

Guidelines for PMDF 3.1 problem solving

Abstract

The objective of this report is to rescue VXGIFT from excessive load, accelerate the mail delivery to VMS mail users and ensure an acceptable response time to the same user group when they need to enter MINT::"user@host.domain" in the destination address field. The following instructions assume no detailed VMS experience.

This document replaces the one entitled "GUIDELINES FOR PMDF PROBLEM SOLVING" and reflects PMDF 3.1 file structure.

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1. Logon VXGIFT from a privileged account.

Ask Christian Isnard or Danny Davids for one if necessary. All PMDF files and job queues are accessible from all cluster machines and the logical name PMDF_ROOT is common to the whole cluster. Being logged on to VXGIFT helps for checking the system processes and NCP links. All queue and/or log checking actions can be done from any other machine or station of the cluster.

The logical name PMDF_ROOT as defined for the current PMDF can be checked with the commands:

```
VMS prompt > sh log pmdf_root
```

```
"PMDF_ROOT" = "DISK$USER1:[PMDF31.]" (LNM$SYSTEM_TABLE)
```

A DCL procedure prepared by Chr. Isnard, adapted for PMDF release 3.1 by M. Dimou is available. It is called:

```
cern$manager:pmdf_status.com
```

and when executed from a privileged account it provides a summary of the job queues, the system processes and the message files related to PMDF.

2. Check the number of messages in queue

```
VMS prompt > set def PMDF_ROOT:[QUEUE]
```

```
VMS prompt > dir
```

PMDF 3.1 has a different file structure than PMDF 3.0 had. There is one directory related to each PMDF channel, which contains the messages pending for delivery to this channel. These are the directories displayed following the above command:

```
Directory PMDF_ROOT:[QUEUE]
```

```
D.DIR;1      DSMTP_DK.DIR;1    DSMTP_SI.AC.DIR;1  L.DIR;1
WTCP_GATEWAY.DIR;1
```

Within each of these directories there should be only ONE version of each and any message file. In case of no manual intervention this version is 1.

The DECNET messages are represented by files within the [QUEUE.D] directory with name format HEXnumber.00;1 ,

```
e.g. 4DC282BF6B3F2016F6.00;1
```

It is desirable that the number of such messages in queue are not more than 100.

The RFC822--style message which are routed with SMTP to DXMINT by default are represented by files within the [QUEUE.WTCP_GATEWAY] with name format HEXnumber.00;1 ,

```
e.g. 5059A509897F200AB2.00;1
```

This type of messages should never get stuck in the queue.

The RFC822 – style message which are routed with SMTP over DECNET to SLAC are represented by files within the [QUEUE.DSMTP_SLAC] directory with name format HEXnumber.00;1 , e.g. 50585D97DA7F200CBA.00;1

The RFC822 – style message which are routed with SMTP over DECNET to Denmark are represented by files within the [QUEUE.DSMTP_DK] directory with name format HEXnumber.00;1 , e.g. 501E5A723CDF200F15.00;1

3. Check the number of jobs running

VMS prompt > sh queue/full/all pmdf31*

Server queue PMDF31_DEC, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
 /BASE_PRIORITY=4 /DEFAULT=(FEED,FORM=DEFAULT (stock=STANDARD))
 /OWNER=[SYSTEM] /PROCESSOR=CTLSMB /PROTECTION=(S:E,O:D,G:R,W:R)

Jobname	Username	Entry	Blocks	Status
PMDF channel D master	SYSTEM	936	28	Processing
Submitted 14-AUG-1990 12:24 /FORM=DEFAULT (stock=STANDARD) /PARAM=("D", "NOPOLL", "14-AUG-1990:12:24:37.44") /PRIORITY=100				
File: _VXGIFT\$DUA5:[PMDF31.EXE]MASTER.COM;83 (processing)				

Server queue PMDF31_DELAY, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
 /BASE_PRIORITY=4 /DEFAULT=(FEED,FORM=DEFAULT (stock=STANDARD))
 /OWNER=[SYSTEM] /PROCESSOR=CTLSMB /PROTECTION=(S:E,O:D,G:R,W:R)

Jobname	Username	Entry	Blocks	Status
PMDF delivery	SYSTEM	749	13	Processing
Submitted 14-AUG-1990 10:01 /FORM=DEFAULT (stock=STANDARD) /PRIORITY=100				
File: _VXGIFT\$DUA5:[PMDF31.EXE]POST.COM;55 (processing)				
PMDF delivery	SYSTEM	1207	15	Holding until 14-AUG-1990 11:45
Submitted 14-AUG-1990 10:16 /FORM=DEFAULT (stock=STANDARD) /PRIORITY=100				
File: _VXGIFT\$DUA5:[PMDF31.EXE]POST.COM;66				

