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# Performance Toolkit for VM

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IBM Performance Toolkit for VM Development

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**IBM**  
*Performance  
Toolkit for VM*

## Topics

- **Some History**
- **Direction**
- **Some Function**
- **FL510 updates**
- **FL520 updates**

## Some History

### *RealTime Monitor*

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

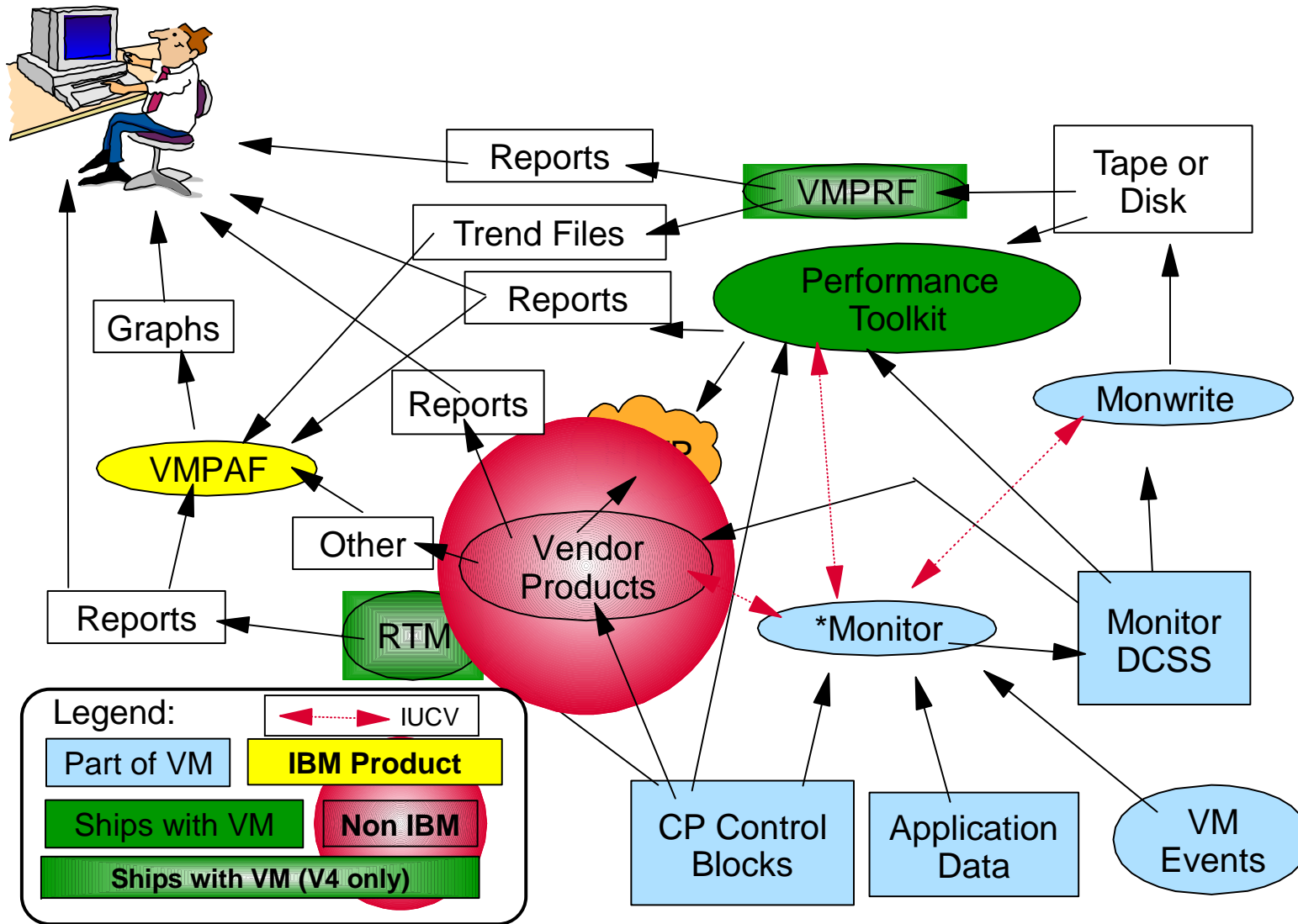
### *VMPRF*

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

