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What's new in Performance Toolkit for VM in Version 5.1.0

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What's new in Performance Toolkit for VM in V5.1.0

Performance Toolkit for VM™ is a pre-installed, priced optional feature of z/VM® that was introduced with z/VM 4.4.0 and is based on the FCON/ESA offering. Performance Toolkit for VM is a full-screen operator's console and performance monitoring program that includes the ability to view performance data from z/VM systems from the Web. This article focuses on function added with the z/VM 5.1.0 level of Performance Toolkit for VM (FL510). The primary objectives of this level of Performance Toolkit for VM are:

- *Providing function similar to the VM Performance Reporting Facility*
- *Support for newly-available monitor data from Linux®.*

PERFKIT batch processing and its relation to VM Performance Reporting Facility

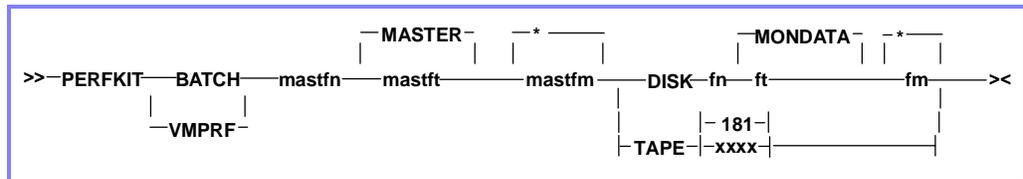
Printed reports and performance history files have traditionally been created by programs that process monitor data saved to disk or tape in batch mode using products like IBM's VM Performance Reporting Facility (VMPRF). Performance Toolkit for VM is designed to process CP monitor data directly from the monitor saved segment (MONDCSS), allowing you to analyze the system's performance in real time. Printed reports and performance history files can be produced by Performance Toolkit for VM as a byproduct of normal real time operation without the overhead of first saving the monitor data in a disk or tape file for later batch processing.

However, there are times when you need to process a monitor data file saved on disk or tape, either for detailed analysis of a problem on your system or for analysis of data obtained from another VM system. Performance Toolkit for VM currently provides the interactive monitor data scan mode (MONSCAN) which allows you to view the saved monitor data as if you were using Performance Toolkit for VM in real time. The menus and screens appear the same, but reports are limited to those derived from the saved monitor data.

With Performance Toolkit for VM FL510, a second method, operation in batch mode, allows you to process the saved monitor data using a set of control input and output files to create reports and performance history files. If you are familiar with VMPRF, you will find similarities in the way batch mode is controlled in Performance Toolkit for VM. However, there are differences and it is recommended you migrate your existing VMPRF reports and performance history files to Performance Toolkit for VM.

Invoke Performance Toolkit for VM batch mode by issuing the PERFKIT command with either the BATCH option or the VMPRF option. To ease the migration from VMPRF, the VMPRF option is provided as an aid to assist you in converting your VMPRF control files and

reports to Performance Toolkit for VM control files and reports. The command format is shown in Figure 1:



The MASTER file, input files, and output files

The MASTER file (mastfn mastft mastfm) contains statements that define all of the input and output control files used to create the performance reports, and the DISK and TAPE options specify where the monitor data is found. Because the MASTER file in Performance Toolkit for VM is similar to the MASTER file in VMPRF, you can use existing VMPRF master files with a few changes.

Table 1 describes the input files and whether or not they are used by the BATCH and VMPRF command options.

Table 1. Input Files		
File/description	Used by BATCH?	Used by VMPRF?
SETTINGS. Contains statements that control the report output (start and end times, number of users and DASD reported, etc.)	Yes. Should contain Performance Toolkit for VM format specifications.	Yes. Should contain VMPRF format specifications; however, not all VMPRF settings are supported.
REPORTS. List of reports to be created.	Yes. Should contain Performance Toolkit for VM format specifications.	Yes. Should contain VMPRF format specifications; however, not all VMPRF reports are supported
SUMREC. Restricts the creation of summary records	Yes. Should contain Performance Toolkit for VM format specifications.	Yes. Should contain Performance Toolkit for VM format specifications.
TRENDREC. Restricts the creation of trend records.	Yes. Should contain Performance Toolkit for VM format specifications	Yes. Should contain Performance Toolkit for VM format specifications.
UCLASS. Contains user class specifications in VMPRF format	No.	Yes
INCLUSER, MDISKS, MDISKVOL. Performance Toolkit for VM does not support these files.	No.	No.

Table 2 describes the output files created by the BATCH and VMPRF command options

Table 2. Output Files		
File/description	Used by BATCH?	Used by VMPRF?
LOG. Keeps a running log of PERFKIT BATCH or VMPRF invocations. Each invocation adds entries to the file that includes the start and end time for each run, the CPU consumption, and the return code. If the file already exists, new entries are appended to the end of the file. The contents of this file are similar to the contents of the file in VMPRF.	Yes	Yes
LISTING. Contains the reports specified in the REPORTS file. The first page contains a table of contents that shows the reports listed in the file followed by the reports in the order they were specified in the REPORTS file. Interim reports are an exception: those reports are appended to the end of the reports for the overall reporting period. The interim reports are listed together with their own table of contents for each interim interval. All of the reports in the REPORTS file are Performance Toolkit for VM reports even when the VMPRF option is specified.	Yes	Yes
RUNFILE. Contains detailed information on the most recent batch run. The information includes informational, error and warning messages, monitor data used, notices of which files were used during processing, a listing of input and output file specifications, and the commands used to control the report output. Any existing RUNFILE will be replaced with each batch invocation. The contents of this file are similar to the contents of the file in VMPRF.	Yes	Yes
SUMMARY. Created when specified in the MASTER file and contains summary records. Different from summary records created by VMPRF. In VMPRF, the summary records are specified in the REPORTS file and begin with SUMMARY_. In Performance Toolkit for VM, all summary records are created whenever the SUMMARY file is specified in the MASTER file. Because requesting all summary records can cause large and detailed files, the SUMREC file specifications allow you to specify only the records you want created. Additional record creation can be restricted for records related to users and devices.	Yes	Yes
TREND. Created when specified in the MASTER file and contains trend records. Different from trend records created by VMPRF. In VMPRF, the trend records are specified in the REPORTS file and begin with TREND_. In Performance Toolkit for VM, all trend records are created whenever the TREND file is specified in the MASTER file. Because requesting all trend records can cause large and detailed files, the TRENDREC file specifications allow you to specify only the records you want created. Additional record creation can be restricted for records related to users and devices.	Yes	Yes

