

***PAMtutorials* 19: Scheduled Requests**

When Scheduled Requests Go Wrong

PIPER-Rx Application Monitor – *PAM* VIRTUAL APPS ADMINISTRATOR

PAM Version 4.0

“Blurring the line between software product and training”

May 2012

***PAM - P*iper-Rx *A*pplication *M*onitor**

PIPER-Rx – Home of the E-Business Resource Centre

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1 What you will get out of *PAMtutorials 19*

So as to lighten the load on the concurrent managers we encourage our users to schedule their non-important / urgent requests to run during lower activity times such as a lunch time and after hours.

We also schedule normal activity and maintenance programs such as the Work flow background processes and maintenance purging for the same reasons.

However, based on experience, what we generally don't do as part of a normal maintenance program is to re-visit our scheduled requests and keep them up to date and relevant.

In this tutorial we will cover:

Aged scheduled requests:

Those scheduled requests that have been hanging around forever. These requests should be reviewed periodically to ensure they are still required or relevant.

Scheduled request creep:

Those high resource requests that were originally scheduled to run after hours, however they have been scheduled to run from the end of the prior run and have crept into the working day.

Duplicate scheduled requests:

All too often I find sites with multiples of the same scheduled request with the same argument set. In many cases these requests are just wasting resources.

2 Where to Start – review current scheduled requests

The first and simplest starting point is to review a list of the current scheduled requests within your application.

PAMreports - Admin [PAMADCR005Scheduled Requests](#) lists all the currently configured scheduled reports:

Example **PAMADCR005 Scheduled Requests** report

PAMADCR005-30		PAM - PIPER-RX - APPLICATION MONITOR						PIPER-Rx	
Scheduled Requests									
As at 27-Feb-12 (Mon) 17:21									
APPS 12i									
Request	User	Program Name	Arguments	Req Date	Time To Start (DDHHMM)	Re-submit	Time	End Date	
5737890	OMALL	Cost Manager		27-Feb-12 17:22	00:00:00	1 Minutes (End)		25-Sep-08	
5827378	SYSADMIN	OAM Applications Dashboard	(None)	27-Feb-12 17:23	00:00:01	10 Minutes (End)			
Scheduled Requests 2									

As mentioned above, the types of information you are looking for in this report are:

- ❖ Duplicate Scheduled requests
- ❖ Scheduled requests with a resubmit from the end of the prior run
- ❖ Known long running requests running during peak application processing times

3 CP-005 Aged Scheduled Requests

The **PAM** aged scheduled requests alert is a simple maintenance reminder alert.

Once per month (default) **PAM** will check all scheduled concurrent requests and alert if any have been in existence for more than the **PAM** threshold number of months (default 12 months).

The aim of this alert is provide a reminder to review scheduled request that have been in existence for an extended period of time to make sure they are still required and relevant.

Note: The concurrent program FNDOAMCOL has been excluded from this check.

Once an alert has been raised for an aged scheduled request, **PAM** will not alert again for that scheduled request based on the requests program ID and arguments, until the threshold number of months has passed again.

3.1 PAM aged scheduled requests e-mail alert

When **PAM** detects scheduled requests that have been in existence for longer than the threshold months a **PAM** alert e-mail is raised:

Example **PAM** CP-005 – **PAM** Aged scheduled requests alert message

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

Company = Company Name
Site = APPS 12i
Alert Level = **Informational**
Detected = 30-Aug-11 (Tue) 14:53:20
Alert Frequency = 1 Month

The scheduled program - Workflow Work Items Statistics Concurrent Program (Args: (None)) has been running for over 12 months and should be reviewed

Alert Information:

CP-005 Long running scheduled request

A SCHEDULED REQUEST HAS BEEN IN EXISTANCE FOR OVER A YEAR AND SHOULD BE REVIEWED

PAM aged scheduled requests alert is a simple maintenance reminder alert.

Once per month (default) **PAM** will check all scheduled concurrent requests and alert if any have been in existence for more than the **PAM** threshold number of months (Default 12 months)

The aim of this alert is provide a reminder to review scheduled request that have been in existence for an extended period of time to make sure they are still required and relevant.