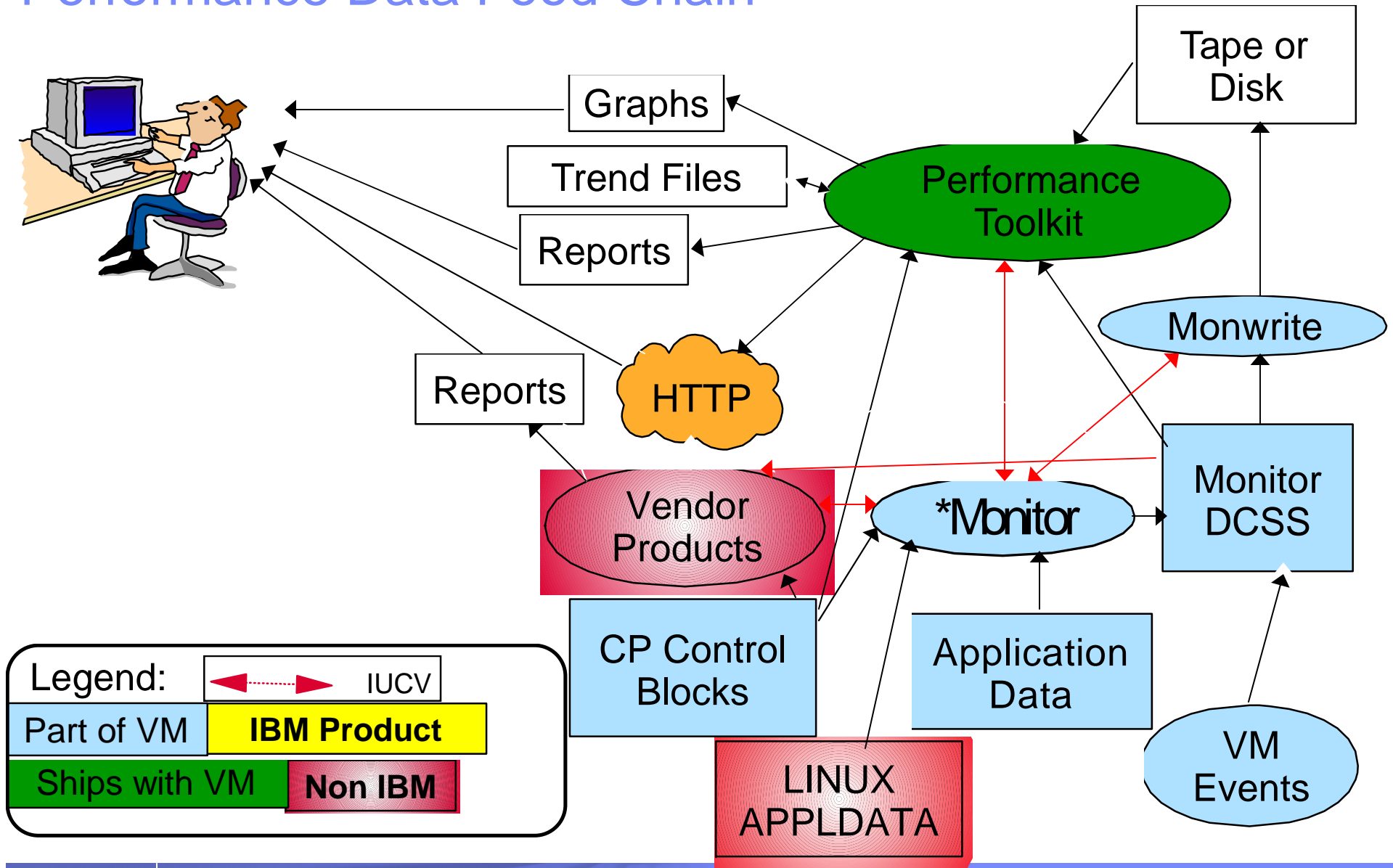
### *FCON/ESA*

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

# Performance Data Food Chain



# Performance Data Food Chain



## Performance 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

Continue to encourage vendor activity

- competition breeds excellence
- greater percentage of customer needs met

## 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**
- **4VMPTK40 = installation userid for FL440**
- **5VMPTK10 = installation userid for FL510**
- **5VMPTK20 = installation userid for FL520**