<p>FCXEQUIV. This file contains a list of equivalent Performance Toolkit for VM reports for the VMPRF reports specified in the REPORTS file. You can use this file to assist you in creating a new REPORTS file for use with the BATCH option. The FCXEQUIV file is written to the user's A-disk and the file name for the FCXEQUIV file will be the same as the REPORTS file name specified in the MASTER file.</p>	No	Yes
---	----	-----

To help you in understand how to convert your existing VMPRF files, consider the following example:

Figure 2:

Sample Master File

Input Parameter Files

```

SETTINGS          VMPRF SETTINGS      *
REPORTS           VMPRF REPORTS    *
UCLASS           VMPRF UCLASS      *
    
```

Not Supported in Performance Toolkit for VM

```

*INCLUSER
*MDISKS
*MDISKVOL
    
```

OUTPUT FILES

```

LISTING           VMPRF LISTING      B
LOG               VMPRF LOG        B
RUNFILE          VMPRF RUNFILE     B
    
```

Figure 2 shows an existing VMPRF MASTER file executed using the VMPRF option of the PERFKIT command. The SETTINGS, REPORTS, and UCLASS files processed during execution represent existing VMPRF control files containing information in a format expected by VMPRF. An "*" in column 1 indicates a comment causing that line to be ignored.

The next three figures show examples of existing VMPRF SETTINGS, REPORTS, and UCLASS files and are discussed throughout the example.

The sample VMPRF SETTINGS file contains:

Figure 3:

```
*****  
* VMPRF SETTINGS (Parameter Settings) file  
*****  
*  
SYSTEM          "VMPRF sample"  
SYSTEMID        ZVM430  
BYTIME          5 minutes  
INTERIM         5 minutes  
SDATE           05/22/1996  
EDATE           01/01/2000  
STIME           10:00:00  
ETIME           12:00  
REPORTUSERS     100  
reportdasd      100
```

The sample VMPRF REPORTS file contains:

Figure 4:

```
*****  
* Report Selection File  
*****  
  
** Reports  
REPORT_TABLE_OF_CONTENTS  
MONITOR_DATA  
MONITOR_SETTINGS_BY_EVENT  
SYSTEM_SUMMARY_BY_TIME  
SYSTEM_SUMMARY2_BY_TIME  
SYSTEM_CONFIGURATION  
USER_RESOURCE_UTIL  
DEVICE_CONFIGURATION  
  
** Summary records  
SUMMARY_SYSTEM  
SUMMARY_PROCESSOR  
  
** Trend records  
TREND_SYSTEM  
TREND_PROCESSOR
```

The sample VMPRF UCLASS file contains:

Figure 5:

```
*****  
* User Classes  
*****  
          EVRYBODY  
MAINT  MAINT
```

When you execute the command:

```
PERFKIT VMPRF SAMPLE MASTER B DISK ZVM430 MONDATA D
```

The VMPRF LOG, VMPRF RUNFILE, and VMPRF LISTING files are created on the B-disk. In addition the VMPRF FCXEQUIV file is created on the A-disk.

The VMPRF LOG file contains:

Figure 6:

```
25 Apr 2004 22:08:03 PERFKIT  Version FL510  at Fix Level 00  
25 Apr 2004 22:08:03 PERFKIT  Arguments passed for VMPRF emulation:  
25 Apr 2004 22:08:03 PERFKIT  VMPRF SAMPLE MASTER B DISK ZVM430 MONDATA  
25 Apr 2004 22:08:03 PERFKIT  Reduction Started  
25 Apr 2004 22:08:06 PERFKIT  Vtime=.12, Ttime=.20, Connect time 3 sec.  
25 Apr 2004 22:08:06 PERFKIT  Reduction Completed, Rc= 4
```

The contents of the VMPRF LOG file in Figure 6 is similar to the information produced by VMPRF. Included in the file is the level of Performance Toolkit for VM, the arguments passed to the PERFKIT command, the time the command took to execute, and the return code.

A partial VMPRF LISTING file is shown in Figure 7 and contains the reports generated. The table of contents within the listing file shows the Performance Toolkit for VM reports created. The rest of the VMPRF LISTING file is not shown, but contains the actual reports. In addition, following the reports listed in the table of contents, are the interim reports created, which are also not shown.

Figure 7: Partial Contents of the VMPRF LISTING File

```
FCXTOC  Run 2004/04/25 22:08:06      Table of Contents  
                                           PERFKIT Reports in Order of Appearance  
  
From 2002/01/22 10:37:27  
To 2002/01/22 11:55:33  
For 4686 Secs 01:18:06              VMPRF sample
```

Rpt ID	Report Description	Page	From Time	To Time
FCX155	Count and Size of Processed Monitor Records	1	10:37:33	- 11:55:33
FCX149	Monitor Settings: Initial and Changed	3	10:37:33	- 11:55:33
FCX225	System Performance Summary by Time	4	10:37:33	- 11:55:33
FCX239	Processor Performance Summary by Time	5	10:37:33	- 11:55:33
FCX180	System Configuration, Initial and Changed	6	10:37:27	- 11:55:33
FCX112	General User Resource Utilization	7	10:37:33	- 11:55:33
FCX131	I/O Device Configuration	8	-----	- 11:55:33

Notice that a VMPRF FCXEQUIV file was created on the A-disk. Figure 8 shows the contents of this file, which contains a list of the Performance Toolkit for VM report names used to create the LISTING file.

