

Introduction to Performance Toolkit for VM

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Topics

- Some History
- Direction
- Functions
 - Basic Mode
 - Performance Monitoring
 - Batch Mode
 - OMEGAMON XE on z/VM and Linux

Some History

RealTime Monitor

- *Dependent on CP control blocks*
- *Recompile on system*

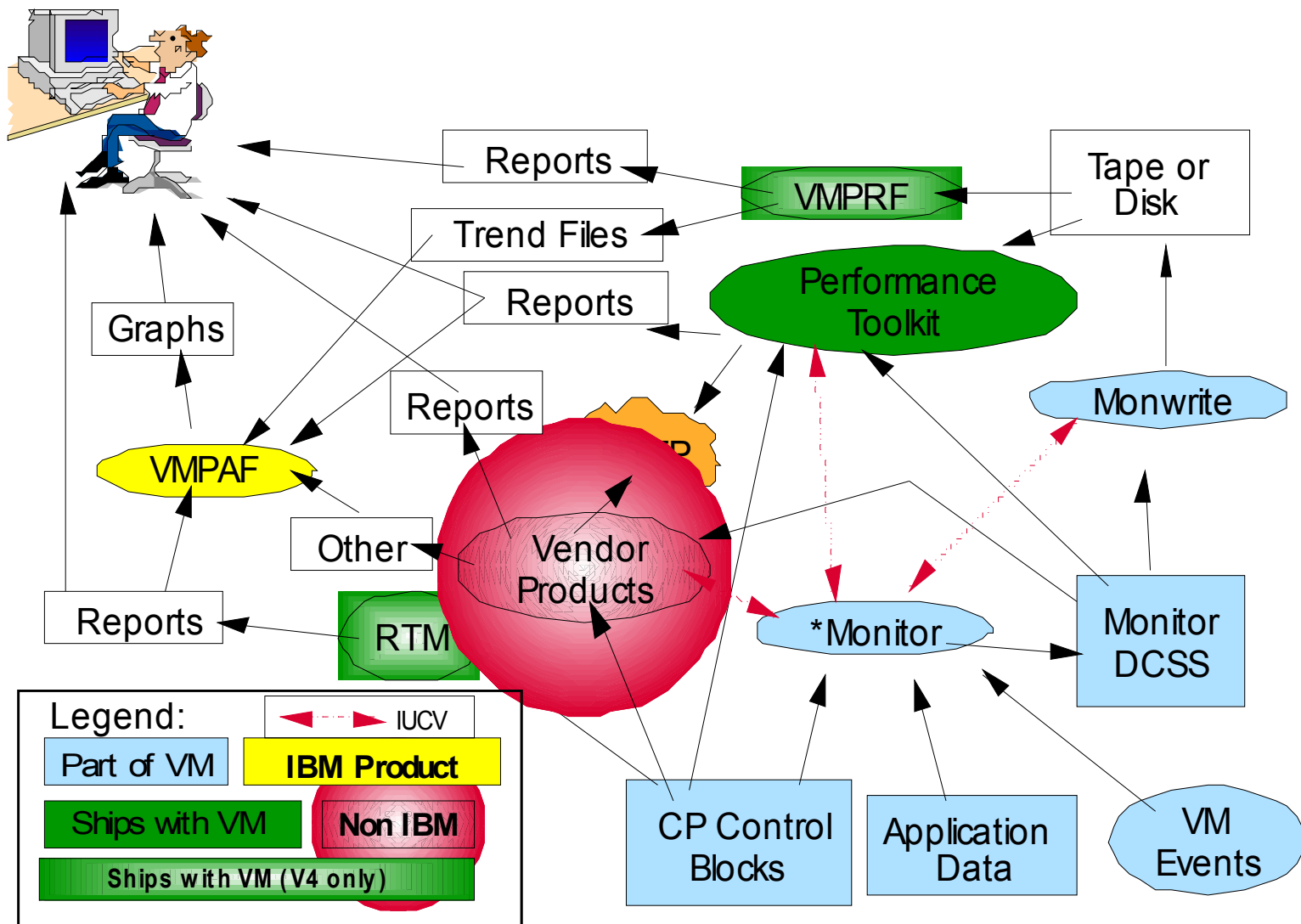
VMPRF

- *Required PL/I or LE*
- *Slow*

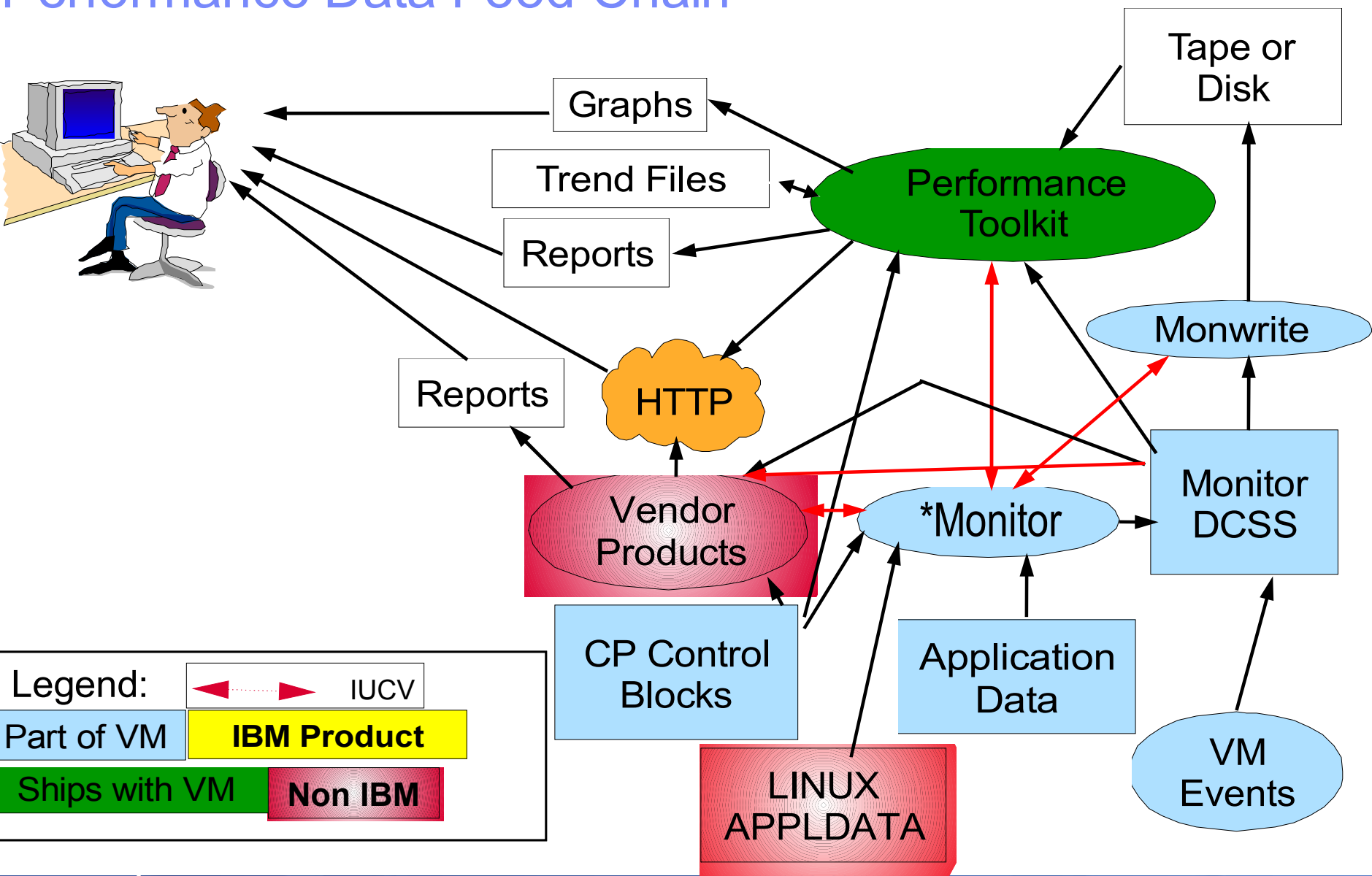
FCON/ESA

- *Most of the function of the others*
- *Plus...TCP/IP, LINUX, Web, Graphics....*

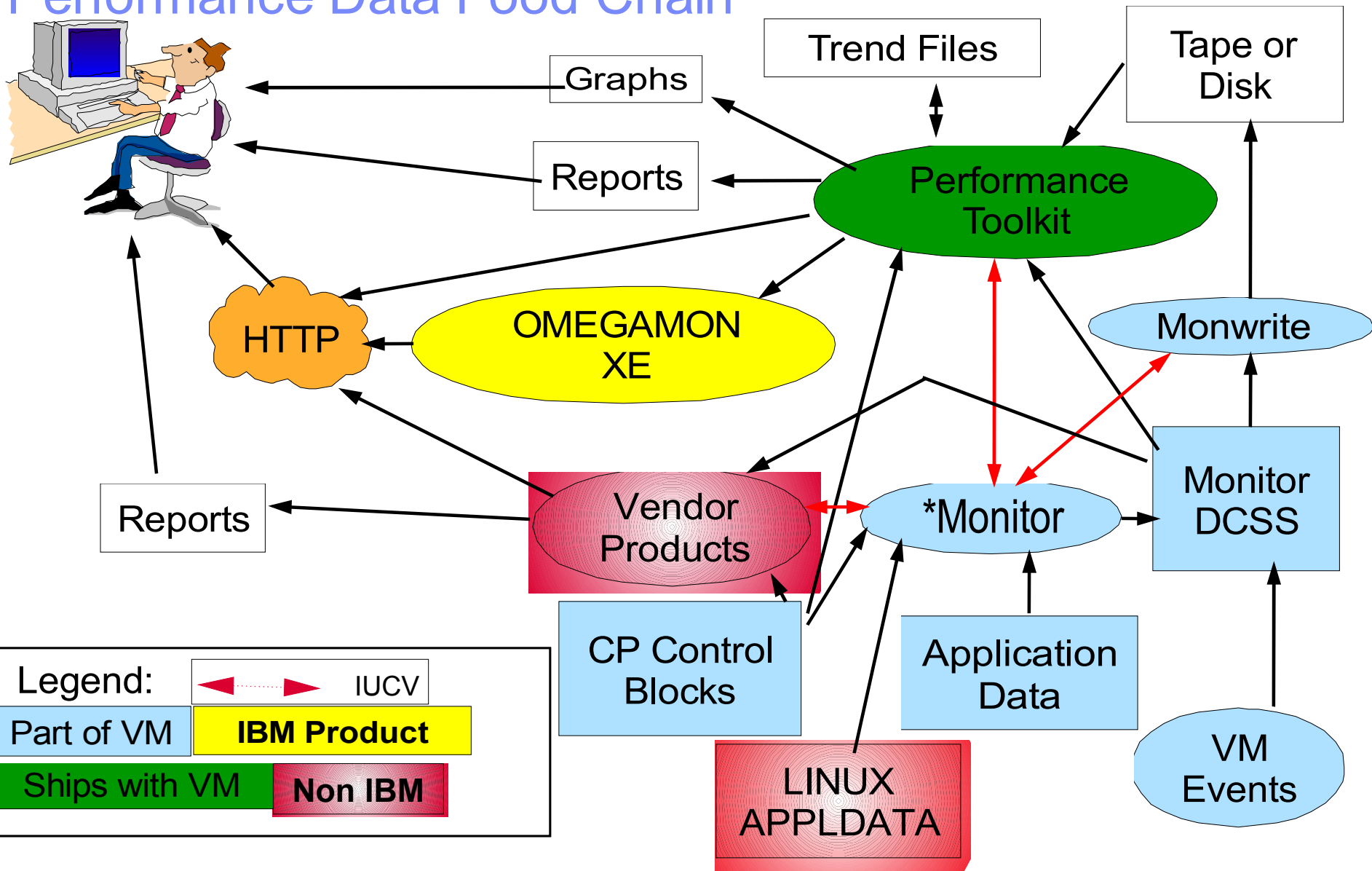
Performance Data Food Chain



Performance Data Food Chain



Performance Data Food Chain



Performance Product Strategy

VMPRF and RTM phased out

- high development costs

FCON/ESA phased in as Performance Toolkit for VM

- adds significant new function
- focus on a single product

Synergy with other IBM Offerings

- OMEGAMON XE

Continue to encourage vendor activity

- competition breeds excellence
- greater percentage of customer needs met

Perfkit feature levels

- FL440 – with z/VM 4.4.0 – **not in service**
 - First introduction
 - Mostly RTM replacement
- FL510 – with z/VM 5.1.0 – **not in service**
 - Added BATCH mode
 - Mostly VMPRF replacement
 - Linux Appldata support
- FL520 – with z/VM 5.2.0 - **not in service**
 - Mostly 64 bit
 - New/Changed reports for system execution space
- FL530 – with z/VM 5.3.0
 - New virtual network reports
 - New/changed reports for mixed engines
 - Passphrase support
 - Sharing data with OMEGAMON XE
 - Use of VMDUMPTL
 - Ship text
 - Book split into Guide and Reference
- FL540 – with z/VM 5.4.0
 - Use monitor data instead of Diagnose x'04'for:
 - FCX102 – SYSTEM COUNTERS FCX100 - CPU
 - FCX104 - PRIVOPS
 - Support for z/VM dynamic memory configuration
 - FCX103 – STORAGE UTILIZATION
 - FCX254 - AVAILLOG
 - Support for Relative Share
 - FCX112 - USER
 - FCX226 – UCONF
 - Provide “user banner” capability before web login
- FL610 with z/VM 6.1.0
 - 5.4.0 APAR Service roll-up of all z/VM
 - Support for VMPRF compatibility dropped

Program Functions

- *System Operation in Full-Screen Mode*
(Full Screen Operator CONsole)
- *Realtime Performance Monitoring*
Central monitoring facility for multiple systems
Multiple (remote, WWW) access to realtime performance data
- *Performance History Data Processing*
- *"BATCH" processing similar to VMPRF*

Performance Toolkit Naming

- FCON = Full Screen Operator Console
 - FCON/XA, FCON/ESA
- FCX = 3 letter module prefix
 - used in messages, displays, etc.
- Performance Toolkit for VM = full name
- PERFKIT = module that invokes it
- PERFSVM = default userid it runs in
- FCXRES00 = default APPC resource name
- 5VMPTK40 = installation userid for FL540
- 6VMPTK10 = installation userid for FL610

Control Files

- FCONX \$PROFILE
 - Invoked at startup
 - Contains setup and commands
- FCONX REPORTS
 - List of reports to be automatically generated
- FCONRMT SYSTEMS
 - Used for Central Data Collection
 - Identifies Systems from which to collect data
- FCONRMT AUTHORIZ
 - Used for Central Data Collection, APPC and WEB

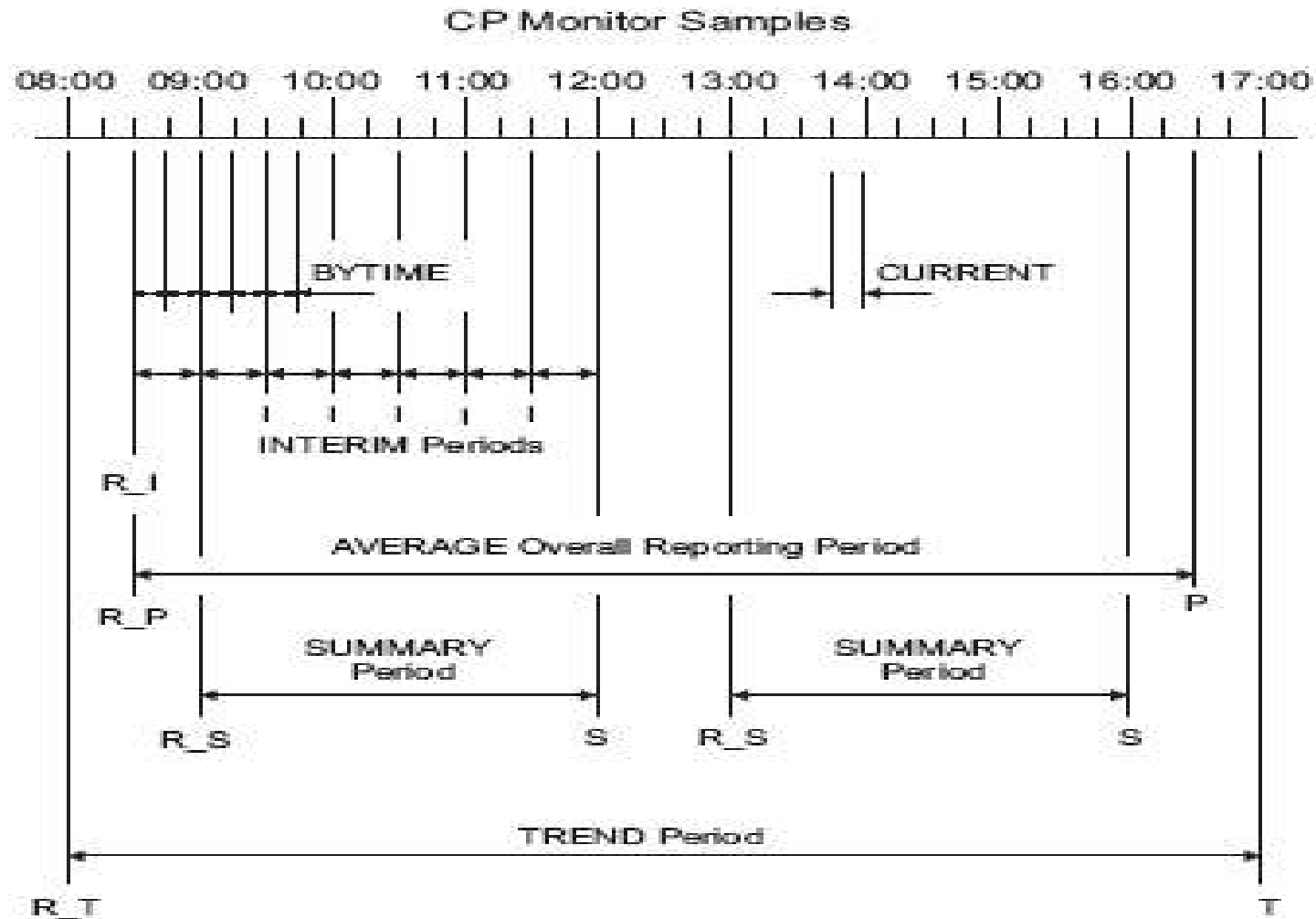
Usages

- Real time Monitor
 - Allows viewing of current status of the system
 - Scheduled report generation
 - Recording for historical records
- MONSCAN
 - View MONWRITE Data as if you were looking at live system
- BATCH or VMPRF
 - Post processing of MONWRITE data
- Re-display of historical records
- Systems Operations

