
"Blurring the line between software product and training"

PAM Version 1.4

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Change an alert threshold for AU-001
Change an alert threshold for AU-001

1 General

1.1 What versions of OEBS does PAM support?

The PAM application monitor will run against both 11i and 12i releases of Oracle E-Business Suite®

1.2 Why is PAM free?

PAM (Piper-Rx Application Monitor) is a critical part of the whole PIPER-Rx.com initiative which exists solely to provide a resource centre for OEBS and focuses on progressively building your knowledge and sharing learnings amongst OEBS professionals.

Everything about PIPER-Rx.com and PAM is dedicated to providing a practical approach to day to day Oracle E-Business Suite application management activities.

Probably the best feature about PIPER-Rx.com is all of the initial information and reports are FREE and that includes PAM, *an OEBS application monitor deliberately designed to blur the line between software product and education*. That's right, as a thank you to an industry that has been a fabulous career for over 20+ years; you are getting many of the learnings of one of the industry's most respected OEBS professionals for absolutely no charge.

Some people write a book, we chose to share our knowledge with the PIPER-Rx.com website and PAM monitoring tool.

1.3 Do PAM reports support US letter format?

No – PAM uses the predominant international standard - A4

1.4 My OEBS schema owners are not APPS, APPLSYS or ICX etc...

This generally occurs if you have an old version of “Oracle Financials” that has been upgraded over the years. It used to be common practice to have different schema owners E.g. PRODGL for GL PRODAP for AP etc...

As most modern installs (11.0 and above) use standard schemas for the OEBS application objects, we decided against the use of high maintenance synonyms and have hard coded the schema names within the PAM source.

The solution is to edit the entire source and rename the schema owners to those of your site. However during the course of the tutorials we will be over writing the procedures we provide as part of the **PAM** monitor.

1.5 What languages does **PAM** support?

The **PAM** application is only provided in Australian English.

In some cases **PAM** reports use Oracle E-Business Suite® language translation tables where applicable.

1.6 Why am I not getting data in some reports?

The most common reason is an incorrect language setting. An incorrect setting will cause some **PAM** reports that perform a language translation to return no information.

1.7 Why do I have to set the language?

The **PAM** language value is used by some **PAM** reports to provide the correct language translation regardless of the local PC's settings. The **PAM** language setting is set to 'US' by default, if your application is using a different language you will need to change the **PAM** setting. An incorrect setting will cause some **PAM** reports that perform a language translation to return no information.

A list of installed languages can found using the **PAM** config report [PAMC019-10 PAM Installed Languages](#) This report will also display in the header the current **PAM** language setting and the current user session language setting - (userenv('LANG')) as per the following example report:

Example Report

Lang*	Language Name	Language Description
US	AMERICAN	American English

Note: In order for PAM to report language translated information correctly the PAM language setting must match one of the installed languages of the OEBS application.

1.8 How do I change the **PAM** language setting?

The **PAM** language value is used by some **PAM** reports to provide the correct language translation regardless of the local PC's settings. The **PAM** language is set to 'US' by default; if your OEBS application is using a different language you will need to change the **PAM** setting. An incorrect setting will cause some **PAM** reports that perform a language translation to return no information.

A list of installed languages can be found using the **PAM** config report [PAMC019-10 PAM Installed Languages](#). The current **PAM** language setting and the current user session language setting - (userenv('LANG')) will display in the report header

To change the **PAM** language value you can use the following **PAM** API (after amending the argument as required):

```
exec PIPER_RX_PAM_API.PAM_LANGUAGE_VALUE_SET ('US');
```

Arguments: The language code to be used by **PAM**. Make sure it is set to a valid language or any report that uses a language translation table will return no information.

1.9 What sign-on audit level does **PAM** require?

In order to report on full service activity **PAM** requires a sign-on audit level of either RESPONSIBILITY or FORM. **PAM** uses the audit entry in [fnd_responsibilities](#) to determine if a connected user is a full service user.

1.10 I have changed the OEBS sign-on audit level, how do I set the new level in **PAM**?

If the OEBS sign-on audit level is changed **PAM** will alert you to the change. As part of the alert **PAM** will reset its internal sign-on audit level reference value to the new OEBS value.

If you wish to change the **PAM** sign-on audit level you can use the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_SOA_LEVEL_MANUAL ('R');
```

Valid arguments for this **PAM** API are:

- ❖ N = NONE
- ❖ U = USER
- ❖ R = RESPONSIBILITY
- ❖ F = FORM

We also provide an API to set the **PAM** sign-on audit level to the current level of the application

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_SOA_LEVEL_AUTO;
```

1.11 How can I find my OEBS applications current sign-on audit level?

You can either:

- ❖ use the applications profile options screen and search for the site level profile option **Sign-On: Audit Level**, or
- ❖ use the following SQL:

```
SELECT nvl(fpov.profile_option_value, 'NOT SET') sign_on_audit_level,
       fl.meaning level_description
FROM   applsys.fnd_profile_options fpo,
       applsys.fnd_profile_option_values fpov,
       apps.fnd_lookups fl
WHERE  fpo.application_id = fpov.application_id(+)
       and fpo.profile_option_id = fpov.profile_option_id(+)
       and fpov.level_id(+) = 10001
       and fpov.profile_option_value = fl.lookup_code(+)
       and fl.lookup_type(+) = 'SIGNONAUDIT'
       and fpo.profile_option_name = 'SIGNONAUDIT:LEVEL';
```

1.12 PAM has sent an alert saying my sign-on audit level changed from the PAM threshold value – How do I change the PAM reference value?

Alert ID GA-001 - Alerts when the sign-on audit level has been changed.

You should not normally need to change the PAM reference value as the PAM reference value is have been change by the alert process to your sites new value.

However, if you feel the need, you can change the PAM sign-on audit reference level to the current application level using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_SOA_LEVEL_AUTO;
```

1.13 How do I disable the PAM sign-on audit level reminder (IN-006)?

If you have decided not to set your OEBS applications sign-on audit level to either RESPONSIBILITY or FORM PAM will not record full service activity. Where this is the case you may want to disable the sign-on audit level reminder alert (PAM Alert ID IN-006)

The sign-on audit level check ([PAM](#) Alert ID IN-006) can be disabled using the following [PAM](#) API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-006', 'N' );
```

Setting the second parameter to any value other than 'Y' will mark the collection as disabled and it will no longer be run until the check is re-enabled.

1.14 Why don't you use UTIL_MAIL?

Oracle introduced UTIL_MAIL in Oracle 10g. Not all OEBS sites are running 10g there are still OEBS 11i installs out there running Oracle 9.

1.15 Why does PAM use DBMS jobs and not the scheduler?

We cannot guarantee that the scheduler is fully operational on all versions of OEBS we support

2 PAM Architecture

2.1 Why are there no data entry screens to update the PAM tables?

TOAD can do all PAM needs at this time. If you want to, by all means lend your support to the PAM initiative and write a FREE open source add-on that can be distributed with the PAM application and send it to us at PIPER-Rx.com!

2.2 Why did you choose TOAD, for PAM reports?

TOAD's almost universal use by DBAs and Apps DBAs makes it an easy choice and the TOAD Reports Manager is highly suited to PAM's needs. A very important feature is that TOAD also provides the ability to export and import reports (TRD format) which provides the ability to share reports.

2.3 Why TOAD reports?

TOAD's almost universal use by DBAs makes it an easy choice and the TOAD Reports Manager is highly suited to PAM's needs.

TOAD provides a full featured and easy to use report writer for creating reports that can be easily shared via the report export import feature.

TOAD also provides the ability to run reports unattended.

The Reports – Tutorials section of the PIPER-Rx.com website has the information you need to know about TOAD reports including **Tutorial 1 - How to Create TOAD Report Manager reports**. This tutorial will take you through the steps required to create a set of custom report templates that you can then use to create your own reports.

2.4 How do I share a TOAD report?

If you require assistance regarding using TOAD TRD (Toad Report Definition) format the Reports – Tutorials section of the PIPER-Rx.com website has a document on [How to Import, Export & Delete TOAD® Reports](#)

2.5 Why do PAM TOAD reports call stored procedures?

Stored procedures provide the ability to go beyond a single SQL statement allowing more complex result sets.

2.6 How do I change a PAM alert frequency?

The PAM alert frequencies for each alert are held in the [piper_rx_pam_config](#) table. A list of the current alerts and their alert frequencies can be obtained using the PAM config report [PAMC001a-10 PAM Config \(basic\)](#).

An alert frequency can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_FREQUENCY_CHANGE ( 'HB-001', 1 , 'DAY' );
```

Arguments: The first argument is the PAM alert_id for the alert frequency you wish to change. The second argument is the alert frequency and the third is the frequency unit. In the above example the PAM heart beat e-mail (HB-001) will be changed to every 1 day.

The list of valid values for the alert frequency units can be found using the PAM config report [PAMC003-10 PAM Lookups](#) - Lookup type “FREQUENCY UNITS”.

2.7 How do I change a PAM alert severity?

The alert severity for each PAM alert is held in the [piper_rx_pam_config](#) table. A list of the current alerts and their alert severities can be obtained using the PAM config report [PAMC001a-10 PAM Config \(basic\)](#).

A PAM alert severity can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_SEVERITY_CHANGE ( 'CM-001', 'W' );
```

Arguments: The first argument is the PAM alert_id for the alert severity you wish to change; the second is the severity code. The valid codes are:

- I – Informational
- W – Warning
- C - Critical

The list of valid values for alert severities can be found using the PAM config report [PAMC003-10 PAM Lookups](#) - Lookup type “ALERT_SEVERITIES”

2.8 I have a **PAM** alert that keeps failing, how do I turn that alert off?

Individual alerts can be enabled or disabled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-001', 'N' );
```

The first argument is the **PAM alert_id** to be enabled or disabled, the second argument is the alert status Y = Enabled, N = Disabled

2.9 Why do I get so many **PAM** errors when the collection is only run once per week?

When the **PAM** collector calls a procedure that fails it cannot set the **last_check_date** in the **piper_rx_pam_config** table to the date of the last run. As such the collector believes that the procedure has not been run and will attempt to run it again on the next collector run.

Errors will continue to be reported until the underlying issue is corrected or the procedure call has been disabled. An individual procedure call can be disabled with the following **PAM** API

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-001', 'N' );
```

The first argument is the **PAM alert_id** to be enabled or disabled, the second argument is the alert status Y = Enabled, N = Disabled

