PAMtutorials 13: More on Workflow

Business bottlenecks busters
(or how to make you look good)

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

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

May 2012

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1   What you'll get out of *PAMtutorials* 13

In *PAMtutorials* 13 we will show how *PAM* monitors and reports on:

❖ Long running workflows (WF-002)

>An alert is raised when workflows are taking longer than they normally should to complete

❖ Old Active Workflows (WF-003)

>Once every few months an alert is generated to let you know how many "old" workflows exist within your application. This is provided as a gentle reminder to start a workflow cleanup project

Workflow has been a hot topic for many years because it is so often poorly managed. Here is some additional reading if you are interested:

>In November 2008 I wrote a paper "Managing Workflow as you would your Accounts Receivables" and presented it as a web e-training session for the Victorian Oracle Application User group.

>I rewrote the paper and re-titled it to "A better approach to OEBS workflow management" for the AUSOUG conference in both Perth and Melbourne Australia 2009 incorporating a number of features developed for the PIPER-Rx *PAM* product.

>The paper can be found on the *PIPER-Rx* website - http://www.piper-rx.com/pages/papers/aged_workflows_2009.html

1.1 How to look good

As the tutorial title "Business Bottlenecks Busters (or how to make you look good)" suggests, in this tutorial we will show you how to be seen to be on top of business processes with minimal effort and understanding on your part.

Typically DBAs / apps DBAs operate within the technical arena and in most cases have almost no interest in the functional or business side of the application unless it affects performance or causes issues.

I know this is going to be hard to believe, but for this feature to work you are going to have to understand that performance is not just a technical IT thing or

related to poor performing SQL. ***Business performance*** is more important to the business management than whether not there is a piece of poor performing SQL ☺

What we will demonstrate in this tutorial is how you can identify if there are any business process workflows that are taking longer than they should and give you the information to allow you to pass on to the appropriate department a list of workflows that are candidates for investigation.

2   Workflow Background

Oracle describes workflow as:

> *Business processes today involve getting many types of information to multiple people according to rules that are constantly changing. Oracle Workflow lets you automate and continuously improve business processes, routing information of any type according to business rules you can easily change to people both inside and outside your enterprise.*
>
> *With so much information available, and in so many different forms, how do you get the right information to the right people? Oracle Workflow lets you provide each person with all the information they need to take action. Oracle Workflow can route supporting information to each decision maker in a business process.*
>
> *Oracle Workflow extends the reach of business process automation throughout the enterprise and beyond to include any e-mail or Internet user. Oracle Workflow lets people receive notifications of items awaiting their attention via e-mail, and act based on their e-mail responses. You can even view your list of things to do, including necessary supporting information, and take action using a standard Web browser.*

Source: Oracle Workflow Guide - Release 2.6.2

2.1 What happens in the real world

Firstly I should clearly state that workflow really does all the things Oracle says it's going to do - there is no question of that.

The rot first starts with running, creating or modifying existing workflows. How often do you copy an existing workflow and modify the content? This just carries forward information such as the item "cost" and timeout values of the old workflow. This in turn generally results in issues with far too many workflow background processes, which can be a major pain to cleanup.

Then there is the issue of sending alerts to personnel that left the company several years ago. In the case of workflow routings they are often very old an unmaintained.

It's amazing how many workflow notifications I find that are several years old.

2.2 So what does this all mean?

You end up with a whole lot of rubbish in your workflow system making it difficult to see the wood for the trees.

How do you find the workflows you are interested in amongst the thousands of workflows that are never going to complete; so more and more workflows get lost or fall through the cracks.

Note: Purging "old" workflows only purges those that are fully completed…

Another problem with cleaning up workflows is business users are reluctant to let you remove old workflows – the business users don't understand that workflow is just the guide, the actual data is still in the application and deleting workflows does not affect the actual business process.

3   Long Running Workflows (WF-002)

3.1 What is a long running workflow?

In the business world we age our debtors, 30, 60, 90, 120+ days so the business can focus on and recover income that is overdue. In this way we keep on top of our customers and recover as much income as possible and keep our cash flow in the black.

What if we could apply that same principle to workflow to keep on top of our business processes; that is identify those workflows that are running longer than "normal" and action them prior to them becoming lost in the amorphous mass known as workflow.