PMDF message bouncer	SYSTEM	1063	12	Holding until 15-AUG-1990 00:30
Submitted 14-AUG-1990 00:35 /FORM=DEFAULT (stock=STANDARD) /PRIORITY=100				
File: _VXGIFT\$DUA5:[PMDF31.EXE]RETURN.COM;27				

Server queue PMDF31_WTCP, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
 /BASE_PRIORITY=4 /DEFAULT=(FEED,FORM=DEFAULT (stock=STANDARD))
 /OWNER=[SYSTEM] /PROCESSOR=CTLSMB /PROTECTION=(S:E,O:D,G:R,W:R)

The number of pending jobs in each of the above 3 queues PMDF31_DEC, PMDF31_DELAY and PMDF31_WTCP should normally not be more than in this example. If the number of jobs with status Pending (queue busy) increase it is useful to delete them with the command:

VMS prompt > delete/entry = (entry_number1,...,entry_numberN) queue_name

where queue_name is one of the 3 queues PMDF31_DEC, PMDF31_DELAY or PMDF31_WTCP.

However, manual job deletion will, in principle, never be necessary in the future, due a DCL procedure, which is executed automatically every 30 minutes and deletes obsolete pending jobs.

Alternatively:

VMS prompt > sh queue/summary pmdf31*

shows the number of jobs in summary.

```
Server queue PMDF31_DEC, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
```

```
Job summary: queue is empty
```

```
Server queue PMDF31_DELAY, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
```

```
Job summary: 1 executing, 2 timed release
```

```
Server queue PMDF31_WTCP, on VXGIFT::, mounted form DEFAULT (stock=STANDARD)
```

```
Job summary: queue is empty
```

4. Check system processes

If logged on VXGIFT enter the following:

VMS prompt > show system /subprocess

If logged on another member of the CS cluster:

VMS prompt > show system /subprocess/node = VXGIFT

The PMDF processes must be found amongst other subprocesses (if any), e.g.:

```
VAX/VMS V5.3--1 on node VXGIFT 14-AUG-1990 09:33:07.77 Uptime 5 19:54:14
```

Pid	Process Name	State	Pri	I/O	CPU	Page flts	Ph.Mem
2440007B	PMDF31_DEC_01	COM	4	500902	0	03:07:42.07	1283929 300
2440007C	PMDF31_DELA_02	COM	4	638515	0	04:54:43.92	2685560 387
244004F3	PMDF31_WTCP_03	PFW	4	56160	0	00:26:40.13	173480 308

These processes start when the appropriate messages appear in the queue. If a high number of messages in queue lead to the suspicion that one of the processes is stuck, use the command:

VMS prompt > show process/continuous/id = Pid

where: Pid is the process id, e.g. in this example 2440007B.

An example follows of what is displayed next:

Process PMDF31_DELA_02

15:32:10

State	LEF	Working set	964
Cur/base priority	9/4	Virtual pages	4260
Current PC	7FFEE44C	CPU time	000:05:08:21.68
Current PSL	03C00004	Direct I/O	226319
Current user SP	7FF2FDA8	Buffered I/O	438153
PID	2440007C	Page faults	2813992
UIC	[SYSTEM]	Event flags	E0000000
		80000000	

UXCSB1\$DUA1: [SYS7.SYSCOMMON.] [SYSEXE]MAIL_SERVER.EXE

If the process state, page faults, usage of CPU time and file access activity changes with the time, then hit CTRL/Z to exit. It probably means the process is happily running.

If you suspect it is stuck then

hit CTRL/Z to exit.

VMS prompt > stop / id = Pid

As long as there is a message backlog a new process will start immediately.

5. Check for blocking messages

To see which messages are handled by the PMDF processes at a given moment logon VXGIFT and use the command:

VMS prompt > show device /file disk\$user1 /nosystem

This command will give you a list of files accessed on the disk of VXGIFT. Amongst others there will be the executables, log and DCL command files needed by PMDF as well as the message files locked by the relevant PMDF process now. E.g.:

PMDF31_DELA_02 244006AC [PMDF31.QUEUE.D]55235CA5C4022406EE9.00;1

If the process doesn't send out or set free the message file, then you have to stop the process first, before you can read the message file and see if it has bad address format or other unhealthy symptoms.