2.10 How do I purge the **PAM** errors table?

The **PAM** errors table **piper_rx_pam_errors** can be purged using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ERROR_PURGE;
```

This will delete all entries from the **piper_rx_pam_errors** table. There is no index on this table that needs rebuilding.

2.11 How does the **PAM** Collector work?

The **PAM** collector is the workhorse of the **PAM** application which is run periodically via a DBMS job or similar.

On each run the collector scans the [piper_rx_pam_config](#) table using the run frequency and the time of the last run to determine if an alert procedure should be run.

As the collector is a sequential process each run will have a tendency to creep forward in time. In order to limit time creep the collector first updates the last run time to the nearest hour of the last time the collector ran (this occurs only for hourly, daily weekly and monthly runs).

The collector checks if Debug mode is enabled, if so it writes a record for every collection ran to the debug table. Just in case you leave debug on, the collector will purge all records older than 10 days from the debug table to stop it filling up.

If at any time one or more alert procedures fails to run e.g the procedure has become invalid, an entry will be added to the **PAM** error table [piper_rx_pam_errors](#) and processing will continue with the next alert procedure. The **PAM** heart beat e-mail will report any **PAM** errors.

The collector will also purge the **PAM** [piper_rx_pam_alerts](#) and [piper_rx_pam_errors](#) tables based on the conditions set in the [piper_rx_pam_settings](#) table for both purge hour of day (PURGE_HOD) and purge days (PURGE_DAYS - the amount of history to be held on-line).

2.12 How do I enable debug mode?

Debug is enabled by setting the DEBUG_MODE value to 'Y' in the [piper_rx_pam_settings](#) table

To enable debug mode run the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_DEBUG_ENABLE ( 'Y' );
```

To enable debug mode run the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_DEBUG_ENABLE ( 'N' );
```

2.13 What debug information do I get?

In debug mode the **PAM** collector process writes a record for each collection procedure it runs and the time it was run to the **PAM** debug table [piper_rx_pam_debug](#). You can use TOAD to check the debug data.

2.14 As the collections are sequential, how do you prevent the collections over time creeping forward?

Prior to each collection run, the collection process sets the time of the last run to the neared hour for each hourly, daily, weekly and monthly run. In this way the time creep issue is limited.

2.15 Does PAM have an alert escalation feature?

No

2.16 Does PAM have blackout / maintenance windows?

No. PAM is an activity monitor so if no activity, then there is nothing to report.

The only thing you need to be aware of is to make sure the concurrent managers are shutdown correctly or PAM will report the managers are down.

2.17 How do I recompile PAM objects?

The following PAM API will identify any PAM registered packages that are invalid and recompile them.

```
exec PIPER_RX_PAM_API.PAM_INVALID_PAM_PACKAGES_FIX;
```

2.18 Why did you put a sleep in the e-mail send package?

We added the **user lock.sleep(100)** as we found some slower applications had trouble if we sent large numbers of emails. This gave the application a chance to keep up.

2.19 Can I send a funny alert?

Yes – But be warned comedy can be a tricky thing, what is funny to some can be offensive to others so tread with caution and at your own risk!

```
BEGIN
  PIPER_RX_PAM_API.PAM_ALERT_DUMMY_RECORD_ADD
    ( 'ABC-001',
      'I',
      'Free format text message');
  COMMIT;
END;
```

Argument 1 – is the dummy alert_id value

Argument 2 – The alert severity (valid values **I** – Informational , **W** - Warning, **C** – Critical)

Argument 3 – Free format text message, this will be truncated to 100 characters

The message will be sent via the 'DEF' (default) route only.

3 PAM E-mail alerting

3.1 Does PAM provide any other alert method other than e-mail?

No - However as **PAM** stores all alerts (these are written to the **PAM** *[piper_rx_pam_alerts](#)* table) it would be possible to pick up the alert from that table and send that to a third party monitor.

3.2 How does **PAM** send alert e-mails?

PAM uses the Oracle database *[utl_smtp](#)* function to send e-mails. The e-mail settings are held in two (2) **PAM** tables: *[piper_rx_pam_smtp_settings](#)* and *[piper_rx_pam_smtp_routing](#)*. The site's settings such as SMTP server and domain are set in the *[piper_rx_pam_smtp_settings](#)* table and e-mail recipients are set in the *[piper_rx_pam_smtp_routing](#)* table.

3.3 How do I setup **PAM** e-mail alerting?

Refer to the install document *[Installing PAM.doc](#)* provided with the **PAM** application.

3.4 How do I test the **PAM** e-mail setup?

The following procedure call will generate a test **PAM** e-mail sending the e-mail to the default (DEF) recipients defined in the *[piper_rx_pam_smtp_routing](#)* table:

```
exec PIPER_RX_PAM_SENDMAIL.SEND_TEST_EMAIL ( 'DEF' );
```

The following procedure call will generate a test **PAM** e-mail sending the e-mail to the heartbeat (HB) recipients defined in the *[piper_rx_pam_smtp_routing](#)* table:

```
exec PIPER_RX_PAM_SENDMAIL.SEND_TEST_EMAIL ( 'HB' );
```

3.5 How do I disable **PAM** e-mail alerts?

All **PAM** e-mail alerts can be disabled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_ENABLE ( 'N' );
```

3.6 How do I add a CC address to a PAM route?

A CC address can be added to a PAM email route using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_CC_CHANGE ( 'DEF', 'abc@abcxy.com' );
```

The first argument is the PAM route, the second argument is the CC email address

Note: If a CC address already exists it will be over written

3.7 How do I change a CC address for a PAM route?

A CC address can be changed for a PAM email route using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_CC_CHANGE ( 'DEF', 'abc@abcxy.com' );
```

The first argument is the PAM route, the second argument is the CC email address

3.8 How do I delete a CC address for a PAM route?

A CC address can be deleted for a PAM email route using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_CC_DELETE ( 'DEF' );
```

The argument is the PAM route

3.9 How does PAM prevent alert storms?

PAM has a built in e-mail grouping feature. When there are more than *N* alerts of the same type (*alert_id*), a group e-mail is sent rather than individual e-mails. The e-mail group count is set in the *group_count* attribute in the *pipper_rx_pam_smtp_settings* table.

The group count can be raised or lowered using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_GROUP_COUNT_CHANGE ( 10 );
```

3.10 The PAM e-mail test works so how come but I don't seem to be receiving any PAM e-mail alerts?

First, using either TOAD or the following SQL check if there are any alerts to be sent:

```
SELECT notified_to,
       count(*)
  FROM piper_rx_pam_alerts
 WHERE alert_time > trunc(sysdate)
 GROUP BY notified_to;
```

A value of null in the *notified_to* attribute indicates that a **PAM** e-mail is ready to be sent.

Note: The test e-mail process bypasses the **PAM** global e-mail disable setting, where as the normal **PAM** alert e-mail process does not.

Next, check the current e-mail status using either TOAD or the following SQL:

```
SELECT decode(email_enabled, 'Y', 'Enabled', 'Disabled') emial_status
  FROM piper_rx_pam_smtp_settings;
```

If the status is disabled then use the following **PAM** API to enable the e-mail function:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_ENABLE ( 'Y' );
```

3.11 What is **PAM** heart beat e-mail?

The **PAM** heart beat is a periodic e-mail sent to inform you that the **PAM** application is functioning and to inform you of any alerts raised and or any errors encountered. If a heart beat e-mail is not received when expected it may indicate the database is down.

3.12 Can I disable the **PAM** heart beat e-mail?

Yes. The **PAM** heart beat e-mail can be disabled using the following **PAM** API

```
exec PIPER_RX_PAM_API.PAM_EMAIL_HB_ENABLE ( 'N' );
```

3.13 How do I change the **PAM** heart beat e-mail frequency?

The **PAM** heart beat e-mail frequency can be changed using the following **PAM** API:

Example: Change to every 4 hours

```
exec PIPER_RX_PAM_API.PAM_EMAIL_HB_FREQ_CHANGE ( 4, 'HR' );
```

Example: Change to once per day

```
exec PIPER_RX_PAM_API.PAM_EMAIL_HB_FREQ_CHANGE ( 1, 'DAY' );
```

The following table lists the valid frequency units:

Valid Frequency Units	Description
MIN	Minute
HR	Hour
DAY	Day
WK	Week
MON	Month

3.14 I have stopped seeing “Alert Information” at the bottom of my PAM alert e-mails

The alert information that appears at the bottom of most PAM alert e-mails can be enabled (default) or disabled by changing the value for [setting_varchar_value](#) in the [piper_rx_pam_settings](#) table.

Use the following PAM API to either enable or disable this setting. Valid values are Y or N:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_ALERT_DISPALY_SET ( 'Y' );
```

3.15 How do I resend a PAM alert e-mail?

A PAM alert e-mail can be resent by setting the alert [notified_date](#) to null in the [piper_rx_pam_alerts](#) table. When an alert e-mail is resent all the sent information for the alert will be overwritten.

3.16 Can I send a PAM alert e-mail to multiple recipients?

According to the documentation I have read, you should be able to send the e-mail to a mail distribution list.

3.17 Why have you added the ability to change the background colour of the PAM alert e-mails?

PAM distinguishes the different environments by adding the customer name in the subject line of its alert e-mails. PAM provides an additional method of distinguishing between different environments e.g. “Production” and “Test” by allowing you to change the background colour of the alert e-mails.

3.18 How do I change the PAM e-mail background colours?

PAM email background colors can be changed using the following PAM API and setting the argument to any valid HTML colour code:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_BG_COLOUR_SET ( '#CCFFFF' );
```

Note: The PAM alert e-mails use Red (#FF0000), Orange (#FF9900) and Blue (#0000FF) so please try and pick complementary colours

The following are some HTML colour codes that could be used (and there is any number of additional HTML colour charts available on the web):

- ❖ #FFFFFF White (best choice if you plan to print the e-mails)
- ❖ #CCFFFF Light blue
- ❖ #CCFF99 Light green
- ❖ #FFCCCC Light pink
- ❖ #FFFF99 Light yellow

Once the colour has been changed send a test e-mail to test the colour you have chosen using the following procedure call:

```
exec PIPER_RX_PAM_SENDMAIL.send_test_email ('DEF');
```

3.19 Can I change the PAM alert severity level colours?

Yes, the colours used for informational, warning and critical severity levels can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_SEVERITY_COLOURS_SET ( 'I', '#0000FF' );
```

The above example will set the informational colour to Blue.

