

***PAMtutorials* 9: User Activity**

Basic User Activity

PIPER-R**x 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 9

PAMtutorials 9 provides a look into application user accounts covering the following items:

Current Full Service Sessions

Alert when the number of current full service sessions exceeds the PAM threshold value

Current Self Service Sessions

Alert when the number of current self-service sessions exceeds the PAM threshold value

Self Service Page Request (Day)

Alert when the total number of self-service page requests exceeds the PAM threshold value

In this tutorial we have also included the internal PAM email storm feature (IN-010), whereby should any PAM alert generates more than 50 (default) alerts and e-mails during the day that alert will be suspended until midnight of that day.

2 UA-002 Full Service Sessions

PAM will alert when the number of full service user connections exceeds the PAM threshold.

Each user connection requires application resources, often we are in a position where resources are limited and we know that once we exceed the certain number of connected users the overall application slows down and all users experience a degradation in performance.

PAM defines a full service session as a user using the application via the "Fat Client" In order to be counted as a full service user the user must be connected to a responsibility. For the more technically minded, when a full or self-service user connects an entry is placed in the [fnd_logins](#) table, when a full service user selects a responsibility an entry is added in to the [fnd_login_responsibilities](#) table. However, if the sign - on audit level has not been set to responsibility level an entry will not be placed in the [fnd_login_responsibilities](#) table and this PAM alert will not produce alerts.

Note: Thus **PAM** alert requires a minimum sign-on audit level of responsibility.

2.1 Why doesn't **PAM** use v\$ objects for determining connected users?

Why not use something like the following SQL to determine who is connected via the full service application?

```
SELECT fu.user_name
FROM apps.fnd_logins fl,
     v$session s,
     v$process c,
     apps.fnd_user fu
where s.paddr = c.addr
     and fl.pid = c.pid
     and fl.spid = s.process
     and fu.user_id = fl.user_id;
```

This really does work and the technical DBA's loves this stuff, all those V\$ or GV\$ tables.... ☺

Why **PAM** does not use this type of stuff is basically a version issue, almost everything we do with **PAM** is as OEBS version independent as possible, thus our one set of source supports all 11i and 12i environments regardless of the database version. (In fact our full service user code still works for both 10.7 and 11.0). Having been around OEBS for some 20+ years, I have found the underlying database and its features are an ever changing target, whereas OEBS is solid and stable, undergoing little underlying architecture change between releases, in fact, this is what you want from a package that is running your business – “stability”. If you stay away from the “cool” database stuff, and use the base OEBS application objects, your OEBS code will support most OEBS versions for about 3+ years requiring little to no maintenance.

Dead Sessions

Ever wonder why you have so many sessions that appear to have been opened of a long period of time, in some cases years?

All too often full service sessions are closed but appear as active, usually because the session was terminated abnormally. What happens in this instance is that the session recorded in [fnd_logins](#) is not updated with an end date [end_time](#) and thus will appear to be active sessions. Only sessions with end dates will be purged by the standard purge program.

How many dead sessions do you have?

The following simple SQL will identify if you have any “dead” sessions still hanging around.

```
SELECT count(distinct(fl.login_id))
FROM applsys.fnd_logins fl,
     applsys.fnd_login_responsibilities flr
WHERE fl.login_id = flr.login_id
     and fl.end_time is null
     and fl.start_time < trunc(sysdate);
```

Note: The above SQL will only work if sign-on audit is set to responsibility or form level.

In this example we have joined to the responsibilities table so that we only report dead full service sessions.

In reality, all dead sessions do is clog up your sign-on audit tables and show lots of “live” sessions when using the oracle monitoring screens. However I have encountered sites with several thousand “dead” sessions which can be quite annoying.

There are several scripts on metalink that can be used to clean up dead sessions.