Figure 8: Contents of the VMPRF FCXEQUIV File

```
MONDATA  
MONSET  
SYSSUMLG  
PROCSUM  
SYSCONF  
USER (SORT TCPU  
DEVCONF
```

The final output file created is the VMPRF RUNFILE file. When converting from VMPRF to Performance Toolkit for VM, this file contains useful information. In the file you will find detailed information on the most recent batch mode execution. This information includes:

- *Informational, error, and warning messages*
- *Information on the monitor data used*
- *Notice of which files were used during processing*
- *Listing of the input and output file specifications*
- *FCONTROL subcommands used to control the report output.*

For clarity, the VMPRF RUNFILE has been divided into sections with explanations after each section in the file.

Figure 9: First section of the VMPRF RUNFILE

```
25 Apr 2004 22:26:07 PERFKIT Version FL510 at Fix Level 00  
25 Apr 2004 22:26:07 PERFKIT Arguments passed for VMPRF emulation:  
25 Apr 2004 22:26:07 PERFKIT VMPRF SAMPLE MASTER B DISK ZVM430 MONDATA
```

The first three lines of the VMPRF RUNFILE show the level of Performance Toolkit for VM and the arguments passed on the PERFKIT command.

The next four sections detail the processing of the MASTER file and the three input files specified within the MASTER file. The information in these sections can be used to convert your VMPRF format files to Performance Toolkit for VM format.

Figure 10: Processing of the SAMPLE MASTER File

```
22:26:07 * Processing MASTER file 'SAMPLE MASTER B'
SAMPLE MASTER B: *****
SAMPLE MASTER B: *
SAMPLE MASTER B: * Sample MASTER file
SAMPLE MASTER B: *
SAMPLE MASTER B: *****
SAMPLE MASTER B: *** Input Parameter Files ***
SAMPLE MASTER B: SETTINGS VMPRF SETTINGS *
SAMPLE MASTER B: REPORTS VMPRF REPORTS *
SAMPLE MASTER B: UCLASS VMPRF UCLASS *
SAMPLE MASTER B: *** Not Supported in Performance Toolkit for VM ***
SAMPLE MASTER B: *INCLUSER
SAMPLE MASTER B: *MDISKS
SAMPLE MASTER B: *MDISKVOL
SAMPLE MASTER B: *** Output Files ***
SAMPLE MASTER B: LISTING VMPRF LISTING B
SAMPLE MASTER B: LOG VMPRF LOG B
SAMPLE MASTER B: RUNFILE VMPRF RUNFILE B
22:26:07 =Basic=> FC SET SUMREC FCONX SUMREC *
22:26:07 =Basic=> FC SET TRENDREC FCONX TRENDREC *
22:26:07 =Basic=> FC SET REPFILID VMPRF LISTING B
22:26:07 =Basic=> FC TRACE RESET ON
FCXCMK603I RESET trace activated
```

Beginning with the line “* Processing MASTER file ‘SAMPLE MASTER B’ you see the entire SAMPLE MASTER file. Following the MASTER file are four FC or FCONTROL commands. These are the commands passed to the batch processing and indicate the names of the files used. You do not need to specify these commands because they are generated automatically during processing. Note that the SUMREC and TRENDREC file specifications are set to the defaults (FCONX SUMREC and FCONX TRENDREC), because they were not specified in the MASTER file.

Figure 11: Processing of the SETTINGS File

```
22:26:07 * Processing SETTINGS file 'VMPRF  SETTINGS *'  
VMPRF  SETTINGS *: *****  
VMPRF  SETTINGS *: *  
VMPRF  SETTINGS *: * VMPRF SETTINGS (Parameter Settings) file  
VMPRF  SETTINGS *: *  
VMPRF  SETTINGS *: *****  
VMPRF  SETTINGS *: *  
VMPRF  SETTINGS *: system "VMPRF sample"  
22:26:07 =Basic=> FC SET SYSTEM VMPRF sample  
VMPRF  SETTINGS *: systemid ZVM430  
22:26:07 =Basic=> FC SET SYSTEMID ZVM430  
VMPRF  SETTINGS *: bytime 5 minutes  
22:26:07 =Basic=> FC SET BYTIME 5 MIN  
VMPRF  SETTINGS *: interim 5 minutes  
22:26:07 =Basic=> FC SET INTERIM 5 MIN  
VMPRF  SETTINGS *: sdate 05/22/1996  
FCXBAF651I VMPRF Parameter SDATE not supported  
VMPRF  SETTINGS *: edate 01/01/2000  
FCXBAF651I VMPRF Parameter EDATE not supported  
VMPRF  SETTINGS *: stime 10:00:00  
VMPRF  SETTINGS *: etime 12:00  
VMPRF  SETTINGS *: reportusers 100  
22:26:07 =Basic=> FC SET MAXUSERS 100  
VMPRF  SETTINGS *: reportdasd 100  
22:26:07 =Basic=> FC SET MAXDEVS 100  
22:26:07 =Basic=> FC SET PAGESIZE 60  
22:26:07 * SETTINGS file processing completed with RC 4
```

The next section, beginning with the line “* Processing the SETTINGS file ‘VMPRF SETTINGS *”, contains the entire SETTINGS file along with a description of how the file was processed. Here you see each VMPRF setting and the actual Performance Toolkit for VM FC command issued. To convert your VMPRF format SETTINGS file to the format expected in Performance Toolkit for VM, you would use the FC commands in this section.