The first argument is the severity level and valid values are:

- I **I**nformational
- W **W**arning
- C **C**ritical

The second argument is the html colour code for the desired colour.

Once the colour has been changed send a test e-mail to test the colour you have chosen using the following procedure call:

```
exec PIPER_RX_PAM_SENDMAIL.send_test_email ('DEF');
```

3.20 Can I easily reset the PAM e-mail colours to the default values?

Yes - The values can be reset to the default values using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_COLOUR_CODES_RESET;
```

3.21 What is an e-mail route?

A PAM e-mail route is the method PAM uses to direct and alert e-mail to a designated recipient. There are two default routes provided with PAM, “DEF” Default and “HB” heart beat.

3.22 Can I turn off the links displayed at the bottom of each alert e-mail?

Yes: The following PAM API can be used to turn off the links displayed at the bottom of each PAM alert email:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_DISPALY_SET ( 'N' );
```

3.23 How do I add an alert e-mail link to PAM alert e-mails?

An alert email link can be added using the following PAM API:

```
BEGIN
  PIPER_RX_PAM_API.PAM_EMAIL_LINK_ADD
    ( 'W2',      -- Primary Key ( W = Web, E = E-mail followd by a number)
      'W',      -- W= Web, E = Email, T = Twitter
      'Link to www.piper-rx.com web site', -- Free format text
      'N',      -- Display the link in PAM alert emails
      '5',      -- Link display order
      'http://www.piper-rx.com', -- Link HREF value
      'Web link to piper-rx.com', -- Link title for mouse over
      'www.piper-rx.com'); -- Link display text

  COMMIT;
END;
```

3.24 How do I delete an alert e-mail link to PAM alert e-mails?

An alert email link can be deleted using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_DEL ( 'W2' );
```

Where the parameter is the link id

3.25 Can disable one or more links displayed at the bottom of each alert e-mail?

A PAM alert e-mail link can be enabled / disabled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_ENABLE_LINK ( 'W2', 'N' );
```

Parameter 1: Is the e-mail link ID

Parameter 2: Y = Enable the check
N = Disable check

4 Tips for the colour blind user

4.1 How do I distinguish between the different PAM e-mail alert severity levels if not by colour?

The alert email contains the alert severity level text in the heading as follows:

PAM Alert Message - ABC PLC - UA-001 - Informational

and again in the body of the email:

Alert Level = **Informational**

4.2 Can I change the alert severity level colours?

Yes, the colours used for informational, warning and critical severity levels can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_SEVERITY_COLOURS_SET ('I', '#0000FF');
```

The first argument is the severity level and valid values are:

I	I nformational
W	W arning
C	C ritical

The second argument is the html colour code for the desired colour.

Once the colour has been changed send a test e-mail to test the colour you have chosen using the following procedure call:

```
exec PIPER_RX_PAM_SENDMAIL.send_test_email ('DEF');
```

4.3 Can I easily reset the email colours to the default values?

Yes, the values can be reset to the default values using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_COLOUR_CODES_RESET;
```

5 Daily Activity

5.1 What is the daily activity collected by PAM?

The PAM daily activity collector runs once per day and records information on the total application activity for the prior day as follows:

- ❖ The total number of requests
- ❖ Warning requests
- ❖ Error requests
- ❖ Log file space generated
- ❖ Out file space generated
- ❖ Number of full service connections
- ❖ Number of distinct full service users
- ❖ Total full service connect time including average and standard deviations
- ❖ Number of self service connections
- ❖ Number of distinct self service users
- ❖ Total self service connect time including average and standard deviations
- ❖ Number of self service page requests
- ❖ Overall application response statistics time for the day
- ❖ The number of active user accounts

After a period of time you will build up a comprehensive activity profile for your application.

As a bonus feature, PAM's daily activity collector will populate up to the prior 31 days history based on the available online history thus providing valuable historical trend information immediately upon install. If the PAM collector is not run for a few days, when run it will populate missing days information with available online data.

5.2 Is daily activity history purged by PAM?

Yes. Each time the PAM daily activity collector runs it will purge any record older than the number of days held in the `piper_rx_pam_settings` table `setting_id` PURGE_DA_DAYS (default 550 days approx 1.5 years)

5.3 How does PAM daily activity calculate response time?

The PAM application response time measure is based on the runtime of the concurrent program FNDOAMCOL. This program collects application data for Oracle's Application Manager and is normally run every 10 minutes 24 * 7.

The beauty and simplicity of using this program to calculate response time, is that the program performs the same tasks across the same data every time it runs; consistency is the key. So the overall performance (runtime) of this program is related to the activity of the application at the time the collector runs and not the program itself.

5.4 Can I use a different concurrent program as a performance measure?

You could, although it is discouraged as you would need to choose or write a program that performs the same task each time it runs. E.g. Using an account trial balance is not a good choice as its runtime is based on the account range entered and may be different per run; small account range – fast, large account range – slow....

If you wish to change the performance measure program, you will need to find the concurrent program name and application ID for the desired program. Once that is done you would then need to modify the source in the following procedures to use your selected program:

[*pipex rx pam da monitor*](#)
[*pipex rx pam cm monitor*](#)

Example of source code:

```
WHERE (fcr.program_application_id, fcr.concurrent_program_id) =
      (SELECT fcp.application_id, fcp.concurrent_program_id
       FROM applsys.fnd_concurrent_programs fcp
       WHERE fcp.concurrent_program_name = 'FND0AMCOL'
       and fcp.application_id = 0)
```

Note: BEWARE! During the subsequent tutorial / software pack releases **PAM** will overwrite these procedures as more functionality is added.

5.5 How do I report on the **PAM** daily activity information?

PAM provides 10 basic reports in the category **PIPER-Rx** Application Monitor (**PAM**) Reports. Each report has the prefix PAMRDA...

If this is not enough, you can always write new TOAD reports, or use any reporting tool you have that can access the data in the **PAM pipex rx pam daily activity** table to report the information in any way you think would be valuable for your site, all the data is all there, ready for you to use your imagination. E.g.

- ❖ Plot the of requests over time to see if your application is getting busier
- ❖ Plot the of requests vs Overall performance to show the affect of increased request activity

If you write a report, please share it with other **PAM** users via our web site.

5.6 Why is **PAM** daily activity showing no connections for full service activity when I know there are full service connections?

The **PAM** application requires the sign-on audit level to be set to either RESPONSIBILITY or FORM for full service activity to be recorded.

5.7 How do I change the number of days history to be held on-line?

The daily activity table **piper_rx_pam_daily_activity** is populated at a rate of one record per day equating to 365 records per year. Holding 2 years history on-line will be more than sufficient in most cases.

The number of days daily activity history to be held online can be changed using the following **PAM** API where the argument is the number of days history you wish to keep on-line:

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_DA_PURGE_DAYS_SET ( 720 );
```

The above example will set the retention period to 2 years (720 days)

5.8 What is the **PAM** daily activity comments feature?

Have you ever gone back and looked at some application reports which show an increase or decrease in activity or performance but cannot exactly remember what may have caused that change in activity profile?

PAM provides a **simple** method of recording some comments that may have affected the overall performance and activity profile, these may include such comments as:

- ❖ Merged with company XYZ
- ❖ Added 200 new application accounts
- ❖ End dated 40 application accounts
- ❖ HR went live
- ❖ Consolidated the workflow background processes
- ❖ Added a new FAST concurrent manager to speed up the manager throughput
- ❖ Family pack H added

It is worth taking the time to add comments as when you look back over the past year and your manager wants to know what caused the performance decrease or profile change for the month of July – you at least will know what may have contributed to it or

the applications administrator who comes in after you will know what has been happening.

5.9 How do I add a comment on the daily activity?

Comments can be added to the [piper_rx_pam_da_comments](#) table enabling you to keep a record of unusual activity that may have affected the daily activity values. The following **PAM** API adds a comment in the daily activity comments table:

```
BEGIN
  PIPER_RX_PAM_API.PAM_DAILY_ACTIVITY_COMMENT_ADD
    ( '29-Jul-09',          -- Activity date
      'Added 200 application users'); -- Activity text
  COMMIT;
END;
```

Argument 1 - The comment date in the format DD-MON-YY

Argument 2 - Free format text – the text will be truncated to 100 characters

5.10 How do I report on the daily activity comments?

Uses the **PAM** report [PAMRDA015-10 Daily Activity Comments](#)

5.11 What is the example monthly activity report?

Experience tells us that most sites do not provide the business any kind of application activity report that the end user can understand.

We have provided a Monthly Activity Report template, guidelines on how to use the template based on data collected in the **PAM** daily activity module. There is also a worked example report for fictitious company “ABC PLC” so you can actually see what finished should look like.

The example report is specifically targeted for distribution to Systems Accountants, General Accounting Managers and Shared Services Managers.

When you apply for your next pay increase, ask yourself and your manager, who has been helping / supporting the users the most... ☺

6 PAM Clone protection feature

6.1 What is the PAM clone protection feature?

If the instance on which PAM has been installed is cloned this feature prevents two sets of alerts coming from two different instances with the same e-mail heading information.

6.2 What happens if I clone production?

PAM will check the current instance and host name against its own reference values, if these have changed then PAM will take the following actions:

The first time the collector runs on the cloned instance the two (2) PAM DBMS jobs:

```
PIPER_RX_PAM_COLLECTOR.RUN_COLLECTIONS  
PIPER_RX_PAM_SENDMAIL.GENERATE_E_MAIL_ALERT
```

will be removed.

In addition, the *last_check_date* value for each collector in the *piper_rx_pam_config* table will be set to the current time, thus preventing any collections from running.

To prevent confusion, should the PAM jobs be restarted and any alert emails generated, the word "CLONE" will be added to the beginning of the *customer_name* in *piper_rx_pam_smtp_settings* table which will appear in any e-mails generated until the customer name is manually changed.

6.3 The clone protection feature did not remove all the PAM DBMS Jobs

The clone protection feature does not remove broken Jobs.

6.4 How do I re-enable PAM in the cloned environment?

Re-enabling PAM in the cloned environment is a simple 2 step process:

Step 1 – Reset the PAM internal references and customer name using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_CLONE_RESET ('XYZ');
```

The PAM API will:

- ❖ Set the customer name to the value provided in the API
- ❖ Reset the PAM reference instance name to the current instance

- ❖ Reset the **PAM** reference host name to the current host

Step 2 – Re create the two **PAM** collection jobs

The **PAM** e-mailer program can be recreated using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_JOB_ADD (10);
```

The API argument is the number of minutes between runs - 10 = every 10 minutes

Note: Don't set the e-mail job frequency to a lower value than the frequency you intend to use on the collector job. The collector job is set up in section 3.4 below.

The **PAM** collector program can be recreated using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_COLLECTOR_JOB_ADD (5);
```

The API argument is the number of minutes between runs - 5 = every 5 minutes.