Once an alert has been raised for an aged scheduled request, **PAM** will not alert again for that scheduled request based on the requests program id and arguments, until the threshold number of months has passed again.

You can use the **PAMreports** -General **PAMRCP005 Aged Scheduled Requests** to view all aged scheduled requests that have been in existence for longer than the **PAM** threshold value of X months.

3.2 What to do with this information

You can use **PAMreports** - General **PAMRCP005 Aged Scheduled Requests** to view all aged scheduled requests that have been in existence for longer than the **PAM** threshold value of X months (default 12 months).

Example **PAMRCP005 Aged Scheduled Requests** report

Request Id		Submitted By	Program Name	Arguments	Resubmit Interval		Months
PAMRC005-20 PAM - PIPER-RX - APPLICATION MONITOR PIPER - Rx Aged Scheduled Requests Threshold Months: 6 AS at 25-Aug-11 19:55 For APPS 12I							
4431046	SYSADMIN	Workflow Mailer Statistics Concurrent Pr...	(None)	24 HOURS	END	11	11
4431048	SYSADMIN	Workflow Agent Activity Statistics Concu...	(None)	24 HOURS	END	11	11
4431050	SYSADMIN	Workflow Work Items Statistics	(None)	24 HOURS	END	11	11

The value for “Months” is the estimated number of months the scheduled request has been in existence. This value is calculated based on the number of resubmissions the request has undergone multiplied by the scheduled request resubmission interval. Example: A scheduled request that runs once per month and has a resubmission count of 18 has been running for estimated 18 months.

You can then use this information to review the scheduled request/s for relevance.

3.3 Changing the *PAM* threshold value

The *PAM* threshold value can be change using the following *PAM* API:

```
exec piper_rx_pam_api_2.pam_threshold_cp005_set ( 6 );
```

Parameter 1: The number of months a scheduled request must have been in existence for before an aged scheduled request alert is raised

