PAMtutorials 22: *PAMfallback*

Fall Back – the *PAM* auto-healer

Fall Back - To begin to use someone or something held in reserve or to depend on something after a loss or failure

PIPER-Rx Application Monitor – PAM
VIRTUAL APPS ADMINISTRATOR

PAM Version 4.0
"Blurring the line between software product and training"

Nov 2013

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1 Background

As we all know packages can become invalid for no apparent reason and as such we have implemented the *PAMfallback* module.

The *PAMfallback* module came about when we found on two (2) occasions during development over the past four (4) years that a *PAM* core package became invalid for no apparent reason. Since adding the *PAMfallback* module we have not had the issue. That being said testing has shown that should a *PAM* core package become invalid *PAMfallback* has been able to "fix" it.

For correct operation *PAM* is dependent on the following *PAM* Core components

 ❖ *PAM* Common
 ❖ *PAM* Collectors
 ❖ *PAM* Send mail
 ❖ *PAM* Web Common

If any one of these components fails *PAM* will either cease to operate or the majority of the application will fail.
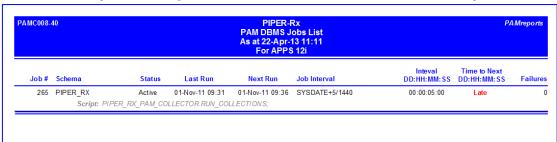
2   *PAMfallback* is run as a DBMS Job

PAMfallback is run as a DBMS job providing it full independence from the *PAM* application.

PAM uses DBMS jobs as they are easily understood and available in all releases of the Oracle RDBMS that supports Oracle E-Business Suite versions supported by *PAM*.

You can use the *PAMreports* report PAMC008-40 PAM DBMS Jobs to list all *PAM* related RDBMS jobs.

Example *PAMreports* PAMC008-40 PAM DBMS Jobs report

PAMC008-40		PIPER-Rx PAM DBMS Jobs List As at 22-Apr-13 11:11 For APPS 12i					PAMreports
Job #	Schema	Status	Last Run	Next Run	Job Interval	Inteval DD:HH:MM:SS	Time to Next DD:HH:MM:SS	Failures
265	PIPER_RX	Active	01-Nov-11 09:31	01-Nov-11 09:36	SYSDATE+5/1440	00:00:05:00	Late	0
	Script: PIPER_RX_PAM_COLLECTOR.RUN_COLLECTIONS;							

3 What *PAMfallback* Does

The *PAMfallback* module has been designed to run every 30 minutes (default).

The *PAMfallback* package has its own internal SMTP and recompile functions and does not make any calls to the *PAM* Common package making it fully independent of the *PAM* application. Thus should any *PAM* core package fail, *PAMfallback* has the ability to recompile *PAM* Core objects.

On each execution *PAMfallback* performs the following steps:

Step 1:

Checks if the *PAM* common package has become invalid and will attempt to recompile the package if found to be invalid.

Step 2:

Checks if the *PAM* send mail package has become invalid and will attempt to recompile the package if found to be invalid.

Step 3:

Checks if the *PAM* collector package has become invalid and will attempt to recompile the package if found to be invalid.

Step 4:

Checks if the *PAM* web common package has become invalid and will attempt to recompile the package if found to be invalid.

Step 5:

If any of the above *PAM* packages were found to be invalid, *PAMfallback* will attempt to recompile all *PAM* invalid packages.

Step 6:

PAMfallback checks the *PAM* collector DBMS job. If the job is found to be missing or invalid (broken) *PAMfallback* will attempt to restart the job.

Step 7:

PAMfallback checks the *PAM* sendmail DBMS job. If the job is found to be missing or invalid (broken) *PAMfallback* will attempt to restart the job.

Step 8:

If *PAMfallback* found an issue with any of the *PAM* core packages, *PAMfallback* will send an e-mail notification that it has attempted to repair the issue.

PAMfallback will attempt to "fix" a maximum of five (5) times after which *PAMfallback* will cease its activities until the following day when *PAMfallback* will run again.

Of course if the *PAMfallback* job becomes invalid *PAMfallback* feature will cease to function.

3.1 Recompiling PAM invalid objects

PAM internal alert IN-016 (Internal - Alert when there are new *PAM* related invalid objects) runs every 4 hours (default) and generates an alert when a *PAM* object becomes invalid, however this check alert does not attempt to recompile the invalid object.

The *PAMfallback* module on each execution will attempt to recompile any *PAM* invalid object. This feature is enabled (default). If a *PAM* package is found to be invalid *PAMfallback* will attempt to recompile the package. It will not notify you as to the success or failure of the attempt.