PAM defines a long running workflow as any workflow that is taking longer than that type of workflow would normally take to complete.

Example: If your OEOH workflows have an average runtime of 35 days with a standard deviation of 5 days, then any OEOH workflow that has been active for say 45 days for example would be a candidate for investigation.

3.2 Why doesn't workflow clean up happen?

Workflow is designed to guide us through our normal business processes, however large numbers of workflows do not complete for various reasons or have been completed manually and remain in an active status and are never cleaned up. What we really need to do is keep on top of the workflows by identifying those that have stalled or have not completed in an appropriate amount of time, however the issue is how we sort out the real ones from all the rubbish you have accumulated in your workflow application?

The next reason is that each workflow type has different run times, e.g. if an order has been hanging around for 60+ days then it is most likely on back order or is lost in the system, whereas errors should be looked at and cleared within a few days. So what happens is because there is not a simple formula for identifying delays, no one looks at any of them.

PAMtutorials demonstrates how to detect any workflow that is taking longer than it "normally" should i.e. a long running workflow. *PAM* will generate an alert for any workflows that are taking longer than normal to complete and in

this way action can be taken to catch errant workflows before they become "dead" workflows that will hang around for ever.

3.3 Assessing the damage

The following SQL will list the workflows in your application that were started over 1 year ago and are still running:

```
SELECT wi.item type "Item Type",
       substr(witt.display name, 1, 60) ||
           decode(sign(length(witt.display_name) - 60), 1, '...') "Display Name",
       count(*) "Sample Size",
       round(min((sysdate - wi.begin_date)),0) "Minimum Days",
       round(avg((sysdate - wi.begin date)),0) "Average Days",
       round(max((sysdate - wi.begin_date)),0) "Maximum Days"
  FROM applsys.wf items wi,
       applsys.wf_item_types_tl witt
 WHERE wi.item_type = witt.name
   and witt.language = userenv('LANG')
   and (sysdate - wi.begin_date) > 365 -- Started over 1 year ago
   and wi.end date is null -- Still active
 GROUP by wi.item type,
         witt.display_name
 ORDER by 6 DESC;
```

Example output

Item ... ▼	Display Name	Sample Size	Minimum Days	Average Days	Maximum Days
APEXP	AP Expense Report	39	4591	4825	5050
WFERROR	System: Error	1399	374	4104	5050
POREQ	PO Requisition	4	5036	5041	5047
HREKIOSK	HR Employee Direct Access	61	4598	4799	5032

As you can see from this example there are a lot of workflows that were started over a year ago and are still active.

3.3.1 Workflow spinners

In *PAMtutorials* 6: What lurks beneath... (Workflow activity) we covered one of the hidden issues with "old" workflows; workflow spinners. These are the "old" workflows that are continually writing in to the workflow wf_item_activity_statuses_h table.

PAMtutorials 6 also introduced the *PAM* WF-004 alert - Alert when possible Workflow spinners are detected, so at least you will be warned when spinners are detected long before they cause issues.

I recommend at this stage it would be worth re-reading the "Data Issues" section of *PAMtutorials* 6 again.

4   Setting Up *PAM* Workflow Monitoring

When setting up a *PAM* monitored workflow for you need to determine two pieces of information:

- How long does a workflow normally take to run?
- How long must the workflow have been running before it is considered "old"?

4.1 How long does a workflow normally take to run?

So the big question is, how long is "normal"? Firstly we need to know how long your workflows are taking to complete, but what we need to do is exclude any "old" workflows from this calculation.

Using *PAMreports* -General PAMRWF005 Workflow Runtime Stats you can determine how long your workflows have been taking to run.

The report parameter "STARTED_WITHIN_DAYS" limits the report to showing only those workflow stated within the last *nn* days. In this way we filter out all those "old" workflows. When you first start I suggest you use approximately 200 days.