7 Application response time

7.1 What is the **PAM** application response time check?

The **PAM** Application response time check (PF-001) checks the **fnd_concurrent_requests** table for any new occurrences of the FNDOAMCOL program since the last check. It records the run time (**actual_completion_date** – **actual_start_date**) for that program in the **piper_rx_pam_rt_history** table thereby providing a history of application runtime independent of the **fnd_concurrent_requests** table which is purged on a regular basis.

When the response time of any sample exceeds the **PAM** application response time threshold an alert is raised.

7.2 How is the response time threshold set?

During the install process (for tutorial 2), **PAM** will calculate the average response time of the FNDOAMCOL concurrent program (excluding weekends) and set the threshold to the (average + 2(standard deviations)) response time in seconds.

Example:

If the average is response time is 8 seconds with a standard deviation of 3 seconds then the threshold will be set to $(8 + (2*3)) = 14$ seconds.

7.3 How do I know what to set the response time threshold value to?

You don't have to. The following PAM API will set the response time value to the historical average (up to the past 32 days excluding week ends) plus 2 standard deviations.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_PF001_SET_AUTO;
```

7.4 How do I raise or lower the response time threshold value?

You can raise or lower the Application response time threshold value using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_PF001_SET ( 20 );
```

The parameter is the alert threshold value in seconds.

7.5 How do I change the response time history purge days?

PAM will add one record every 10 minutes to the PAM response time history table. (This equates to 144 per day and 26,000 rows in 180 days.)

So as not to fill up your application database, PAM will purge the PAM response time history for all entries greater than 180 days (default). This value can be change using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_RT_HISTORY_PURGE_DAYS_SET ( 180 );
```

The parameter is the number of day's history to be held by PAM.

7.6 How do I view my Application's response time performance?

You can view the performance profile of your application using the following three (3) PAM reports:

PAMRGA001-10 Intraday Response Time History

Reports on all the PAM response time history

PAMRGA002-10 Intraday Response Time History (day)

Reports on the **PAM** response time history for a given day

PAMRGA003-10 Intraday Response Time History (month)

Reports on the **PAM** response time history for a given month

7.7 How do I turn the Application response time alert off?

This is not recommended, however you can use the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'PF-001', 'N' );
```

Parameter 1: Is the **PAM** alert ID. In this case PF-001 is the Application response time check

Parameter 2: Y = Enable the check
N = Disable check

7.8 If I turn the Application response time alert off, will PAM continue to collect application response time information?

No

7.9 How can I continue to collect historical information but not be alerted when the Application's response time threshold has been exceeded?

Set the alert threshold for the **PAM** Application response time (PF-001) alert to a very high value.

The following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_PF001_SET ( 2000 );
```

Note: As all three (3) **PAM** Application response time alert reports plot the threshold value as part of the report, the report may not be useful as all the sample values will be well below the threshold value shown in the chart.

8 Workflow – Background Processes

8.1 PAM has alerted me saying I have too many WF background processes running, but I believe I need these?

In most cases you don't need them.... a common cause of performance issues is too many workflow background processes running.

PAM will alert if there are more than 1,000 (default) workflow background processes running per day.

1 every 10 min = 6 per hour = 144 runs per day 1 every 5 min = 12 per hour = 288 runs per day

You should re re-read the workflow background process section of PAM tutorial two (2) and then assess if you really need all the workflow background processes you think you need.

8.2 How do I increase the WF background process threshold “runs per day” value?

Firstly don't set the threshold too high as you defeat the purpose of the check.

There are two methods of setting the threshold value as follows:

Method 1: This PAM API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF001_SET (1000);
```

The argument is the revised threshold value (runs per day).

Method 2: This PAM API will set the threshold based on the maximum number of runs your site has run on any day plus a percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF001_SET_AUTO (10);
```

The argument is the percentage uplift pct. If the current number of runs is 1,000 and you apply a 10% uplift the threshold value will be set to 1,100 runs.

Note: Method 2 will set a minimum value of 100 runs.

The second method is useful if your site has a large number of workflow background processes and you want to be alerted if more are added.

8.3 How do I turn the Workflow Background Process alert off?

This is not recommended as you may not catch when workflow background processes are added. If you still want to turn this alert off you can use the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'WF-001', 'N');
```

Parameter 1: Is the **PAM** alert ID. In this case WF-001 is the workflow background process check.

Parameter 2: Y = Enable the check
N = Disable check

9 Database

9.1 Why don't you include temp in the database free space calculation?

As we have always stated **PAM** is not a DBA or database monitoring tool; the management of table spaces such as TEMP and rollback etc... is in our opinion a pure DBA function and there are already many good tools on the market for this. For the same reasons **PAM** does not provide any functions for managing free space.

The database free space monitor is purely informational only.

9.2 What permissions does **PAM** require for the database monitor?

The schema that runs the **PAM** application monitor requires access to the following objects:

- DB-001 – Invalid Objects check
 - ❖ sys.obj\$
 - ❖ sys.user\$
- DB-002 – Index Maintenance check
 - ❖ dba_objects
- DB-003 – Free Space check
 - ❖ dba_data_files
 - ❖ dba_free_space

9.3 The **PAM** schema does not have access to the required database objects.

The solution is to either grant the **PAM** schema access to the objects or disable the (3) database monitor alerts.

Individual database monitor checks can be enabled / disabled using the following **PAM** APIs:

To disable the **PAM** invalid objects check (DB-001):

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-001', 'N' );
```

To disable the **PAM** index maintenance check (DB-002):

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-002', 'N' );
```

To disable the **PAM** database free space check (DB-003):

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-003', 'N' );
```

Parameter 1: Is the **PAM** alert ID.

Parameter 2: Y = Enable the check

N = Disable check

9.4 How does **PAM** report on invalid objects?

PAM reports any registered application related object or objects that start with **piper_rx** (**PAM** objects) where the object time stamp is greater than the last check date and the object status is “Invalid”. Once the object has been reported as invalid it will not be reported on again until it has been compiled and become invalid again.

9.5 How do I exclude an object from the invalid objects check?

One or more objects can be excluded from the invalid object check by adding the object to the **PAM** object exceptions table **piper_rx_pam_db_object_ex** using the following **PAM** API setting the “Exclude from invalid check value” to ‘Y’:

```
BEGIN

  PIPER_RX_PAM_API.PAM_MONITORED_OBJECT_ADD
    ( 'APPLSYS',           -- Object owner
      'FND_CONCURRENT_REQUESTS', -- Object name
      'Y',                 -- Object check status
      'Y',                 -- Exclude from invalid check
      'N',                 -- Index rebuild check
      0);                 -- Index rebuild freq months

  COMMIT;

END;
```

Note1: All items are not case sensitive

Note2: If the object already exists it will not be added

9.6 How do I remove an object from the PAM object exceptions table `piper_rx_pam_db_object_ex`?

One or more objects can be removed from the PAM object exceptions table `piper_rx_pam_db_object_ex` using the following PAM API:

```
BEGIN

  PIPER_RX_PAM_API.PAM_MONITORED_OBJECT_DEL
    ( 'APPLSYS',           -- Object owner
      'FND_CONCURRENT_REQUESTS'); -- Object name

  COMMIT;

END;
```

9.7 How do I obtain a list of excluded objects?

A list of database object exceptions can be obtained by running the PAM Config report **PAMC016-10 PAM DB Object Exclusions**. Object with a value of “Yes” in the “Exclude from Invalid” column will be excluded from the invalid object check.

Example Report

PAMC016-10		PAM - PIPER-RX - APPLICATION MONITOR		PIPER - Rx	
Database Object Check - Exclusions / Inclusions					
As at 02-Nov-09 15:08:14					
For APPS 12i					
Object Owner	Object Name	Overall Status	Exclude From Invalid	Include Index Rebuild	Index Rebuild Months
APPLSYS	FND_CONCURRENT_REQUESTS	Enabled	Yes	No	0
APPLSYS	FND_CONCURRENT_REQUESTS_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGINS_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGIN_RESPONSIBILITIES_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGIN_RESP_FORMS_N1	Enabled	No	Yes	6
APPLSYS	WF_ITEM_ACTIVITY_STATUSES_H_N1	Enabled	No	Yes	6
APPLSYS	WF_ITEM_ACTIVITY_STATUSES_PK	Enabled	No	Yes	6
ICX	ICX_SESSIONS_U1	Enabled	No	Yes	6
PIPER_RX	PIPER_RX_PAM_DB_MONITOR	Enabled	Yes	No	0

In the above example report, the package `piper_rx.piper_rx_pam_db_monitor` will be excluded from the PAM invalid object check.

9.8 What happens if hundreds of objects become invalid at once, do I get hundreds of e-mail alerts?

No. **PAM** has a built in e-mail grouping feature. When there are more than 10 (default) alerts of the same type, a group e-mail alert is sent rather than individual e-mails. The e-mail group count is set in the [piper_rx_pam_smtp_settings](#) table.

The e-mail group value can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_GROUP_COUNT_CHANGE ( 15 );
```

Note: The e-mail group count affects all **PAM** alerts

9.9 What is an application related object?

An application related object is any object with an object owner registered in the application [fnd_oracle_userid](#) table.

9.10 How do I find out which objects have become invalid?

When “new” invalid objects are detected, **PAM** will send an alert e-mail indicating that **X** new invalid objects have been detected. Use the **PAM** Action report [PAMDB001-10 Invalid Objects](#) entering the date and time of the alert to list the invalid objects.

If an object has been “fixed” in the time between the alert being raised and the generation of the report, that object will not appear on the invalid object report.