Time Periods Example

- CP MONITOR SAMPLE INTERVAL 5 MIN
- CP MONITOR SAMPLE RATE 1 SEC
- FC MONCOLL RESET 08:30R_P 16:30P
- FC MONCOLL RESET 09:00R_S 12:00S 13:00R_S 16:00S (MERGE
- FC MONCOLL RESET 08:00R_T 17:00T (MERGE
- FC MONCOLL RESET 08:30R_I 09:00I 09:30I 10:00I ... (MERGE
 - Or use FC SETTING INTERIM 30
- FC SETTING BYTIME 15
- Results:
 - Reports automatically generated at 16:30 covering 8:30-16:30 along with Interim reports of 30 minute periods.
 - Two Summary files created spanning 9:00-12:00 and also 13:00-16:00
 - Trend file appended to with data spanning 8:00-17:00

Time Periods Picture

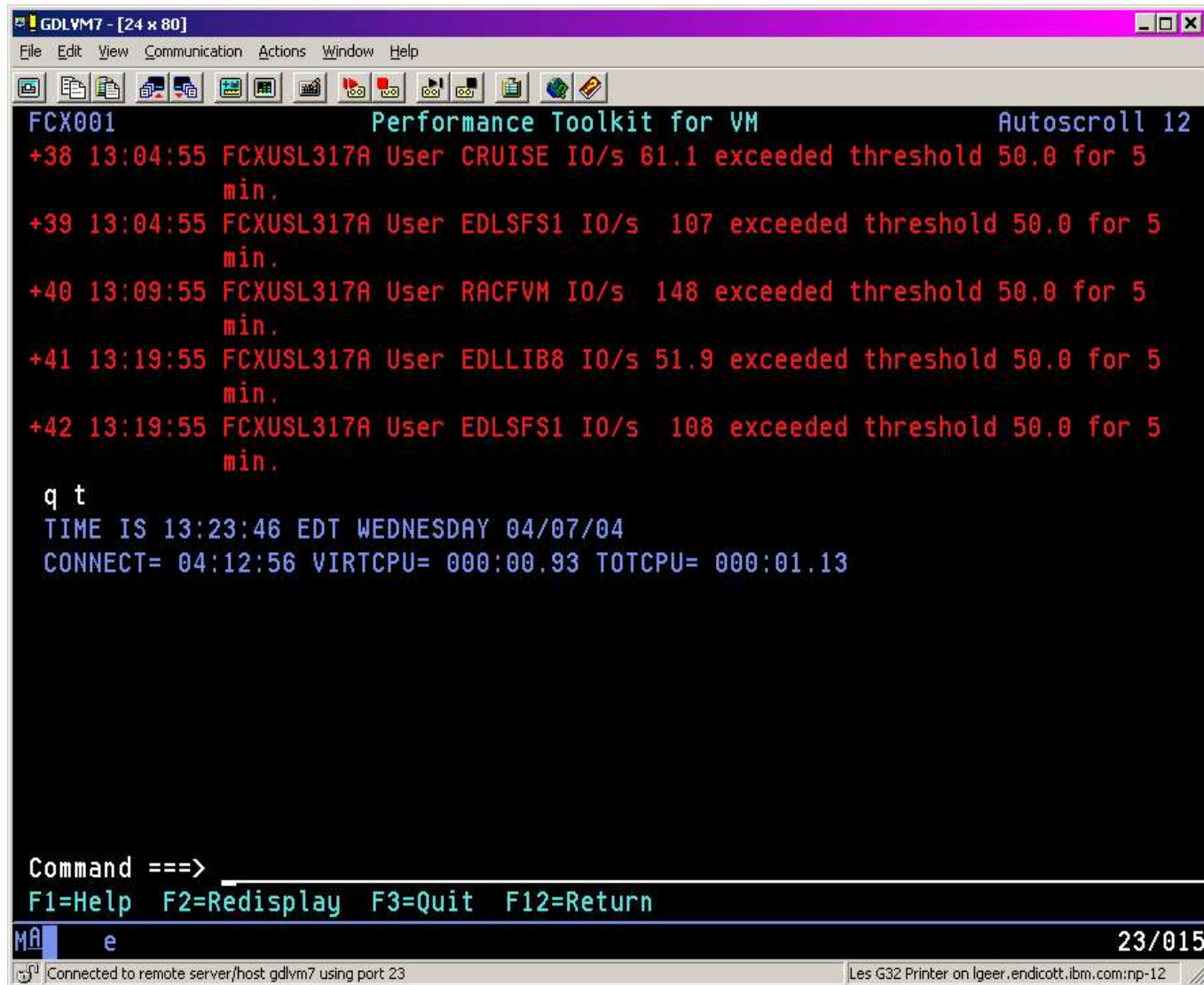


Time Periods

- Most data based off of monitor data
 - ▶ Sample Interval – default of 1 minute
 - ▶ Sample Rate – default of 2 seconds high frequency sampling rate
 - ▶ Controlled by **CP MONITOR** command

- Toolkit Related time frames
 - ▶ CURRENT – most recent monitor interval
 - ▶ AVERAGE – average overall reporting period
 - ▶ BYTIME – data rows for each monitor interval or as set
 - ▶ INTERIM – multiple reports for each interim period as set
 - ▶ SUMMARY – summary period for historic recording
 - ▶ TREND – large granularity for historic recording
 - ▶ Controlled by Performance Toolkit **FC MONCOLL RESET** command

Basic Mode - Operator's console



The screenshot shows a terminal window titled "GDLVM7 - [24 x 80]". The window contains the following text:

```
FCX001 Performance Toolkit for VM Autoscroll 12
+38 13:04:55 FCXUSL317A User CRUISE I0/s 61.1 exceeded threshold 50.0 for 5
min.
+39 13:04:55 FCXUSL317A User EDLSFS1 I0/s 107 exceeded threshold 50.0 for 5
min.
+40 13:09:55 FCXUSL317A User RACFVM I0/s 148 exceeded threshold 50.0 for 5
min.
+41 13:19:55 FCXUSL317A User EDLLIB8 I0/s 51.9 exceeded threshold 50.0 for 5
min.
+42 13:19:55 FCXUSL317A User EDLSFS1 I0/s 108 exceeded threshold 50.0 for 5
min.

q t
TIME IS 13:23:46 EDT WEDNESDAY 04/07/04
CONNECT= 04:12:56 VIRTCPU= 000:00.93 TOTCPU= 000:01.13

Command ==>
F1=Help F2=Redisplay F3=Quit F12=Return

MA e 23/015
```

At the bottom of the window, there is a status bar with the text: "Connected to remote server/host: gdlvm7 using port 23" and "Les G32 Printer on lgeer.endicott.ibm.com:np-12".

Performance Monitoring

Session D - [24 x 80]

File Edit View Communication Actions Window Help

FCX124 Performance Screen Selection (FL520 VM63929) Perf. Monitor

General System Data	I/O Data	History Data (by Time)
1. CPU load and trans.	11. Channel load	31. Graphics selection
2. Storage utilization	12. Control units	32. History data files*
3. Reserved	13. I/O device load*	33. Benchmark displays*
4. Priv. operations	14. CP owned disks*	34. Correlation coeff.
5. System counters	15. Cache extend. func.*	35. System summary*
6. CP IUCV services	16. DASD I/O assist	36. Auxiliary storage
7. SPOOL file display*	17. DASD seek distance*	37. CP communications*
8. LPAR data	18. I/O prior. queueing*	38. DASD load
9. Shared segments	19. I/O configuration	39. Minidisk cache*
A. Shared data spaces	1A. I/O config. changes	3A. Storage mgmt. data*
B. Virt. disks in stor.		3B. Proc. load & config*
C. Transact. statistics	User Data	3C. Logical part. load
D. Monitor data	21. User resource usage*	3D. Response time (all)*
E. Monitor settings	22. User paging load*	3E. RSK data menu*
F. System settings	23. User wait states*	3F. Scheduler queues
G. System configuration	24. User response time*	3G. Scheduler data
H. VM Resource Manager	25. Resources/transact.*	3H. SFS/BFS logs menu*
	26. User communication*	3I. System log

Select performance screen with cursor and hit ENTER
 Command ==>

F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

MA d 23/015

Connected to remote server/host gdlvm7.pok.ibm.com using port 23 usendl3d-250-02-P014-Endicott-N on usendl3d

Performance Monitoring – USER Display

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX112 CPU 2084 SER 56F5A Interval 10:11:33 - 10:12:33 Perf. Monitor
<----- CPU Load -----> <----- Virtual I/O/s ----->
<-Seconds-> T/V
Userid %CPU TCPU VCPU Ratio Total DASD Avoid Diag98 UR Pg/s User Status
>>Mean>> .01 .007 .005 1.5 .0 .0 .0 .0 .0 .0 ---,---,---
MPROUTE .23 .137 .125 1.1 .0 .0 .0 1.1 .0 .0 ESA,CLO,DIS
TCPIP .21 .128 .092 1.4 .8 .0 .0 .8 .0 .0 ESA,CLO,DIS
SSLSERV .12 .074 .047 1.6 .0 .0 .0 .0 .0 .0 ESA,CLO,DIS
LXGIPV6B .11 .065 .031 2.1 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXRIPV6A .11 .064 .032 2.0 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXRIPV6B .11 .067 .035 1.9 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXGIPV6A .10 .062 .031 2.0 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
PERFSVME .07 .043 .036 1.2 .1 .0 .0 .0 .0 .0 ESA,---,DOR
SMAPICL .06 .036 .026 1.4 .0 .0 .0 .0 .0 .0 EME,---,DOR
PERFSVMD .05 .032 .026 1.2 .1 .1 .0 .0 .0 .0 ESA,---,DOR
VMSERVS .03 .015 .009 1.7 1.5 1.5 1.5 .0 .0 .0 XC, CLO,DIS
VSMWORK1 .02 .013 .010 1.3 .0 .0 .0 .0 .0 .0 ESA,---,DOR
VSMWORK2 .02 .010 .007 1.4 .0 .0 .0 .0 .0 .0 ESA,---,DOR
VSMWORK3 .02 .013 .009 1.4 .0 .0 .0 .0 .0 .0 ESA,---,DOR
FARMAN .01 .003 .003 1.0 .0 .0 .0 .0 .0 .0 EME,---,DOR
FCXOUT112I Cannot write to A-disk - correct problem and re-initialize PERFKIT
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

Context Sensitive Help

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help

FCX112      CPU 2094  SER 19B9E  Interval 14:19:02 - 14:24:02      Perf. Monitor
.
.
.
<----- CPU Load -----> <----- Virtual IO/s ----->
      <-Seconds->      T/V
Userid  %CPU  TCPUR  VCPU  Ratio  Total  DASD  Avoid  Diag98  UR  Pg/s  User Status
>System<  .06   .189  .156   1.2    .5    .4    .0    .0    .0  .0    ---,---,---

Help Text

%CPU      Percent of total CPU used.
          This value is based on the utilization of a single
          processor: Values exceeding 100% are possible for virtual MP
          users.

F12=Return

GOERTZ    .15   .437  .409   1.1    4.4   4.2    .2    .0    .0  3.1   ESA,---,DOR
EDLSFS    .13   .392  .236   1.7    21.4  21.4   .0    .0    .0  .0    XC, ---,DOR
TOMDEF    .11   .329  .294   1.1    3.0   2.7    .1    .0    .0  .0    ESA,---,DOR
AVATAR    .10   .311  .275   1.1    21.0  20.8   .0    .0    .0  .0    ESA,---,DOR
FARRELLS .10   .288  .269   1.1    2.1   1.6    .1    .0    .0  .0    XC, ---,DOR
Select a user for user details or IDLEUSER for a list of idle users
Command ==>
F1=Help  F4=Top  F5=Bot  F7=Bkwd  F8=Fwd  F10=Left  F11=Right  F12=Return