3.4 Turning the *PAM* aged scheduled requests alert off and on again

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

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

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CP-005', 'Y' );
```

4 CP-006 Scheduled Request Creep

Any recurring scheduled request that is set to resubmit from the **END** of the prior run will creep forward each run by approximately the runtime of the prior run.

Example: A recurring schedule program with an average runtime of 30 minutes is scheduled to start at 1am and set to run once per night resubmitting at the **END** of the prior run.

The first time the program runs it will start at 1am. The second night it will start at 1:30am, the third night 2:00am etc... eventually this long running request will be running during the working day.

Any scheduled long running request that was designed to be run out side normal business hours, that then runs during business hours may have a detrimental impact on the application's overall performance.

This alert is designed to alert you to the fact that a long running scheduled request has crept into the working day. Once the request has crept out of the working day it will no longer be alert on until it creeps back into the working day again.

With this alert and its subsequent reports we are only interested in scheduled requests that have a resubmit type code of 'END'. In addition **PAM** only reports on requests that have an average run time greater than the **PAM** threshold value of 10 minutes (default).

Note: The concurrent program FNDOAMCOL has been excluded from this check.

4.1 PAM scheduled request creep e-mail alert

When **PAM** detects scheduled requests that have been in existence for longer than the threshold months a **PAM** alert e-mail is raised:

Example **PAM** CP-006 – **PAM** scheduled request creep alert message

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

Company = Company Name
Site = APPS 12i
Alert Level = **Informational**

Detected = 30-Aug-11 (Tue) 14:53:20
 Alert Frequency = 1 Week

The scheduled program - Workflow Work Items Statistics Concurrent Program - Request ID (4431050) submitted by SYSADMIN has crept into the working day

Alert Information:

CP-006 Scheduled request creep alert

A SCHEDULED REQUEST HAS CREPT IN TO THE WORKING DAY

Any recurring scheduled request that is set to resubmit from the END (resubmit type = `END?`) of the prior run will creep forward each run by approximately the runtime of the prior run.

This alert is designed to alert if a long running scheduled request has crept into the working day. Once the request has crept out of the working day it will no longer be alert on until it creeps back into the working day again.

You can use [PAMreports](#) - General [PAMRCP006 Scheduled Requests Creep](#) to list all scheduled requests that have the potential to creep forward (resubmit type = `END?`).

Note: For this alert a long running request is defined as any request with an average runtime of greater than 10 minutes (default)

4.2 What to do with this information

You can use [PAMreports](#) - General [PAMRCP006 Scheduled Requests Creep](#) to list all scheduled requests that have the potential to creep forward (resubmit type = `END`).

Example [PAMRCP006 Scheduled Requests Creep](#) report

Request Id		Submitted By	Program Name	Arguments	Next Start Date	Avg Run Time DD:HH:MM
4431050		SYSADMIN	Workflow Work Items Statistics		07-Jul-11 15:17	0:0:0
4431048		SYSADMIN	Workflow Agent Activity Statistics Concu...		07-Jul-11 15:05	0:0:0
4431046		SYSADMIN	Workflow Mailer Statistics Concurrent Pr...		07-Jul-11 14:56	0:0:0

PAM woking week: Working Week - 9 to 17 hours (Inclusive) Monday to Friday
PAM alert minimum run time (Minutes): 10

This report only shows scheduled requests with a resubmit type code of END.

The report will display the “Next Start Date” in red if that time is within the working week.

As the average runtime is the runtime derived in the **PAM** concurrent request runtime history, an average runtime of zero indicates either there is no average runtime history currently held in the **PAM** concurrent request runtime history, or the programs average runtime is less than 1 minute.

Unless there is a valid business reason for the request to creep into the business day, the general practice is to cancel the current scheduled request and submit a new one so that the long running request does not impact the working day.

The working day is defined as Monday to Friday 9:00 to 5:00pm

4.3 Turning the **PAM** scheduled requests creep alert off and on again

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

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

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CP-006', 'Y' );
```

5 CP-007 Duplicate Scheduled Requests

When reviewing sites I often find a number of duplicate scheduled requests. This is quite understandable given that the current OEBS screens provide little in the way of providing a list of scheduled requests; as such users tend to add new scheduled requests without checking the existing scheduled requests.

In most cases duplicate scheduled requests are a waste of processing resources.

There are instances where there are duplicate scheduled requests are intended, that is, I want a program is to be run with the same arguments at the beginning of the day, midday and in the late afternoon. In this case the duplicates will be alerted on again every grace period (default 3 months) so this acts as a kind of reminder to check all duplicates.

PAM will raise an alert when duplicate scheduled requests are found. However, **PAM** will **not** raise an alert again on that program and arguments for a defined period (default 3 months).

Note: Should another request be added with the same program and arguments as an existing reported duplicate that has been alerted on within the grace period (default 3 months) an additional alert will **not** be raised. Instead when the grace period has passed an alert will be raised for all duplicates.

5.1 PAM duplicate scheduled request e-mail alert

When **PAM** detects duplicate scheduled requests a **PAM** alert e-mail is raised:

Example **PAM** CP-007 – **PAM** duplicate scheduled requests alert message

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

Company = Company Name
Site = APPS 12i
Alert Level = **Informational**
Detected = 30-Aug-11 (Tue) 14:53:20
Alert Frequency = 1 Week

2 duplicate scheduled Workflow Background Process (Y:Y:N) requests detected

Alert Information:

CP-007 Duplicate Scheduled requests alert

A DUPLICATE SCHEDULED REQUEST HAS BEEN DETECTED

A duplicate scheduled request is defined as a scheduled (reoccurring) program with the same arguments.

There may be instances where the same program is required to be scheduled to run several times during the day, this occurrence will be picked by this alert.

Once a duplicate has been alerted, that duplicate will not generate another alert for a defined period of time (default 3 months).

You can use *PAMreports* – Actions **PAMACP004-30 Scheduled Requests (duplicates)** to list all current duplicate scheduled requests.