9.11 How do I turn the Invalid object check off?

The Invalid object check alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-001', 'N');
```

Parameter 1: Is the PAM alert ID. In this case DB-001 is the Invalid object check.

Parameter 2: Y = Enable the check
N = Disable check

9.11.1 Does **PAM** provide a function to recompile invalid objects?

No – recompiling invalid objects is a pure DBA function, However, if one or more **PAM** objects become invalid, the following **PAM** API can be used to recompile **PAM** objects only:

```
exec PIPER_RX_PAM_API.PAM_INVALID_PAM_PACKAGES_FIX;
```

The list of objects to recompile comes from the list of **PAM** registered objects held in the **[piper_rx_pam_objects](#)** table

Note: Of course if the **[piper_rx_pam_api](#)** package is invalid this will not work.

9.12 What is the index maintenance alert?

There are a number of indexes within the application that should be rebuilt on a regular basis as part of an application maintenance program. These indexes are generally associated with tables that have a high transaction rates (inserts and deletes) such as **[fnd_concurrent_requests](#)** and interface tables such as **[gl_interface](#)** etc...

The index alert is designed to remind you when a monitored index has not been rebuilt within the last **X** months.

9.13 How do I obtain a list of indexes being monitored for the index rebuild alert?

A list of indexes that are being monitored for the index rebuild alert can be obtained by running the **PAM** Config report **[PAMC016-10 PAM DB Object Exclusions](#)**. Any Object with a value of “Yes” in the “Include Index Rebuild” column will be monitored.

Example report

PAMC016-10 PAM - PIPER-RX - APPLICATION MONITOR PIPER - Rx					
Database Object Check - Exclusions / Inclusions					
As at 02-Nov-09 15:08:14					
For APPS 12i					
Object Owner	Object Name	Overall Status	Exclude From Invalid	Include Index Rebuild	Index Rebuild Months
APPLSYS	FND_CONCURRENT_REQUESTS	Enabled	Yes	No	0
APPLSYS	FND_CONCURRENT_REQUESTS_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGINS_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGIN_RESPONSIBILITIES_U1	Enabled	No	Yes	6
APPLSYS	FND_LOGIN_RESP_FORMS_N1	Enabled	No	Yes	6
APPLSYS	WF_ITEM_ACTIVITY_STATUSES_H_N1	Enabled	No	Yes	6
APPLSYS	WF_ITEM_ACTIVITY_STATUSES_PK	Enabled	No	Yes	6
ICX	ICX_SESSIONS_U1	Enabled	No	Yes	6
PIPER_RX	PIPER_RX_PAM_DB_MONITOR	Enabled	Yes	No	0

9.14 How do I add an index to the index maintenance alert?

One or more indexes can be added to the index rebuild reminder check by adding the index to the **PAM** object exceptions table **[piper_rx_pam_db_object_ex](#)** using the following **PAM** API:

```
BEGIN
    PIPER_RX_PAM_API.PAM_MONITORED_OBJECT_ADD
    ( 'APPLSYS',           -- Object owner
      'FND_CONCURRENT_REQUESTS_U1', -- Object name
```

```

        'Y',
        'N',
        'Y',
        6);
-- Object check status
-- Exclude from invalid check
-- Index rebuild check
-- Index rebuild freq months

COMMIT;

END;

```

Note 1: All items are not case sensitive

Note 2: If the object already exists it will not be added

9.15 How do I lower the index maintenance reminder to 3 months?

Use either TOAD® or the following SQL to update the value for *index_rebuild_freq_months* in the *piper_rx_pam_db_object_ex* table to the desired number of months for the selected index.

```

UPDATE piper_rx_pam_db_object_ex
SET index_rebuild_freq_months = 3
WHERE object_owner = 'INDEX_OWNER'
and object_name = 'INDEX_NAME';

COMMIT;

```

9.16 How do I remove an index from the PAM index rebuild reminder?

One or more indexes can be removed from the PAM index rebuild reminder using the following PAM API:

```

BEGIN

    PIPER_RX_PAM_API.PAM_MONITORED_OBJECT_DEL
        ( 'APPLSYS', -- Object owner
          'FND_CONCURRENT_REQUESTS_U1' ); -- Object name

COMMIT;

END;

```

9.17 How do I turn the index maintenance check off?

The index maintenance check alert can be turned off using the following PAM API:

```

exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-002', 'N');

```

Parameter 1: Is the **PAM** alert ID. In this case DB-002 is the Index maintenance check

Parameter 2: Y = Enable the check

N = Disable check

9.18 What is the **PAM** free space monitor?

PAM monitors for any decrease in the available free space in any table space (except internal table spaces such as temporary table spaces) where the available free space is less than 10% (default) and the table space has decreased in free space since the prior **PAM** free space check (default daily). **PAM** will also alert when a data file has been added.

9.19 How do I increase the free space alert percentage threshold to say 15%

The threshold percentage can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_FREE_SPACE_CHANGE_PCT ( 15 );
```

The parameter is the percent free space below which **PAM** will generate an alert.

9.20 How do I exclude a table space from the free space check?

One or more table spaces can be excluded from the free space check by setting the **exclude_from_space_check** value to 'Y' in the **piper_rx_pam_db_space** table.

A table space can be excluded using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_TABLESPACE_EXCLUDE ( 'ABC', 'Y' );
```

Parameter one: Is the table space name to be excluded from the free space check

Parameter two: Y = Exclude from the **PAM** free space check

N = Include in the **PAM** free space check

9.21 I have added a table space, do I need to let the **PAM** free space monitor know about the new table space?

No. **PAM** will detect the new table space during the next free space check. **PAM** will also detect table spaces that have been removed.

9.22 Why are there no PAM detailed free space reports?

PAM is not a DBA tool. Many other tools such as TOAD® provide excellent database space analysis.

9.23 How do I turn the free space check off?

The free space check alert can be turned off using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'DB-003', 'N');
```

Parameter 1: Is the PAM alert ID. In this case DB-003 is the free space check

Parameter 2: Y = Enable the check
N = Disable the check

10 Maintenance Mode

10.1 What is the Maintenance mode alert?

The maintenance mode alert will be raised when the application is placed in maintenance mode. During this time no users can connect to the application.

Whilst the maintenance mode check runs at a frequency of 5 minutes, once the first maintenance mode alert is raised, the frequency will be lowered to 30 minutes for the duration of the maintenance activity (refer Maintenance Mode alert delay feature).

Once a current maintenance mode has been turned off, the PAM alert will be run again at the default frequency of 5 minutes.

10.2 How do I turn the Maintenance Mode alert off?

The PAM maintenance mode alert can be turned off using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'GA-002', 'N');
```

10.3 How do I increase the time between maintenance mode alerts?

An alert frequency can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_FREQUENCY_CHANGE ( 'GA-002', 1 , 'DAY' );
```

Arguments: The first argument is the **PAM** alert_id for the alert frequency you wish to change. The second argument is the alert frequency and the third is the frequency unit. In the above example the **PAM** maintenance mode check (GA-002) will be changed to every 1 day.

The list of valid values for the alert frequency units can be found using the **PAM** config report **PAMC003-10 PAM Lookups** - Lookup type "FREQUENCY UNITS".

10.4 What is the **PAM** Maintenance Mode alert delay feature?

Once **PAM** has detected that the application is in maintenance mode, a delay is added to the check frequency for the maintenance mode check. In this way you are not continually bombarded by alert emails for the duration of the time the application is in maintenance mode.

10.5 Can I change the delay time?

Yes, the delay time can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_SET_DELAY_MM_CHECK ( 25 );
```

The parameter is the number of minutes to delay before the next check and alert.

Note: The minimum delay is 10 minutes; setting the parameter to anything smaller than 10 minutes will default to 10 minutes.

10.6 How is the alert delay time reset?

When the **PAM** alert check runs with a success status the delay time is not added and the alert monitoring will be run at the normal alert check frequency.

11 Internal Concurrent Manager

11.1 What is the ICM?

The ICM (Internal Concurrent Manager) controls the behavior of all concurrent managers, STANDARD, INVMGR, FNDCRM etc... The main functions of the ICM include:

- ❖ Start up and shutdown the individual concurrent managers
- ❖ Resetting the managers processes after one them has a failure (Common cause - terminating a concurrent request)
- ❖ Verifying manager processes. E.g. If you increase or lower the number of manager processes it is the ICM that adds or removes manager processes

11.2 Why doesn't PAM check all concurrent manager processes?

When a concurrent request is terminated, the concurrent process running that request is "killed".

This has two issues:

- ❖ Hopefully the program that was running is able to recover from a termination
- ❖ The concurrent process is no longer available so that manager will show a missing process until the internal manager restarts a new process for that manager which will have a new process ID

Hence there is potential for a false alarm: "A concurrent manager process cannot be found" as the process id which has changed may be perceived as missing.

11.3 How do I turn the ICM status alert off?

You can turn off the ICM status check use the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CM-001', 'N');
```

Parameter 1: Is the PAM alert ID. In this case CM-001 is the ICM status check

Parameter 2: Y = Enable the check
N = Disable check

11.4 I have been told the use of GV\$ objects have a performance impact?

I have heard this too, if it is an issue then why do most vendors use these objects particularly when monitoring the Oracle Database.

11.5 What GV\$ object does PAM use?

PAM only uses the GV\$SESSION object to assess if the internal concurrent manager process exists. The default rate is once every 5 minutes.

11.6 What is the PAM ICM alert delay feature?

Once PAM has detected that the ICM (Internal Concurrent Manager) has been detected as down, a delay is added to the check frequency for the ICM check. In this way you are not continually bombarded by alert e-mails for the duration of the time the managers are down.

11.7 Can I change the delay time?

The delay time can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_SET_DELAY_ICM_CHECK ( 25 );
```

The parameter is the number of minutes to delay before the next check and alert.

Note: The minimum delay is 10 minutes; setting the parameter to anything smaller than 10 minutes will default to 10 minutes.

11.8 How is the alert delay time reset?

When the PAM alert check runs with a success status the delay time is not added and the alert monitoring will be run at the normal alert check frequency.

12 Concurrent Requests (Completed)

12.1 What is the PAM completed requests check?

The PAM completed requests check, will send an alert e-mail when you have completed more requests than you have completed in the available online history.

The basic principle is that if you are completing more requests than you have in the past you are having a bad day... The earlier you receive the alert during the day the more activity is occurring.

We have introduced a cutoff hour, based on the premise that you don't want to be notified after your working day that you have had a bad day... (so no getting an alert e-mail just before midnight!)

Note: PAM will only generate one alert per day.

12.2 Can I set the alert threshold manually?

Yes, the alert threshold can be set using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_CR003_SET ( 20000 );
```

The parameter is the alert threshold value in complete requests.