2.2 PAM full service connections e-mail alert

When the number of full service sessions exceeds the **PAM** threshold a **PAM** alert e-mail is raised:

Example **PAM** UA-002 – **PAM** full service sessions 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 = 25-Feb-11 (Fri) 09:45:49
 Alert Frequency = 15 Minutes

The number of current full service sessions 2005 has exceeded the threshold value of 2000

Alert Information:

UA-002 - Full Service User Accounts Connected

THE NUMBER OF CONCURRENT CONNECTED FULL SERVICE USER ACCOUNTS CONNECTED HAS EXCEEDED THE THRESHOLD VALUE

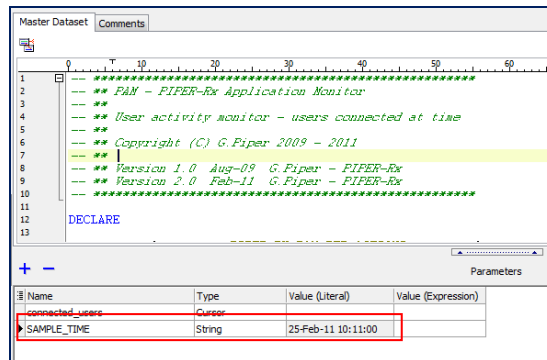
If you want to obtain a list of the users connected at the time of the alert you can use **PAMreports** -Actions **PAMAUA002 Connected Users (time)** entering the time of the alert

Note 1: The alert will continue to alert until the number of concurrent connected Full Service users drops below the alert threshold

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

2.1 What to do with this information

You can use **PAMreports** -Actions **PAMAUA002 Connected Users (time)** to list the full service users connect at the time of the alert by entering the time of the alert in the report variable section:



Example **PAMAUA002 Connected Users (time)** report

PAMAU002-20		PAM - PIPER-RX - APPLICATION MONITOR			PIPER - Rx
Connected Users -25-Feb-11 10:11:00					
PAM Threshold Value - 600 Users					
As at 25-Feb-11 10:20					
For APPS 12i					
User ID	User Name	Description	Session Start	Session End	
1914	GPIPER	Gary Piper	25-Feb-11 09:24:03	Connected	

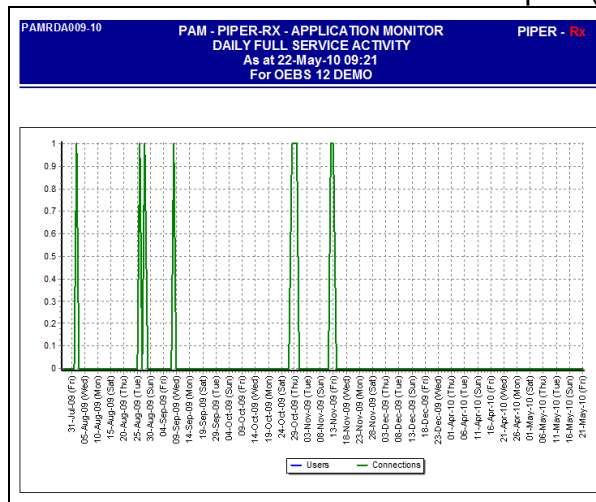
2.2 Full Service Activity profiling

PAM has been collecting daily full service activity levels (IN-001) since installation. In addition when the daily activity collector was first run, it populated up to 30 days prior activity we did this to provide real usable data out of the box.

There are two (2) **PAMreports** - Daily that can be used to profile your applications full service activity. The reports show “connections” which is the total number of full service session for the day and “users” which is the total number of distinct users assessing your application via the full service screens.

In many cases where a user connects in the morning, logs out over lunch, reconnects for the afternoon and then logs out when they go home; you will see a 2:1 ratio of connections verses users. These reports will also give you profiling information covering both user connections over your business cycles, and the real number of full service user connections.

Example **PAMRDA009 FS Connections** report (Page 1)



Example **PAMRDA009 FS Connections** report (Page 2)