MA d
23/015
Connected to remote server/host gdlvm7.pok.ibm.com using port 23
usendl3d-250-02-P014-Endicott-N on usendl3d

```

FC UCLASS FTP* FTP

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL530 26Feb07) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address <http://gdlvmk4.endicott.ibm.com:8086/03B2C1C8/0A0B/21> Go

Links IBM Business Transformation Homepage IBM Internal Help Homepage IBM Standard Software Installer Search the Web with Lycos Windows Marketplace

General User Resource Utilization (GDLVMK4)

Select a user for user details or [IDLEUSER](#) for a list of idle users

Command Refresh Systems Menu Foww Help Auto-Refresh

Interval 14:37:37-14:38:37, on 2007/03/08 (CURRENT interval, select [interim](#) or [average](#) data)

Userid	CPU Load				Virtual IO/s				User Time		Spool		MDC Insert	Share	Nr of Users	
	%CPU	TCPU	VCPU	Ratio	Total	DASD	Avoid	Diaq98	UR	Pq/s	Logged	Active				Total Pages	Rate SPq/s
>>Mean>>	.04	.026	.021	1.2	.9	.2	.2	.6	.0	.0	1.0	.5	.0	.0	.9	10
User Class Data:	.03	.017	.011	1.5	2.0	2.0	1.3	.0	.0	.0	1.0	.9	.0	.0	.9	---
FTP	.03	.017	.011	1.5	2.0	2.0	1.3	.0	.0	.0	1.0	.9	.0	.0	.9	---
User Data:																
LDAPSRV	2.11	1.264	1.242	1.0	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
TCPIP	.77	.461	.274	1.7	60.2	.0	.0	60.2	.0	.0	1	1	0	.00	.0	3000
FTPSERVE	.28	.170	.112	1.5	20.2	20.1	13.5	.0	.0	.0	1	1	0	.00	9.2	100
MROUTE	.26	.156	.140	1.1	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
SSLSERV	.12	.069	.044	1.6	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
LXGIPV6A	.10	.060	.029	2.1	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
LXGIPV6B	.10	.057	.028	2.0	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
LXRIPV6B	.10	.057	.031	1.8	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
LXRIPV6A	.09	.056	.028	2.0	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100
PERFSVM	.06	.034	.028	1.2	.1	.1	.0	.0	.0	.0	1	1	0	.00	.0	3.0%
PERFSVMD	.06	.034	.029	1.2	.2	.1	.1	.0	.0	.0	1	1	0	.00	.0	3.0%
PERFSVME	.06	.038	.029	1.3	.4	.2	.1	.0	.0	.0	1	1	0	.00	.0	3.0%
VMSEVRS	.03	.015	.009	1.7	1.5	1.5	1.5	.0	.0	.0	1	1	0	.00	.0	1500
RACFVM	.02	.012	.010	1.2	1.2	1.2	.3	.0	.0	.0	1	1	0	.00	.0	2000
VSMWORK1	.02	.013	.009	1.4	.0	.0	.0	.0	.0	.0	1	1	0	.00	.0	100

Done Internet

Back to USER screen

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX112 CPU 2084 SER 56F5A Interval 10:16:33 - 10:17:33 Perf. Monitor
<----- CPU Load -----> <----- Virtual I0/s ----->
<-----Seconds-----> T/V
Userid %CPU TCPU VCPU Ratio Total DASD Avoid Diag98 UR Pg/s User Status
>>Mean>> .01 .009 .006 1.5 .0 .0 .0 .0 .0 .0 ---,---,---
MPROUTE .29 .172 .156 1.1 .0 .0 .0 .0 .0 .0 ESA,CL0,DIS
TCP/IP .25 .147 .106 1.4 1.1 .0 .0 1.1 .0 .0 ESA,CL0,DIS
SSLSERV .14 .082 .053 1.5 .0 .0 .0 .0 .0 .0 ESA,CL0,DIS
LXRIPV6B .13 .078 .040 2.0 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXGIPV6B .12 .074 .036 2.1 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXRIPV6A .12 .072 .036 2.0 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
LXGIPV6A .11 .068 .034 2.0 .0 .0 .0 .0 .0 .0 ESA,CL3,DIS
PERFSVME .07 .042 .037 1.1 .0 .0 .0 .0 .0 .0 ESA,---,DOR
SMAPICL .06 .038 .028 1.4 .0 .0 .0 .0 .0 .0 EME,---,DOR
PERFSVMD .05 .032 .026 1.2 .1 .1 .0 .0 .0 .0 ESA,---,DOR
VMSERVS .03 .016 .009 1.8 1.5 1.5 1.5 .0 .0 .0 XC, CL0,DIS
VSMWORK1 .02 .014 .010 1.4 .0 .0 .0 .0 .0 .0 ESA,---,DOR
VSMWORK2 .02 .014 .010 1.4 .0 .0 .0 .0 .0 .0 ESA,CL1,DIS
VSMWORK3 .02 .014 .010 1.4 .0 .0 .0 .0 .0 .0 ESA,---,DOR
FARMAN .01 .004 .004 1.0 .0 .0 .0 .0 .0 .0 EME,---,DOR
FCXOUT112I Cannot write to A-disk - correct problem and re-initialize PERFKIT
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

USER Details

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX115 CPU 2084 SER 56F5A Interval 10:25:13 - 10:25:43 Perf. Monitor

Detailed data for user PERFSVME
Total CPU : .1% Storage def. : 64MB Page fault rate: .0/s
Superv. CPU : .1% Resident <2GB: 3941 Page read rate : .0/s
Emulat. CPU : .0% Resident >2GB: 4448 Page write rate: .0/s
VF total : . . . . .% Proj. WSET : 8368 Pgs moved >2GB>: .0/s
VF overhead : . . . . .% Reserved pgs : 0 Main > XSTORE : .0/s
VF emulation: . . . . .% Locked pages : 0 XSTORE > main : .0/s
VF load rate: . . . . /s XSTORE dedic.: 0MB XSTORE > DASD : .0/s
I/O rate : .2/s XSTORE pages : 0 SPOOL pg reads : .0/s
DASD IO rate: .2/s DASD slots : 0 SPOOL pg writes: .0/s
UR I/O rate : .0/s IUCV X-fer/s : .2/s MDC insert rate: .0/s
Diag. X'98' : .0/s Share : 3% MDC I/O avoided: .1/s
*BLOCKIO : .0/s Max. share : . . .

#I/O active : 0 Active :100% PSW wait : 0% I/O act. : 0%
Stacked blk : .. Page wait : 0% CF wait : 0% Eligible : 0%
Stat.: ESA,QDS,SIMW I/O wait : 0% Sim. wait:100% Runnable : 0%

Data Space Name Size Mode PgRd/s PgWr/s XRd/s XWr/s Migr/s Steal/s

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M& a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

USER Details – page 2

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

FCX115 CPU 2084 SER 56F5A Interval 10:25:13 - 10:25:43 Perf. Monitor

DASD IO rate: .2/s DASD slots : 0 SPOOL pg writes: .0/s
UR I/O rate : .0/s IUCV X-fer/s : .2/s MDC insert rate: .0/s
Diag. X'98' : .0/s Share : 3% MDC I/O avoided: .1/s
*BLOCKIO : .0/s Max. share : ...

#I/O active : 0 Active :100% PSW wait : 0% I/O act. : 0%
Stacked blk : .. Page wait : 0% CF wait : 0% Eligible : 0%
Stat.: ESA,QDS,SIMW I/O wait : 0% Sim. wait:100% Runnable : 0%

Data Space Name Size Mode PgRd/s PgWr/s XRd/s XWr/s Migr/s Steal/s
BASE 64MB Priv .0 .0 .0 .0 .0 .0

Device activity and status:
0009 3215 .1 000C 254R CL *, EOF NOH NCNT
000D 254P CL A, CO 01, NOH NCNT 000E 1403 CL A, CO 01, NOH NCNT
0190 3390 .0 A505,RR, 130Cyl,--->0 0191 3390 .2 C121,WR, 40% MDC eff.
019D 3390 .0 A500,RR, 150Cyl,--->0 019E 3390 .0 A500,RR, 355Cyl,--->0
01CC 3390 .0 8B2D,RR, 10Cyl,--->0 0200 3390 .0 8B2D,RR, 10Cyl,--->0
0201 3390 .0 8B2D,RR, 10Cyl,--->0 029D 3390 .0 8B2D,RR, 8Cyl,--->0

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M& a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```


Device Details

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

FCX110      CPU 2084      SER 56F5A      INITIAL. 10:27:22      Perf. Monitor

Detailed Analysis for Device C121 ( SYSTEM )
Device type : 3390-3      Function pend. : .1ms      Device busy : 0%
VOLSER      : K4E509      Disconnected  : .1ms      I/O contention: 0%
Nr. of LINKs: 7          Connected     : 1.0ms     Reserved : 0%
Last SEEK   : 1379      Service time  : 1.2ms     SENSE SSCH : ...
SSCH rate/s : .2        Response time : 1.2ms     Recovery SSCH : ...
Avoided/s   : ....     CU queue time : .0ms      Throttle del/s: ...
Status: MDCACHE USED

Path(s) to device C121:  B0      B1
Channel path status :  ON      ON

Device          Overall CU-Cache Performance      Split
DIR ADDR VOLSER  IO/S %READ %RDHIT %WRHIT ICL/S BYP/S  IO/S %READ %RDHIT
01  C121 K4E509  .2      8      100     100     .0     .0      No SEQ./ CACHE FW

MDISK Extent      Userid      Addr IO/s VSEEK Status      LINK  VIO/s %MDC
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
C          651 - 665      GREGORJL 0191  .0      0 WR          1      .0 ...

Command ==>
F1=Help  F4=Top  F5=Bot  F7=Bkwd  F8=Fwd  F10=Left  F11=Right  F12=Return

M& a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

Device Details – page 2

Session A - [24 x 80]

File Edit View Communication Actions Window Help

FCX110 CPU 2084 SER 56F5A Interval 10:27:22 - 10:28:00 Perf. Monitor

Status: MDCACHE USED

Path(s) to device C121: B0 B1
Channel path status : ON ON

Device Overall CU-Cache Performance Split

DIR	ADDR	VOLSER	IO/S	%READ	%RDHIT	%WRHIT	ICL/S	BYP/S	IO/S	%READ	%RDHIT	
01	C121	K4E509	.2	0	0	100	.0	.0	.1	0	0	(N)

MDISK Extent Userid Addr IO/s VSEEK Status LINK VIO/s %MDC

MDISK	Extent	Userid	Addr	IO/s	VSEEK	Status	LINK	VIO/s	%MDC
C	651 - 665	GREGORJL	0191	.0	0	WR	1	.0	...
C	994 - 1053	PERFSVMA	0191	.0	0	WR	1	.0	...
C	1319 - 1378	PERFSVMD	0191	.1	0	WR	1	.1	20
C	1379 - 1438	PERFSVME	0191	.1	0	WR	1	.1	40
C	1559 - 1678	PERFSVM	0191	.0	0	WR	1	.0	...
C	1824 - 1923	TCPMAINT	2591	.0	0	WR	1	.0	...
C	2874 - 2943	TOOLS	1528	.0	0	WR	1	.0	...

Command ==>

F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

MA a 23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

Benchmarking

- More closely monitor users and/or I/O devices
- Log-type displays on a “by-time” basis
- Started with FCONTROL BENCHMARK command

USERLOG userid

```

Session B - [24 x 80]
File Edit View Communication Actions Window Help
FCX162 CPU 2094 SER F6A8D Interval 13:39:20 - 13:49:20 Perf. Monitor
Resource Usage Log for User LX00001

<----- CPU Load -----> <----- Virtual I/O/s ----->
Interval <-Seconds-> T/V
End Time %CPU TCPU VCPU Ratio Total DASD Avoid Diag98 UR Pg/s User Status
>>Mean>> 26.0 93.21 59.10 1.6 .5 .5 .4 .0 .0 2.9 ---,---,---
13:41:20 28.2 16.92 10.44 1.6 .6 .5 .6 .0 .0 11.4 EME,CLO,DIS
13:42:20 25.6 15.33 9.795 1.6 .5 .5 .6 .0 .0 2.3 EME,CLO,DIS
13:43:20 25.4 15.27 9.783 1.6 .5 .4 .4 .0 .0 3.4 EME,CLO,DIS
13:44:20 26.1 15.63 10.01 1.6 .5 .5 .5 .0 .0 .3 EME,CLO,DIS
13:45:20 User logged off
13:46:20 User logged off
13:47:20 User logged off
13:48:20 User logged off
13:49:20 User logged off

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA b 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

DEVLOG devno

Session B - [24 x 80]

File Edit View Communication Actions Window Help

FCX168 CPU 2094 SER F6A8D Interval 14:13:21 - 14:17:21 Perf. Monitor

General I/O Data Log for Device 16C8

Interval	Dev.	Descr.->	Mdisk	Pa-	<-Rate/s->			<----- Time (msec) ----->					R
End Time	Type	Label/ID	Links	ths	I/O	Avoid	Pend	Disc	Conn	Serv	Resp	CUWt	Q
>>Mean>>	3390	CF16C8	1	1	20.5	16.1	6.9	.8	2.6	10.3	10.3	.0	
14:15:21	3390	CF16C8	1	1	20.0	24.1	5.6	2.0	3.8	11.4	11.4	.0	
14:16:21	3390	CF16C8	1	1	14.0	14.5	2.6	1.1	3.5	7.2	7.2	.0	
14:17:21	3390	CF16C8	1	1	8.2	21.5	1.7	1.0	3.4	6.1	6.1	.0	

Command ===>

F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

MA b 23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

Monitoring Linux Guests

- Through Linux APPLDATA support, you can monitor
 - Summary CPU use
 - Summary memory use
 - Summary network use
 - Data is CP monitor data, so it can be saved and viewed again

- Through the Linux RMF PM, you can monitor
 - More detailed Linux internal metrics
 - Data is not saved by Performance Toolkit

LINUX Selection Screen – Option 29

Session D - [24 x 80]

File Edit View Communication Actions Window Help

FCX242 CPU 2094 SER F6A8D Linux Displays Perf. Monitor

```

Linux screens selection
S Display      Description
. LINUX        RMF PM system selection menu
. LXCPU        Summary CPU activity display
. LXMEN        Summary memory util. & activity display
. LXNETWRK     Summary network activity display
  
```

Select performance screen with cursor and hit ENTER

Command ==> MA d

F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

08/002

Connected to remote server/host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

LINUX CPU Screen

Session D - [24 x 80]

File Edit View Communication Actions Window Help

FCX243 CPU 2094 SER F6A8D Interval 10:04:01 - 11:30:51 Perf. Monitor

```

<----- Total CPU ----->
Linux Virt <----- Utilization (%) ----->
Userid CPUs TotCPU User Kernel Nice IRQ SoftIRQ IOWait Idle Stolen Runab
>System< 3.5 1.0 .2 .4 .0 .1 .1 1.3 335.0 3.2 2.
LXM00001 5 3.0 .7 1.6 .0 .0 .7 .8 496.2 ...
LXM00002 5 5.9 2.1 3.1 .0 .0 .6 2.0 492.0 ...
LX00001 4 .7 .0 .1 .0 .0 .2 .4 396.8 2.2
LX00002 4 ... ..
LX00003 3 ... ..
LX00004 2 .2 .0 .2 .0 .0 .0 .6 196.6 2.5
LX00005 2 ... ..
LX00006 5 ... ..
LX00007 5 ... ..
LX00008 5 ... ..
LX00009 2 .5 .1 .3 .0 .0 .1 .6 196.5 2.3
LX00010 4 .6 .0 .2 .0 .0 .1 .5 396.0 2.9
LX00011 3 ... ..
LX00012 5 ... ..
LX00013 2 ... ..

```

Select a highlighted guest for RMF PM Linux details
Command ==>

F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

M d 23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

LXCPU LOG userid Screen

```

Session B - [24 x 80]
File Edit View Communication Actions Window Help
FCX246 CPU 2094 SER F6A8D Interval 13:38:25 - 13:42:32 Perf. Monitor

Linux CPU Load Log for User LX00001

<----- Total CPU -----> <----->
Interval Virt <----- Utilization (%) -----> <----->
End Time CPUs TotCPU User Kernel Nice IRQ SoftIRQ IOWait Idle Stolen Runab
>>Mean>> 1 16.2 .3 5.0 .0 4.0 7.0 .0 .0 83.8 48.
13:40:29 1 16.3 .3 5.0 .0 4.0 7.0 .0 .0 83.7 4
13:41:29 1 16.7 .3 5.1 .0 4.1 7.3 .0 .0 83.3 4
13:42:32 1 16.0 .3 4.9 .0 3.9 6.9 .0 .0 84.0 5

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA b 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

LINUX MEMORy Screen

Session D - [24 x 80]

File Edit View Communication Actions Window Help

FCX244 CPU 2094 SER F6A8D Interval 10:04:01 - 11:31:08 Perf. Monitor

```

<----- Memory Allocation (MB) -----> <----- Swapping
Linux <--- Main ---> <--- High ---> Buffers Cache <-Space (MB)-> <-
Userid M_Total %MUsed H_Total %HUsed Shared /CaFree Used S_Total %SUsed
>System< 528.7 49.9 .0 .0 .0 89.9 85.3 29.3 .0
LXM00001 5020 5.3 .0 .0 .0 117.6 56.2 29.3 .0
LXM00002 3010 8.8 .0 .0 .0 134.2 46.2 29.3 .0
LX00001 610.2 45.6 .0 .0 .0 143.1 89.3 29.3 .0
LX00002 460.4 60.1 .0 .0 .0 142.6 91.2 29.3 .0
LX00003 645.7 43.4 .0 .0 .0 142.8 91.9 29.3 .0
LX00004 418.1 66.1 .0 .0 .0 143.1 92.8 29.3 .0
LX00005 608.3 46.0 .0 .0 .0 142.9 92.3 29.3 .0
LX00006 323.5 70.0 .0 .0 .0 134.0 52.1 29.3 .0
LX00007 381.6 71.7 .0 .0 .0 137.7 91.1 29.3 .0
LX00008 555.0 50.7 .0 .0 .0 142.7 92.3 29.3 .0
LX00009 506.9 55.1 .0 .0 .0 142.9 92.4 29.3 .0
LX00010 554.1 51.1 .0 .0 .0 142.9 92.1 29.3 .0
LX00011 330.5 72.7 .0 .0 .0 106.4 91.9 29.3 .0
LX00012 464.3 53.5 .0 .0 .0 106.3 92.0 29.3 .0
LX00013 412.2 58.4 .0 .0 .0 105.2 91.1 29.3 .0
Select a highlighted guest for RMF PM Linux details
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

```

MA d 23/015

Connected to remote server /host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

LINUX MEMORy LOG Screen

```

Session B - [24 x 80]
File Edit View Communication Actions Window Help
FCX247 CPU 2094 SER F6A8D Interval 13:38:25 - 13:42:32 Perf. Monitor

Linux Memory Utilization Log for User LX00001

<----- Memory Allocation (MB) -----> <----- Swapping
Interval <--- Main ---> <--- High ---> Buffers Cache <-Space (MB)-> <-
End Time M_Total %MUsed H_Total %HUsed Shared /CaFree Used S_Total %SUsed
>>Mean>> 610.3 54.8 .0 .0 .0 148.0 104.2 29.3 .0 .
13:40:29 610.3 54.9 .0 .0 .0 148.0 104.2 29.3 .0 .
13:41:29 610.3 54.6 .0 .0 .0 148.0 104.2 29.3 .0 .
13:42:32 610.3 54.7 .0 .0 .0 148.1 104.2 29.3 .0 .

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA b 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

LINUX NETWORK Screen

Session D - [24 x 80]

File Edit View Communication Actions Window Help

FCX245 CPU 2094 SER F6A8D Interval 10:04:01 - 11:31:08 Perf. Monitor

```

      <--- Data Transfer/sec ---> <----- Errors/sec ----->
Linux   Inter <--Packets--> <---Bytes---> BadPac Packet <-No Space-> Transmit
Userid  faces P_Recv P_Xmit B_Recv B_Xmit Recvd X_Mit Buffer Linux Collisn
>System<  4.1  1.758   .750   239   355   .000   .000   .000   .000   .000
LXM00001  8.0  60.42  59.10  7373  46168 .000   .000   .000   .000   .000
LXM00002  8.0   5.664   .136   585    13   .000   .000   .000   .000   .000
LX00001   4.0   1.183   .242   142    35   .000   .000   .000   .000   .000
LX00002   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00003   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00004   4.0   1.204   .236   144    34   .000   .000   .000   .000   .000
LX00005   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00006   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00007   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00008   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00009   4.0   1.200   .252   145    36   .000   .000   .000   .000   .000
LX00010   4.0   1.185   .238   142    34   .000   .000   .000   .000   .000
LX00011   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00012   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
LX00013   4.0   . . .   . . .   . . .   . . .   . . .   . . .   . . .   . . .
Select a highlighted guest for RMF PM Linux details
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

```

Md 23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

LXNETLOG Screen

```

Session B - [24 x 80]
File Edit View Communication Actions Window Help
FCX247 CPU 2094 SER F6A8D Interval 13:38:25 - 13:42:32 Perf. Monitor

Linux Memory Utilization Log for User LX00001

<----- Memory Allocation (MB) -----> <----- Swapping
Interval <--- Main ---> <--- High ---> Buffers Cache <-Space (MB)-> <-
End Time M_Total %MUsed H_Total %HUsed Shared /CaFree Used S_Total %SUsed
>>Mean>> 610.3 54.8 .0 .0 .0 148.0 104.2 29.3 .0 .
13:40:29 610.3 54.9 .0 .0 .0 148.0 104.2 29.3 .0 .
13:41:29 610.3 54.6 .0 .0 .0 148.0 104.2 29.3 .0 .
13:42:32 610.3 54.7 .0 .0 .0 148.1 104.2 29.3 .0 .

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA b 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

LINUX RMF Selection Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX223 CPU 2094 SER F6A8D Linux Systems Perf. Monitor

Selectable Linux Systems
#X00215 #X00700 LXM00001 LXM00002 LX00001 LX00002
LX00003 LX00004 LX00005 LX00006 LX00007 LX00008
LX00009 LX00010 LX00011 LX00012 LX00013 LX00014
LX00015 LX00016 LX00017 LX00018 LX00019 LX00020
LX00021 LX00022 LX00023 LX00024 LX00025 LX00026
LX00027 LX00028 LX00029 LX00030 LX00031 LX00032
LX00033 LX00034 LX00035 LX00036 LX00037 LX00038
LX00039 LX00040 LX00041 LX00042 LX00043 LX00044
LX00045 LX00046 LX00047 LX00048 LX00049 LX00050
LX00051 LX00052 LX00053 LX00054 LX00055 LX00056
LX00057 LX00058 LX00059 LX00060 LX00061 LX00062
LX00063 LX00064 LX00065 LX00066 LX00067 LX00068
LX00069 LX00070 LX00071 LX00072 LX00073 LX00074
LX00075 LX00076 LX00077 LX00078 LX00079 LX00080
LX00081 LX00082 LX00083 LX00084 LX00085 LX00086
LX00087 LX00088 LX00089 LX00090 LX00091 LX00092
LX00093 LX00094 LX00095 LX00096 LX00097 LX00098

Select a system for Linux details
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M d X -S 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f
  
```

LINUX RMF Selection Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX224 CPU 2094 SER F6A8D Interval 11:34:00 - 11:35:00 Perf. Monitor
Linux Performance Data Selection for System LX00081

System Data
Processes created per second      0.233
Context switches per second       123.3
Apache: Requests per second      ...
      Bytes per request           ...
      Busy threads                ...
      Idle threads                ...
      404 Errors per minute       ...