12.3 Can I set the alert threshold automatically?

Yes, the alert threshold can be set based on the available online history using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_CR003_SET_AUTO;
```

12.4 How does PAM calculate the auto threshold level?

PAM sets the threshold value to the day with the most completed requests in the past 32 days of available history in the [fnd_concurrent_requests](#) table. The calculation only includes requests completed up to the cutoff hour.

12.5 What is the cutoff hour?

The intention of the completed requests alert is to alert if you have completed more requests that day than you have completed before, on the understanding that the more requests, the harder your application has been working. In addition, the earlier in the day you receive this alert indicates the extent of the activity. For example, if you receive the alert at about 2:00pm that indicates you have completed more requests by 2:00pm than you have on the busiest day you have had in the past 32 days.

Also, it would be pointless receiving this alert after the normal business day so we have introduced the cutoff hour.

If you set the cutoff hour to 18 (6 pm) then the stats collected for the auto threshold will exclude all requests completed after 18:00 hours and an alert will not be generated after 18:00 hours.

12.6 Can I change the cut off hour?

The PAM completed requests alert cutoff hour of day can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_CUTOFF_HR_CR003_SET ( 18 );
```

The parameter is the hour of day (using the 24 hour clock) after which the PAM alert will not be generated. The parameter must be between 17 (5:00pm) and 23 (11pm).

Note: Setting the cutoff hour using this API will recalculate the alert threshold.

12.7 Can I change the check frequency?

Alert frequency can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_FREQUENCY_CHANGE ( 'CR-003', 1 , 'HR');
```

Arguments: The first argument is the PAM alert_id for the alert frequency you wish to change. The second argument is the alert frequency and the third is the frequency unit. In the above example the PAM Completed requests alert (CR-003) will be changed to every 1 hour.

The list of valid values for the alert frequency units can be found using the PAM config report [PAMC003-10 PAM Lookups](#) - Lookup type "FREQUENCY UNITS".

12.8 How do I turn the completed requests alert off?

You can turn off the completed requests check using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CR-003', 'N');
```

Parameter 1: Is the PAM alert ID. In this case CR-003 is the completed requests check.

Parameter 2: Y = Enable the check
N = Disable check

13 Complete Error Requests

13.1 What causes a request to complete with a status of error?

When a concurrent request encounters an error during the program execution the concurrent request will complete with a status of error.

The [fnd_concurrent_request.status_code](#) will have a value of 'E'.

13.2 Why do you exclude report sets and report set stages from the completed error check?

PAM excludes both “Report Sets” and “Reports Set Stages” from this check as these programs are basically control programs that are designed as part of normal behavior to complete with a status of error, warning or normal.

E.g. When a request set stage finishes with a status of either normal, warning or error its completion status of a that stage will determine which of the next stages to run E.G. If stage 1 completes normal then process stage 2 if fail (Error) process stage 4.

Thus including these in this alert would be misleading.

13.3 How do you prevent alerting on the same error requests?

PAM will alert the first time when the alert threshold has been exceeded. It will then keep a record of the number of completed error requests and use that value as the new intraday threshold. At the beginning of each day the intraday threshold will be set to the starting threshold value.

13.4 How do I turn the Completed error alert off?

The **PAM** completed error alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CR-002', 'N');
```

Parameter 1: Is the **PAM** alert ID. In this case CR-002 is the completed error check.

Parameter 2: Y = Enable the check
N = Disable check

14 Complete Warning Requests

14.1 What causes a request to complete with a status of warning?

When a concurrent request is sent to a printer that does not exist or has been taken off line at the OS level the concurrent request will complete with a status of warning. The `fnl_concurrent_request.status_code` will have a value of 'G'.

14.2 Why do you exclude report sets and report set stages from the completed warning check?

PAM excludes both "Report Sets" and "Reports Set Stages" from this check as these programs are basically control programs that are designed as part of normal behavior complete with a status of error, warning or normal.

E.g. When a request set stage finishes with a status of either normal, warning or error its completion status of a that stage will determine which of the next stages to run E.G. If stage 1 completes normal then process stage 2 if fail (Error) process stage 4.

Thus including these in this alert would be misleading.

A request set stage can finish with a status of Normal, warning or error. The completion status of a stage will determine which of the next stages to run E.G. If stage 1 completes normal then process stage 2 if fail (Error) process stage 4

Thus including these in this alert would be misleading.

14.3 How do you prevent alerting on the same warning requests?

PAM will alert the first time when the alert threshold has been exceeded, it will then keep a record of the number of completed warning requests and use that value as the new intraday threshold. At the beginning of each day the intraday threshold will be set to the starting threshold value.

14.4 How do I turn the Completed warning alert off?

The PAM completed warning alert can be turned off using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CR-004', 'N' );
```

Parameter 1: Is the PAM alert ID. In this case CR-004 is the completed warning check

Parameter 2: Y = Enable the check

N = Disable check

15 Workflow activity

15.1 What is the workflow intraday collection?

PAM is predominantly an application activity profiling and alerting application; however, there is a basic issue when profiling workflow activity. When a workflow item changes status to complete e.g. Deferred to complete, the workflow item status is updated and there is no historical record of the activity.

To resolve this issue, **PAM** collects the workflow activity statuses every 15 minutes (default), thus providing a full historical profile of your workflow activity.

Using this information you can for example, plot the number of error workflow items throughout the day or week. Using the following PAM reports

PAMRWF003-10 Workflow Intraday Activity (day)
PAMRWF004-10 Workflow Intraday Activity (week)

PAM also uses this historical information for alerting and workflow auto threshold calculations

15.2 Why do deferred and mailer items continually alert whilst other statuses only alert once per day?

Both the deferred items and mailer items are statuses that can be “fixed” by either fixing the workflow background process or workflow mailer where as all other statuses are dependant on the normal running of the workflow application.

In the case of stuck and time out which are also actioned by the workflow background process these generally are actioned on a daily basis

15.3 Why don't you check the `wnd_svc_cpcomponents` table to identify if the workflow mailer is having a problem?

It is common practice for DBAs to determine the status of the workflow mailer by checking the of the workflow mailer status via the application table `wnd_svc_cpcomponents` table. I have found that the mailer can hang and the status can show all is OK. **PAM** checks the number of items waiting to be sent, if there is any thing wrong with the mailer process the number of items will increase at a high rate

15.4 What is a workflow spinner?

The concept of a workflow spinner and using the to identify workflows that may be experiencing a problem is unique to **PIPER-Rx PAM**.

When a workflow continually times out or is stuck in a loop the workflow writes records in the [wf_item_activity_statuses_h](#) table. I have experienced instances where a workflow that has been spinning for long time that has only 10 or so records in the [wf_item_activity_statuses](#) table has thousands of records in the [wf_item_activity_statuses_h](#) table. Any workflow that falls into this category should be investigated

15.5 Is the workflow spinners check resource intensive?

Yes, anything that requires access to the workflow tables, particularly requests that access both the [wf_item_activity_statuses](#) and [wf_item_activity_statuses_h](#) tables. This is further exasperated by the amount of “Old” data being held in the workflow tables and the state of the workflow table indexes. The amount of resources required to run the collection purely depend on the state of your workflow tables and is impossible to predict.

We have used an intermediate table as we found that running requests against the two workflow tables has a habit of filling up temp space.

15.6 Why is the workflow spinners check disabled on install?

Due to the possible resource impact, it is disabled on install. The amount of resource required to run the collection purely depend on the state of your workflow tables and is impossible to predict thus it should be tested before it is implemented

15.7 How do I turn on the Workflow spinners check?

A **PAM** workflow spinners alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'WF-004', 'Y');
```

Parameter 1: Is the **PAM** alert ID. In this case WF-004 is the workflow spinner alert

Parameter 2: Y = Enable the check
N = Disable check

15.8 What is the difference between a workflow and a workflow item?

PAM defines a **workflow** as a single business process such as an expense claim. A **workflow** is made up of one or more **workflow items** that are the individual processing steps within the workflow

15.9 How does the Active workflow alert (WF-111) differ from the workflow active items alert (WF-101)?

The active workflow alert (WF-111) reports on the total workflow, where as the workflow active items alert reports on the workflow items based on their activity status

15.10 What defines an active workflow?

Every workflow has an entry in the OEBS application *wf_items* table. Each workflow has a *begin_date*, which is the date the workflow started and an *end_date* which is the date the workflow completed. If the *end_date* does not have a value (null) then the workflow is Active

15.11 How do I turn off a workflow alert?

A **PAM** workflow alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'WF-101', 'N');
```

Parameter 1: Is the **PAM** alert ID. In this case WF-101 is the active workflow items alert

Parameter 2: Y = Enable the check
N = Disable check

For a list of workflow alerts and their current alert status run the **PAM** Config report [PAMC001a-10 PAM Config \(basic\)](#) looking at the workflow section of the report

15.12 How do I change a **PAM** workflow alert severity?

The alert severity for each **PAM** alert is held in the *piper_rx_pam_config* table. A list of the current alerts and their alert severities can be obtained using the **PAM** config report [PAMC001a-10 PAM Config \(basic\)](#).