For example:

```
‘SYSTEM “VMPRF sample”
```

Would appear in a Performance Toolkit for VM SETTINGS file as:

```
‘FC SET SYSTEM VMPRF sample’
```

Also included in this section are messages indicating VMPRF settings that are no longer valid: in this case, the SDATE and EDATE settings. Finally, since VMPRF supported certain

default values for some of the settings values, you might also see FC commands that allow you to maintain these default values in your reports in Performance Toolkit for VM. In the example, such a command is the FC SET PAGESIZE 60 command. Also note that the STIME and ETIME settings appear to be ignored, though they are not; these settings are discussed later. At the end of this section you see the SETTINGS file completed with a return code of 4. The return code of 4 is indicated because the SDATE and EDATE settings are no longer supported.

Figure 12: Processing of the REPORT File

```

22:26:07 * Processing REPORTS file 'VMPRF  REPORTS  *'
VMPRF  REPORTS *: *****
VMPRF  REPORTS *: * Report Selection File:          VMPRF REPORTS  *
VMPRF  REPORTS *: *****
VMPRF  REPORTS *: ** Reports
VMPRF  REPORTS *: REPORT_TABLE_OF_CONTENTS
VMPRF  REPORTS *: MONITOR_DATA
VMPRF  REPORTS *: MONITOR_SETTINGS_BY_EVENT
VMPRF  REPORTS *: SYSTEM_SUMMARY_BY_TIME
VMPRF  REPORTS *: SYSTEM_SUMMARY2_BY_TIME
VMPRF  REPORTS *: SYSTEM_CONFIGURATION
VMPRF  REPORTS *: USER_RESOURCE_UTIL
VMPRF  REPORTS *: DEVICE_CONFIGURATION
VMPRF  REPORTS *: ** Summary records
VMPRF  REPORTS *: SUMMARY_SYSTEM
FCXBAF659I SUMMARY record creation controlled by SUMREC control file
VMPRF  REPORTS *: SUMMARY_PROCESSOR
VMPRF  REPORTS *: ** Trend records
VMPRF  REPORTS *: TREND_SYSTEM
FCXBAF659I TREND record creation controlled by TRENDREC control file
VMPRF  REPORTS *: TREND_PROCESSOR
22:26:07 * Equivalent reports file VMPRF  FCXEQUIV A built
22:26:07 =Basic=> FC SET REPORTS VMPRF  FCXEQUIV A
22:26:07 * REPORTS file processing completed with RC 0
    
```

Following the processing of the SETTINGS file is the information on the processing of the REPORTS file. Here you will find a listing of the contents of your REPORTS file and any information on reports no longer supported. One area where Performance Toolkit for VM differs from VMPRF is in the area of summary and trend records. In VMPRF you specified the creation of summary and trend records by listing the individual records you want created. They are indicated by a report name beginning with either SUMMARY_ or TREND_. In Performance Toolkit for VM, these report names are ignored. Summary and trend records are created only if you provide the SUMMARY and TREND output file specifications in the MASTER file. If you specify SUMMARY and TREND outputs, all summary and trend records are created. Summary and trend files can become large and contain detailed information that

might not be needed. To prevent building these large files you can restrict the summary and trend records by specifying the records to be created using the SUMREC and TRENDREC input specifications in the MASTER file. The contents of these files contain a list of the summary and trend records you want created. In addition, to limit the records created even further on reports containing user and device information, you can specify that records be created only for specific users and devices. The default FCONX SUMREC and FCONX TRENDREC files are provided with Performance Toolkit for VM.

Figure 13: Processing the UCLASS File

```
22:26:07 * Processing UCLASS file 'VMPRF UCLASS *'  
VMPRF UCLASS *: *****  
VMPRF UCLASS *: * User Classes  
VMPRF UCLASS *: *****  
VMPRF UCLASS *: EVRYBODY  
22:26:07 =Basic=> FC UCLASS %* EVRYBODY  
VMPRF UCLASS *: *OTHER*  
22:26:07 =Basic=> FC UCLASS %* *OTHER*  
VMPRF UCLASS *: MAINT MAINT  
22:26:07 =Basic=> FC UCLASS MAINT MAINT  
22:26:07 =Basic=> FC UCLASS QUERY  
22:26:07 * UCLASS file processing completed with RC 0
```

The next section of the RUNFILE shows the processing of the UCLASS file. The UCLASS file is valid only when you specify the VMPRF option on the PERFKIT command. In this section you see the contents of the UCLASS file along with the Performance Toolkit for VM FC UCLASS commands used for processing. Because the UCLASS file is not supported when the BATCH option is specified on the PERFKIT command, the FC UCLASS commands need to appear in the SETTINGS file.

Figure 14: Processing of the STIME and ETIME settings

```
25 Apr 2004 22:26:08 PERFKIT Reduction Started  
22:26:08 =Basic=> Monscan ZVM430 MONDATA D  
22:26:08 * Monitor data start at 10:37:27 on 2002/01/22  
22:26:08 =Monscan=> FC MONCOLL RESET 10:00:00R_P 12:00:00P (MERGE  
22:26:08 =Monscan=> FC MONCOLL RESET QUERY
```

The next area of the RUNFILE contains information on the processing of the STIME and ETIME settings. If you go back and look at the SETTINGS you will see STIME was set to 10:00:00 and ETIME was set to 12:00, indicating the information in the reports created were to contain information only for the time period from 10:00:00 AM to 12:00 PM. In Performance Toolkit for VM this is indicated using the FC MONCOLL RESET command. In

the RUNFILE the conversion of the STIME/ETIME values is done with the following statement:

```
FC MONCOLL RESET 10:00:00R_P 12:00:00P (MERGE
```

Figure 15: Additional processing information

```
FCXPMC811T Proc/Reset init call at 10:37:27
22:26:08 =Monscan=> Nextsamp 12:00
22:26:10 * Last monitor sample processed for 11:55:33 on 2002/01/22
22:26:10 =Monscan=> Return
25 Apr 2004 22:26:10 PERFKIT Vtime=.10, Ttime=.17, Connect time 3 sec.
25 Apr 2004 22:26:10 PERFKIT Reduction Completed, Rc= 4
```

Finally, the rest of the RUNFILE contains additional processing information, execution time and the overall return code which is propagated from any earlier return codes. In this case, the return code is set to 4 because the SETTINGS file received a return code of 4.