S Perform. Reports      Description
_ LXCPU      LX00081    CPU utilization details
_ LXMEM      LX00081    Memory utilization & activity details
_ LXNETWRK   LX00081    Network activity (overall & by device)
_ LXFILSYS   LX00081    File system size and utilization
Select Linux performance details
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

```

23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

LINUX RMF CPU Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX230 CPU 2094 SER F6A8D Interval 11:35:00 - 11:36:00 Perf. Monitor

Linux CPU Utilization for System LX00081

<--- Percent CPU Utilization ---> <-Accumulated (s)->
Processor Total User Kernel Nice Idle TotTm UserTm KernTm
>>Mean>> 0.11 0.03 0.07 0 99.88 --- --- ---
cpu0 0.06 0.03 0.03 0 99.93 --- --- ---
cpu1 0.08 0.03 0.04 0 99.91 --- --- ---
cpu2 0.13 0.05 0.08 0 99.86 --- --- ---
cpu3 0.10 0.05 0.05 0 99.89 --- --- ---
cpu4 0.13 0.01 0.11 0 99.86 --- --- ---

Process Name
slpd.783 0.25 ... 0.25 0 --- 14.63 0.04 14.59
zmd.871 0.2 0.11 0.08 19 --- 12.58 7.86 4.72
events/1.13 0.01 ... 0.01 ... --- 0.38 ... 0.38
events/4.16 0.01 ... 0.01 ... --- 0.35 ... 0.35
gpmddsrvc.3973 0.01 ... 0.01 ... --- 0.15 0.12 0.03
httpd2-prefork.2398 0.01 0.01 ... 0 --- 1.02 0.61 0.41
procgat.3968 0.01 ... 0.01 0 --- 0.55 0.09 0.46

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M d 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```


LINUX RMF Memory Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX229 CPU 2094 SER F6A8D Interval 11:36:00 - 11:37:00 Perf. Monitor

Linux Memory Util. & Activity Details for System LX00081

Total memory size          575MB          Swap space size          29MB
Total memory used          105MB          % Swap space used        0%
  Used for buffer          100MB          Swap-in rate             0/s
  Used for shared           0MB           Swap-out rate            0/s
  Used for cache           86MB          Page-in rate             0.283/s
Total free memory          328MB          Page-out rate            9.316/s

Process Name                <----- Size -----> <----- Page Fault Rate/s ----->
                          (Bytes)      (kB)      Minor   Major   <-Incl.Children->
                          VirtSize   ResidSet  MinPgFlt MajPgFlt MinPFltC MajPFltC
zmd.871                     79183900   23652    .....  .....  .....  .....
httpd2-prefork.2398         49635300   6488     .....  .....  .....  .....
httpd2-prefork.3243         49770500   4060     .....  .....  .....  .....
gdm.1840                    14221300   3292     .....  .....  .....  .....
httpd2-prefork.3356         49635300   3292     .....  .....  .....  .....
httpd2-prefork.3357         49635300   3292     .....  .....  .....  .....

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M d 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

LINUX RMF Network Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX227 CPU 2094 SER F6A8D Interval 11:36:00 - 11:37:00 Perf. Monitor

Linux Network Activity for System LX00081

Network      <----- Received/s -----> <----- Transmitted/s ----->
Device       RcvPack  RcvByte  RcvError  SndPack  SndByte  SndError
>Total>      4.08     1792     0         2.61     1343     0
eth313       0.76      79       0         0         0         0
eth314       3.31    1712     0         2.61     1343     0
lo           0         0         0         0         0         0
sit0         0         0         0         0         0         0

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M&#92; d 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

LINUX RMF Filesys Screen

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX228 CPU 2094 SER F6A8D Interval 16:39:00 - 16:40:00 Perf. Monitor
Linux Filesystem Usage for System LX00081

DASD I/O Activity
I/O request rate per second          1.01
I/O response time/request (msec)     320.4
I/O response time/sector (msec)     73.70

Filesystem
Name      <---- MBytes ---->  <-Percent->
          Size      Free  %Used %Free
>Total>   5831      2294   58.8  41.1
/dev/dasda1  586        214   63.4  36.5
/dev/dasdb1 2310        194   91.1   8.8
/dev/dasdf1  283        251    6.3  93.6
/dev/dasdg1 1155        223   79.6  20.3
/dev/dasdh1  489        456    1.7  98.2
/dev/dasdi1  721        669    2.3  97.6
udev       287        287     0   100

Command ===>
F1=Help  F4=Top  F5=Bot  F7=Bkwd  F8=Fwd  F12=Return

```

23/015

Connected to remote server/host gdlvme.pok.ibm.com using port 23

usendl3f-250-02-P014-Endicott-N on usendl3f

Monitoring TCP/IP Stacks

- Track activity across the TCP/IP servers

- Track device activity associated with TCP/IP

TCPIP Menu – Option 3K

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX203 CPU 2094 SER F6A8D TCP/IP Displays Perf. Monitor

Server      Log File
S Userid    Name        Description
. System    HIPSOCK     Hipersocket channel activity
. System    QDIO        QDIO device activity
. System    VNIC        Virtual Network Device activity
. System    VSWITCH     Virtual Switch activity
. OSPFIPC1  TCPACTLG    General TCP/IP activity log
. OSPFIPC1  TCPBPLOG    TCP/IP buffer pools log
. OSPFIPC1  TCPCONF     TCP/IP server configuration
. OSPFIPC1  TCPDATLG    General TCP/IP data transfer log
. OSPFIPC1  TCPDOSLG    TCP/IP denial of service log
. OSPFIPC1  TCPICMP     TCP/IP ICMP messages log
. OSPFIPC1  TCPIOLOG   TCP/IP I/O activity log
. OSPFIPC1  TCPLINKS    TCP/IP links activity log
. OSPFIPC2  TCPACTLG    General TCP/IP activity log
. OSPFIPC2  TCPBPLOG    TCP/IP buffer pools log
. OSPFIPC2  TCPCONF     TCP/IP server configuration
. OSPFIPC2  TCPDATLG    General TCP/IP data transfer log
. OSPFIPC2  TCPDOSLG    TCP/IP denial of service log
Select performance screen with cursor and hit ENTER
Command ==>
F1=Help  F4=Top  F5=Bot  F7=Bkwd  F8=Fwd  F12=Return

M d 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

HIPSOCK

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
FCX231 CPU 2094 SER F6A8D Interval 13:04:53 - 13:05:53 Perf. Monitor

-----
Channel Path ID Shrd
<----- Hipersocket Activity/Sec. ----->
<--- Total for System ---> <----- Own Partition ----->
<-Transferred--> Failed <-Transferred--> <--- Failed --->
T_Msgs T_DUnits T_NoBuff L_Msgs L_DUnits L_NoBuff L_Other
FA Yes .00 .00 .00 .00 .00 .00
FB Yes .05 41.22 .00 .00 .00 .00
FC Yes .07 65.25 .00 .00 .00 .00
FD Yes .02 3.31 .00 .00 .00 .00
FE Yes .02 6.88 .00 .00 .00 .00
FF Yes .00 .00 .00 .00 .00 .00

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return
d 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPACTLG – TCPIP Activity Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX204 CPU 2084 SER 56F5A Interval 12:45:37 - 13:13:37 Perf. Monitor

TCP/IP Activity Log for Server TCPIP

<--- Connections/s ---> <----- TCP Segments/s -----> <---- ARP/s
<---- Opens ----> Trans Re- Recvd X-mit <---- Reply
Interval End Time Init Accept Fails Reset Recvd mit X-mit Error Reset Recvd X-mit
>>Mean>> .000 .017 .016 .000 .437 .464 .098 .063 .016 .000 .000
13:00:37 .000 .017 .017 .000 .083 .083 .083 .067 .017 .000 .000
13:01:37 .000 .017 .000 .000 .100 .100 .100 .067 .000 .000 .000
13:02:37 .000 .017 .017 .000 .067 .067 .083 .050 .017 .000 .000
13:03:37 .000 .017 .017 .000 .100 .116 .100 .067 .017 .000 .000
13:04:37 .000 .017 .017 .000 .100 .117 .100 .067 .017 .000 .000
13:05:37 .000 .017 .017 .000 .083 .083 .100 .067 .017 .000 .000
13:06:37 .000 .050 .017 .000 .950 1.350 .083 .050 .017 .000 .000
13:07:37 .000 .017 .017 .000 1.469 1.669 .100 .067 .017 .000 .000
13:08:37 .000 .017 .017 .000 1.250 1.300 .083 .050 .017 .000 .000
13:09:37 .000 .000 .017 .000 1.817 1.850 .100 .067 .017 .000 .000
13:10:37 .000 .017 .017 .000 1.133 1.150 .100 .100 .017 .000 .000
13:11:37 .000 .017 .017 .000 1.400 1.417 .100 .050 .017 .000 .000
13:12:37 .000 .017 .017 .000 1.117 1.133 .100 .067 .017 .000 .000

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPBPLOG – TCPIP Buffer Pool Mgmt Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX210 CPU 2084 SER 56F5A Interval 12:45:37 - 13:13:37 Perf. Monitor
TCP/IP Buffer Pool Management Log for Server TCPIP
----- Buffer Pool Level -----
Acti Cli- <- Enve- -> Raw Sock BSD TCP UDP Segm
vity ent <- lope --> IP et Sock Ctl Ctl <-Data Buffer--> Ackn
Interval CBlk CBlk Reglr Large CBlk CBlk CBlk Blok Blok Reglr Small Tiny CBlk
>>Mean>> 984 83 748 139 48 903 948 2962 68 8964 494 8 60k
>>Min.>> 471 83 335 99 48 647 945 2705 67 8447 481 7 60k
13:03:37 978 83 747 134 48 903 948 2963 68 8963 495 8 60k
13:04:37 979 83 745 135 48 903 948 2963 68 8963 495 8 60k
13:05:37 978 83 749 134 48 903 948 2963 68 8963 495 8 60k
13:06:37 975 83 749 130 48 903 948 2961 68 8963 493 8 60k
13:07:37 976 83 749 132 48 903 948 2961 68 8963 493 8 60k
13:08:37 980 83 747 136 48 903 948 2961 68 8963 493 8 60k
13:09:37 982 83 749 137 48 903 948 2961 68 8964 493 8 60k
13:10:37 980 83 745 135 48 903 948 2961 68 8964 493 8 60k
13:11:37 974 83 749 130 48 903 948 2961 68 8964 493 8 60k
13:12:37 976 83 745 130 48 903 948 2961 68 8964 493 8 60k
13:13:37 978 83 749 133 48 903 948 2961 68 8964 493 8 60k

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```


TCPCONF – TCPIP Server Configuration

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX212      CPU 2084  SER 56F5A      Status 14:05:21      Perf. Monitor

TCP/IP Configuration for Server TCPIP

          Total <--Allocation Limit-->      Free  Min.  Elem.
Buffer Pools  Blocks Unrestricted Restricted Blocks Depth Size
Activity Control Block  1024      51      102    972   946   137
Client Control Block   154       7      15     86    86   344
Data Buffer            9000     450     900   8958  8954 16384
Small Data Buffer       500      25      50    498   498  2048
Tiny Data Buffer        10       1       1     10    10   256
Envelope              750      37      75    750   693  2048
Large Envelope        150       7      15    125   100  9216
Host Pool              0         0       0     0     0     0
Raw IP Control Block   51        2       5     49    49   240
Socket Control Block  1007      50     100   903   903   244
BSD-Style Socket Ctl. Block 1007      50     100   948   948   493
TCP Control Block     3002     150     300  2955  2955   824
UDP Control Block      102       5      10    70    70   276
Address Translation   1512       0       5   1510  1510   176
IP Route               312       0       6    307   307   140

Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return
Mâ a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPICMP – TCPIP ICMP Messages Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX206 CPU 2084 SER 56F5A Interval 13:58:21 - 14:05:21 Perf. Monitor
TCP/IP ICMP Messages Log for Server TCPIP
<----- ICMP Messages Received/s -----> <----->
Interval          Un-   Time Param Source Redi-   Time Addr
End Time  Total Error reach Exceed Probl Quench rect Echo Stamp Mask Total Err
>>Mean>> 22.88  .000  .000  .000  .000  .000  .000  22.9  .000  .00  23.63  .0
13:58:21  .00  .00  .00  .00  .00  .00  .00  .00  .00  .00  .00  .0
13:59:21 24.18  .000  .000  .000  .000  .000  .000  24.2  .000  .00  24.92  .0
14:00:21 22.00  .000  .000  .000  .000  .000  .000  22.0  .000  .00  22.76  .0
14:01:21 23.91  .000  .000  .000  .000  .000  .000  23.9  .000  .00  24.64  .0
14:02:21 21.95  .000  .000  .000  .000  .000  .000  22.0  .000  .00  22.72  .0
14:03:21 22.15  .000  .000  .000  .000  .000  .000  22.2  .000  .00  22.88  .0
14:04:21 23.32  .000  .000  .000  .000  .000  .000  23.3  .000  .00  24.08  .0
14:05:21 22.65  .000  .000  .000  .000  .000  .000  22.7  .000  .00  23.38  .0

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
Mâ a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPIOLOG – TCPIP I/O Activity Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

FCX222      CPU 2084  SER 56F5A  Interval 13:58:21 - 14:05:21  Perf. Monitor

TCP/IP I/O Activity Log for Server TCPIP

<---- I/O per sec. ---->  <---- QDIO Activity per sec. ---->  <---->
Interval  <Requests-> <-- Bytes -->  <Data Transfers>  PCI <--Polls-->  Re-
End Time  Read Write Receive X-mit  Inbound Outbound Inter Total Idle ceive
>>Mean>> .000 .326 79704 321k 52.93 30.19 .000 115.7 32.70 4.410
13:58:21  ... ..
13:59:21 .000 .417 84590 323k 55.33 40.77 .000 135.0 38.93 4.933
14:00:21 .000 .316 71753 346k 55.34 19.93 .000 103.0 27.69 4.459
14:01:21 .000 .301 82230 330k 54.76 25.89 .000 111.0 30.60 4.224
14:02:21 .000 .300 74709 334k 54.83 33.77 .000 122.0 33.43 4.067
14:03:21 .000 .317 78572 272k 49.60 28.10 .000 109.0 31.42 4.667
14:04:21 .000 .317 83060 352k 54.20 33.62 .000 122.5 34.57 4.300
14:05:21 .000 .317 83034 288k 46.45 29.25 .000 107.7 32.27 4.217

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
Mâ a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPLINKS – TCPIP LINK Activity Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
FCX208 CPU 2084 SER 56F5A Interval 13:58:21 - 14:04:21 Perf. Monitor
TCP/IP Links Activity Log for Server TCPIP
<----- Received/s -----> <----- Tran
<----- Packets -----> <-----
Interval Uni- Non- Dis- Unknown Uni-
End Time Link Name Bytes cast Unicast card Error Protocol Bytes cast
14:03:21 ETRING1 22174 44.90 .000 .00 .000 .000 106.2 1.000
14:03:21 STK00IPV6A .000 .000 .000 .00 .000 .000 9400 12.90
14:03:21 VNETRING .000 .000 .000 .00 .000 .000 .000 .000
14:03:21 VNETRIN1 .000 .000 .000 .00 .000 .000 .000 .000
14:03:21 VSWITCHLINK .000 .000 .000 .00 .000 .000 .000 .000

14:04:21 ISRING 8411 7.867 .000 .00 .000 .000 28593 36.93
14:04:21 ETRING 52319 67.70 19.03 .00 .000 1.133 313k 221.8
14:04:21 ETRING1 22330 49.62 .000 .00 .000 .000 108.1 1.017
14:04:21 STK00IPV6A .000 .000 .000 .00 .000 .000 11176 15.55
14:04:21 VNETRING .000 .000 .000 .00 .000 .000 .000 .000
14:04:21 VNETRIN1 .000 .000 .000 .00 .000 .000 .000 .000
14:04:21 VSWITCHLINK .000 .000 .000 .00 .000 .000 .000 .000

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return
MA a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPDATLG – TCPIP General Data Trans Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

FCX205 CPU 2084 SER 56F5A Interval 13:58:21 - 14:03:21 Perf. Monitor

TCP/IP Data Transfer Log for Server TCPIP

<- IP Packets --> <----- IP Datagrams ----->
<- Received/s --> <----- Incoming/s -----> <- Outgoing/s --> <Fragm.
Interval <-Errors--> For- Unknwn Dis- <User Prot> Dis- No Recei Da
End Time Total Headr Addr warded Protcl card DelTo SupBy card Route ved gr
>>Mean>> 117.9 .000 .000 21.60 .000 .00 54.89 194.7 .000 .000 56.62 15
13:58:21 ... .. 31.88 .000 .00 56.20 193.5 .000 .000 61.37 16
13:59:21 133.1 .000 .000 11.25 .000 .00 56.37 215.3 .000 .000 52.63 14
14:00:21 105.4 .000 .000 17.23 .000 .00 55.96 199.7 .000 .000 60.62 15
14:01:21 118.3 .000 .000 25.65 .000 .00 55.33 205.2 .000 .000 54.43 14
14:02:21 120.7 .000 .000 22.02 .000 .00 50.68 159.9 .000 .000 54.17 14
14:03:21 112.0 .000 .000

Command ===>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F10=Left F11=Right F12=Return