A **PAM** alert severity can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_SEVERITY_CHANGE ( 'WF-101', 'W');
```

Arguments: The first argument is the **PAM** alert_id for the workflow alert severity you wish to change; the second is the severity code. The valid codes are:

- I – Informational
- W – Warning
- C - Critical

The list of valid values for alert severities can be found using the **PAM** config report **PAMC003-10 PAM Lookups** - Lookup type “ALERT_SEVERITIES”

15.13 How do I change the alert threshold for the active workflows alert (WF-111)?

There are two (2) methods of changing the threshold value for WF-111 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF111_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF111_SET (1000);
```

15.14 How do I change the alert threshold for the completed workflows alert (WF-112)?

There are two (2) methods of changing the threshold value for WF-112 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF111_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF111_SET (1000);
```

15.15 How do I change the alert threshold for the active workflow items alert (WF-101)?

There are two (2) methods of changing the threshold value for WF-101 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF101_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF101_SET (1000);
```

15.16 How do I change the alert threshold for the completed workflow items alert (WF-102)?

There are two (2) methods of changing the threshold value for WF-102 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF102_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF102_SET (1000);
```

15.17 How do I change the alert threshold for the deferred workflow items alert (WF-103)?

There are two (2) methods of changing the threshold value for WF-103 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF103_SET_AUTO;
```

Method 2: The following PAM API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF103_SET (1000);
```

15.18 How do I change the alert threshold for the error workflow items alert (WF-104)?

There are two (2) methods of changing the threshold value for WF-104 as follows

Method 1: The following PAM API will set the threshold value based on the PAM collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient PAM collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF104_SET_AUTO;
```

Method 2: The following PAM API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF104_SET (1000);
```

15.19 How do I change the alert threshold for the notified workflow items alert (WF-105)?

There are two (2) methods of changing the threshold value for WF-105 as follows

Method 1: The following PAM API will set the threshold value based on the PAM collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient PAM collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF105_SET_AUTO;
```

Method 2: The following PAM API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF105_SET (1000);
```

15.20 How do I change the alert threshold for the suspended workflow items alert (WF-106)?

There are two (2) methods of changing the threshold value for WF-106 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF106_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF106_SET (1000);
```

15.21 How do I change the alert threshold for the waiting workflow items alert (WF-107)?

There are two (2) methods of changing the threshold value for WF-107 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF107_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF107_SET (1000);
```

15.22 How do I change the alert threshold for the timeout workflow items alert (WF-108)?

There are two (2) methods of changing the threshold value for WF-108 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF108_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF108_SET (1000);
```

15.23 How do I change the alert threshold for the stuck workflow items alert (WF-109)?

There are two (2) methods of changing the threshold value for WF-109 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF109_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF109_SET (1000);
```

15.24 How do I change the alert threshold for the workflow mailer alert (WF-110)?

There are two (2) methods of changing the threshold value for WF-110 as follows

Method 1: The following **PAM** API will set the threshold value based on the **PAM** collected intraday workflow activity maximum value plus two standard deviations. If there is insufficient **PAM** collected intraday activity, the threshold will be set to the current value from the workflow tables plus a 10 % percentage uplift.

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF110_SET_AUTO;
```

Method 2: The following **PAM** API sets the threshold to a defined value:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF110_SET (1000);
```

16 PAM Self monitoring features – PAM Growth alert

16.1 What is the PAM unbounded growth alert (IN-005)?

There are a number of **PAM** repository tables within the **PAM** application that hold **PAM** collected application information

Example: The OEBS response time activity which collected once every 10 minutes is stored in the **PAM** *pipex_rx_pam_rt_history* table. At one record every 10 minutes, we expect the table to hold approximately 53,000 rows per year

To prevent unbounded growth all **PAM** tables that collect detailed information (and are not self limiting like **PAM** the table *pipex_rx_pam_db_space* where the number of rows is limited to the number of tablespaces) have an inbuilt purge setting set to hold a maximum number of days data, after which that data is purged from the table. The following table lists those **PAM** tables that collect regular information and the **PAM** setting that sets the number of day history to be kept on-line:

PAM Table Name	PAM Setting
PIPER_RX_PAM_ALERTS	PURGE_ALERT_DAYS
PIPER_RX_PAM_AT_HISTORY	PURGE_AT_DAYS
PIPER_RX_PAM_DAILY_ACTIVITY	PURGE_DA_DAYS
PIPER_RX_PAM_DEBUG	PURGE_DEBUG_DAYS
PIPER_RX_PAM_ERRORS	PURGE_ERROR_DAYS
PIPER_RX_PAM_IDA_ACTIVITY	PURGE_IDDA_DAYS
PIPER_RX_PAM_IDW_ACTIVITY	PURGE_IDWA_DAYS
PIPER_RX_PAM_RT_HISTORY	PURGE_ART_DAYS

As a backup precaution against unbounded growth, **PAM** has an internal check and alert (IN-005) that is run once per week that will send an e-mail alert should the number of rows in any **PAM** registered table exceed a defined value as set in the **PAM** setting INTERNAL_MAX_ROWS (default 500,000).

16.2 Where can I get a list of PAM purge days?

The **PAM** config report *PAMC002-10 PAM Settings* lists all the current **PAM** settings.

16.3 How do I registering a custom PAM object?

You can register a custom **PAM** object using the following API:

```
BEGIN
```

```

PIPER_RX_PAM_API_2.PAM_OBJECT_REGISTER
( 'ABC_AUDIT_CHECK', -- Object Name
  'T',               -- Object Type
  'Custom User account Audit check', -- Object Description
  'Y' );             -- Object Backup
    
```

```
END;
```

- Parameter 1 - The object name being registered
- Parameter 2 - The object type T = Table, I = Index, P = Procedure
- Parameter 3 - Free format description Max 300 characters
- Parameter 4 - Backup object 'Y' or 'N'. Only tables can be backed up

Note 1: The object being registered must pre exist or the object will not be registered.

WARNING: The PAM objects table is also used in the PAM uninstall process. **All** registered objects will be removed as part of the PAM uninstall process.

16.4 How do I deregistering custom PAM objects?

A PAM custom object can be deregistered using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_OBJECT_DEREGISTER ('ABC_AUDIT_CHECK', 'T');
```

- Parameter 1 - The object name being registered
- Parameter 2 - The object type T = Table, I = Index, P = Procedure

16.5 How do I changing the value for INTERNAL_MAX_ROWS?

The number of days of PAM error history to be kept on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_IN005_PURGE_ROWS (5000000);
```

Where the parameter is the number of rows above which an alert will be sent.

16.6 How do I turn the PAM unbounded growth alert (IN-005) off or on?

The PAM error alert can be turned off using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ('IN-005', 'N');
```

Parameter 1: Is the PAM alert ID. In this case IN-005 is the internal PAM unbounded growth check.

Parameter 2: Y = Enable the check

N = Disable check

16.7 How do I change the severity of the PAM unbounded growth alert?

A PAM alert severity can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_SEVERITY_CHANGE ( 'IN-005', 'W' );
```

Arguments: The first argument is the PAM alert_id for the alert severity you wish to change; the second is the severity code. The valid codes are:

- I – Informational
- W – Warning
- C - Critical

The list of valid values for alert severities can be found using the PAM config report [PAMC003-10 PAM Lookups](#) - Lookup type “ALERT_SEVERITIES”

17 PAM Self monitoring features – PAM Error alert

17.1 What is the PAM error alert (IN-009)?

When PAM encounters an error whilst running one of its collection procedures that procedure is skipped and an entry is added to the [PAM piper_rx_pam_errors](#) table.

Once every 2 hours (default) PAM will report via an e-mail alert if any errors have been encountered today. PAM will continue to report on any **new** errors throughout the day

17.2 Can I turn the PAM error alert (IN-009) off

The PAM error alert can be turned off using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-009', 'N' );
```

Parameter 1: Is the PAM alert ID. In this case IN-009 is the internal PAM error check

Parameter 2: Y = Enable the check
N = Disable check

17.3 How do I change the severity of the PAM error alert?

A PAM alert severity can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_SEVERITY_CHANGE ( 'IN-009', 'W' );
```

Arguments: The first argument is the PAM alert_id for the alert severity you wish to change; the second is the severity code. The valid codes are:

- I – Informational
- W – Warning
- C - Critical

The list of valid values for alert severities can be found using the PAM config report **PAMC003-10 PAM Lookups** - Lookup type “ALERT_SEVERITIES”

17.4 Why am I getting so many reports of the same PAM package error?

When a package fails, the last runtime is not set, thus the next time the PAM collector runs it will attempt to run the same invalid package at the run frequency of the main PAM collector, usually every 5 minutes. The package will continue to fail until fixed, hence the multiple reporting of the same package.

17.5 What is the most common cause of a PAM package failure?

Generally the most common cause is one or more of the PAM packages becoming invalid. When a PAM package becomes invalid, you would have received a PAM alert from the PAM invalid objects alert DB-001. As PAM provides open source, it should not be too difficult to track down the reason for the object becoming invalid

17.6 Can I auto compile PAM packages?

Yes, Invalid PAM objects can be recompiled using the PAM API:

```
exec PIPER_RX_PAM_API.PAM_INVALID_PAM_PACKAGES_FIX;
```

For the more technically minded we use the dbms_ddl.alter_compile package to compile all packages in the PAM schema

Note: Of course if the *piper_rx_pam_api* package is invalid this will not work.

17.7 Can I get a list of PAM invalid objects?

Yes, you can run the **PAM** Config report **PAMC013-10 PAM Object Check** that will list all the **PAM** objects and highlight in **red** those that are invalid

18 Customising **PAM**

18.1 What are the **PAM** e-mail links at the bottom of each **PAM** alert e-mail?

PAM provides the ability to add links to the bottom of each alert e-mail. Whilst the links provided out of the box are all **PIPER-Rx** related links, these can be change to link to your internal or support sites.

18.2 How do I disable the email links at the bottom of each **PAM** alert e-mail?

The **PAM** global setting – (DISPLAY_EMAIL_LINKS Display e-mail links in alert e-mails) that determines if e-mail links are to be displayed

All e-mail links can be turned off or on using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_DISPALY_SET ( 'N' );
```

Parameter 1: Y = Enable e-mail links
N = Disable e-mail links

18.3 How do I enable / disable individual email links at the bottom of each **PAM** alert e-mail?

Individual e-mail links can be disabled or enabled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_ENABLE_LINK ( 'T1', 'Y' );
```

Parameter 1: Link ID is the unique ID of the link

The Link ID's and the current status of the e-mail links can be found using the **PAM** Config report **PAMC020-10 PAM Alert Email Links**

Parameter 2: Y = Enable e-mail links
N = Disable e-mail links

18.4 How do I delete an email links at the bottom of each PAM alert e-mail?

PAM alert e-mail links can be permanently deleted using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_EMAIL_LINK_DEL ( 'T1' );
```

Parameter 1: Link ID is the unique ID of the link

The Link ID's and the current status of the e-mail links can be found using the PAM Config report [PAMC020-10 PAM Alert Email Links](#)

18.5 How do I change the email links at the bottom of each PAM alert e-mail?

The step is to delete the email link and then add the revised link data to the PAM [piper_rx_pam_email_links](#) table:

A link can then be added using the following PAM API:

```
BEGIN
PIPER_RX_2.PIPER_RX_PAM_API.PAM_EMAIL_LINK_ADD
( 'W2',          -- LINK_ID (Primary Key)
  'W',          -- LINK_TYPE ( W (Web), E (Email) or T (Twitter) )
  'Link to www.piper-rx.com web site', -- LINK_DESCRIPTION,
  'Y',          -- LINK_DISPLAY_STATUS,
  1,           --LINK_DISPLAY_ORDER,
  'http://www.piper-rx.com', --LINK_HREF,
  'Web link to piper-rx.com', --LINK_TITLE,
  'www.piper-rx.com');    --LINK_DISPLAY_TEXT

COMMIT;

END;
```

In this example we are adding the web link to piper-rx.com.