PAMRDA009-10		PAM - PIPER-RX - APPLICATION MONITOR			PIPER - Rx	
DAILY FULL SERVICE ACTIVITY						
As at 22-May-10 09:23						
For OEBS 12 DEMO						
Sample Time	Users	Connections	Total (Hrs)	Average (Min)	STDEV (Min)	
21-May-10 (Fri)	0	0	0	0	0	0
20-May-10 (Thu)	0	0	0	0	0	0
19-May-10 (Wed)	0	0	0	0	0	0
18-May-10 (Tue)	0	0	0	0	0	0
17-May-10 (Mon)	0	0	0	0	0	0
16-May-10 (Sun)	0	0	0	0	0	0
15-May-10 (Sat)	0	0	0	0	0	0
14-May-10 (Fri)	0	0	0	0	0	0
13-May-10 (Thu)	0	0	0	0	0	0
12-May-10 (Wed)	0	0	0	0	0	0
11-May-10 (Tue)	0	0	0	0	0	0
10-May-10 (Mon)	0	0	0	0	0	0
09-May-10 (Sun)	0	0	0	0	0	0
08-May-10 (Sat)	0	0	0	0	0	0
07-May-10 (Fri)	0	0	0	0	0	0
06-May-10 (Thu)	0	0	0	0	0	0
05-May-10 (Wed)	0	0	0	0	0	0
04-May-10 (Tue)	0	0	0	0	0	0
03-May-10 (Mon)	0	0	0	0	0	0

Page two of the report provides more detail activity profiling information:

Total (hrs)

The total number of connection hours across all users for the day

Average (Min)

The average connect time (minutes) for the session throughout the day

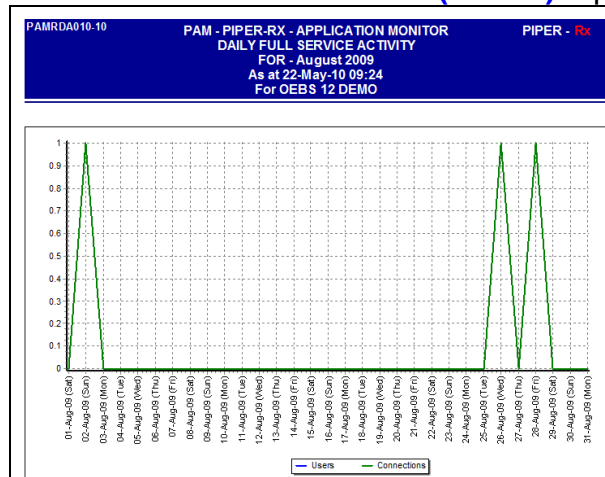
Stddev (Min)

The standard deviation of connect time (minutes) for the session throughout the day

Note: If a user remains connected overnight, the next day's activity for the session will not be recorded. For any connection lasting longer than 24 hours will be recorded as being connected for 12 hours.

A second report is provided that shows the same information but is limited to a selected month:

Example **PAMRDA010 FS Connections (month)** report (Page 1)



Example **PAMRDA010 FS Connections (month)** report (Page 2)

Sample Time	Users	Connections	Total (Hrs)	Average (Min)	STDDEV (Min)
31-Aug-09 (Mon)	0	0	0	0	0
30-Aug-09 (Sun)	0	0	0	0	0
29-Aug-09 (Sat)	0	0	0	0	0
28-Aug-09 (Fri)	1	1	1	49	0
27-Aug-09 (Thu)	0	0	0	0	0
26-Aug-09 (Wed)	1	1	0	5	0
25-Aug-09 (Tue)	0	0	0	0	0

2.3 Setting the alert threshold

The **PAM** alert threshold for can be set using the following **PAM** APIs:

Manual setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA002_SET ( 200 );
```

Parameter: The threshold value for the full service connections.

Auto setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA002_SET_AUTO;
```

The auto threshold is set to the maximum full service connections on any given day as collected by the **PAM** intraday activity collector.

2.1 How do I turn the **PAM** full service connections alert off?

The **PAM** full service user alert can be turned off using the following **PAM** API:

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

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

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

2.2 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.

3 UA-004 Self Service Sessions

PAM will alert when the number of self-service user connections exceeds the **PAM** threshold.

Each user connection requires application resources, not only on the OEBS application but also the web servers. Often we are in a position where resources are limited and we know that once we exceed the certain number of connected users the overall application slows down and all users experience a degradation in performance.

PAM defines a self-service session as a user using the application via the “Web Client”. For the more technically minded, when a self service user connects an entry is placed in the `icx_sessions` table. When that user disconnects the entry in the `icx_sessions` is closed, the `disabled_flag` is set to ‘Y’.