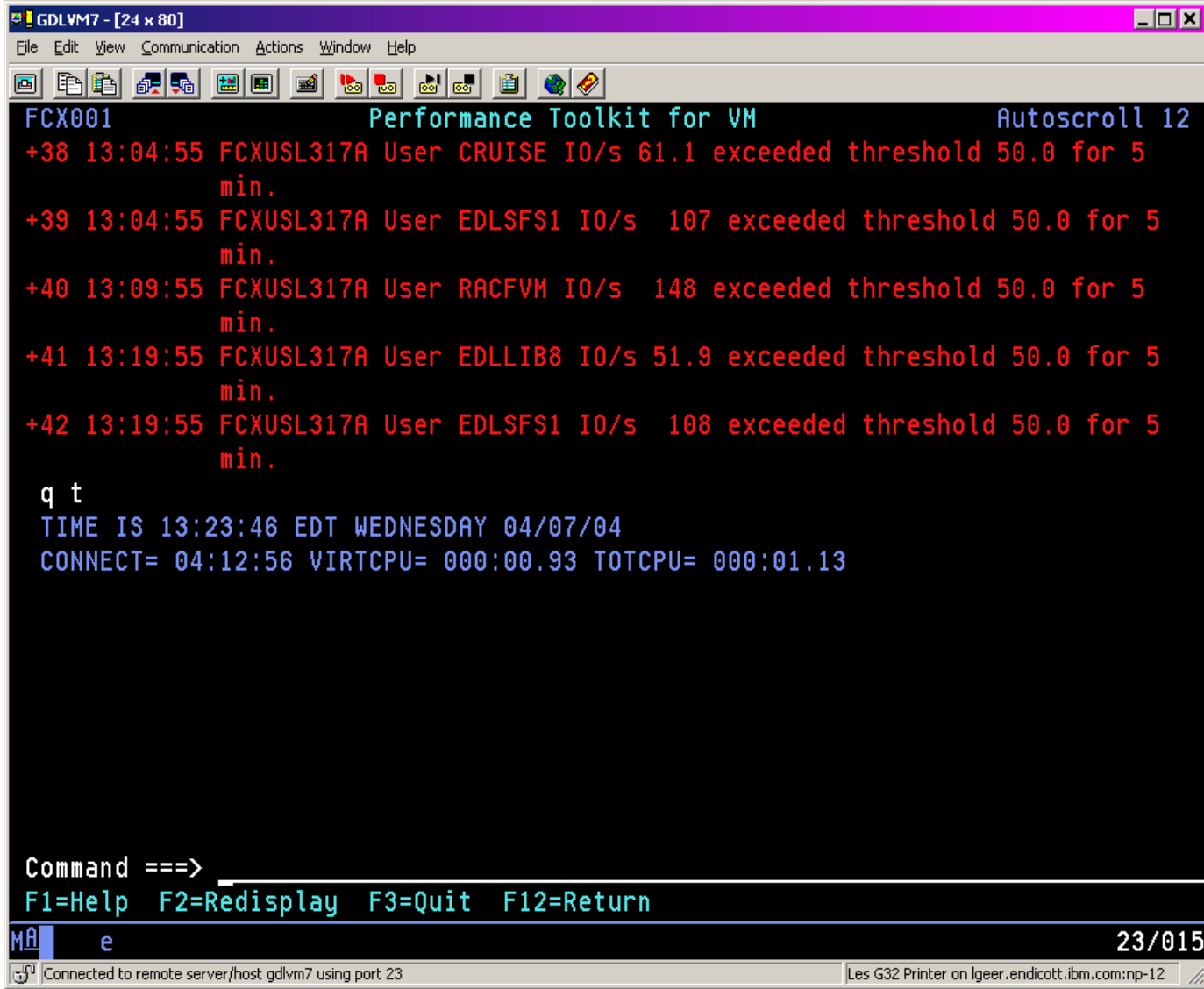
## Control Files

- **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

- **Realtime 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**

# Operator's console



The screenshot shows a terminal window titled "GDLVM7 - [24 x 80]" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. The main display area 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
```

At the bottom of the terminal, there is a status bar showing "MA e" on the left, "23/015" on the right, and a connection status "Connected to remote server/host gdlvm7 using port 23" on the far left and "Les G32 Printer on lgeer.endicott.ibm.com:np-12" on the far right.

# 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.  21. User resource usage* 3B. Proc. load & config*
C. Transact. statistics  22. User paging load*   3C. Logical part. load
D. Monitor data         23. User wait states*   3D. Response time (all)*
E. Monitor settings     24. User response time* 3E. RSK data menu*
F. System settings      25. Resources/transact.* 3F. Scheduler queues
G. System configuration  26. User communication* 3G. Scheduler data
H. VM Resource Manager   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^ d 23/015
Connected to remote server/host gdlvm7.pok.ibm.com using port 23
usendl3d-250-02-P014-Endicott-N on usendl3d

```

# 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	TCPU	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

# Example for Performance Data Display

Hyperlink  
selection  
of:

Sort sequence →

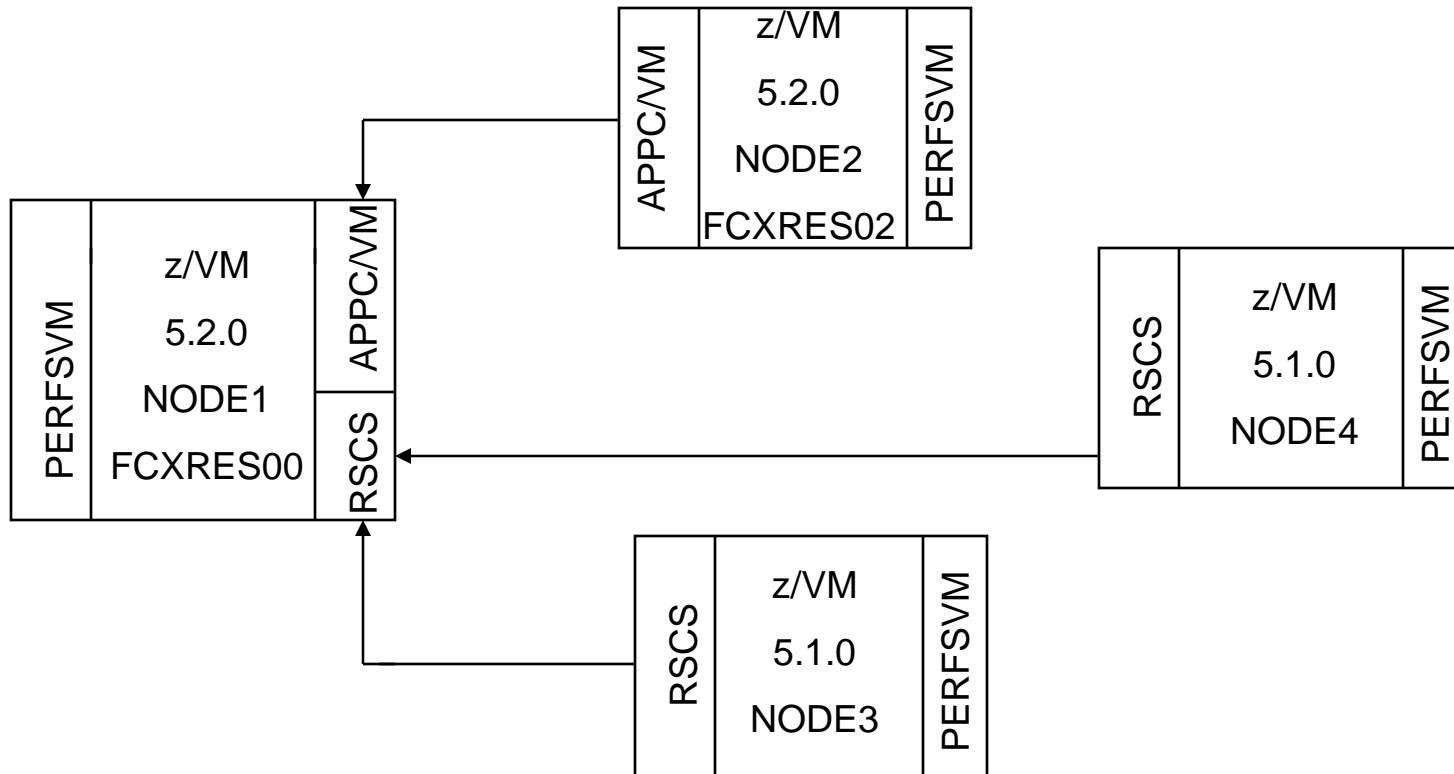
Context help ↗

Device details →

Device	Mdisk	Pa	Rate/s	Time (msec)	Re
>> All DASD <<			.0	5 13.8	5.5 19.8 19.8
2000 3380-K XASRES	0	1	.0	1.6 1	1.8 3.5 3.5
2001 3380-K SYSTOL	0	1	.0	1.0 1	.3 1.4 1.4
2002 3380-K SFSPK1	0	1	.0	.3 0	.3 .6 .6
2003 3380-K SFSPK2	0	1	.0	.2 0	.3 .5 .5
2004 3380-K CMS1	0	1	.0	.2 0	.3 .5 .5
2005 3380-K CMS2	0	1	.0	.2 1	.3 .6 .6
2006 3380-K CMS3	0	1	.0	.2 1	.3 .6 .6
2007 3380-K LP1	0	1	.0	.2 0	.3 .5 .5
2008 3380-K RTST01	0	1	.0	.3 0	.3 .6 .6
2009 3380-K RTST02	0	1	.0	.2 0	.3 .5 .5
200A 3380-K RTST03	0	1	.0	.1 0	.3 .4 .4
200B 3380-K VTAM01	0	1	.0	.2 1	.3 .6 .6
200C 3380-K VTAM02	0	1	.0	.3 1	.2 .6 .6