If a package cannot be recompiled, it will be picked up and reported as invalid by the *PAM* Internal IN-016 alert - Alert when there are new *PAM* related invalid objects

The *PAMfallback* auto recompile feature will not attempt to recompile an Invalid *PAM* package that has had **all** alerts within a given package either turned off and or disabled by *PAM*. This prevents the *PAMfallback* feature from attempting to auto recompile packages that cannot be recompiled for whatever reason.

3.2 Turning the *PAMfallback* auto recompile feature on or off

You can use the following *PAM* API to turn on or off the *PAMfallback* auto recompile feature.

```
exec piper_rx_pam_api_dev_i.pam_fallback_autocompile_set ('Y')
```

3.3 Turning the *PAMfallback* feature on or off

There are two (2) methods of turning the *PAMfallback* feature off.

Method one: Delete the *PAMfallback* DBMS job.

Method two: Use the following *PAM* API:

```
exec piper_rx_pam_api.pam_alert_enable ( 'IN-015', 'Y');
```

Parameter 1: The PAM Alert ID
Parameter 2: 'Y' = Enable alert, 'N' = Disable alert

4 IN-015 – *PAM* Fallback check

The *PAM* internal check IN-015 –Check the status of *PAMfallback* module periodically checks (default 2 hours) the status of the *PAMfallback* package and for the existence of the *PAMfallback* job.

If either the job does not exist or is "broken" or the *PAMfallback* package has become invalid *PAM* will raise an alert.

Example *PAM* IN-015 - *PAMfallback* e-mail alert message

ALERT MESSAGE FROM *PAM* - PIPER-Rx Application Monitor - DO NOT REPLY

Company = Company name
Site = Site name
Alert Level = **Warning**
Detected = 02-Apr-13 (Mon) 10:30:10
Alert Frequency = 2 Hours

The PAMfallback Package PIPER_RX_PAM_FALL_BACK was found to be invalid

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Alert Information:

IN-015 *PAMfallback*

PAM has detected that the *PAMfallback* package has become invalid or that the *PAMfallback* dbms job does not exist or is broken.

Fall Back - "*to begin to use someone or something held in reserve or to depend on something after a loss or failure*"

PAMfallback module is an independent *PAM* package designed to check the existence and status of the *PAM* central processing objects and in the case of an issue attempt first level of rectification.

This alert indicates that the *PAMfallback* package itself has become invalid or that the DBMS job that runs the *PAMfallback* package is either broken or has

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been removed. As such the *PAMfallback* feature is no longer active.

This alert message does not indicate an issue with *PAM*, however should an issue with one or more of the *PAM* packages arise *PAMfallback* may not detect that issue.

5 IN-016 – Invalid *PAM* Objects

Prior to *PAM* Version 4 invalid *PAM* objects were detected by the DB-001 alert – Alert when new invalid objects are detected. In *PAM* Version 4 the DB-001 alert now only checks for OEBS application objects owned by registered OEBS application schema owners.

The *PAM* internal alert IN-016 - Alert when there are new *PAM* invalid objects now checks for *PAM* packages that have become invalid since the last *PAM* invalid object check.

The *PAM* internal invalid *PAM* object check will run every 4 hours (default) and if one or more *PAM* objects have become invalid since the last *PAM* check the following e-mail alert message is sent:

Example *PAM* IN-016 - *PAM* Invalid *PAM* object e-mail alert message

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ALERT MESSAGE FROM *PAM* - PIPER-Rx Application Monitor - DO NOT REPLY

Company = Company name
Site = Site name
Alert Level = **Warning**
Detected = 01-Apr-13 (Mon) 10:30:10
Alert Frequency = 4 Hours

PAM PACKAGE BODY - PIPER_RX_PAM_SSM has been identified as invalid since the last invalid object check (01-Apr-13 10:20)

Alert Information:

DB-001 Invalid Objects

ONE OR MORE APPLICATION OBJECTS HAVE BECOME INVALID SINCE THE LAST CHECK.

Note 1: Objects will not be reported on again unless they are fixed and become invalid again.

Note 2: Whilst all sites have invalid objects, it is good practice to investigate any new

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invalid object as soon as possible. If you want to obtain a list of the objects that have become invalid since the last *PAM* invalid object check you can use *PAMreports* - Actions **PAMADB001 Invalid Objects** using the last check date provided in the alert message.

If you are aware of new invalid objects within a functional module then you are more attuned for any "left field" errors associated with that module that may be related to the invalid objects.