Example **PAMRWF005 Workflow Runtime Stats** report

PAMRWF005-10	PAM - PIPER-RX - APPLICATION MONITOR		PIPER - Rx
	Workflow Runtime Stats		
	For workflows started within the last - 3000 days		
	As at 09-Oct-10 14:52		
	For OEBS 12 DEMO		

Workflow	Display Name	Sample Size	Average (days)	STDDEV (days)
APEXP	Expenses	3	2,831	48
APIMP	AP Open Interface Import	7	1	1
ARCMREQ	AR Credit Memo Approval Request	4	2,886	1
ARSBALSG	AR: Substitute Balancing Segment	535	1	1
BISRGNOT	BIS PM Viewer Notifications	4	1	1
CNCOMPPR	Compensation Plan Processing	11	2,902	6
CREATEPO	PO Create Documents	1	2,855	1
CSMTYPE3	CSM Type 3	25,357	2,423	694
CSS_WFEN	CSS_WFEN	1	1	1
CS_KB_WF	Knowledge Management Workflow Process	98	2,933	78
DOSFLOWE	Dossier Approval Flow Enhanced	2	1,443	2,041
ECXERROR	XML Gateway Error Processing	7	2,886	1
EXPAPPRV	EXP Approval	2	2,886	1
FAFLEXWF	FA Account Generator	2,426	1	1
FIIBISWF	FII BIS Corrective Action	3	1	1
GMDQC0	OPM Quality Control Sample Creation Notification	29	318	5
GMSWF	GMS Workflow	16	1	1
HRSSA	HR	332	2,844	359
HXCEMP	OTL Workflows for Employees	2	2,886	1
IBEALERT	iStore Alerts Workflow	17	1	1
IEXSTRY	IEX: Collection Strategy Work Flow	87	2,886	1
IRC_WF	iRecruitment	59	2,887	11
MRPEXPWF	Planning Exception Messages	3,124	2,806	3
MSCEXPWF	MSC: ASCP Exception Messages	837	2,957	1

This report uses the completed time based on the *wf_items* table.

> **Note:** This report shows all workflows both active and complete

> **TIP:** This report is a great business management KPI report, by running this report once per month you will be able to show if the business is getting better or worse at any workflow processes.

When calculating your "normal" workflow runtime you should use the average plus 2 or 3 standard deviations.

4.2 How long must the workflow have been running before it is considered "old"?

The next piece of information you need is to define how long a workflow must have been running for it to be classified as old. *PAM* uses this value to filter workflows limiting the *PAM* long running workflow alert to workflows that have been started in the *nn* days. That is, we don't want OEOH workflows that have been hanging around for 1 year to be alerted.

4.3 Setting up a *PAM* long running workflow check

Now we have this information we need to add it to the *PAM* piper_rx_pam_lr_workflows table using the following *PAM* API:

```
exec PIPER_RX_PAM_API.PAM_ADD_LONG_RUNNING_WF ( 'OEOH', 'Y', 200, 90 );
```

Parameter 1:   The workflow to be monitored
Parameter 2:   Alert status 'Y' Active, 'N' Disabled
Parameter 3:   Workflows must have been stated within *nn* days
Parameter 4:   Alert if the workflow has been running for more than *nn* days – Use the average run time plus 2 or 3 standard deviations of the runtime

In this example we have set up *PAM* to monitor for OEOH workflows that have been started in the past 200 days and alert if any OEOH workflows have taken longer than 90 days to complete.

4.4 Viewing the *PAM* monitored workflows list

You can use *PAMreports* -Config PAMC017 PAM Workflow Long Running Monitor List to list all *PAM* monitored workflows:

Example **PAMC017 PAM Workflow Long Running Monitor List** report

PAMC017-10	PAM - PIPER-RX - APPLICATION MONITOR Long running workflow monitor list As at 09-Oct-10 15:08:35 For OEBS 12 DEMO		PIPER - Rx	
Workflow	**Display Name**	**Status**	**Started Within (days)**	**Threshold (days)**
OEOH	OM Order Header	Enabled	200	90

Where no workflows have been configured the report will display "None Configured".