Note:

The link title is the mouse over display

The link display text is the text that appears at the bottom of the PAM alert e-mail

18.6 How do I view the current PAM alert email links

PAM alert e-mail link information can be found using the PAM Config report [PAMC020-10 PAM Alert Email Links](#)

18.7 Can I send alerts through to Quest's Foglight?

Firstly one would question why you would want to do this as Foglight 5 is much more comprehensive monitoring tool; that being said:

The simple answer is yes! – **but at your own risk!!**

The Following is described in the Foglight® Cartridge for Oracle E-Business User Guide - something like “Adding your own Health Check”

There is a Foglight® table within your OEBS application instance **QUEST_FG_OEBS_ALERT_SUMMARY_T** has four columns:

Timestamp	The time the alert was generated - usually sysdate
Alertid	Alert ID to appear in the Foglight® alerts console
Severity	Warning, Critical, and Fatal (spelling and case sensitive).
Details	The alert message that will appear in the Foglight® alerts console

NOTE: Don't use a severity of Critical as that will generate a Foglight® SLA failure alert – and no good can come of that...

So if you manually add a record to this table the next time the Foglight® Oracle E-Business Suite cartridge health check wakes up the summary message will be sent to the Foglight® alerts console.

The Alertid and Details are free format text.

I have historically presented the power of this feature by showing the following humorous example:

```
INSERT into QUEST_FG_OEBS_ALERT_SUMMARY_T
VALUES ( sysdate, 'OEBS001', 'Critical', 'Foglight has detected there is
insufficient beer in the fridge');
```

In a few minutes this alert will show up in the Foglight® console.

Oh the fun..., but remember one person's humor can be another person's insult so it is best to only use this feature for legitimate business purposes.

Thus all you have to do is write a script that takes the **PAM** alerts from the **PAM** alerts table **piper_rx_pam_alerts** and write the record into the Quest Foglight table **QUEST_FG_OEBS_ALERT_SUMMARY_T** table. (may be a trigger on the PAM alerts table...)

You will need to do a little manipulation, for the technically minded the following SQL should give you some guidance:

```
SELECT alert_time,
```

```
'PAM-'||alert_id alert_id,
decode(alert_severity,
'I', 'Warning', --Foglight does not have a notification level
'W', 'Warning',
'C', 'Critical', 'Warning') alert_severity,
alert_details
FROM PIPER_RX_PAM_ALERTS;
```

19 Pending Requests Alert (CM-002)

19.1 How do I turning the CM-102 alert off and on?

The **PAM** pending requests alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CM-002', 'N');
```

The alert can be re-enabled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CM-002', 'Y');
```

19.2 How do I exclude a manager from the pending request check?

Managers can be excluded from the pending request check by adding the manager you wish to exclude to the **PAM** manager exceptions table *piper_rx_pam_conc_mgr_ex* using the following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_PENDING_CHECK_EX_ADD ( 'MRPMGR' );
```

Parameter 1: The Concurrent manager name you wish to exclude from the pending request alert.

A manager can be removed from the **PAM** manager exceptions list using the following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_PENDING_CHECK_EX_DEL ( 'MRPMGR' );
```

Parameter 1: The Concurrent manager name you wish to remove from the **PAM** pending request alert exceptions list.

19.3 What is the **PAM** pending request alert delay feature?

Once **PAM** has detected pending request backlog, a delay is added to the check frequency for the pending requests check. In this way you are not continually bombarded by alert emails for the duration of the time the requests are being cleared.

19.4 How do I change the pending requests alert delay time?

The delay time can be changed using the following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_SET_DELAY_PENDING_CHECK_CHECK ( 10 );
```

Parameter 1: The number of minutes to delay before the next check and alert.

Note: The minimum delay is 10 minutes; setting the parameter to anything smaller than 10 minutes will default to 10 minutes

20 Long Running Requests Alert (CM-003)

20.1 What is the alert threshold multiplier value?

The threshold multiplier is the number of standard deviations you wish to apply to the long running requests calculation. A long running request is any request that runs longer than its average plus **X** standard deviations.

20.2 How do I change the alert threshold multiplier value?

The **PAM** multiplier value can be set using the following **PAM** API:

```
exec PIPER_RX_PAM_API_2.PAM_SET_DELAY_PENDING_CHECK (20);
```

20.3 How do I exclude a program from the **PAM** long running request check?

By adding the program to the **PAM** `piper_rx_pam_cp_monitor_tl` table using the following **PAM** API:

```
BEGIN
PIPER_RX_PAM_API.PAM_MONITORED_PROGRAM_ADD
( 101, -- Program Application ID
  101, -- Program ID
  'Y', -- Alert status - alert on or off
```

```
'N', -- Alert if program does not exist
'Y', -- Alert if completed error
'Y', -- Alert if completed earning
'N', -- Alert if submitted
'N', -- Exclude from duplicates check
'Y' ); -- Exclude from long running check
```

END;

If the program already exists in the [PAM piper_rx_pam_cp_monitor_tl](#) table you will need to change the exclude from long running value from 'N' to 'Y'.

21 Duplicate requests alert (CP-004)

21.1 What is a duplicate request?

PAM defines a duplicate request as the same program submitted by the same user with the same arguments with either a status of running or pending.

Note: Both on-hold and scheduled requests are not included in the duplicate request check

21.2 When I got back to the office after a meeting I received a duplicate request alert. How do I find out more details about the requests?

PAM provides a report [PAMRGA005-10 Application Activity \(period\)](#) that allows you to view all the activity between a start time and an end time; in affect allowing you to look back in time.

Note: The available history is dependant on your concurrent request and sign on audit purge programs

21.3 What is the duplicates grace period?

PAM introduced the duplicate grace period (hour/s) so that the same duplicates are not reported on with each **PAM** duplicates check, thus preventing multiple alerts on the same duplicates. If the grace period is set to 1 hour, then a set of duplicates will not be re-reported for that period.

21.4 How do I change the duplicates grace period?

The PAM duplicate request grace period can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_DUPLICATES_GRACE_SET ( 1 );
```

Parameter 1: The number of hours to suspend a duplicate check for detected duplicates

21.5 How do I exclude a program from the PAM long running request check?

By adding the program to the PAM piper_rx_pam_cp_monitor_tl table using the following PAM API:

```
BEGIN
PIPER_RX_PAM_API.PAM_MONITORED_PROGRAM_ADD
( 101, -- Program Application ID
  101, -- Program ID
  'Y', -- Alert status - alert on or off
  'N', -- Alert if program does not exist
  'Y', -- Alert if completed error
  'Y', -- Alert if completed earning
  'N', -- Alert if submitted
  'Y', -- Exclude from duplicates check
  'N' ); -- Exclude from long running check
END;
```

If the program already exists in the PAM piper_rx_pam_cp_monitor_tl table you will need to change the exclude from duplicates value from 'N' to 'Y'.

22 Auto Purging

22.1 Why does PAM include an auto purge feature?

PAM provides an auto purge feature to remove PAM collected data after a defined period of time. This is based on the understanding that historical monitoring data's value diminishes over time so there is no real need to keep that data. What we don't want is the PAM repository growing too large and to ensure synergy with the "self managing" and "set and forget" design principles of PAM.

22.2 What objects are purged by the PAM auto purge process?

The following PAM tables are purged as part of the auto purge process:

PIPER_RX_PAM_DEBUG

This table holds PAM debug information. Once PAM debug has been enabled this table will be populated at a rate of one record per PAM check. The default number of days history to be held online is set to 5 days.

PIPER_RX_PAM_ERRORS

This table holds PAM runtime error information. This table will be populated at a rate of one record per PAM error encountered when running a PAM stored procedure. The default number of days history to be held online is set to 10 days.

PIPER_RX_PAM_ALERTS

This table holds the alerts generated by PAM currently defaults to 365 days.

PIPER_RX_PAM_IDWA_MONITOR_TL

This table holds the Intraday Workflow Activity (IDWA) data which is populated at the rate of one (1) record every 15 minutes (default) which equated to approximately 35,000 records per year (default purge data older than 1 year).

PIPER_RX_PAM_DAILY_ACTIVITY

This table holds the daily application activity data which is populated at a rate of one (1) record per day which equates to 365 records per year (default purge data older than 1.5 years).

PIPER_RX_PAM_IDA_ACTIVITY

This table holds the application intraday activity which is populated at the rate of one (1) record every 15 minutes (default) which equated to approximately 35,000 records per year (default purge data older than 1 year).

PIPER_RX_PAM_RT_HISTORY

This table holds the intra day application response time data which is populated at a rate of one (1) record every 10 minutes which equates to 144 records per day (default purge data older than 6 months).

PIPER_RX_PAM_AT_HISTORY

This table holds the historical auto threshold data which is populated at a rate of one (1) record per week which equates to 52 records per year (default purge data older than 2 years).

22.3 How do I increase or decrease the purge days for PAM auto purged tables?

The number of days PAM debug history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_DEBUG_PURGE_DAYS_SET ( 5 );
```

The number of days PAM error history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ERROR_SET_PURGE_DAYS ( 10 );
```

The number of days PAM alert history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_PURGE_DAYS_CHANGE ( 365 );
```

The number of days PAM intraday workflow history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_IDWA_HIST_PURGE_DAYS_SET ( 365 );
```

The number of days PAM daily activity history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API.PAM_SETTINGS_DA_PURGE_DAY_SET ( 540 );
```

The number of days PAM intraday application activity history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_IDAA_PURGE_DAYS_SET ( 180 );
```

The number of days PAM application response time history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_RT_HISTORY_PURGE_DAYS_SET ( 180 );
```

The number of days PAM auto threshold history to be held on-line can be changed using the following PAM API:

```
exec PIPER_RX_PAM_API_2.PAM_AT_PURGE_DAYS_SET ( 365 );
```

22.4 When are the PAM objects auto purged?

The PAM purged objects are purged whenever the collector for that data is run.

E.g. The Daily Activity collector is run once per day. At the end of each run any records found that are older than the threshold for purged days specified in the **PAM** settings are deleted.

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