Note 3: Objects that continue to become invalid can be excluded from this check by adding the object to the *piper_rx_pam_db_object_ex* table setting the exclude_from_invalid_check to [Y].

Note 4: If you want to obtain a list of the current excluded objects you can use *PAMreports* - Config **PAMC016 PAM DB Object Exclusions**

5.1.1 What to do next when you get a *PAM* IN-016 alert

If you receive a *PAM* IN-016 alert you can obtain a list of *PAM* invalid objects using the *PAMreports* Config - PAMC013-40 PAM Object Check

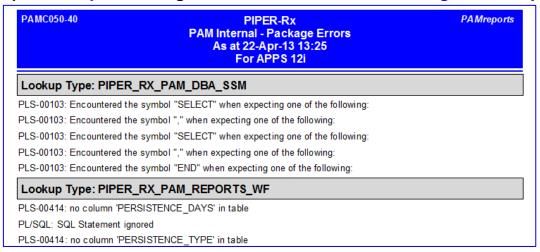### Example *PAMreports* PAMC013-40 PAM Object Check report

PAMC013-40		PIPER-Rx PAM Object Check As at 22-Apr-13 12:53 For APPS 12i				*PAMreports*
Object Name	**Object Type** *Description*	**Created**	**Last Updated**	**Invalid date**	**Status**	**Backup**
PIPER_RX_PAM_ACCOUNT_EX	TABLE	01-Nov-11 (Tue) 09:18	22-Apr-13 (Mon) 09:27		VALID	Yes
PIPER-RX PAM - User account exceptions						
PIPER_RX_PAM_ACTIONS	TABLE	01-Nov-11 (Tue) 09:18	01-Nov-11 (Tue) 09:18		VALID	
PIPER-RX PAM - Alert actions						
PIPER_RX_PAM_ALERTS	TABLE	01-Nov-11 (Tue) 09:17	01-Nov-11 (Tue) 09:17		VALID	Yes
PIPER-RX PAM - Alerts						
PIPER_RX_PAM_AT_HISTORY	TABLE	01-Nov-11 (Tue) 09:18	01-Nov-11 (Tue) 09:18		VALID	Yes
PIPER-RX PAM - Auto threshold history						

Object Name	**Object Type** *Description*	**Created**	**Last Updated**	**Invalid date**	**Status**	**Backup**
PIPER_RX_PAM_DB_MONITOR	PACKAGE	01-Nov-11 (Tue) 09:19	05-Apr-13 (Fri) 11:45		VALID	
PIPER-RX PAM - Database activity checks						
PIPER_RX_PAM_DB_MONITOR	PACKAGE BODY	01-Nov-11 (Tue) 09:19	17-Apr-13 (Wed) 12:40		VALID	
PIPER_RX_PAM_EV_MONITOR	PACKAGE	01-Nov-11 (Tue) 09:22	26-Mar-12 (Mon) 14:03		VALID	
PIPER-RX PAM - E-mail validation						
PIPER_RX_PAM_EV_MONITOR	PACKAGE BODY	01-Nov-11 (Tue) 09:22	11-Apr-12 (Wed) 10:09		VALID	
PIPER_RX_PAM_GA_MONITOR	PACKAGE	01-Nov-11 (Tue) 09:18	13-Apr-12 (Fri) 14:15		VALID	
PIPER-RX PAM - General Application checks						
PIPER_RX_PAM_GA_MONITOR	PACKAGE BODY	01-Nov-11 (Tue) 09:19	13-Apr-12 (Fri) 14:15		VALID	
PIPER_RX_PAM_GL_MONITOR	PACKAGE	27-Feb-12 (Mon) 11:10	28-Mar-13 (Thu) 15:35		VALID	
PIPER-RX PAM - General Ledger Module						
PIPER_RX_PAM_GL_MONITOR	PACKAGE BODY	27-Feb-12 (Mon) 11:10	31-Mar-13 (Sun) 09:34	2013-03-31:09:34:17	INVALID	
PIPER_RX_PAM_IDAA_MONITOR	PACKAGE	01-Nov-11 (Tue) 09:19	18-Apr-13 (Thu) 11:49		VALID	
PIPER-RX PAM - Intraday Daily Activity						
PIPER_RX_PAM_IDAA_MONITOR	PACKAGE BODY	01-Nov-11 (Tue) 09:19	18-Apr-13 (Thu) 11:49		VALID	

This report lists all **PAM** objects indicating those that are invalid in red.

Should you find any **PAM** invalid objects you can use the **PAMreports** config - PAMC050-40 PAM Internal Package Errors report to list the internal errors related to the invalid object. Do not be concerned if there are no errors associated with an invalid **PAM** object, it is Oracle and it does happen.