However if the session is not shut down correctly the `disabled_flag` is not set and the session will appear to be active.

3.1 When does **PAM** consider a session inactive?

With **PAM** we have implemented an inactivity time; that is, if a session has not had any activity for a defined period of time (default 30 minutes) **PAM** will consider the session inactive and will not count that session as an active session. If after the **PAM** time out period has passed the user accesses their session, that session will be considered active until either the session is closed normally or the **PAM** timeout period has passed.

3.2 Setting the self-service inactivity value

The **PAM** self service time out period (minutes) can be set using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_SS_TIMEOUT_SET ( 30 );
```

Parameter: The time out period in minutes

3.3 PAM self service connections e-mail alert

When the number of self service sessions exceeds the **PAM** threshold a **PAM** alert e-mail is raised:

Example **PAM** UA-004 – **PAM** self service sessions 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 = 25-Feb-11 (Fri) 14:15:38
Alert Frequency = 15 Minutes

The number of current self service sessions 34 has exceeded the threshold value of 30

Alert Information:

UA-004 - Self service sessions

THE NUMBER OF ACTIVE SELF SERVICE SESSIONS HAS EXCEEDED THE THRESHOLD VALUE.

If you want to obtain a list of the sessions connected at the time of the alert you can use **PAMreports** -Actions **PAMAUA004 Self Service Sessions (time)** entering the time of the alert

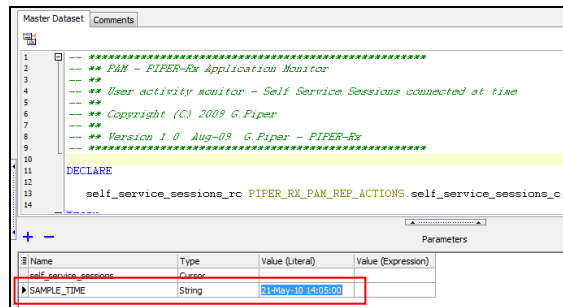
Note 1: A session that has had no activity for more than 30 minutes [Default] will be considered inactive

Note 2: The alert will continue to alert until the number of self service sessions users drops below the alert threshold

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

3.1 What to do with this information

You can use **PAMreports** - Actions **PAMAUA004 Self Service Sessions (time)** to list the self service users connect at the time of the alert by entering the time of the alert in the report variable section:



Example **PAMAUA004 Self Service Sessions (time)** report

User ID	User Name	Description	Session Start	Session End
6	GUEST	guest	21-May-10 14:04:38	21-May-10 14:19:02

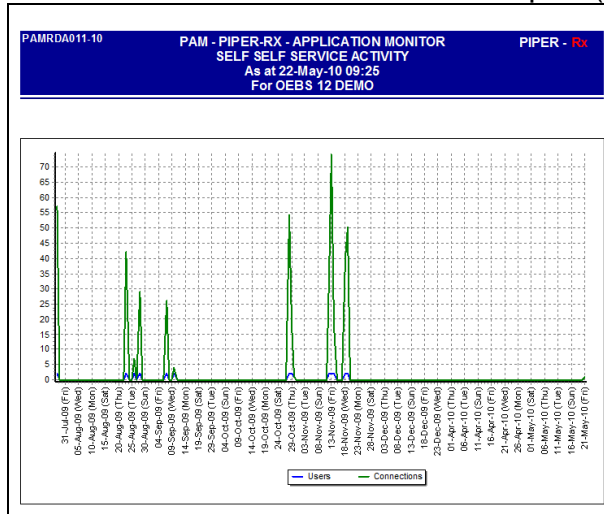
3.1 Self Service Activity profiling

PAM has been collecting daily self-service activity levels (IN-001) since installation. In addition when the daily activity collector was first run, it populated up to 30 days prior activity we did this to provide real usable data out of the box.

There are two (2) **PAMreports** – Daily that can be used to profile your applications self-service activity. The reports show “connections” which is the total number of self service session for the day and “users” which is the total number of distinct users assessing your application via the self service screens.