5.2 What to do with this information

You can use *PAMreports* - General **PAMACP004 Scheduled Requests (duplicates)** to list all duplicate scheduled requests:

Example **PAMACP004 Scheduled Requests (duplicates)** report

Request	User	Program Name	Arguments	Req Date	Time To Start (DDHHMM)	Re-submit	Time	End Date
No Scheduled Duplicate Requests								
Duplicate Scheduled Requests 0								

5.3 Changing the PAM duplicate scheduled requests grace period

The *PAM* grace period can be change using the following *PAM* API:

```
exec piper_rx_pam_api_2.pam_threshold_cp007_set ( 3 );
```

Parameter 1: The number of months after a duplicate scheduled request has been alerted on before that request is alerted on again.

5.4 Turning the *PAM* duplicate scheduled requests alert off and on again

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CP-007', 'N' );
```

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'CP-007', 'Y' );
```

6 IN-013 Preventing PAM alert backlogged e-mail storms

We have gone to great lengths to prevent PAM from generating and sending too many alert messages including:

- ❖ Minimising the number of high frequency alert checks
- ❖ Slowing down subsequent alert check periods after the first alert (the PAM alert delay feature)
- ❖ Temporarily suspend PAM alerts associated with excessive PAM alerting (IN-010)

However at one point during development we encountered an instance when the database e-mail subsystem was down for several days, and, once the e-mail sub system was restarted, the backlog of PAM alerts were sent, resulting in large number of alert e-mails.

In the real world given the importance of the e-mail subsystem, excessive down time would most likely not occur. However, in order to prevent the potential for an e-mail storm as a result of prolonged e-mail subsystem down time, where there are more than 20 (default) PAM e-mail alerts older than one day that that have not been sent, they will be marked as “Not Sent”. The current day’s alerts as well as any IN-013 alerts will be sent when the e-mail subsystem comes back on line.

Note: The PAM IN-013 alert message will not be marked as “Not Sent”

6.1 PAM alert backlogged e-mail alert

When PAM detects there are more than 20 (default) e-mail alerts that are older than one day that have not been sent, the e-mail alerts are marked “Not Sent” and a PAM alert e-mail is raised:

Example PAM IN-013 – PAM alert backlogged 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 = 05-Oct-11 (Wed) 20:15:11
 Alert Frequency = 1 Day

25 back logged PAM alert e-mails have been marked - Not Sent.

Alert Information:

IN-013 PAM Alert E-mail Backlog

PAM has detected that the e-mail subsystem may have been unavailable for an extended period of time.

This *PAM* alert message indicates that the database e-mail subsystem has been down for over one day, and that *PAM* has generated more than 20 (default) e-mail alerts during the e-mail subsystem down time.

When the database e-mail subsystem has been restarted after an extended period of time, *PAM* will attempt to send any outstanding alert e-mails. So as to prevent an e-mail storm from a possible backlog of alerts, any alerts that have been generated during the e-mail subsystem down time that are older than 1 day will have been marked as – Not Sent.

You can use *PAMreports* – Alerts Summary **PAMAS005 Alerts Not Sent (month)** to view any alerts that have not been sent.

6.2 What to do with this information

You can use *PAMreports* – Alerts Summary **PAMAS001-30 Alerts Summary** to list by day the numbers of e-mail alerts “Not Sent”.

Example **PAMAS001-30 Alerts Summary** report

PAMAS001-30 PAM - PIPER-RX - APPLICATION MONITOR PIPER-Rx					
Alerts Summary					
As at 04-Mar-12 11:28					
For APPS 12i					
Alert Date	Informational	Warning	Critical	Total	Not Sent
04-Mar-12 (Sun)	9	9	0	18	0
03-Mar-12 (Sat)	10	9	0	19	0
01-Mar-12 (Thu)	12	12	0	24	24
27-Feb-12 (Mon)	17	22	0	39	38
14-Feb-12 (Tue)	10	15	0	25	25
13-Feb-12 (Mon)	14	11	0	25	25
09-Feb-12 (Thu)	10	3	0	13	12
25-Jan-12 (Wed)	8	5	0	13	13
23-Jan-12 (Mon)	17	11	0	28	28