Creating PERFKIT files similar to VMPRF

Using the information from the output files when running VMPRF input files in Performance Toolkit for VM with the PERFKIT VMPRF option, you can now create similar files in the format expected when you use the PERFKIT BATCH option.

Figure 16: Sample Master File

```
*****
* Sample MASTER file
*****

*** Input Parameter Files ***
SETTINGS  BATCH SETTINGS  *
REPORTS   BATCH REPORTS  *

*** Output Files ***

LISTING   BATCH LISTING   B
LOG       BATCH LOG       B
RUNFILE   BATCH RUNFILE   B
```

Figure 16 shows the SAMPLE MASTER file which is similar to the MASTER file used in the PERFKIT VMPRF example, except the VMPRF specific file specifications have been removed.

Figure 17: Sample BATCH SETTINGS File

```
*****
* BATCH SETTINGS (Parameter Settings) file
*****

FC SET SYSTEM "VMPRF sample"
FC SET SYSTEMID ZVM430
FC SET BYTIME 5 minutes
FC SET INTERIM 5 minutes
FC MONCOLL RESET 10:00:00R_P 12:00:00P (MERGE
FC SET MAXUSERS 100
FC SET MAXDEVS 100
FC SET PAGESIZE 60
FC UCLASS %* EVERYBODY
FC UCLASS %* *OTHER*
FC UCLASS MAINT MAINT
```

Figure 17 shows the contents of the BATCH SETTINGS file. It contains the FC commands found in the VMPRF RUNFILE we discussed earlier.

Figure 18: Sample BATCH REPORTS File

```
*****
* Report Selection File:
*****

** Reports
MONDATA
MONSET
SYSSUMLG
PROCSUM
SYSCONF
USER (SORT TCPU
DEVCONF
```

The BATCH REPORTS file is shown in Figure 18. The file contains the Performance Toolkit for VM report names. The reports listed in this file are the same as the reports found in the VMPRF FCXEQUIV file produced using the PERFKIT VMPRF option. In fact, this file could have been created by simply renaming the VMPRF FCXEQUIV file.

Now when we execute the command:

```
PERFKIT BATCH SAMPLE MASTER B DISK ZVM430 MONDATA D
```

The BATCH LOG, BATCH RUNFILE, and BATCH LISTING files are created on the B-disk. The BATCH LOG file and the BATCH LISTING file will look similar to the output files created earlier. The BATCH RUNFILE is shown below in Figure 19.

Figure 19: Content of the BATCH RUNFILE (1 of 3)

```
26 Apr 2004 11:24:52 PERFKIT Version FL510 at Fix Level 00
26 Apr 2004 11:24:52 PERFKIT Arguments passed for BATCH mode processing:
26 Apr 2004 11:24:52 PERFKIT BATCH SAMPLE MASTER B DISK ZVM430 MONDATA D
11:24:52 * Processing MASTER file 'SAMPLE MASTER B'
SAMPLE MASTER B: *****
SAMPLE MASTER B: *
SAMPLE MASTER B: * Sample MASTER file
SAMPLE MASTER B: *
SAMPLE MASTER B: *****
SAMPLE MASTER B: *** Input Parameter Files ***
SAMPLE MASTER B: SETTINGS BATCH SETTINGS *
SAMPLE MASTER B: REPORTS BATCH REPORTS *
SAMPLE MASTER B: *** Output Files ***
SAMPLE MASTER B: LISTING BATCH LISTING B
SAMPLE MASTER B: LOG BATCH LOG B
SAMPLE MASTER B: RUNFILE BATCH RUNFILE B
```

Figure 19: Content of the BATCH RUNFILE (2 of 3)

```
11:24:52 =Basic=> FC SET SUMREC FCONX SUMREC *
11:24:52 =Basic=> FC SET TRENDREC FCONX TRENDREC *
11:24:52 =Basic=> FC SET REPFILID BATCH LISTING B
11:24:52 =Basic=> FC TRACE RESET ON

FCXCMK603I RESET trace activated
11:24:52 * Processing SETTINGS file 'BATCH SETTINGS *'
BATCH SETTINGS *: *****
BATCH SETTINGS *: *
BATCH SETTINGS *: * BATCH SETTINGS (Parameter Settings) file
BATCH SETTINGS *: *
BATCH SETTINGS *: *****
BATCH SETTINGS *: *
BATCH SETTINGS *: FC SET SYSTEM "VMPRF sample"
11:24:52 =Basic=> FC SET SYSTEM "VMPRF sample"
BATCH SETTINGS *: FC SET SYSTEMID ZVM430
11:24:52 =Basic=> FC SET SYSTEMID ZVM430
BATCH SETTINGS *: FC SET BYTIME 5 minutes
11:24:52 =Basic=> FC SET BYTIME 5 minutes
BATCH SETTINGS *: FC SET INTERIM 5 minutes
11:24:52 =Basic=> FC SET INTERIM 5 minutes
BATCH SETTINGS *: FC MONCOLL RESET 10:00:00R_P 12:00:00P (MERGE
11:24:52 =Basic=> FC MONCOLL RESET 10:00:00R_P 12:00:00P (MERGE
BATCH SETTINGS *: FC SET MAXUSERS 100
11:24:52 =Basic=> FC SET MAXUSERS 100
BATCH SETTINGS *: FC SET MAXDEVS 100
11:24:52 =Basic=> FC SET MAXDEVS 100
BATCH SETTINGS *: FC SET PAGESIZE 60
11:24:52 =Basic=> FC SET PAGESIZE 60
```

```
BATCH SETTINGS *: FC UCLASS %* EVRYBODY
11:24:52 =Basic=> FC UCLASS %* EVRYBODY
BATCH SETTINGS *: FC UCLASS %* *OTHER*
11:24:52 =Basic=> FC UCLASS %* *OTHER*
BATCH SETTINGS *: FC UCLASS MAINT MAINT
11:24:52 =Basic=> FC UCLASS MAINT MAINT
11:24:52 * SETTINGS file processing completed with RC 0
11:24:52 * Processing REPORTS file 'BATCH REPORTS *'
BATCH REPORTS *: *****
BATCH REPORTS *: * REPORT SELECTION FILE:
BATCH REPORTS *: *****
BATCH REPORTS *: ** REPORTS
BATCH REPORTS *: MONDATA
BATCH REPORTS *: MONSET
BATCH REPORTS *: SYSSUMLG
BATCH REPORTS *: PROCSUM
BATCH REPORTS *: SYSCONF
BATCH REPORTS *: USER (SORT TCPU
BATCH REPORTS *: DEVCONF
11:24:52 =Basic=> FC SET REPORTS BATCH REPORTS *
11:24:52 * REPORTS file processing completed with RC 0
```