Mâ a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23 usendl3f-250-02-P014-Endicott-N on usendl3f

```

TCPDOSLG – TCPIP Denial of Service Log

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

FCX233      CPU 2084  SER 56F5A  Interval 13:58:21 - 14:04:21  Perf. Monitor

TCP/IP Denial of Service Log for Server TCPIP

Interval    <----- Denial of Service Packet Discards/Sec ----->
End Time    Smurf  Fraggle  PoDeath  BLAT  Stream  R4P3D  KOD  KOX  SynFlood
>>Mean>>   .000   .000   .000   .000  .000   .000   .000  .000  .000
13:58:21    ...    ...    ...    ...   ...   ...   ...   ...   ...
13:59:21    .000   .000   .000   .000  .000   .000   .000  .000  .000
14:00:21    .000   .000   .000   .000  .000   .000   .000  .000  .000
14:01:21    .000   .000   .000   .000  .000   .000   .000  .000  .000
14:02:21    .000   .000   .000   .000  .000   .000   .000  .000  .000
14:03:21    .000   .000   .000   .000  .000   .000   .000  .000  .000
14:04:21    .000   .000   .000   .000  .000   .000   .000  .000  .000

Command ===>
F1=Help  F4=Top  F5=Bot  F7=Bkwd  F8=Fwd  F12=Return

Mâ a 23/015
Connected to remote server/host gdlvme.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

Accessing performance data from other userids

While PERFKIT is running in the PERFSVM machine, you can view performance data without signing directly on using:

- VMC in a PIPE
- VMCX for a full screen view using VMCF
- FCONAPPC for a full screen using APPC (Preferred)

FCONAPPC setup information

PERFKIT uses the FCONRMT AUTHORIZ file to determine who can do what.

NODEID USERID authorizations

Where authorizations can be:

- DATA
- CMD
- S&FSERV

Care must be taken when allowing CMD, any CP command that PERFSVM is allowed can be issued from the FCONAPPC session

FCONAPPC resourcename

The PERFSVM machine ships using APPC resource name FCXRES00

To access data from another userid start PERFKIT in that userid then enter **FCONAPPC FCXRES00**

The menu screen will be shown:

FCONAPPC resourcename

```

Session C - [24 x 80]
File Edit View Communication Actions Window Help
FCX124 Performance Screen Selection (FL530 07Mar07) GDLVM7

General System Data      I/O Data      History Data (by Time)
1. CPU load and trans.  11. Channel load  31. Graphics selection
2. Storage utilization  12. Control units 32. History data files*
3. Reserved            13. I/O device load* 33. Benchmark displays*
4. Priv. operations    14. CP owned disks* 34. Correlation coeff.
5. System counters     15. Cache extend. func.* 35. System summary*
6. CP IUCV services    16. DASD I/O assist  36. Auxiliary storage
7. SPOOL file display* 17. DASD seek distance* 37. CP communications*
8. LPAR data          18. I/O prior. queueing* 38. DASD load
9. Shared segments    19. I/O configuration 39. Minidisk cache*
A. Shared data spaces 1A. I/O config. changes 3A. Storage mgmt. data*
B. Virt. disks in stor. 3B. Proc. load & config*
C. Transact. statistics 3C. Logical part. load
D. Monitor data        3D. Response time (all)*
E. Monitor settings    3E. RSK data menu*
F. System settings     3F. Scheduler queues
G. System configuration 3G. Scheduler data
H. VM Resource Manager 26. User communication* 3H. SFS/BFS logs menu*
3I. System log

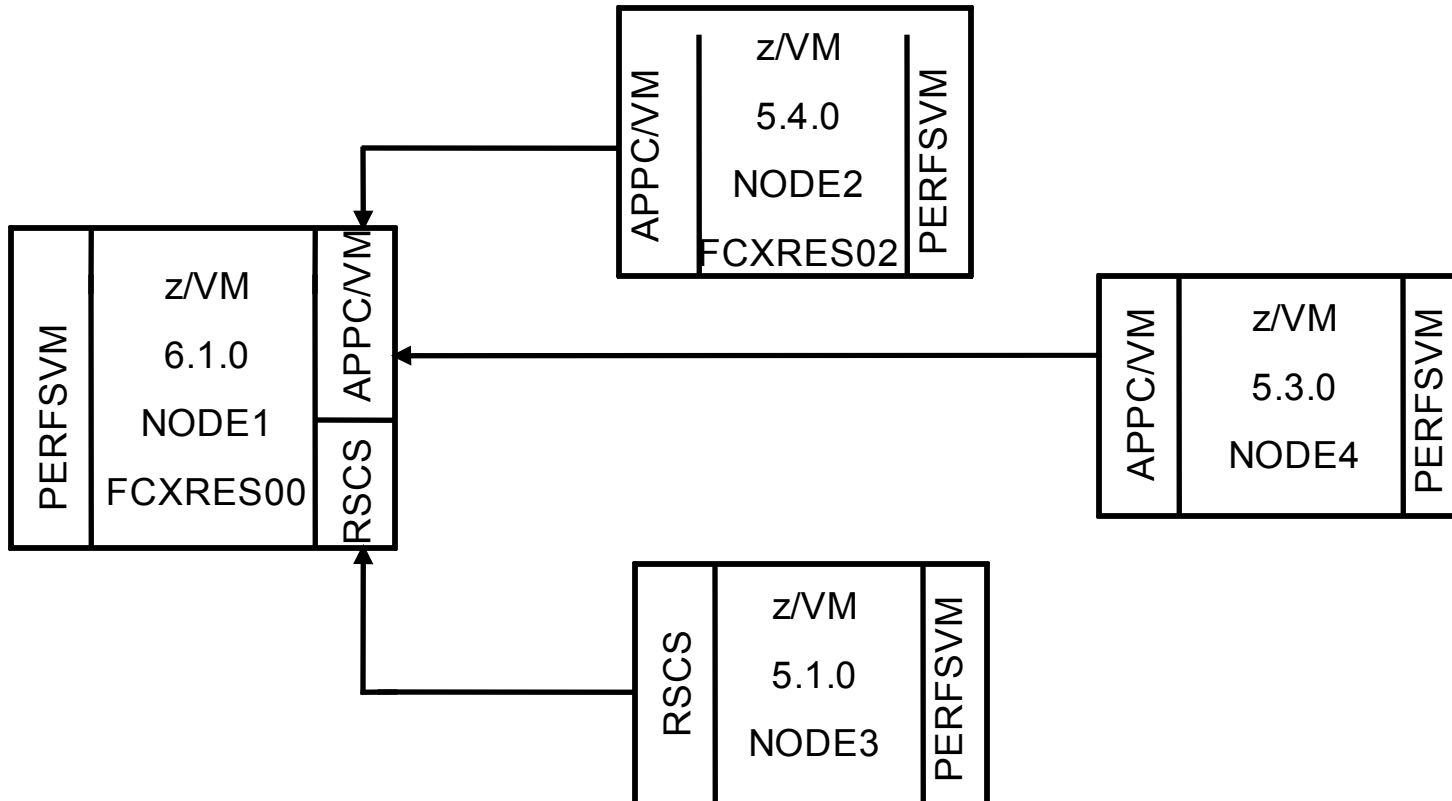
Select performance screen with cursor and hit ENTER
Command ==>
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

M&  c 23/015
Connected to remote server/host gdlvm7.pok.ibm.com using port 23
usendl3f-250-02-P014-Endicott-N on usendl3f

```

Central Data Collection

- Allows efficient central performance monitoring for my remote systems
- Concurrent multiple access to the central machine's data
- Performance data retrieval from local and remote machines similar to native monitoring



Central Data Collection

NODE1 Setup Files

File FCONRMT SYSTEMS

```
*System Definition file for remote monitoring
*Node-ID PERFKIT-ID VM_Type Append Nickname
*|      |          |      |      |
NODE2  PERFSVM  z/VM5.4  N    FCXRES02
NODE3  PERFSVM  z/VM5.3  N    FCXRES03
NODE4  PERFSVM  z/VM5.1  N
```

File FCONRMT AUTHORIZ

```
*Authorization file for local and remote data retrieval and
*command execution
*Node-ID   User-ID   Authorized for ..
* NO ENTRIES NEEDED FOR COLLECTION
```

NOTE: To enable the Web Server, you will need entries for node 1

```
NODE1  PERFSVM  z/VM6.1  N    FCXRES00
```

```
NODE1  PERFSVM  S&FSERV DATA
```

Central Data Collection

NODE2 Setup files

File FCONRMT SYSTEMS

```
*System Definition file for remote monitoring
*Node-ID PERFKIT-ID VM_Type Append Nickname
*|      |          |      |      |
*NO ENTRIES NEEDED
```

File FCONRMT AUTHORIZ

```
*Authorization file for local and remote data retrieval and
*command execution
*Node-ID   User-ID   Authorized for ..
NODE2     PERFSVM   S&FSERV DATA
```

Directory Entry for PERFSVM at NODE2

```
IUCV *IDENT FCXRES02 GLOBAL
IUCV ALLOW
```

UCOMDIR NAMES A

```
:nick.FCXRES00      :luname.*IDENT
                    :tpn.FCXRES02
                    :security.SAME
```

Central Data Collection

NODE3 Setup files

File FCONRMT SYSTEMS

```
*System Definition file for remote monitoring
*Node-ID PERFKIT-ID VM_Type Append Nickname
*|      |      |      |      |
*NO ENTRIES NEEDED
```

File FCONRMT AUTHORIZ

```
*Authorization file for local and remote data retrieval and
*command execution
*Node-ID   User-ID   Authorized for ..
NODE3     PERFSVM   S&FSERV DATA
```

Directory Entry for PERFSVM at NODE2