You can use [PAMreports](#) – Alerts Summary **PAMAS005-30 Alerts Not Sent (month)** to list the details of all alerts “Not Sent” for a given month:

Example **PAMAS005 Alerts Not Sent (month)** report

PAMAS005-30		PAM - PIPER-RX - APPLICATION MONITOR			PIPER-Rx	
Alert Not Sent - SEP-11						
As at 05-Oct-11 20:15:51						
For * SITE NAME NOT SET *						
Alert Time	Alert ID Alert Details	Alert ID Value	Severity	Notified Date	Notified TO	Notified CC
28-Sep-11 17:08	DBA-002 DB session stat 42 (physical write total bytes) with a rate of 57,295 per/sec has exceeded its threshold value of 10,000		Informational	28-Sep-11 17:13	Not Sent	
28-Sep-11 17:03	DBA-002 DB session stat 42 (physical write total bytes) with a rate of 51,217 per/sec has exceeded its threshold value of 10,000		Informational	28-Sep-11 17:13	Not Sent	
28-Sep-11 05:04	EV-008 The workflow table WF_LOCAL_ROLES has 58,472 missing e-mail addresses		Informational	28-Sep-11 05:04	Not Sent	
28-Sep-11 05:04	EV-007 The workflow table WF_LOCAL_USERS has 1 missing e-mail addresses		Informational	28-Sep-11 05:04	Not Sent	

6.3 Setting the e-mail backlog alert threshold

The **PAM** e-mail backlog alert threshold for can be set using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_STORM_THRESHOLD_SET ( 50 );
```

Parameter: The number of alerts generated for any **PAM** alert before **PAM** will alert will be suspended and an alert storm e-mail raised.

Note: Setting the parameter to any value less than 10 will default to 10

6.4 Turning IN-013 alert off and on

The **PAM** IN-013 alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-013', 'N');
```

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-013', 'Y');
```


7 IN-014 Purge PAM data repositories

Prior to **PAM** version 3.0, each of the **PAM** repositories was purged as part of their respective collection processes. With **PAM** version 3.0, the **PAM** purge processes were consolidated into the one package which could be run as a specific time (default 5 am) by the **PAM** collector program thereby preventing any **PAM** purging activity from occurring during the working day.

IN-014 is an internal process that performs the various **PAM** data repository purging and does not generate an alert.

The following **PAM** repositories are purged as part of the IN-014 process:

- ❖ PIPER_RX_PAM_ALERTS
- ❖ PIPER_RX_PAM_AT_HISTORY
- ❖ PIPER_RX_PAM_DAILY_ACTIVITY
- ❖ PIPER_RX_PAM_DB_SESSSTATS
- ❖ PIPER_RX_PAM_DEBUG
- ❖ PIPER_RX_PAM_ERRORS
- ❖ PIPER_RX_PAM_IDA_ACTIVITY
- ❖ PIPER_RX_PAM_IDW_ACTIVITY
- ❖ PIPER_RX_PAM_INTERNAL_AUDIT
- ❖ PIPER_RX_PAM_RT_HISTORY

The exception is the **PIPER_RX_PAM_DB_SESSSTATS** object, the number of days database sessions statistics to be held on-line is set for each session statistic in the **PURGE_DAYS** attribute of the **PIPER_RX_PAM_DB_SESSSTATS** object.

7.1 Setting the time of day to run the PAM purge program

The hour of day can be set using the following **PAM** API:

```
exec piper_rx_pam_api.pam_alert_hrofday_change ( 'IN-014', 5 );
```

Parameter 1

The **PAM** alert ID for the alert hour of day to change

Parameter 2

The hour of day, valid values are 1 to 23 inclusive

7.2 Turning IN-014 alert off and on

The **PAM** IN-014 alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-014', 'N');
```

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-014', 'Y');
```

8 Disclaimer

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