Figure 19: Content of the BATCH RUNFILE (3 of 3)

```
16 Apr 2004 11:24:52 PERFKIT Reduction Started
11:24:52 =Basic=> Monscan ZVM430 MONDATA D
  11:24:52 * Monitor data start at 10:37:27 on 2002/01/22
  11:24:52 =Monscan=> FC MONCOLL RESET QUERY
FCXPMC811T Proc/Reset init call at 10:37:27
  11:24:53 =Monscan=> Nextsamp 12:00
  11:24:55 * Last monitor sample processed for 11:55:33 on 2002/01/22
  11:24:55 =Monscan=> Return
26 Apr 2004 11:24:55 PERFKIT Vtime=.10, Ttime=.17, Connect time 3 sec.
26 Apr 2004 11:24:55 PERFKIT Reduction Completed, Rc= 0
```

The examples above have shown a simple migration from VMPRF to Performance Toolkit for VM using the new batch mode processing. You can find additional information in Chapter 4 of z/VM Performance Toolkit when the FL510 level of the code is available.

New Linux support

With Performance Toolkit for VM, you can display the VM/ESA[®] view of Linux systems running on VM and through the RMF[™] PM interface look at detailed performance data from the Linux system. Using this approach does cause some overhead on the Linux system, including waking the system up if it is idle. With Performance Toolkit for VM FL510, you can view high level performance data from the Linux systems running on z/VM that is provided by the Linux machines through z/VM's CP MONITOR data. This data is collected by z/VM in

the same way that data from other applications like TCP/IP and Shared File System is collected. This data is collected by the Linux machine and placed where z/VM can access it. This reduces the need to wake up the Linux machine unless you need to look at the Linux machine in more detail. Once you have access to Performance Toolkit for VM (from the Web or from VM), use option 21 from the performance selection menu to view the VM view of all users running on the VM system. This display provides a line for each user that is created from the monitor data. To look at more detailed performance data for a given user, place the cursor on the user ID and press the Enter key (or click from the Web). This provides data from the VM internal control blocks for that user.

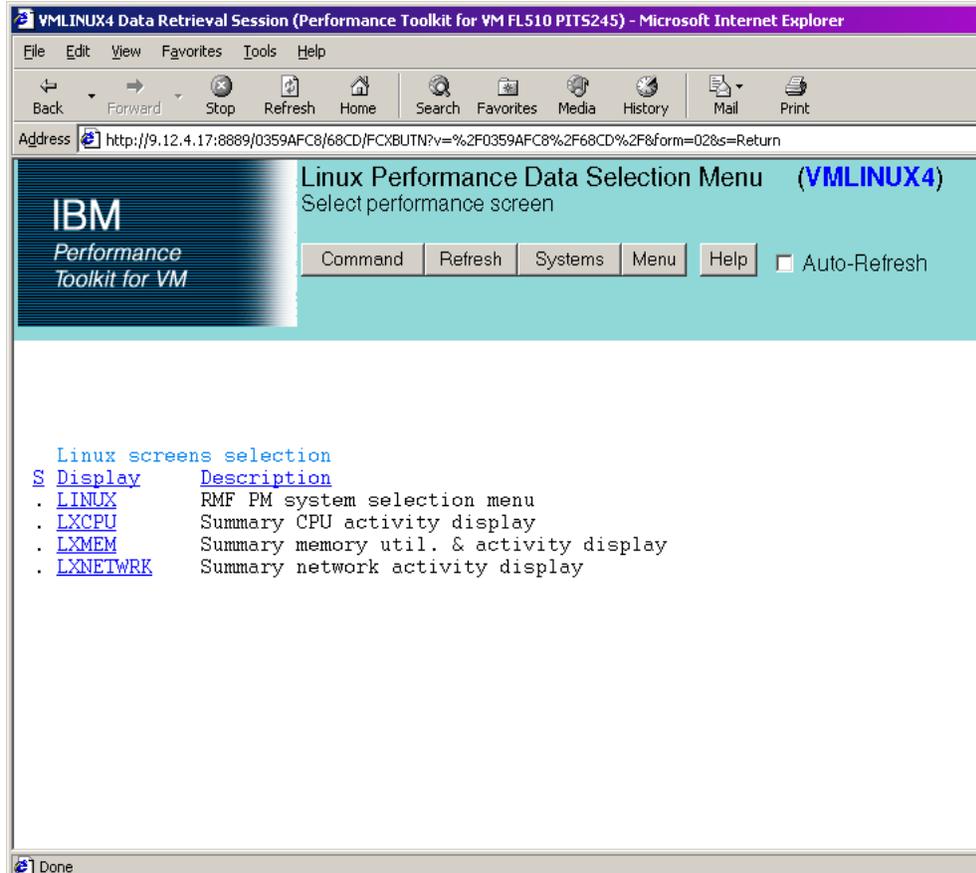
Figure 20: VM user detailed performance data display

```

FCX115      CPU 2064  SER 51524  Interval 03:16:14 - 03:16:45      Perf. Monitor
Detailed data for user LXM00001
Total CPU   : 4.5%      Storage def. : 500MB      Page fault rate: .0/s
Superv. CPU : 1.5%      Resident <2GB: 35988    Page read rate : .0/s
Emulat. CPU : 3.0%      Resident >2GB: 90717    Page write rate: .0/s
VF total    : ....%     Proj. WSET   : 126678     Pgs moved >2GB>: .0/s
VF overhead : ....%     Reserved pgs : 0          Main > XSTORE  : .0/s
VF emulation: ....%     Locked pages : 10         XSTORE > main  : .0/s
VF load rate: .../s     XSTORE dedic.: 0MB      XSTORE > DASD  : .0/s
I/O rate    : 5.6/s     XSTORE pages : 0          SPOOL pg reads : .0/s
DASD IO rate: 5.6/s     DASD slots   : 0          SPOOL pg writes: .0/s
UR I/O rate : .0/s      IUCV X-fer/s : .0/s        MDC insert rate: .0/s
Diag. X'98' : .0/s      Share        : 3000     MDC I/O avoided: .0/s
*BLOCKIO    : .0/s     Max. share   : ...
...
Proc.   %CPU  %CP  %EM  %VECT %VOHD %VEMU VLD/S  IO/S  Status
00      1.2  .4  .8   ....  ....  ....  ....  5.5  ESA,P03,IOWT
01      1.2  .4  .8   ....  ....  ....  ....  .0   ESA,P03,PSWT
02      .8   .2  .5   ....  ....  ....  ....  .1   ESA,P03,IOWT
03      1.3  .4  .9   ....  ....  ....  ....  .1   ESA,P03,IOWT
    
```