Example **PAMC017 PAM Workflow Long Running Monitor List** report

PAMC017-10	PAM - PIPER-RX - APPLICATION MONITOR Long running workflow monitor list As at 09-Oct-10 15:27:13 For OEBS 12 DEMO		PIPER - Rx	
Workflow	**Display Name**	**Status**	**Started Within (days)**	**Threshold (days)**
	None Configured		0	0

Status

Indicates if the workflow is being monitored by *PAM*

Started within days

The workflow must have been stared within the past *n* days

Threshold days

Alert when a workflow's runtime has exceeded the threshold value days

4.5 Updating a *PAM* monitored workflow threshold

A *PAM* monitored long running workflow threshold can be updated using the following *PAM* API:

```
exec PIPER_RX_PAM_API.PAM_UPD_LONG_RUNNING_WF ( 'OEOH', 100000, 80);
```

Parameter 1: The *PAM* monitored workflow to be updated
Parameter 2: Started within days
Parameter 3: Threshold days

4.6 Suspending a *PAM* monitored workflow

A *PAM* monitored long running workflow can be suspended using the following *PAM* API:

```
exec PIPER_RX_PAM_API.PAM_ENABLE_LONG_RUNNING_WF ( 'OEOH', 'Y' );
```

Parameter 1: The *PAM* monitored workflow to be suspended or reactivated
Parameter 2: Monitor status 'Y' = Active, 'N' = Suspended

4.7 Removing a *PAM* monitored long running workflow

A *PAM* monitored long running workflow can be removed using the following *PAM* API:

```
exec PIPER_RX_PAM_API.PAM_DEL_LONG_RUNNING_WF ( 'OEOH' );
```

Parameter 1: The *PAM* monitored workflow to be removed

4.8 E-mail alert

When one or more *PAM* monitored workflows has been found to be running longer than the *PAM* threshold for that workflow, a *PAM* alert e-mail is raised:

Example *PAM* WF-002 – *PAM* long running workflow e-mail alert message

---

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

Company = Company name
Site = Site name
Alert Level = **Informational**
Detected = 28-Feb-11 (Mon) 15:35:50
Alert Frequency = 1 Day

---

475 OEOH workflows have been identified as possible long running

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Alert Information:

WF-002 - Long Running Workflows

ONE OR MORE POSSIBLE "LONG RUNNING" WORKFLOWS HAS BEEN DETECTED FOR A MONITORED WORKFLOW.

If you want to obtain a list of potential long running workflows you can use *PAMreports* - Actions **PAMAWF008 Workflow Long Running** entering the workflow of interest

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If you want to obtain a list of monitored workflows and their threshold values you can use *PAMreports* -Config **PAMC017 PAM Workflow Long Running Monitor List**

If you want to obtain a list of current estimates of workflow runtimes you can use *PAMreports* -General **PAMRWF005 PAM Workflow Runtime Stats**

Note 1: If you want to add a workflow type to be monitored refer to the FAQs for more information

Note 2: A long running workflow is any workflow started within the last *X* [started_within_days] days and has been active for longer than *Y* [threshold_days] days

The started_within_days option has been implemented so as to not to report on any very old workflows that most sites carry that have not been cleaned up

Note 3: If you want to change the alert threshold value refer to the FAQs for more information

4.9 What to do with this information

Using the workflow type from the *PAM* alert e-mail e.g. OEOH, *PAMreports* - Actions **PAMAWF008 WF Long Running** lists those workflows that were stared within the last *nn* days and have not completed within the *PAM* threshold days for that workflow type.

Note: Both the threshold days and started within last days are set on a per workflow basis. *PAM* uses these values for both alerting and reporting.

Example **PAMAWF008 WF Long Running** report for a selected workflow

PAMWF008-10		PIPER - Rx
	PIPER-RX - APPLICATION MONITOR LONG RUNNING WORKFLOWS OEOH - OM Order Header Threshold days - 90 : Started within last days - 4000 As at 09-Oct-10 16:10:02 For OEBS 12 DEMO	
Workflow Key	**Begin Date**	**Age (Days)**
41668	20-Jun-00 14:59	3,763
41688	21-Jun-00 08:30	3,762
41721	23-Jun-00 11:34	3,760
41915	25-Jul-00 11:59	3,728
41936	26-Jul-00 08:08	3,727
41976	26-Jul-00 13:56	3,727
42540	24-Aug-00 07:01	3,698
42545	24-Aug-00 15:36	3,698
42550	25-Aug-00 01:23	3,698
42551	25-Aug-00 01:28	3,698
42555	25-Aug-00 01:44	3,698
42561	25-Aug-00 04:54	3,697

You should pass the report onto the department responsible for following up.