Example *PAMreports* Config PAMC050-40 PAM Internal Package Errors report

PAMC050-40	PIPER-Rx	PAMreports
	PAM Internal - Package Errors	
	As at 22-Apr-13 13:25	
	For APPS 12i	

Lookup Type: PIPER_RX_PAM_DBA_SSM

PLS-00103: Encountered the symbol "SELECT" when expecting one of the following:
PLS-00103: Encountered the symbol "," when expecting one of the following:
PLS-00103: Encountered the symbol "SELECT" when expecting one of the following:
PLS-00103: Encountered the symbol "," when expecting one of the following:
PLS-00103: Encountered the symbol "END" when expecting one of the following:

Lookup Type: PIPER_RX_PAM_REPORTS_WF

PLS-00414: no column 'PERSISTENCE_DAYS' in table
PL/SQL: SQL Statement ignored
PLS-00414: no column 'PERSISTENCE_TYPE' in table

This report can guide both your DBA and **PAM** support personnel to a resolution.

5.2 Compiling invalid PAM objects

PAM provides an API to recompile all **PAM** invalid objects. All Invalid PAM packages can be recompiled using the following **PAM** API:

```
exec PIPER_RX_PAM_API.pam_invalid_pam_packages_fix;
```

You can run this API as often as is required as it only attempts to recompile.

6 IN-017 – Check SSO Status and disable selected alerts

If Single sign-on has been enabled passwords and password aging are handled by the single sign on application. As such **PAM** will disable the following **PAM** alerts:

- ❖ AAA-002 - Alert when accounts with no pwd aging found
- ❖ AAA-003 - Alert when accounts with pwd aging days exceeds site policy
- ❖ AAA-004 - Alert when excluded accounts with pwd aging days exceeds site policy
- ❖ AAA-005 - Alert when accounts with pwd aging accesses exceeds site policy
- ❖ AAA-006 - Alert when excluded accounts with pwd aging accesses exceeds site policy

If **PAM** identifies that single sign-on has been disabled then **PAM** will re-enable the above mentioned **PAM** alerts.

The **PAM** internal single sign-on check will run every month (default) and if single sign-on has been enabled or disabled the following e-mail alert message is sent:

Example *PAM* IN-017 - *PAM* Single Sign-on e-mail alert message

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ALERT MESSAGE FROM *PAM* - PIPER-Rx Application Monitor - DO NOT REPLY

Company = Company name
Site = Site name
Alert Level = **Warning**
Detected = 01-Apr-13 (Mon) 05:00:01
Alert Frequency = 1 Month

PAM has detected that Single Sign On (SSO) is enabled in this instance

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Alert Information:

DB-001 Invalid Objects

ONE OR MORE APPLICATION OBJECTS HAVE BECOME INVALID SINCE THE LAST CHECK.

PAM had detected that single sign-on has been enabled in this instance.

Given that passwords and password aging is handled by the single sign on application _PAM_ will disable the following _PAM_ alerts:

- ❖ AAA-002 - Alert when accounts with no pwd aging found
- ❖ AAA-003 - Alert when accounts with pwd aging days exceeds site policy
- ❖ AAA-004 - Alert when excluded accounts with pwd aging days exceeds site policy
- ❖ AAA-005 - Alert when accounts with pwd aging accesses exceeds site policy
- ❖ AAA-006 - Alert when excluded accounts with pwd aging accesses exceeds site policy

7   IN-018 – Internal – PAM Notifications Check

Periodically (weekly default) *PAM* will check for New Releases, Point releases and bug fixes. When a new product or fix is available *PAM* will generate an e-mail alert.

Example *PAM* IN-017 - *PAM* Single Sign-on e-mail alert message

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ALERT MESSAGE FROM *PAM* - PIPER-Rx Application Monitor - DO NOT REPLY

Company = Company name
Site = Site name
Alert Level = **Warning**
Detected = 01-Apr-13 (Mon) 05:00:01
Alert Frequency = 1 Month

PAM A PAM bug fix: V40001 is available via the PAM web site

Alert Information:

IN-018 PAM Notifications

PAM had detected a *PAM* notification is available.

A *PAM* notification is available via the *PAM* web site – What's New Page:

www.piper-rx.com/pages/whats_new.html

PAM Notifications include:

- New Releases
- Point Releases
- Bug Fixes

7.1   What to do with this information

Visit the *PAM* web site what's new page www.piper-rx.com/pages/whats_new.html for more details on the notification message

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