```
IUCV *IDENT FCXRES03 GLOBAL
IUCV ALLOW
```

UCOMDIR NAMES A

```
:nick.FCXRES00      :luname.*IDENT
                    :tpn.FCXRES03
                    :security.SAME
```

Central Data Collection

NODE4 Setup Files

File FCONRMT SYSTEMS

File FCONRMT AUTHORIZ

No entries needed in either of these files, just need:

FC MONCOLL REMSEND ON RSCS nodeid userid

In FCONX \$PROFILE or entered manually

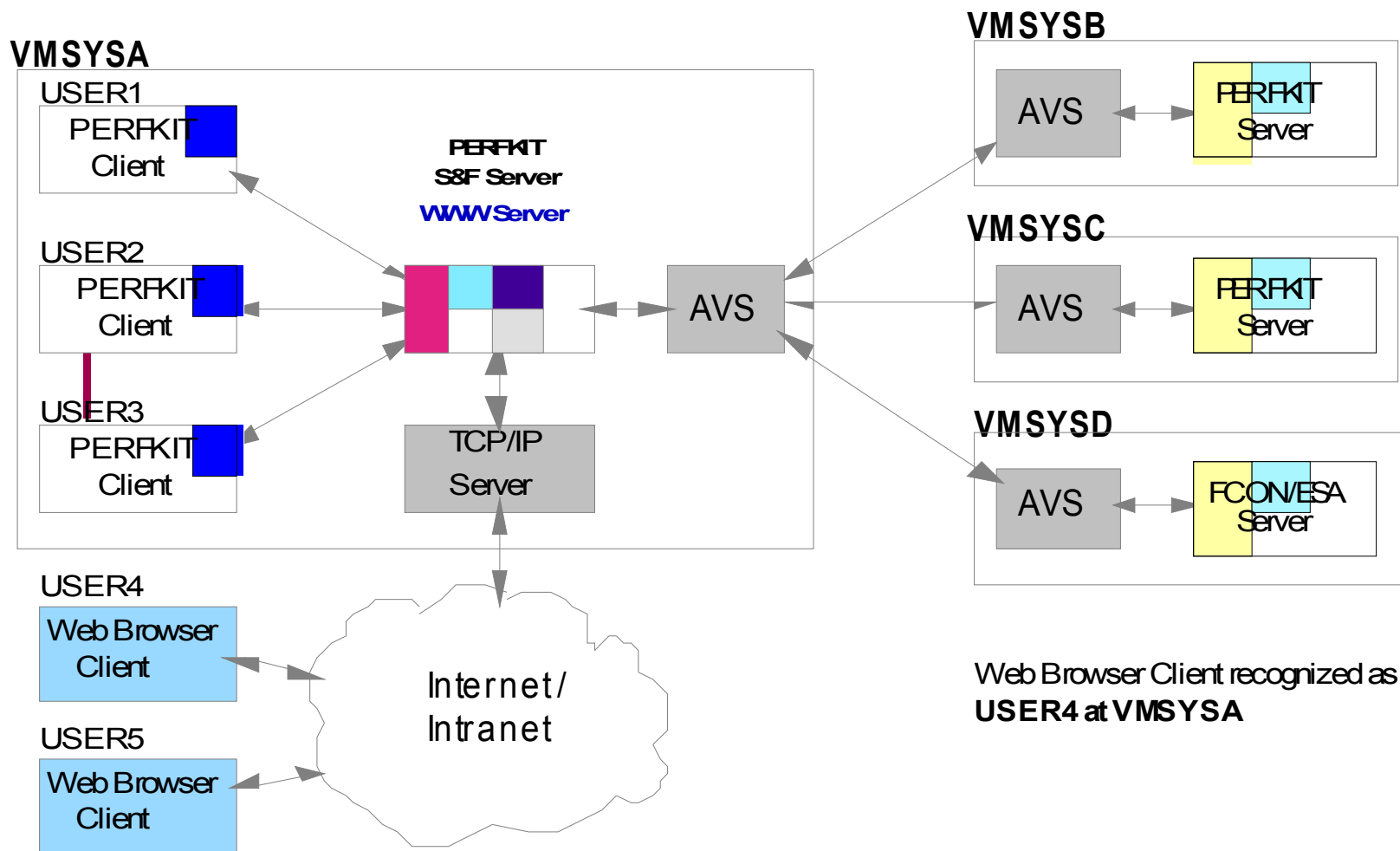
NOTE: FL510 is no longer a supported release

Central Data Collection

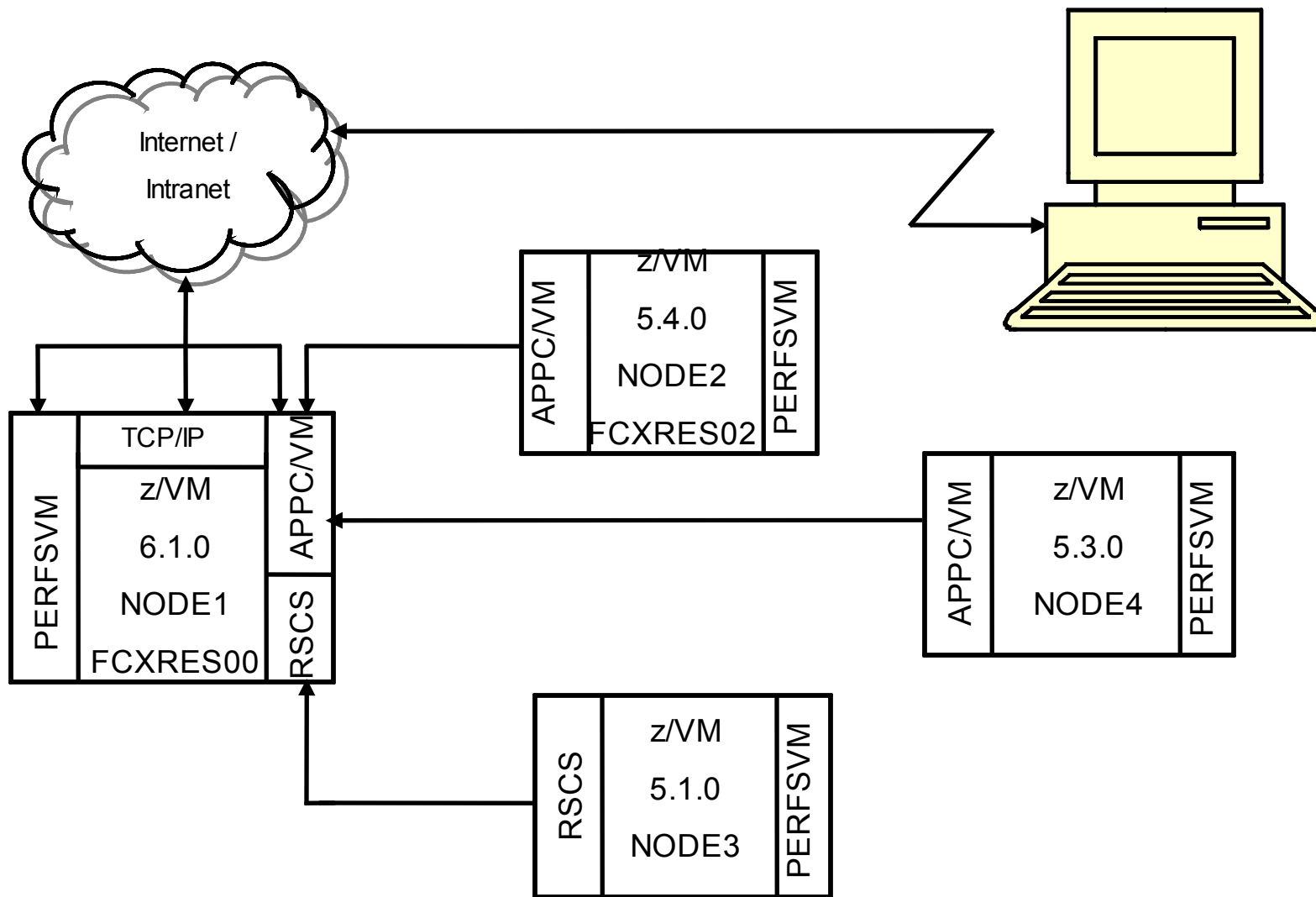
Summary:

- PERFKIT (since FL520) will “pull” data from other PERFKIT systems using APPC/VM when that system is Identified in the FCONRMT SYSTEMS file with a resource name
- PERFKIT will receive data “pushed” from other PERFKIT systems at FL510 or lower using RSCS

Web Access



Web Setup



Web Setup

Performance Toolkit for VM includes an internet interface intended to:

- Provide a graphical user interface based on standard web browsers, thus automatically allowing its use from any of the common supported platforms
- Allow the use of the interface with a minimum of additional prerequisites

The PERFKIT web interface is designed to process only the subset of HTTP requests it expects for a performance retrieval session.

The internet interface works directly with the "store and forward" logic.

Web Setup

To setup web access you need to:

1. Implement S&F Server - See [Central Data Collection](#)
2. Implement IUCV connection to TCPIP machine
3. Activate the interface
4. Test the interface

Web Setup

2. Implement IUCV connection to TCPIP machine

- Decide on a TCP/IP port number to be used
- Update the PROFILE TCPIP on the TCPIP machine

PORT

.....

nn TCP PERFSVM NOAUTOLOG; Performance Toolkit for VM Internet Server

Or for SSL:

nn TCP PERFSVM NOAUTOLOG SECURE **filename/label**; Performance Toolkit for VM Internet Server SSL

.....

- Update FCONX \$PROFILE to activate the webserver interface

FC MONCOLL WEBSERV ON TCPIP TCPIP **nn** IDTEST CP

Or for SSL:

FC MONCOLL WEBSERV ON SSL TCPIP TCPIP 81 IDTEST RACF

SEE The PERFKIT book for more information on userid verification in the “Internet Interface” Section

- Activate the interface – Restart PERFKIT, you should see messages similar to:

FCXTCP571I Connected to TCP/IP server TCPIP on path 0004

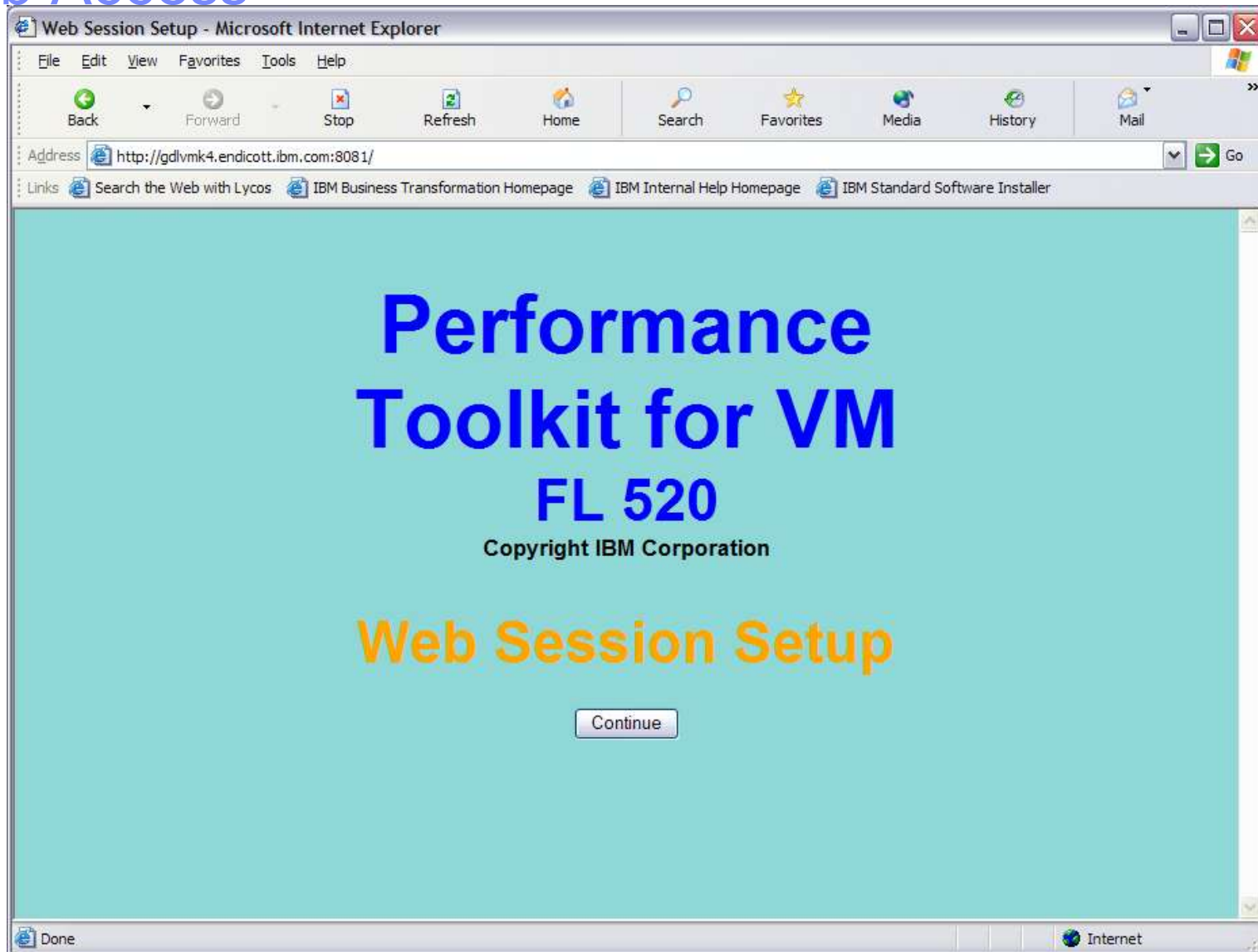
FCXTCP575I Host IP address is 11.22.33.44:**nn**

FCXTCP590I WebServer interface activated

- Activate your web browser and select the URL for Performance Toolkit

<http://11.22.33.44:nn> or for SSL <https://11.22.33.44:nn>

Web Access



Web Access

The screenshot shows a Microsoft Internet Explorer browser window titled "Web Server Logon - Microsoft Internet Explorer". The address bar contains the URL: `http://gdlvmk4.endicott.ibm.com:8086/03C38C38/26EB/LOGON/768`. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar contains icons for Back, Forward, Stop, Refresh, Home, Search, Favorites, History, Mail, Print, and Edit. The Links bar shows several bookmarks: IBM Business Transformation Homepage, IBM Internal Help Homepage, IBM Standard Software Installer, Search the Web with Lycos, and Windows Marketplace.

The main content area displays the "Remote Performance Monitoring Session Setup" page. It features the IBM Performance Toolkit for VM logo on the left. The page title is "Web Server Logon". Below the title, a message states: "You are connected to the data retrieval interface of the Performance Toolkit for VM on system **GDLVMK4**. Data retrieval authorization is based on your VM user identification on that system. Please enter your userid and password".

The login form consists of two input fields: "VM UserID:" and "Password :", followed by a "Submit" button. Below the form, the text "Desired screen layout:" is followed by two dropdown menus: "Max. Data Lines:" (set to 32) and "Line length:" (set to 132). A final message reads: "Up to 12 kB of data can be retrieved per selection, including all control information. Output may be truncated if space is not sufficient for all lines."

The browser's status bar at the bottom shows "Done" on the left and "Internet" on the right.

Web Access

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63929) - Microsoft Internet Explorer

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Address <http://gdlvmk4.endicott.ibm.com:8081/03BC5890/7A56/FCXBUTN?v=%2F03BC5890%2F7A56%2F&form=02&s=Refresh&ar=on> Go

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IBM
Performance Toolkit for VM

Central Monitoring System Load Overview (GDLVMK4)
Select the system to be monitored

Refresh SysMenu Help Auto-Refresh

Node-ID	Time	----- Exceptions & CPU Load -----	AvExcp
GDLVMK4	11:48	>	.03
GDLGST1	.....	no data received	.....

Done Internet

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - Microsoft Internet Explorer

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Address <http://gdlvmk4.endicott.ibm.com:8081/03916390/CB03/GDLVMK4> Go

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IBM
Performance
Toolkit for VM

Initial Performance Data Selection Menu (GDLVMK4)
Select performance screen

Command Refresh Systems Help Auto-Refresh

<p>General System Data</p> <ol style="list-style-type: none"> 1. CPU load and trans. 2. Storage utilization 3. Reserved 4. Priv. operations 5. System counters 6. CP IUCV services 7. SPOOL file display* 8. LPAR data 9. Shared segments A. Shared data spaces B. Virt. disks in stor. C. Transact. statistics D. Monitor data E. Monitor settings F. System settings G. System configuration H. VM Resource Manager I. Exceptions K. User defined data* 	<p>I/O Data</p> <ol style="list-style-type: none"> 11. Channel load 12. Control units 13. I/O device load* 14. CP owned disks* 15. Cache extend. func.* 16. DASD I/O assist 17. DASD seek distance* 18. I/O prior. queueing* 19. I/O configuration 1A. I/O config. changes <p>User Data</p> <ol style="list-style-type: none"> 21. User resource usage* 22. User paging load* 23. User wait states* 24. User response time* 25. Resources/transact.* 26. User communication* 27. Multitasking users* 28. User configuration* 29. Linux systems* 	<p>History Data (by Time)</p> <ol style="list-style-type: none"> 31. Graphics selection 32. History data files* 33. Benchmark displays* 34. Correlation coeff. 35. System summary* 36. Auxiliary storage 37. CP communications* 38. DASD load 39. Minidisk cache* 3A. Storage mgmt. data* 3B. Proc. load & config* 3C. Logical part. load 3D. Response time (all)* 3E. RSK data menu* 3F. Scheduler queues 3G. Scheduler data 3H. SFS/BFS logs menu* 3I. System log 3K. TCP/IP data menu* 3L. User communication 3M. User wait states
--	--	--

Pointers to related or more detailed performance data can be found on displays marked with an asterisk (*).

<http://gdlvmk4.endicott.ibm.com:8081/03916390/6537/1> Internet

Example - Performance Data Display

Hyperlink
selection
of:

Sort sequence

Context help

Device details

General I/O Device Load and Performance (GDLFCFT)
Select a device for I/O device details

Command Refresh Systems Menu Forw Help Auto-Refresh

Interval 11:08:38-11:09:42, on 2004/05/06 (CURRENT interval, select interval)

<--	Device	Descr	-->	Mdisk	Pa-	<--Rate/s-->	<--	Time (msec)	----->	Re				
Addr	Type	Label/ID		Links	ths	I/O	Avoid	Pend	Disc	Conn	Serv	Resp	CUWt	Qu
>>	All	DASD	<<			.0	.0	.5	13.8	5.5	19.8	19.8	.0	
2000	3380-K	XASRES		0	1	.0	.0	1.6	.1	1.8	3.5	3.5	.0	
2001	3380-K	SYSTOL		0	1	.0	.0	1.0	.1	.3	1.4	1.4	.0	
2002	3380-K	SFSPK1		0	1	.0	.0	.3	.0	.3	.6	.6	.0	
2003	3380-K	SFSPK2		0	1	.0	.0	.2	.0	.3	.5	.5	.0	
2004	3380-K	CMS1		0	1	.0	.0	.2	.0	.3	.5	.5	.0	
2005	3380-K	CMS2		0	1	.0	.0	.2	.1	.3	.6	.6	.0	
2006	3380-K	CMS3		0	1	.0	.0	.2	.1	.3	.6	.6	.0	
2007	3380-K	LP1		0	1	.0	.0	.2	.0	.3	.5	.5	.0	
2008	3380-K	RTST01		0	1	.0	.0	.3	.0	.3	.6	.6	.0	
2009	3380-K	RTST02		0	1	.0	.0	.2	.0	.3	.5	.5	.0	
200A	3380-K	RTST03		0	1	.0	.0	.1	.0	.3	.4	.4	.0	
200B	3380-K	VTAM01		0	1	.0	.0	.2	.1	.3	.6	.6	.0	
200C	3380-K	VTAM02		0	1	.0	.0	.3	.1	.2	.6	.6	.0	

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - Microsoft Internet Explorer

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General User Resource Utilization (GDLVMK4)

Select a user for user details or [IDLEUSER](#) for a list of idle users

Command Refresh Systems Menu Forw Help Auto-Refresh

Interval 13:54:14-13:55:14, on 2006/09/11 (CURRENT interval, select [interim](#) or [average](#) data)

Userid	CPU Load				Virtual IO/s				User Time		Spool			
	%CPU	TCPU	VCPU	Ratio	Total	DASD	Avoid	Diaq98	UR	Pq/s	Logged	Active	Pages	SPC
>System<	.01	.007	.005	1.6	.1	.0	.0	.0	.0	.0	1.0	.5	.0	.0
MROUTE	.20	.117	.103	1.1	.0	.0	.0	.0	.0	.0	1	1	0	0
SSLSERV	.16	.096	.063	1.5	.0	.0	.0	.0	.0	.0	1	1	0	0
LXGIPV6B	.13	.075	.036	2.1	.0	.0	.0	.0	.0	.0	1	1	0	0
LXGIPV6A	.12	.072	.036	2.0	.0	.0	.0	.0	.0	.0	1	1	0	0
LXRIPV6A	.12	.072	.038	1.9	.0	.0	.0	.0	.0	.0	1	1	0	0
LXRIPV6B	.12	.069	.040	1.7	.0	.0	.0	.0	.0	.0	1	1	0	0
TCPIP	.09	.056	.028	2.0	2.8	.0	.0	2.8	.0	.0	1	1	0	0
JA2	.05	.029	.023	1.3	.2	.2	.1	.0	.0	.0	1	1	0	0
PERFSVM	.05	.032	.025	1.3	.2	.2	.1	.0	.0	.0	1	1	0	0
RSCS	.01	.003	.002	1.5	.3	.0	.0	.0	.0	.0	1	1	0	0
SNMPD	.01	.004	.003	1.3	.0	.0	.0	.0	.0	.0	1	1	0	0
TCPIPE	.01	.003	.003	1.0	.0	.0	.0	.0	.0	.0	1	1	0	0
VTAM	.01	.004	.004	1.0	.0	.0	.0	.0	.0	.0	1	1	0	0