4.10 Individual Workflow Activity

For more detailed information for an individual workflow, *PAMreports* - General PAMRWF007 Workflow Activity By Workflow report will list all the steps a selected workflow has completed to date allowing you to identify where the workflow got up to before it was abandoned:

Example **PAMRWF007 Workflow Activity By Workflow** report

PAMRWF007-10	PAM - PIPER-RX - APPLICATION MONITOR WORKFLOW ACTIVITY APEXP - Expenses Key: 11647 As at 09-Oct-10 16:18:13 For OEBS 12 DEMO				PIPER - Rx	
Activity Name	**Activity Result**	**Assigned User**		**Activity Start**	**Activity End**	**Days**
AP Standard Expense Report Process	Null			22-Nov-99 06:13	Active	3,974.4
Start	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Determine Which Process To Start From	Server Validation			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Server Side Validation Process	*			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Start	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
AP Validate Expense Report	Pass			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Custom Validate Expense Report	Pass			22-Nov-99 06:13	22-Nov-99 06:13	0.0
End	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Manager (Spending) Approval Process				22-Nov-99 06:13	Active	3,974.4
Start	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Build Receipt Information For Approval Letter				22-Nov-99 06:13	22-Nov-99 06:13	0.0
Third Party Expense Report Process	Continue			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Start	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Employee Equals to Preparer	Yes			22-Nov-99 06:13	22-Nov-99 06:13	0.0
End	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Find Approver	Yes			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Level of Manager Involvement	Approval Required			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Request Approval Process	Approve			22-Nov-99 06:13	22-Nov-99 06:19	0.0
Start	Null			22-Nov-99 06:13	22-Nov-99 06:13	0.0
First Approver	Yes			22-Nov-99 06:13	22-Nov-99 06:13	0.0

In this example the APEXP workflow 11647 has been waiting on a manager approval for over 3,974 days.

4.11 How do I turn the *PAM* long running workflows alert off and on again?

The *PAM* long running workflows alert can be turned off using the following *PAM* API:

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

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

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

4.12 Changing alert check frequency and / or severity

Both the alert check frequency and alert severity can be changed. Please refer to the *PAM* FAQs for more information on how to change an alert frequency and alert severity.

5   Old Workflows (WF-003)

Given the complex nature of cleaning up "old" workflows, we understand that "old" workflows will always exist in your application.

PAM understands that you will most likely never clear all old workflows from within your application. However, for completeness *PAM* will periodically (default every 2 months) alert you to the existence of "old" workflows as a gentle reminder to one day clean them up.

5.1 What is an "old" workflow?

PAM defines an "old" workflow as any active workflow that was stared over *nn* months ago.

Out of the box *PAM* sets the age threshold to 36 months, that is any active workflow that was stared over 36 months ago will be classified as "old".

As you progressively clean up the really old workflows you should set this particular *PAM* threshold lower i.e. 12 – 24 months to alert on any workflows that slipped through the net.

5.2 Setting the *PAM* threshold

The *PAM* "old" workflow threshold can be set using the following *PAM* API:

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_WF003_SET ( 36 );
```

Parameter 1: Age in months

5.3 E-mail alert

When *PAM* detects workflows that have been running for longer than *nn* months, a *PAM* alert e-mail is raised:

Example *PAM* WF-003 – *PAM* old workflow e-mail alert message

---

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

Company = Company name
Site = Site name
Alert Level = **Informational**
Detected = 28-Feb-11 (Mon) 15:37:10
Alert Frequency = 2 Months

There are currently 34968 Active workflows that are older than 36 months

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Alert Information:

WF-003 - Old Workflows

A NUMBER OF ACTIVE WORKFLOWS THAT HAVE BEEN RUNNING FOR LONGER THAN THE THREHOLD VALUE HAVE BEEN DETECTED.

PAM periodically alerts you to the existence of "old" workflows as a general reminder to clean them up

If you want to obtain a list of old workflows you can use *PAMreports* -Actions **PAMAWF009 Workflow Old Workflows**

If you want to obtain a list of all old workflows for a selected workflow type i.e. APEXP you can use *PAMreports* -General **PAMRWF006 Workflow Old Workflows By Workflow**

Note 1: As you progressively clean up old workflows you should lower the threshold value (Workflow age in months).

Note 2: If you want to change the alert threshold value refer to the FAQs for more information

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5.4 What to do with this information

5.4.1 The first step is to assess the damage

PAMreports -Actions PAMAWF009 Workflow Old Workflows lists the active workflows within your application exceeding the *PAM* threshold.

> **Note:** The *PAM* threshold is displayed in the report header

Example **PAMAWF009Workflow Old Workflows** report

In this example report there are 39 Expenses workflows that were stared over 36 months ago, with the oldest being stated May 1997.

> **Note:** It would be a good idea to keep this report, so if you are cleaning up "old" workflows you have a record of workflow numbers before you started and you can run another report after a clean-up process to show the effect of your clean-up program.

5.4.2 Old workflows by workflow

PAMreports -General PAMRWF006 Workflow Old Workflows By Workflow report lists all old workflows based on the *PAM* threshold value for a selected workflow:

Example **PAMRWF006 Workflow Old Workflows By Workflow** report

PAMWF006-10	PAM - PIPER-RX - APPLICATION MONITOR "OLD" WORKFLOWS Workflows Older Than 36 Months For APEXP - Expenses As at 09-Oct-10 16:12:14 For OEBS 12 DEMO		PIPER - Rx
Workflow	**Begin Date**	**Age (Months)**	**Owner / Role**
11647	22-Nov-99 06:13	131	DGRAY
11688	10-Dec-99 07:01	130	DGRAY
11789	03-Mar-00 06:07	127	JFROST
12000	28-Jul-00 10:49	122	ARYAN
12051	01-Sep-00 10:22	121	BCOCHRAN
12052	01-Sep-00 10:46	121	BCOCHRAN
12053	01-Sep-00 10:50	121	BCOCHRAN
12430	13-Jun-01 23:51	112	ALESSIA
12491	19-Jul-01 10:21	111	JPALMER
12492	19-Jul-01 11:39	111	JPALMER
12520	06-Aug-01 16:01	110	MJAGGER
12831	15-Aug-01 11:51	110	JCAGLIASTRO
12851	15-Aug-01 12:20	110	JPALMER
13267	27-Feb-02 08:26	103	FRANCE
13268	27-Feb-02 08:29	103	FRANCE
13286	27-Feb-02 09:32	103	FRANCE
13287	27-Feb-02 09:35	103	FRANCE

5.4.3 Individual workflow activity

For more detailed information for an individual workflow **PAMreports** -General PAMRWF007 Workflow Activity By Workflow report will list all the steps a selected workflow has completed to date all.

Example **PAMRWF007 Workflow Activity By Workflow** report

PAMRWF007-10	PAM - PIPER-RX - APPLICATION MONITOR WORKFLOW ACTIVITY APEXP - Expenses Key: 11647 As at 09-Oct-10 16:13:46 For OEBS 12 DEMO				PIPER - Rx
Activity Name	**Activity Result**	**Assigned User**	**Activity Start**	**Activity End**	**Days**
AP Standard Expense Report Process	Null		22-Nov-99 06:13	**Active**	3,974.4
Start	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Determine Which Process To Start From	Server Validation		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Server Side Validation Process	*		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Start	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
AP Validate Expense Report	Pass		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Custom Validate Expense Report	Pass		22-Nov-99 06:13	22-Nov-99 06:13	0.0
End	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Manager (Spending) Approval Process			22-Nov-99 06:13	**Active**	3,974.4
Start	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Build Receipt Information For Approval Letter			22-Nov-99 06:13	22-Nov-99 06:13	0.0
Third Party Expense Report Process	Continue		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Start	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Employee Equals to Preparer	Yes		22-Nov-99 06:13	22-Nov-99 06:13	0.0
End	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Find Approver	Yes		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Level of Manager Involvement	Approval Required		22-Nov-99 06:13	22-Nov-99 06:13	0.0
Request Approval Process	Approve		22-Nov-99 06:13	22-Nov-99 06:19	0.0
Start	Null		22-Nov-99 06:13	22-Nov-99 06:13	0.0

In this example, the APEXP workflow 11647 has been waiting on a manager approval for over 3,974 days.

5.5 How do I turn the *PAM* "old" workflows alert off and on again?

The *PAM* "old" workflows alert can be turned off using the following *PAM* API:

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

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

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

5.6 Changing alert check frequency and / or severity

Both the alert check frequency and alert severity can be changed. Please refer to the *PAM* FAQs for more information on how to change an alert frequency and alert severity.

6   Disclaimer

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