These reports will also give you profiling information covering both user connections over your business cycles, and the real number of full service user connections.

Example **PAMRDA011 SS Connections** report (Page 1)



Example **PAMRDA011 SS Connections** report (Page 2)

Sample Time	Users	Connections	Total (Hrs)	Average (Min)	STDDEV (Min)
21-May-10 (Fri)	1	1	0	14	0
20-May-10 (Thu)	0	0	0	0	0
19-May-10 (Wed)	0	0	0	0	0
18-May-10 (Tue)	0	0	0	0	0
17-May-10 (Mon)	0	0	0	0	0
16-May-10 (Sun)	0	0	0	0	0
15-May-10 (Sat)	0	0	0	0	0
14-May-10 (Fri)	0	0	0	0	0

Page two of the report provides more detail activity profiling information:

Total (hrs)

The total number of connection hours across all users for the day

Average (Min)

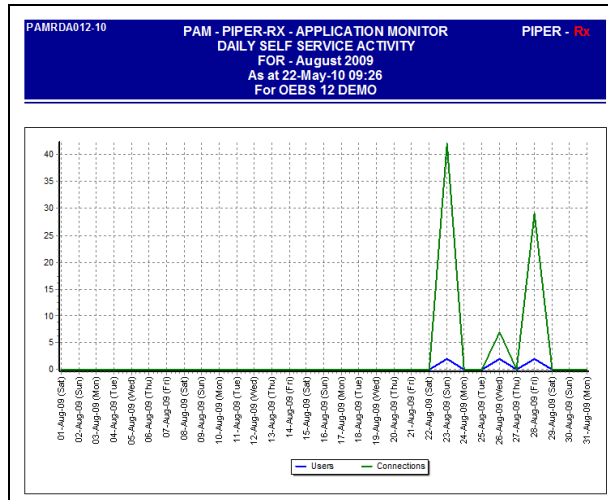
The average connect time (minutes) for the session throughout the day

Stddev (Min)

The standard deviation of connect time (minutes) for the session throughout the day

A second report is provided that shows the same information but is limited to a selected month:

Example PAMRDA012 SS Connections (month) report (Page 1)



Example PAMRDA012 SS Connections (month) report (Page 2)

Sample Time	Users	Connections	Total (Hrs)	Average (Min)	STDDEV (Min)
31-Aug-09 (Mon)	0	0	0	0	0
30-Aug-09 (Sun)	0	0	0	0	0
29-Aug-09 (Sat)	0	0	0	0	0
28-Aug-09 (Fri)	2	29	0	0	0
27-Aug-09 (Thu)	0	0	0	0	0
26-Aug-09 (Wed)	2	7	0	0	0
25-Aug-09 (Tue)	0	0	0	0	0
24-Aug-09 (Mon)	0	0	0	0	0
23-Aug-09 (Sun)	2	42	0	0	0
22-Aug-09 (Sat)	0	0	0	0	0

3.2 More connections than expected?

The Oracle Application Manager (OAM) product provided as part of the OEBS application runs a program FNDOAMCOL to collect its application activity information. We described this program in **PAMtutorials 2** “Your OEBS Application - Surviving performance pressure (business peaks survival tips)” as **PAM** uses this program for its overall application performance measure.

This program connects to the OEBS self-service application once per run; as such you will see one new self service session appear as a result of this connection.

Note: The session is not closed (the `disabled_flag` is not set for the session) so this session can appear active.

PAM has a default time out of 30 minutes; that is, if there has been no activity for a period of 30 minutes **PAM** will consider the session inactive. However as the FNDOAMCOL program is run every 10 minutes (default) **PAM** will usually

report 3 active self service sessions associated with the FNDOAMCOL program.

In the above report example [PAMRDA012 SS Connections \(month\)](#) report (Page 2) these connections are < 1 minute in length, this is indicative of FNDOAMCOL activity.

3.3 Setting the alert threshold

The **PAM** alert threshold for can be set using the following **PAM** APIs:

Manual setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA004_SET ( 200 );
```