AUTOLOG1	0	0	0	...	0	0	0	0	0	0	1	0	0	0
AVS	0	0	0	...	0	0	0	0	0	0	1	0	0	0
BUCKETS	0	0	0	...	0	0	0	0	0	0	1	0	0	0
DATAMOVE	0	0	0	...	0	0	0	0	0	0	1	0	0	0
DIRMAINT	0	0	0	...	0	0	0	0	0	0	1	0	0	0
DTCVSW1	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0
DTCVSW2	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0
EREP	0	0	0	...	0	0	0	0	0	0	1	0	0	0
ESAWEB01	0	0	0	...	0	0	0	0	0	0	1	0	0	0
FARMAN	0	0	0	...	0	0	0	0	0	0	1	0	0	0
FTPSECRB	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0
FTPSECUR	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0
FTPSEVRB	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0
FTPSEVRB	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	1	1	0	0

Done Internet

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - Microsoft Internet Explorer

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IBM Performance Toolkit for VM

General User Resource Utilization (GDLVMK4)

Select a user for user details or [IDLEUSER](#) for a list of idle users

Command Refresh Systems Menu Forw Help Auto-Refresh

Interval 14:21:14-14:22:14, on 2006/09/11 (CURRENT interval, select [interim](#) or [average](#) data)

Userid	CPU Load				Virtual IO/s				User Time		Spool		MDC		Nr	
	%CPU	TCPU	VCPU	Ratio	Total	DASD	Avoid	Diag98	UR	Pq/s	Logged	Active	Pages	SPq/s		Insert	Share
>System<	.01	.007	.005	1.6	.0	.0	.0	.0	.0	.0	1.0	.5	.0	.0	.0	---
Help Text																
%CPU Percent of total CPU used. This value is based on the utilization of a single processor. Values exceeding 100% are possible for virtual MP users.																
Return																
PERFSVM	.05	.031	.025	1.2	.1	.1	.1	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 3.0%
RSCS	.01	.003	.002	1.5	.3	.0	.0	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 100
TCP/IPB	.01	.003	.003	1.0	.0	.0	.0	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 3000
VTAM	.01	.004	.004	1.0	.0	.0	.0	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 100
AUTOLOG1	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
AVS	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
BUCKETS	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
DATAMOVE	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
DIRMAINT	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
DTCVSW1	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 100
DTCVSW2	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA, ---, DORM	1	1	0	.00	.0 100
EREP	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100
FSAWER01	0	0	0	...	0	0	0	0	0	0	ESA, ---, DORM	1	0	0	0	0 100

<http://gdlvmk4.endicott.ibm.com:8081/03916390/8854/HE.04.011> Internet

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - Microsoft Internet Explorer

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Resource Utilization Details for Selected User (GDLVMK4)

IBM Performance Toolkit for VM

Command Refresh Systems Menu Return Help Auto-Refresh

Interval 13:57:44-13:57:54, on 2006/09/11

Detailed data for user PERFSVM

Total CPU : .0%	Storage def : 64MB	Page fault rate : .0/s
Superv. CPU : .0%	Resident <2GB : 7	Page read rate : .0/s
Emulat. CPU : .0%	Resident >2GB : 7704	Page write rate : .0/s
VF total : .0%	Proj. WSET : 7682	Pgs moved >2GB> : .0/s
VF overhead : .0%	Reserved pgs : 0	Main > XSTORE : .0/s
VF emulation : .0%	Locked pages : 0	XSTORE > main : .0/s
VF load rate : .0/s	XSTORE dedic. : 0MB	XSTORE > DASD : .0/s
I/O rate : .2/s	XSTORE pages : 0	SPOOL pg reads : .0/s
DASD IO rate : .2/s	DASD slots : 0	SPOOL pg writes : .0/s
UR I/O rate : .0/s	IUCV X-fer/s : 2.6/s	MDC insert rate : .0/s
Diag. X'98' : .0/s	Share : 3%	MDC I/O avoided : .2/s
*BLOCKIO : .0/s	Max. share : .0%	

#I/O active : 0	Active : 100%	PSW wait : 0%	I/O act. : 0%
Stacked blk : .0	Page wait : 0%	CF wait : 0%	Eligible : 0%
Stat. : ESA,QDS,SIMW	I/O wait : 0%	Sim. wait : 100%	Runnable : 0%

Data Space Name	Size	Mode	PgRd/s	PgWr/s	XRd/s	XWr/s	Migr/s	Steal/s
BASE	64MB	Priv	.0	.0	.0	.0	.0	.0

Device activity and status:

0009 3215 .0		000C 254R	CL *	EOF	NOH	NCNT
000D 254P .0	CL A, CO 01, NOH NCNT	000E 1403	CL A, CO 01, NOH NCNT			
0190 3390 .0	C329, RR, 200Cyl, ---->0	0191 3390 .2	A503, WR, 100% MDC eff.			
0195 3390 .0	A503, WR, 60Cyl, ---->0	019D 3390 .0	BF40, RR, 150Cyl, ---->0			
019E 3390 .0	BF40, RR, 355Cyl, ---->0	01CC 3390 .0	BF41, RR, 1Cyl, ---->0			
0200 3390 .0	BF41, RR, 10Cyl, ---->0	0201 3390 .0	BF41, RR, 10Cyl, ---->0			
029D 3390 .0	BF41, RR, 8Cyl, ---->0	0CCC 3390 .0	BF41, RR, 1Cyl, ---->0			

Done Internet

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - Microsoft Internet Explorer

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Performance Details for a Single I/O Device (GDLVMK4)

IBM Performance Toolkit for VM

Command Refresh Systems Menu Return Help Auto-Refresh

Interval INITIAL.-13:59:40, on 2006/09/11

Detailed Analysis for Device A503 (SYSTEM)

Device type : 3390-3	Function pend. : .1ms	Device busy : 0%
VOLSER : 250SY0	Disconnected : .2ms	I/O contention : 0%
Nr. of LINKs : 4	Connected : 1.2ms	Reserved : 0%
Last SEEK : 1436	Service time : 1.5ms	SENSE SSCH :
SSCH rate/s : .3	Response time : 1.5ms	Recovery SSCH :
Avoided/s :	CU queue time : .0ms	Throttle del/s : ...

Status: MDCACHE USED

Path(s) to device A503: B0 B1
Channel path status : ON ON

Device Overall CU-Cache Performance Split
DIR ADDR VOLSER IO/S %READ %RDHIT %WRHIT ICL/S BYP/S IO/S %READ %RDHIT
05 A503 250SY0 .1 0 0 100 .0 .0 No SEQ./ CACHE FW

	MDISK Extent	Userid	Addr	IO/s	VSEEK	Status	LINK	VIO/s	%MDC	MDIO/s
C	140 - 149	MAINT520	0375	.0	0	WR	1	.0	....	.0 C
C	392 - 397	IMAPAUTH	0191	.0	0	WR	1	.0	....	.0 C
C	1436 - 1495	PERFSVM	0191	.0	0	WR	1	.0	....	.0 C
C	1496 - 1555	PERFSVM	0195	.0	0	WR	1	.0	....	.0 C

Done Internet

Graphics

PERFKIT Graphics include:

- PLOTS – using 3270 and characters like *, o, =, /
- GDDM Graphics – using 3270 and GDDM
- Browser – using your web browser

Graphs can be created from:

- Storage – using data just collected
- History Files – using data saved from an earlier time

Enter **GRAPHICS** from monitor mode or select option **31**

Graphics

GDLFCFT Data Retrieval Session (Performance Toolkit for VM FL520 01Jun05) - Microsoft Internet Explorer

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IBM Performance Toolkit for VM

Graphics Selection Menu (GDLFCFT)

Command Refresh Systems Menu Return Help Auto-Refresh

General Specifications

Output format

Data origin

Graphics type

Selected period

Selected days

Selected hours

Variable Selection

X-Variable

Truncate at

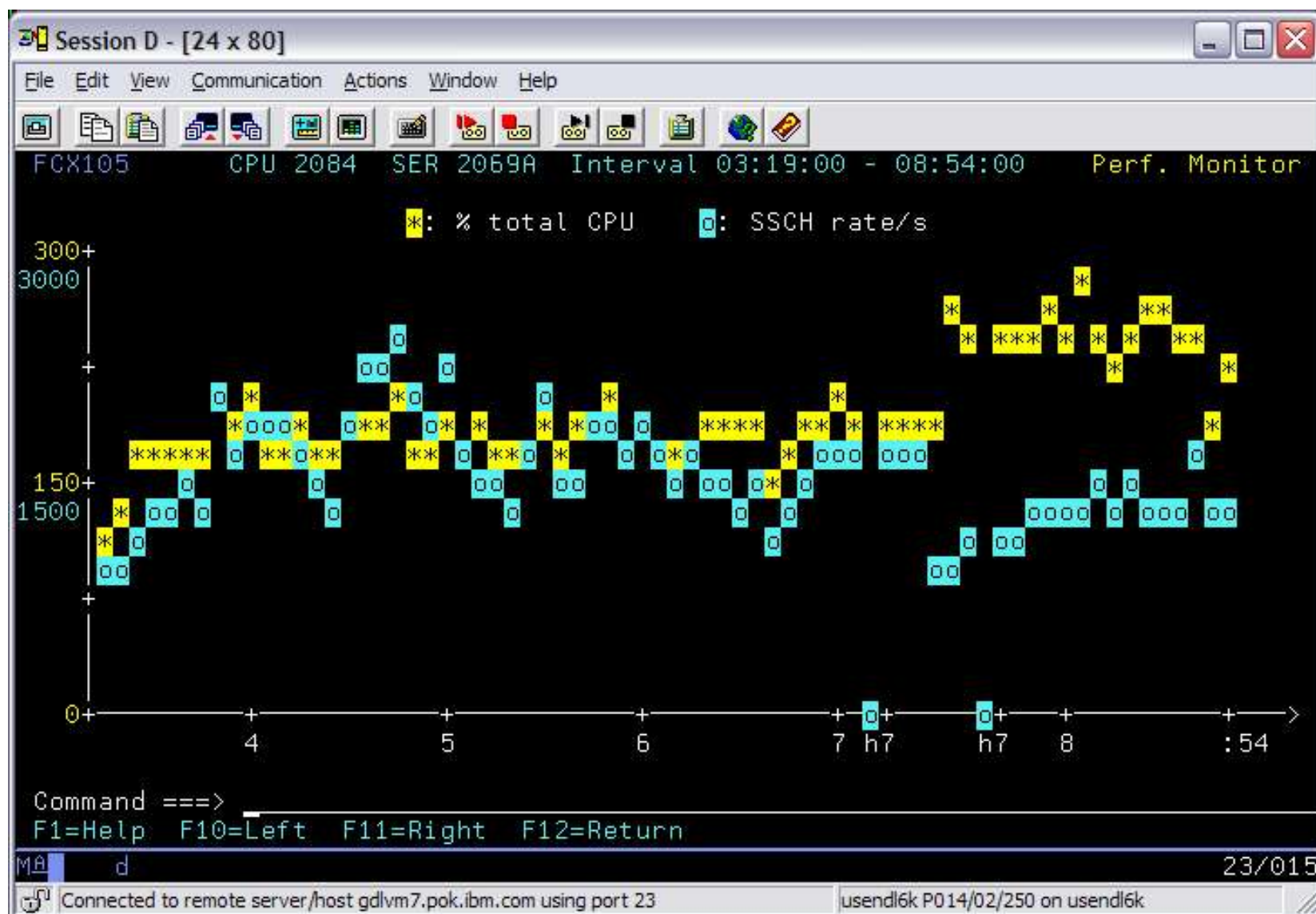
Y-Variables

1	<input type="text" value="CPU"/>	% total CPU
2	<input type="text" value="IO/S"/>	SSCH rate/s
3	<input type="text"/>	
4	<input type="text"/>	

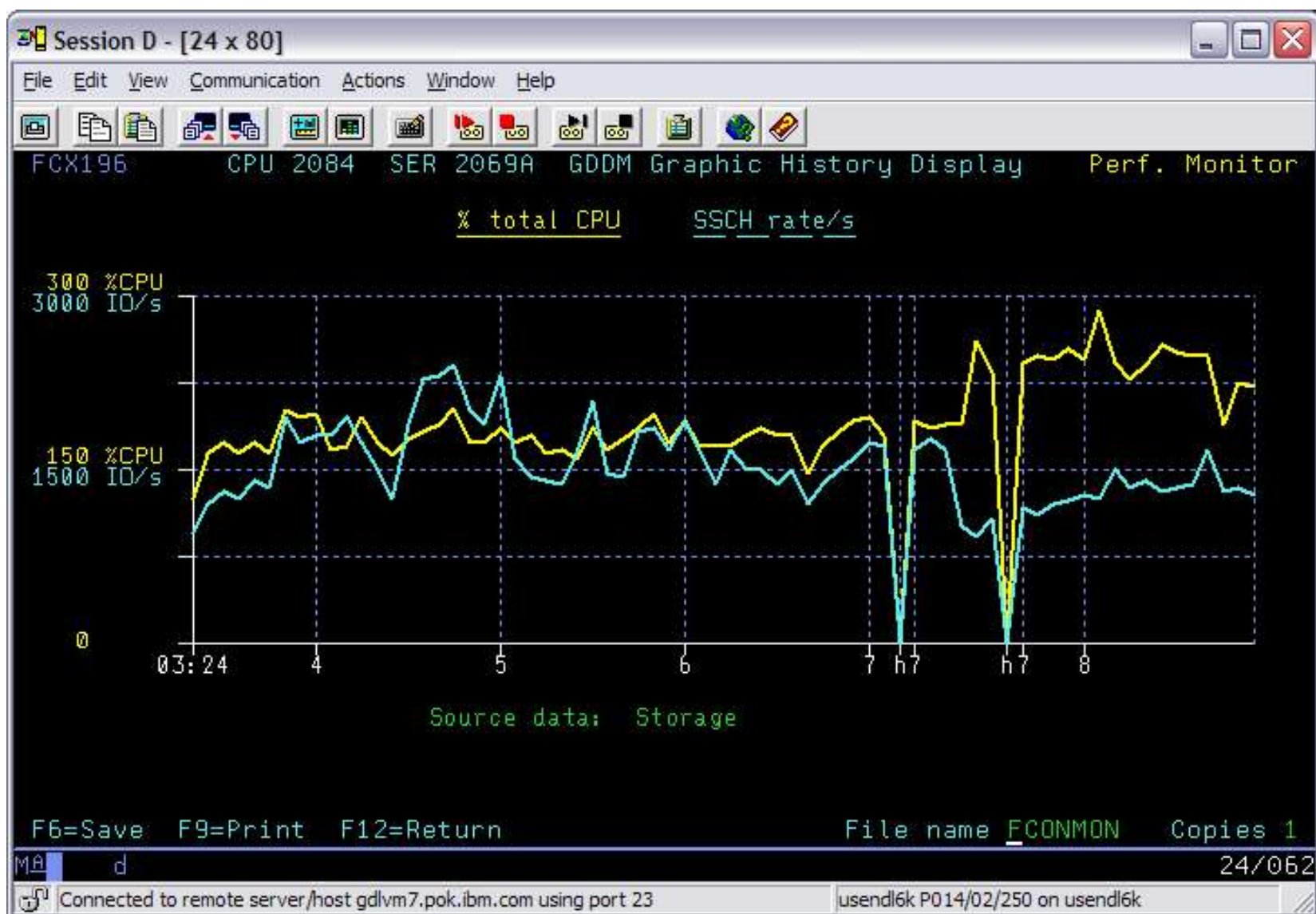
Cumulative

Done Internet

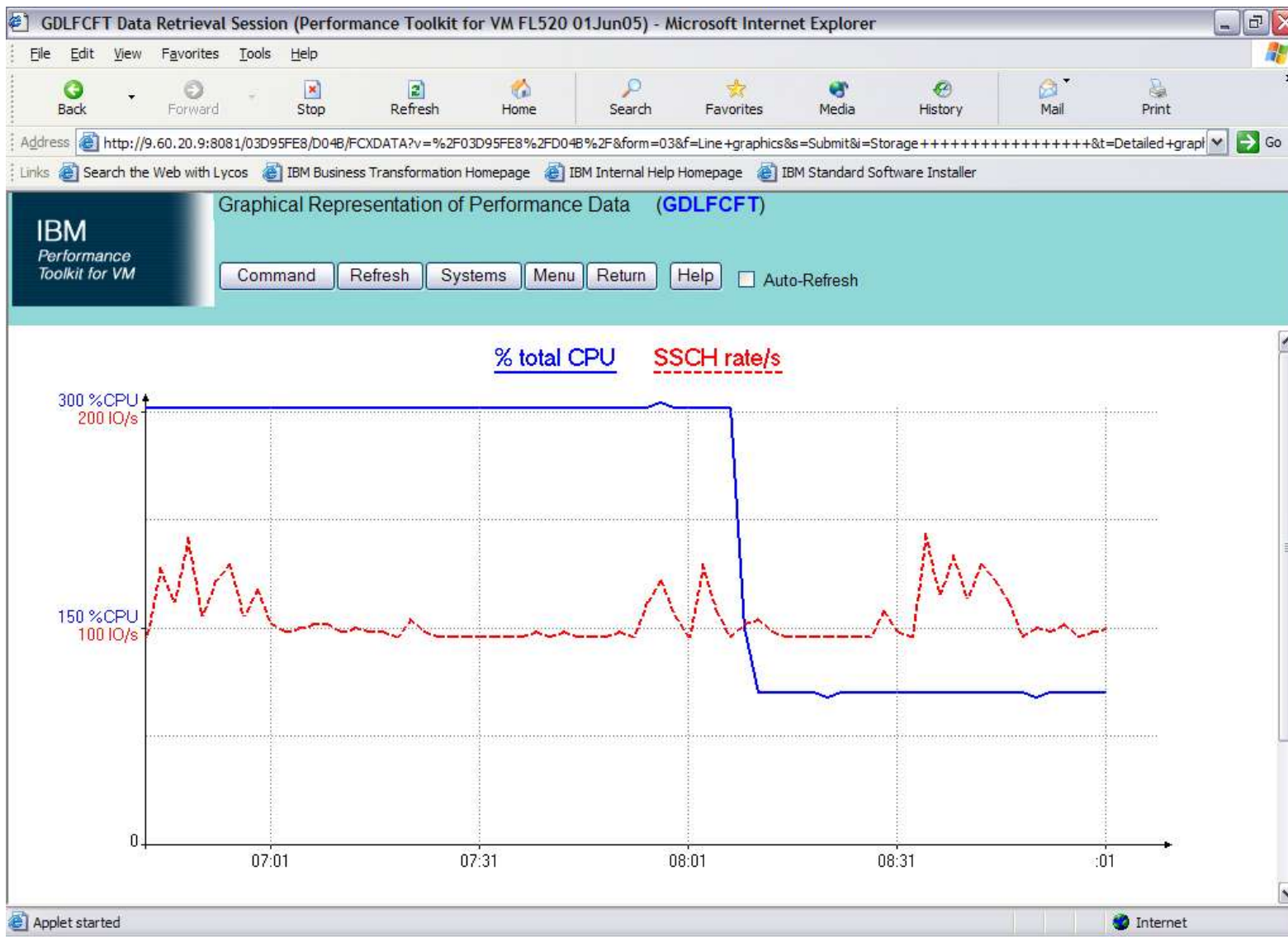
Graphics - PLOT



Graphics - GDDM



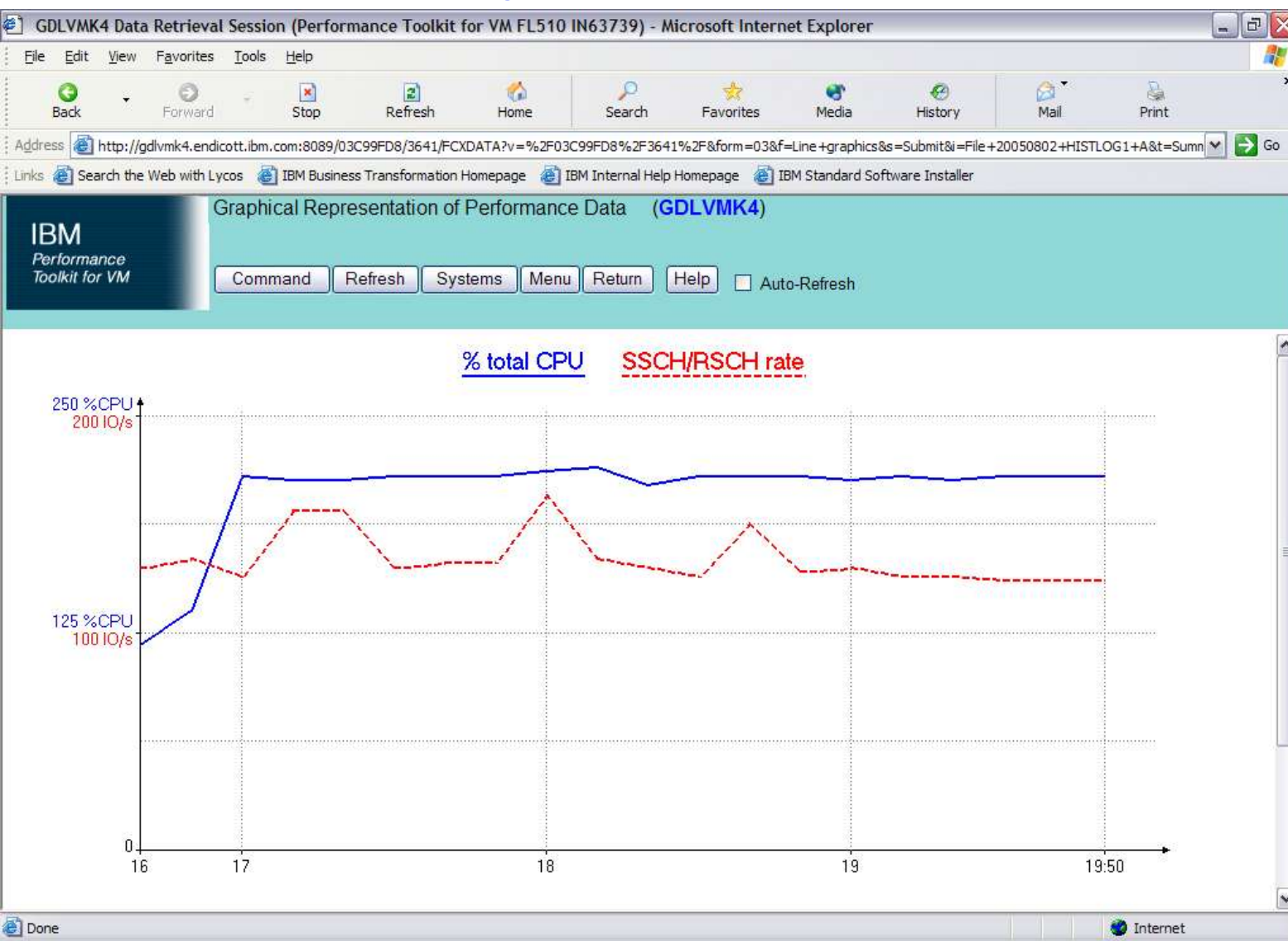
Graphics - WEB



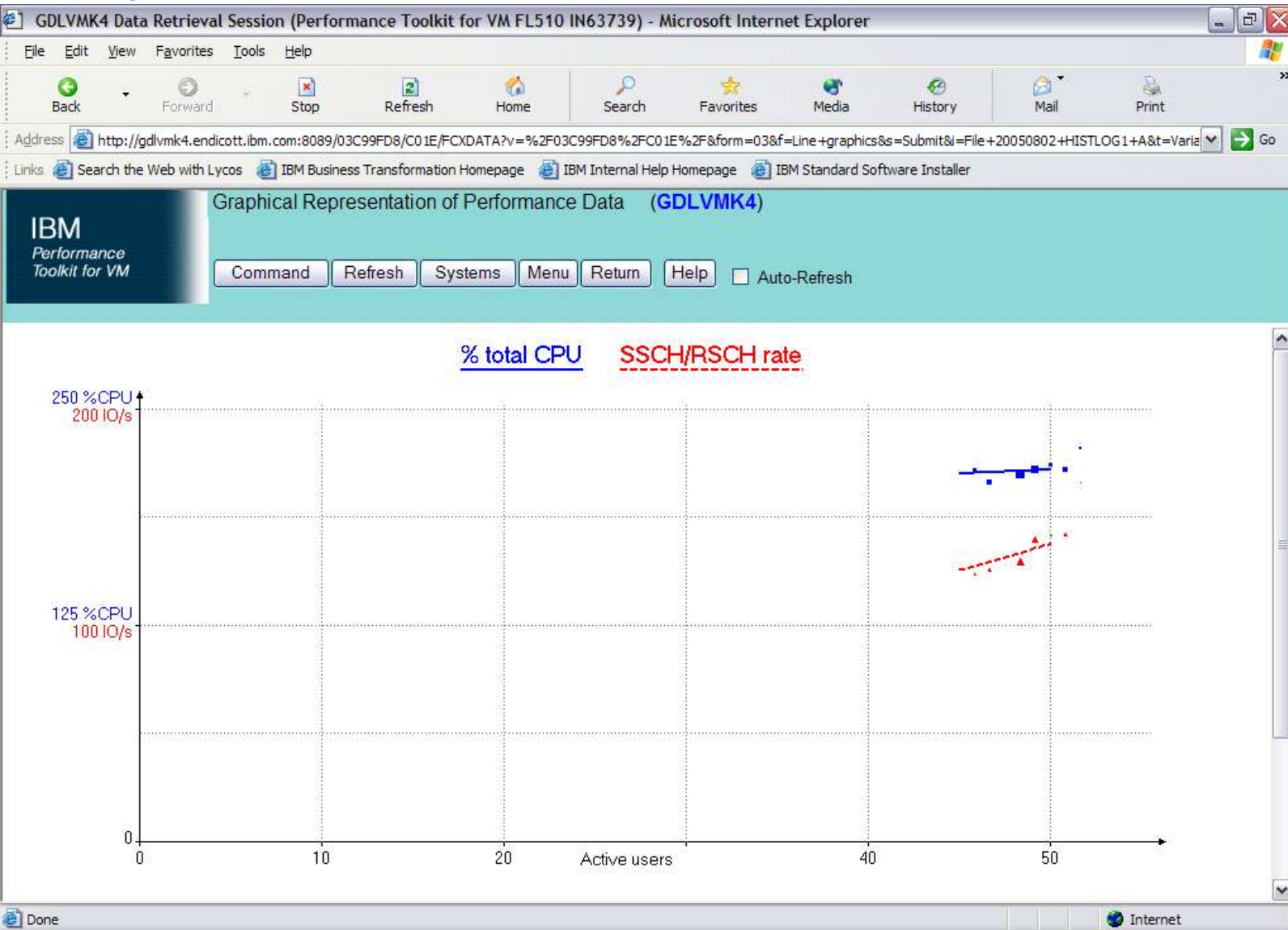
Graphics – Detailed



Graphics - Summary



Graphics – Variable Correlation



Cumulative Graphs

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63929) - Microsoft Internet Explorer

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Address <http://gdlvmk4.endicott.ibm.com:8081/03BC5890/E4B0/FCXBUTN?v=%2F03BC5890%2FE4B0%2F&form=02&s=Return&r=on> Go

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IBM
Performance Toolkit for VM

Graphics Selection Menu (GDLVMK4)

Command Refresh Systems Menu Return Help Auto-Refresh

General Specifications

Output format

Data origin

Graphics type

Selected period

Selected days

Selected hours

Variable Selection

X-Variable

Truncate at

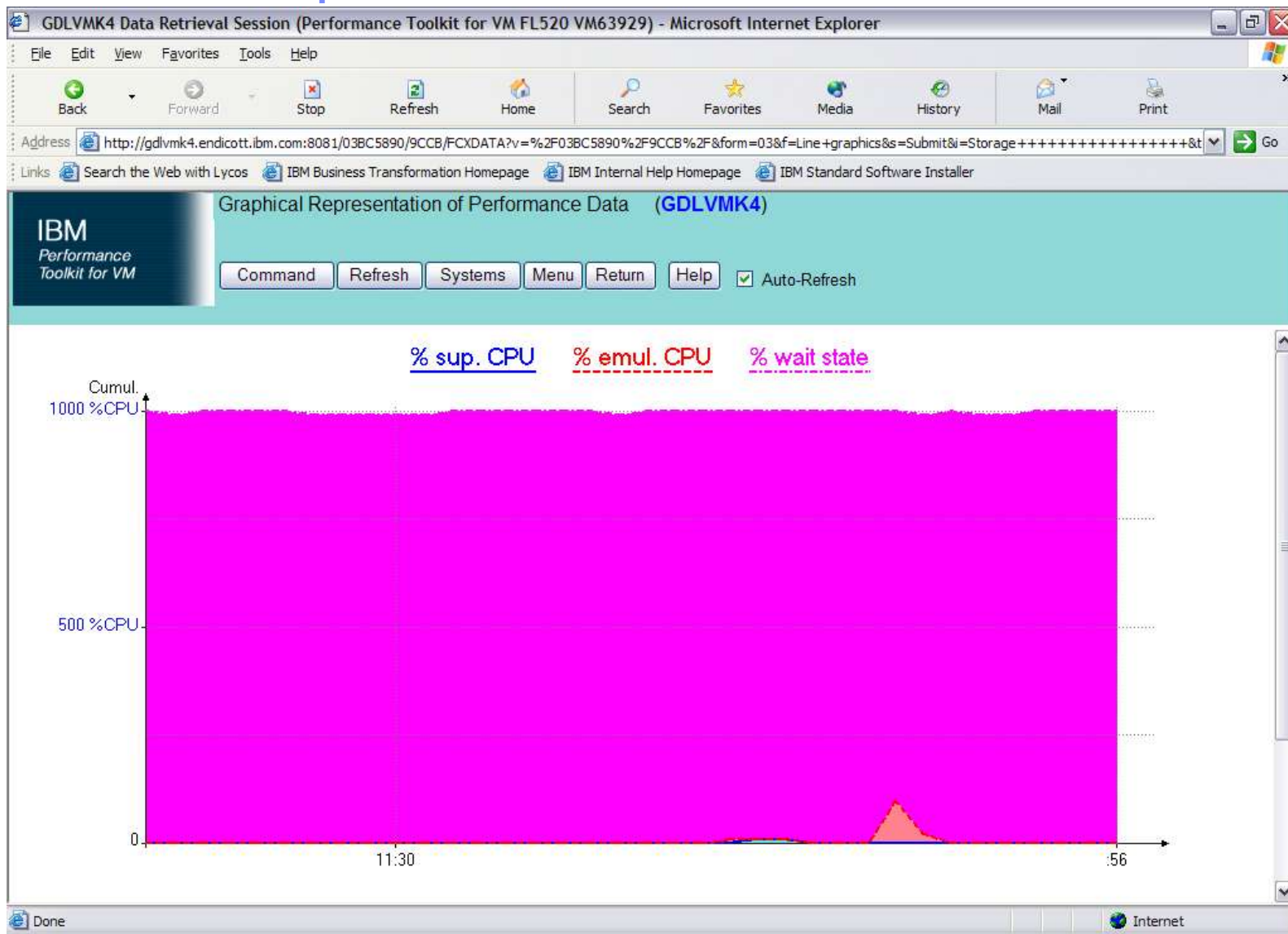
Y-Variables

1	<input type="text" value="%CP"/>	% sup. CPU
2	<input type="text" value="%EM"/>	% emul. CPU
3	<input type="text" value="%WT"/>	% wait state
4	<input type="text"/>	

Cumulative

Done Internet

Cumulative Graphs



Graphics - review

Option **31** or **GRAPHICS**

Select Format

- LINE for PLOT for WEB
- GDDM or PLOT for 3270

Select Data Origin

- Storage or history files

Select Type – Detailed, Summary or Correlation

Select Period, Days (ALL, M-F, MON ...), Hours

Select Variables – from pulldown or REDISP headings

Batch Processing

- BATCH MODE
 - PERFKIT BATCH masterfn masterft masterfm DISK fn ft fm
 - specify master file to use
 - specify MONDATA file to be used as input
- VMPRF "migration aid" MODE (removed in z/VM 6.1.0)
 - PERFKIT VMPRF masterfn masterft masterfm DISK fn ft fm
 - specify VMPRF MASTER file to use
 - Creates masterfn FCXEQUIV file with PERFKIT REPORTS
 - Creates fn RUNFILE similar to VMPRF with PERFKIT Settings
- Real time mode of operation
 - Create REPORT, TREND, SUMMARY data throughout the day
 - using FC MONCOLL RESET settings in FCONX \$PROFILE
 - Use BATCH mode to post process as needed
 - Use MONSCAN or TRNDSCAN to "walk through" history data

Batch Mode – MASTER file

- Input files
 - SETTINGS FCONX SETTINGS *
 - REPORTS FCONX REPORTS *
 - SUMRECFCONX SUMREC *
 - TRENDREC FCONX TRENDREC *

Batch Mode – MASTER file

- Output files
 - LOG BATCH LOG B
 - LISTING BATCH LISTING B
 - RUNFILE BATCH RUNFILE B
 - SUMMARY BATCH SUMMARY B
 - TREND BATCH TREND B

BATCH SETTINGS file

* Perfkit Settings File

* Limit reduction to Noon to 15:45