Figure 20 shows the VM view of the Linux machine. To look at the Linux view, use option 29 from the performance selection screen to reach the Linux selection screen.

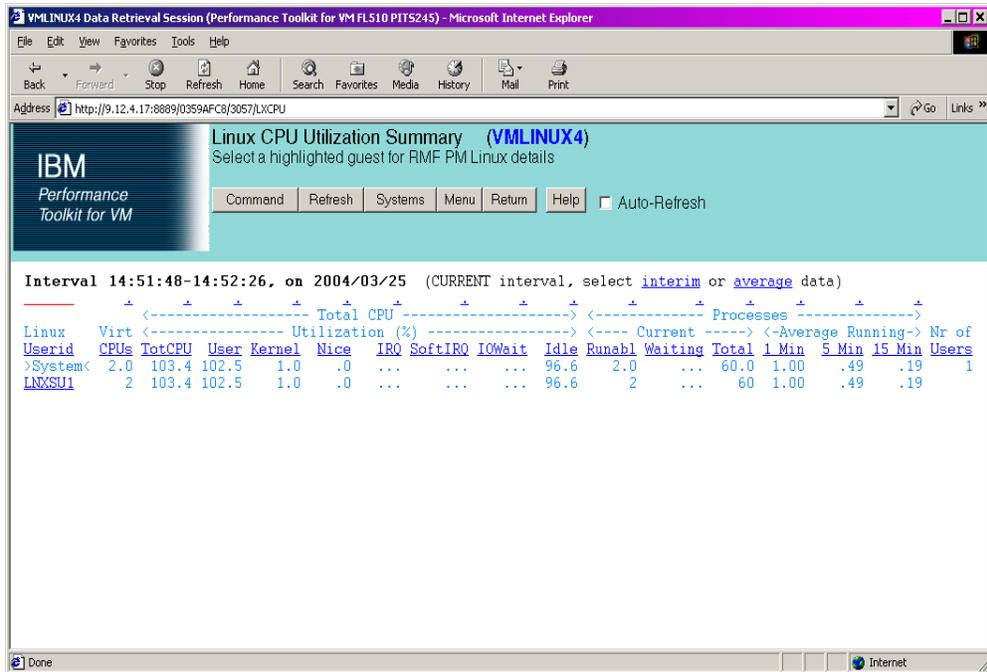
Figure 21: Linux selection display



The top entry leads to the selection screen for detailed Linux performance data that is obtained from the RMF PM interface. To use the RMF PM interface, you must provide the IP address for each Linux machine in the FCONX LINUXUSR file on the PERFSVM machine where Performance Toolkit for VM is running. The Linux name must match the Linux user ID. The other entries are for the high level data that is obtained from the monitor data. The other entries include:

- *Linux CPU data*
- *Linux Memory data*
- *Linux Network data*

Figure 22: Linux CPU display



The Linux CPU display has one line per Linux system that is providing monitor data. If you need to look at the detailed data you can place the cursor on that system and press the Enter key to access the RMF PM data or from the Web click on the Linux system.