Parameter: The threshold value for the self-service connections

Auto setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA004_SET_AUTO;
```

The auto threshold is set to the maximum self-service connections on any given day as collected by the **PAM** intraday activity collector

3.4 How do I turn the **PAM** full service connections alert off?

The **PAM** self service user alert can be turned off using the following **PAM** API:

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

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

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

3.5 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.

4 UA-005 Self Service Page Requests

Your OEBS application records the number of page requests for each self-service session which is stored in `icx_sessions.counter` associated with each session. Reviewing this value can provide very valuable profiling information of your overall web services activity being generated by your OEBS application.

PAM will alert when the number of self service page requests for the day exceeds the **PAM** threshold. On the principle that the more page requests are being made of your web services sub system, your web services subsystem should be working harder than normal and may be experiencing issues.

With experience you will know that if you have generated more than your threshold number of page requests prior to midday you are having a bad day and your web services sub system is being heavily loaded.

Note: The **PAM** self service page requests alert will only be raised once per day

4.1 **PAM** self service page requests e-mail alert

When the number of self service page requests exceeds the **PAM** threshold a **PAM** alert e-mail is raised:

Example **PAM** UA-005 – **PAM** self service page requests 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 = 23-Feb-11 (Wed) 09:01:14
Alert Frequency = 1 Hour

The number of self service page requests 500678 has exceeded the threshold value of 500000

Alert Information:

UA-005 - Self Service Page Requests

THE NUMBER OF SELF SERVICE PAGE REQUESTS HAS EXCEEDED THE THRESHOLD VALUE.

This may indicate a heavier than normal load has been placed on your applications web service architecture

If you want to obtain a list of the user accounts and the total number of pages being requested for the selected day you can use [PAMreports](#) - Actions [PAMAUA005 Self Service Pages \(day\)](#)

Note 1: This alert will alert once per day only

Note 2: A higher than normal number of page requests may be placing the application web service under pressure

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

4.1 What to do with this information

You can use [PAMreports](#) – Actions [PAMAUA005 Self Service Pages \(day\)](#) to list the self service users generating page requests for a given day.

Entering the date that you received the alert will clearly display who has generated the most page requests for the day:

Example [PAMAUA005 Self Service Pages \(day\)](#) report

PAMAUA005-10		PAM - PIPER-RX - APPLICATION MONITOR				PIPER - Rx
SELF SERVICE PAGE REQUESTS FOR - 01-MAY-09						
As at 23-May-10 08:33						
For OEBS 12 DEMO						
Account ID	Account Name	Sessions	Connect Hrs	Pages	Pages / Hr	
6	GUEST	26	4.4	50	11.4	
1000273	IBEQUEST	3	0.2	3	17.4	

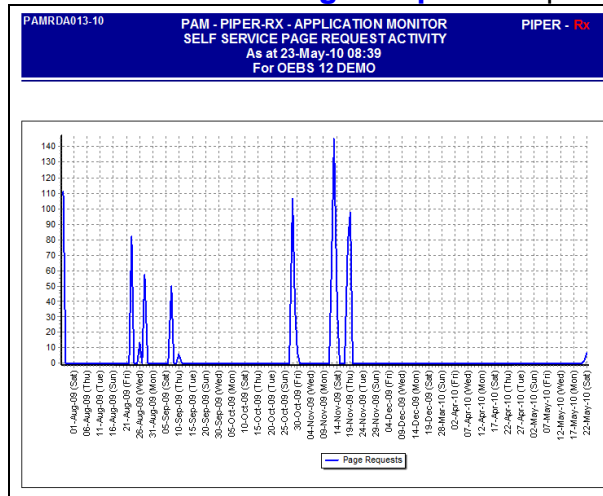
4.1 Self Service Activity profiling

PAM has been collecting daily self service activity levels (IN-001) since installation. In addition when the daily activity collector was first run, it populated up to 30 days prior activity we did this to provide real usable data out of the box.

There are two (2) [PAMreports](#) - Daily that can be used to profile your applications self service page request activity. These reports provide you

profiling information covering page request activity over your business cycles, and within a given month.

Example **PAMRDA013 SS Page Requests** report (Page 1)



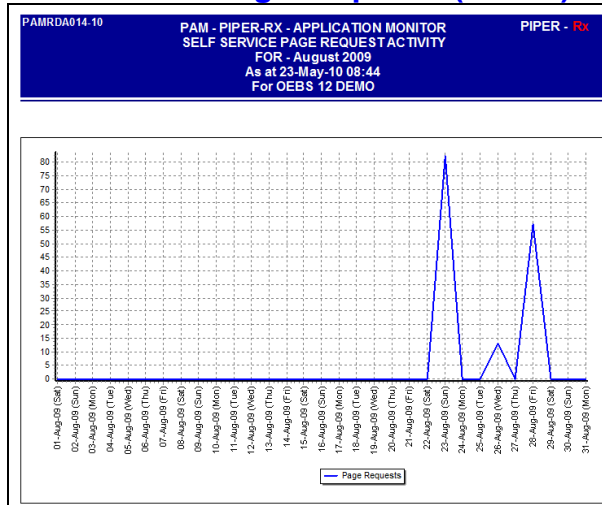
Example **PAMRDA013 SS Page Requests** report (Page 2)

Sample Time	Users	Connections	Total (Hrs)	Page Requests
22-May-10 (Sat)	1	3	0	7
21-May-10 (Fri)	1	1	0	2
20-May-10 (Thu)	0	0	0	0
19-May-10 (Wed)	0	0	0	0
18-May-10 (Tue)	0	0	0	0
17-May-10 (Mon)	0	0	0	0
16-May-10 (Sun)	0	0	0	0

These reports will clearly show if there has been any overall increase in page request activity over time, and if so may be used to justify a few more web servers..... You should also clearly see the overall page request activity associated with your normal business cycles.

The second report provides the same information but is limited to a selected month:

Example **PAMRDA014 SS Page Requests (month)** report (Page 1)



Example **PAMRDA014 SS Page Requests (month)** report (Page 2)

Sample Time	Users	Connections	Total (hrs)	Page Requests
31-Aug-09 (Mon)	0	0	0	0
30-Aug-09 (Sun)	0	0	0	0
29-Aug-09 (Sat)	0	0	0	0
28-Aug-09 (Fri)	2	29	0	57
27-Aug-09 (Thu)	0	0	0	0
26-Aug-09 (Wed)	2	7	0	13
25-Aug-09 (Tue)	0	0	0	0
24-Aug-09 (Mon)	0	0	0	0
23-Aug-09 (Sun)	2	42	0	82

4.2 Setting the alert threshold

The **PAM** alert threshold for can be set using the following **PAM** APIs:

Manual setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA005_SET ( 50000 );
```