```
FC MONCOLL RESET 12:00r_p 15:45p
```

* Interim reports generated for every 15 minute period

```
FC SET INTERIM 15 MINUTES
```

* The log-like reports show a row for every minute

```
FC SET BYTIME 1 MINUTES
```

* Detailed reports (logs) for these users and devices

```
FC BENCHMRK USER BITNER
```

OMEGAMON XE for z/VM and Linux support

- FC MONCOLL SEGOUT ON PERFOUT
- PERFKIT does the calculations and populates the PERFOUT segment with the data that the OMEGAMON server passes on to OMEGAMON and possibly z/VM Operations Manager

OMEGAMON XE on z/VM and Linux

- Provides performance monitoring for z/VM and Linux guests
- Linux agents gather detailed performance data from Linux guests
- z/VM agent gathers performance data from z/VM and Linux
 - Including z/VM view of guests
 - Uses IBM Performance Toolkit as its data source
- Executes automated actions in response to defined events or situations
- Part of the Tivoli Management Services infrastructure and OMEGAMON family of products.
 - Integrates performance management for your entire enterprise
- Tivoli Data Warehouse (TDW) allows you to analyze trends and look at historical data

System Health Workspace

System Health - BMADDOX4 - SYSADMIN *ADMIN MODE*

File Edit View Help

Navigator View: Physical

- Enterprise
 - z/VM Systems
 - BMADDOX4
 - z/VM Linux Systems
 - WLAVMXA

Physical

z/VM Health: CPU Utilization

System ID	Virtual CPU Busy Percent	CP Percent of CPU
WLAVMXA	~55%	~5%
GDLVICOM	~10%	~5%

z/VM Health: Real Memory Overcommit ...

System ID	Storage Overcommit Ratio
GDLVICOM	~5.8
WLAVMXA	~2.0

z/VM Health: DASD Page Spac...

System ID	DASD Page Space In Use Percent
WLAVMXA	~45%
GDLVICOM	~25%

z/VM Health: Main Storage Paging...

System ID	Page Rate
WLAVMXA	~2.9
GDLVICOM	~1.8

z/VM Health: Highest Workload Wait Re...

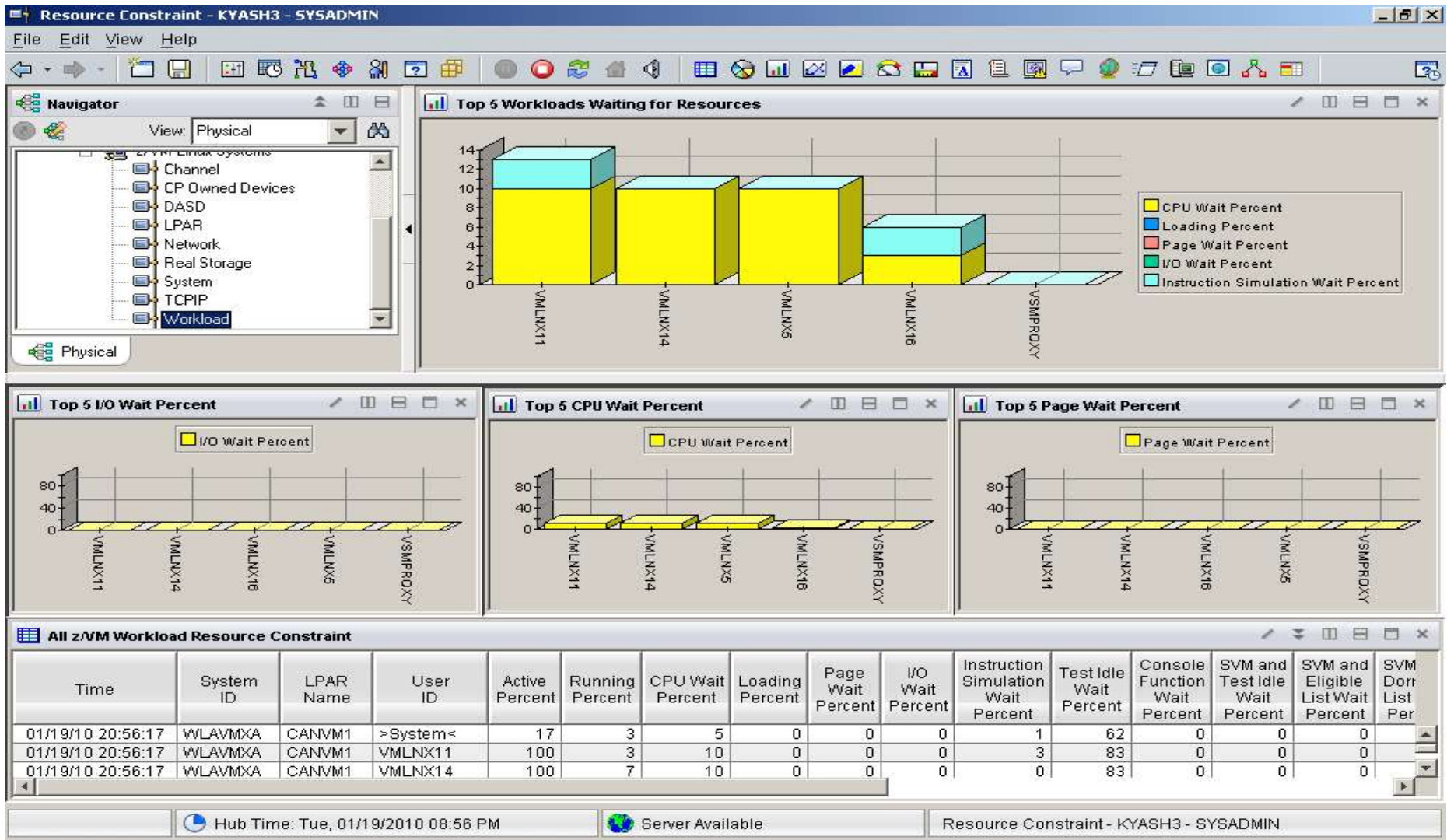
System ID + Waiting Workload	Highest Individual Wait State Percent
GDLVICOM - VMLNX17	~100%
WLAVMXA - VMLNX5	~50%

z/VM Health: All Systems

Time	System ID	LPAR Name	VDISK Main Storage frames	VDISK Maximum Blocks per user	VDISK Maximum Storage Blocks	VDISK Pages Migrated to DASD	VDISK XSTORE blocks	Workload With Highest Wait State	XSTORE Allocation Rate per second	XSTORE Available to CP	XSTORE Dedicated to Virtual Machines
12/18/09 09:46:24	GDLVICOM	VIC	0	0	0	0	0	GDLVICOM - VMLNX17	0	0	0
12/18/09 09:46:25	WLAVMXA	CANVM1	0	0	0	0	0	WLAVMXA - VMLNX5	0	0	0

Hub Time: Fri, 11/20/2009 11:48 AM Server Available System Health - BMADDOX4 - SYSADMIN *ADMIN MODE*

V4.1.2 IF 1: Resource Constraint Analysis (Waits)



References

- General information
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- Performance Toolkit Book
 - http://publibz.boulder.ibm.com/bookmgr_OS390/libraryserver/zvmv5r3/
- Comparison to VMPRF
 - <http://www.vm.ibm.com/related/perfkit/pkitprf.html>
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- RMF PM setup information – page no longer available....
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 - <http://www.vm.ibm.com/library/gm130637.pdf>