Figure 23: Linux CPU detailed display

```

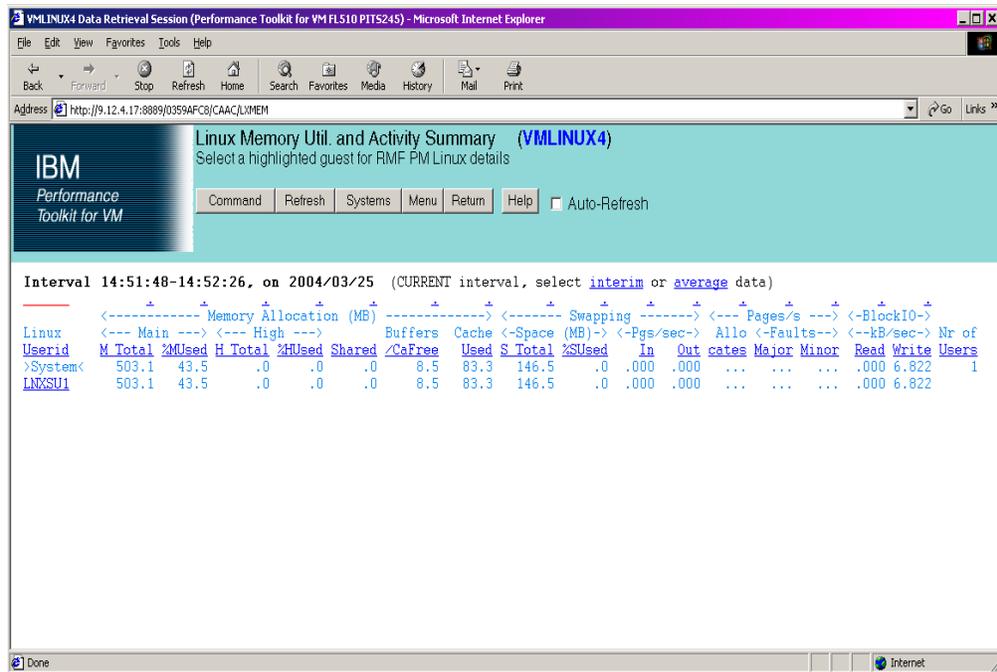
FCX230      CPU 9672  SER 15585  Interval 01:33:00 - 01:34:00      Perf. Monitor
Linux CPU Utilization for System LXM00001

      <--- Percent CPU Utilization --->      <-Accumulated (s)->
Processor      Total      User      Kernel      Nice      Idle      TotTm      UserTm      KernTm
>>Mean>>      0.70      0.06      0.64      0          99.29      ---        ---        ---
cpu0            0.78      0.06      0.71      0          99.21      ---        ---        ---
cpu1            0.73      0.18      0.54      0          99.26      ---        ---        ---
cpu2            0.48      0         0.48      0          99.51      ---        ---        ---
cpu3            0.86      0.01      0.84      0          99.13      ---        ---        ---

Process Name
syslogd.293    0.78      0         0.78      0          ---        3657      36.08      3621
nmbd.499       0.46      0.03      0.43      0          ---        9166      1649      7517
apachegat.29502 0.3       ...       0.3       ...       ---        353.9     1.48      352.5
gengat.29511   0.3       ...       0.3       ...       ---        498.0     1.37      496.7
procgat.29517 0.23      ...       0.23      ...       ---        370.7     13.47     357.2
httpd.464      0.18      0         0.18      0          ---        953.6     18.3      935.3
kupdate.3      0.16      0         0.16      0          ---        603.9     ...       603.9
filegat.29508 0.06      ...       0.06      ...       ---        89.36     0.21      89.15
    
```

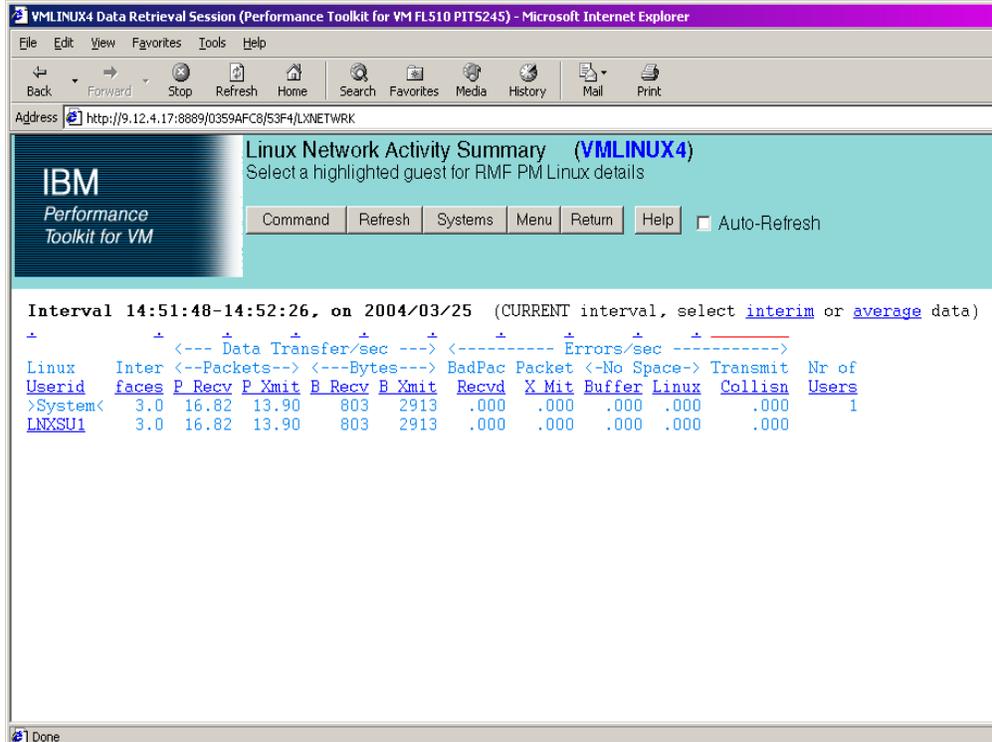
Through using the RMF PM interface, Performance Toolkit for VM uses the IP address from the FCONX LINUXUSR file to access the detailed data from this Linux machine. The data includes process level information.

Figure 24: Linux MEMORY display



The Linux MEMORY display has one line per Linux system that is providing monitor data. RMF PM data can be accessed in the same way as for the CPU data.

Figure 25: Linux NETWORK display



The Linux NETWORK display has one line of network information for each Linux system. You can also access the RMF PM data by selecting the entry.

You can use Performance Toolkit for VM to see the performance data for your Linux system from the VM perspective and from the Linux perspective. You can also view only high level information or view more detailed information for both the VM and the Linux data.

Where to find more information

On the Web

- *The Performance Toolkit for VM Web page:*
www.vm.ibm.com/related/perfkit

Publications

- *The Performance Toolkit for VM manual: z/VM Performance Toolkit, SC24-6136*

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