Parameter: The daily threshold value for the page requests

Auto setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA005_SET_AUTO;
```

The auto threshold is set to the maximum page requests on any given day as collected by the **PAM** intraday activity collector.

4.3 How do I turn the **PAM** page requests alert off?

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

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

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

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

4.4 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 UA-011 Self Service Page Requests Rate

As part of the **PAM** intraday activity collection **PAM** collects the self-service page request rate (pages per minute) calculated over the time between intraday activity collections (default 10 minutes).

5.1 PAM self-service page requests e-mail alert

When the number of self-service page requests rate (pages per minute) exceeds the **PAM** threshold a **PAM** alert e-mail is raised:

Example **PAM** UA-011 – **PAM** self-service page requests rate 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 = 25-Feb-11 (Fri) 12:02:45
Alert Frequency = 10 Minutes

The self-service page requests rate (600 pages per minute) has exceeded the threshold value of 500

Alert Information:

UA-011 - Self Service Page Requests Rate

THE SELF SERVICE PAGE REQUESTS RATE HAS EXCEEDED THE THRESHOLD VALUE

This may indicate a heavier than normal load has been placed on your applications web service architecture

If you want to obtain a list of the user accounts and the total number of pages being requested for the selected day you can use **PAMreports** - Actions **PAMAUA005 Self Service Pages (day)**

5.2 What to do with this information

Firstly you should review *PAMreports* - Actions [PAMAUA005-20 Self Service Pages \(day\)](#). This report provides a list of user accounts that have connected to the self-service application ordered by the number of page requests for the selected day.

Additional self-service page requests rate information can also be obtained from the following *PAMreports* - Intraday:

- ❖ [PAMRIDA016 Page Requests](#)
- ❖ [PAMRIDA017 Page Requests \(month\)](#)
- ❖ [PAMRIDA018 Page Requests \(day\)](#)

5.3 Setting the alert threshold

The *PAM* alert threshold for can be set using the following *PAM* APIs:

Manual setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA011_SET ( 300 );
```