6. Display the contents of a message in queue

Make sure you still are in the appropriate queue directory, e.g. PMDF_ROOT:[QUEUE.D]

VMS prompt > sh def

VMS prompt > type/page message_file_name

E.g. VMS prompt > type/page 4D2E7B6B801F201C86.00;1

Here comes an example of how PMDF arranges the addressing information. This is how the message appears:

```
m;sender@cernvm.cern.ch
 recip1@udphvx.decnet.cern.ch
 recip2@udphvx.decnet.cern.ch
 recip3@udphvx.decnet.cern.ch
 recip4@udphvx.decnet.cern.ch
 recip5@vaxge.decnet.cern.ch
 recip6@vaxge.decnet.cern.ch
 recip7@vaxpi.decnet.cern.ch
 recip8@vaxpi.decnet.cern.ch
 recip9@vaxpi.decnet.cern.ch
```

Return-path: sender@cernvm.cern.ch

Received: from dxmint.cern.ch by vxgift.decnet.cern.ch; Thu, 23 Nov 89 15:24 G
+1

Received: by dxmint.cern.ch (5.57/3.14) id AA05448; Thu, 23 Nov 89
15:26:07 +0100

Date: 23 Nov 89 15:23 +0100

From: <sender@cernvm.cern.ch>

Subject: RESEARCH BOARD OK

To: aaaaa@cernvm, recip7@vaxpi.decnet.cern.ch,
 recip8@vaxpi.decnet.cern.ch, bbbb@rzs.in.sin.ch, ccc@DHDMPI5V.BITNET,
 recip9@vaxpi.decnet.cern.ch, recip1@udphvx.decnet.cern.ch,
 recip2@udphvx.decnet.cern.ch, recip3@udphvx.decnet.cern.ch,
 recip4@udphvx.decnet.cern.ch, recip5@vaxge.decnet.cern.ch,
 recip6@vaxge.decnet.cern.ch

Body of the message

Attempting simultaneous delivery to recip1 – recip9 is now forbidden, in order to avoid problems in delivery to the rest of recipients in case one of them cannot be reached for a long time. This means that there is, now, one message copy in the appropriate queue directory per recipient address.

7. Detection of delivery problems

7.1 look in the log files

VMS prompt > set def pmdf_root:[log]

VMS prompt > edit/read mail.log

```
18-APR-1990 00:40:16 wtcp_local d E 0001 Per@KUNRC1.URC.KUN.  
NL bobbink@vxlaa.decnet.cern.ch  
18-APR-1990 00:40:45 trace sender T 0000 MINT::"Per@KUNRC1.U  
RC.KUN.NL"  
18-APR-1990 00:40:46 trace receiver T 0000 VXLAA::BOBBINK  
18-APR-1990 00:40:56 d D 0001 Per@KUNRC1.URC.KUN.  
NL bobbink@vxlaa.decnet.cern.ch
```

The above set of entries are recorded in the MAIL.LOG file for every message. E=enqueued, T=trace, D=dequeued.

A look in this file gives a flavour of the various problems that cause messages to accumulate in the queue directory.

7.2 Most common problems

1. DECnet unavailability at remote node
2. recipient user has disk quota problems
3. recipient node is an unavailable workstation
4. the MAIL object is wrongly defined at remote node
5. the address formats are wrong

8. Problem solving possible actions

8.1 To check for DECnet connection problems:

Make sure you are logged on VXGIFT for the following:

VMS prompt > ncp show known links

Known Link Volatile Summary as of 18-AUG-1990 17:13:53

Link	Node	PID	Process	Remote link	Remote user
8439	22.90 (VXWA80)	244006D4	MAIL_8439	16719	AWES
8470	22.190 (VXCERN)	2440065D	MAIL_8470	33139	ALAN
307	22.261 (VSCOMB)	24400050	REMACP	8210	DIMOU
8495	32.121 (LPNVAX)	244006AC	PMDF31_DELA_02	8592	MAIL
8494	39.6 (VAXROM)	2440007B	PMDF31_DEC_01	456	MAIL

VMS prompt > set host NODE

where NODE is related to PMDF process will check for DECNET availability.

8.2 To check for MAIL object definition problems:

Send a VMS mail message to a dummy user. For instructions on how to use VMS mail refer to the Email user guide , document DD/US/6.

8.3 To contact the system manager of the node causing problems:

Search in NETNODES and WHO databases on CERNVM for his name and Email address on a reachable machine.

8.4 To count the number of messages in queue for a specific node:

VMS prompt > set def pmdf_root:[queue.D]

VMS prompt > search *.00;1 string

where: string is the node name or other token for search. In the above command we assume we search in the HEXnumber.00;1 message backlog of the [.D] subdirectory.

8.5 To remove a message from the PMDF queue:

VMS prompt > set def pmdf_root:[queue.D]

VMS prompt > rename HEXnumber.00;1 anyname

Same assumptions are applicable here about the message name, i.e. we assume we search in the HEXnumber.00;1 message backlog of the [.D] subdirectory. Some DCL knowledge helps in case a set of commands must be given. This will require assistance by a more experienced VMS user.