Parameter: The threshold value for the page requests rate (pages per minute)

Note: Minimum value 100 pages per minute

Auto setting

```
exec PIPER_RX_PAM_API_2.PAM_THRESHOLD_UA011_SET_AUTO;
```

The auto threshold is set to the maximum page requests rate on any given day as collected by the *PAM* intraday activity collector. Minimum value 100 pages per minute

5.4 How do I turn the *PAM* page requests alert off?

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'UA-011', 'N');
```

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'UA-011', 'Y');
```

5.5 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 IN-010 Preventing PAM alert storms

Whilst we have gone to great length 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)
- ❖ Some alerts only alerting once per day

However, during the developing the [PAM](#) DBA Session stats monitor module (described in later [PAMtutorials](#)) which requires a relatively high sample rate, we encountered, that if the thresholds were set too low, or database activity was such that it exceeded the threshold value for a great portion of the day, [PAM](#) has the potential to generate and send large number of e-mail alerts (up to 288 e-mails per day for some alerts). As [PAM](#) is fully extensible, we believe that this issue could occur with unbounded custom collectors (Customisation will be covered in a later [PAMtutorials](#)).

So as to prevent any individual [PAM](#) or custom alert generating and sending too many e-mail alerts we have implemented the [PAM Alert Storm](#) feature whereby if any [PAM](#) or [PAM](#) custom alert generates more than **X** (Default 50) alerts and subsequent email alerts during the day, that alert will be automatically suspended for the remainder of the day.

6.1 Setting the alert storm alert threshold

The [PAM](#) 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

6.2 PAM alert storm e-mail alert

When any **PAM** alert generates and sends more alerts than the **PAM** auto suspend threshold value a **PAM** alert e-mail is raised:

Example **PAM** IN-010 – **PAM** alert storm e-mail alert message

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

Company = Company name
Site = Site name
Alert Level = **Critical**
Detected = 23-Feb-11 (Wed) 09:45:11
Alert Frequency = 2 Hours

INTERNAL - PAM alert AB-001 has generated over 58 alerts and has been suspended until midnight

Alert Information:

IN-010 - **PAM alert storm alert**

PAM has detected a **PAM** alert that has been generating large numbers of alerts

This alert indicates that one of the **PAM** alerts has been generating a large number of alerts today.

In order to protect your e-mail subsystem **PAM** has suspend the **PAM** alert for the remainder of the day.

This alert could be related to either a **PAM** threshold being set too low, or that todays activity is well above normal due to some application or internal OEBS issue

The **PAM** alert will be reactivated at midnight

6.3 How this all works (technical)

Every 2 hours (default) the **PAM** alert storm check (IN-010) checks the number of individual alerts raised per **PAM** alert for the day. If **PAM** detects that there are more than the threshold number of alerts raised **PAM** changes the `alert_active_flag` in the **PAM** config table `piper_rx_pam_config` from 'Y' (Active) to "AS" (Auto suspend) thus preventing the alert from being executed by the **PAM** collector program.

6.3.1 How does it reset at midnight?

The first step in **PAM** alert storm check (IN-010) is to set all occurrences of the value 'AS' in the `alert_active_flag` in the **PAM** config table `piper_rx_pam_config` to 'Y' (Active). Then the **PAM** alert storm check (IN-010) checks and will reset any alert that has exceeded the threshold back to 'AS'. Thus when the day tips over at midnight, as no alerts have been generated for the new day, all alerts are active until they fail the IN-101 test again.

Note: This check does not affect any alerts that have been intentionally disabled.

6.4 How do I turn the **PAM** alert storm alert off?

Turning the **PAM** alert storm alert off is defiantly not recommended. However, the **PAM** alert storm alert can be turned off using the following **PAM** API:

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-010', 'N');
```

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

```
exec PIPER_RX_PAM_API.PAM_ALERT_ENABLE ( 'IN-010', 'Y');
```

6.5 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.

7 Disclaimer

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