# 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/VM5.2  N      FCXRES02
NODE3  PERFSVM  z/VM5.1  N
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/VM5.2  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      :lname.*IDENT
                    :tpn.FCXRES02
                    :security.SAME
```

# Central Data Collection

## NODE3 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

## 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**

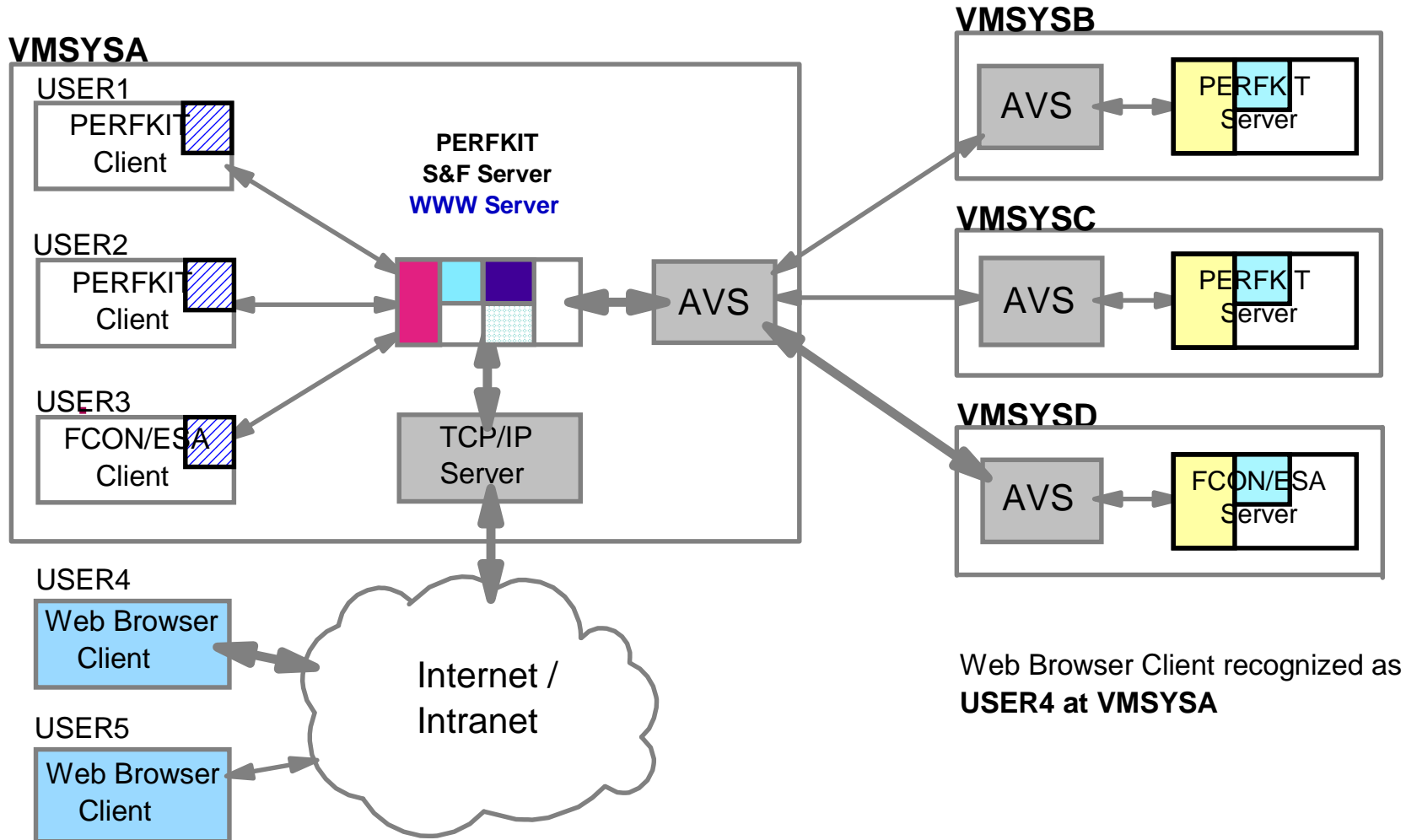
In FCONX \$PROFILE or entered manually

## Central Data Collection

### Summary:

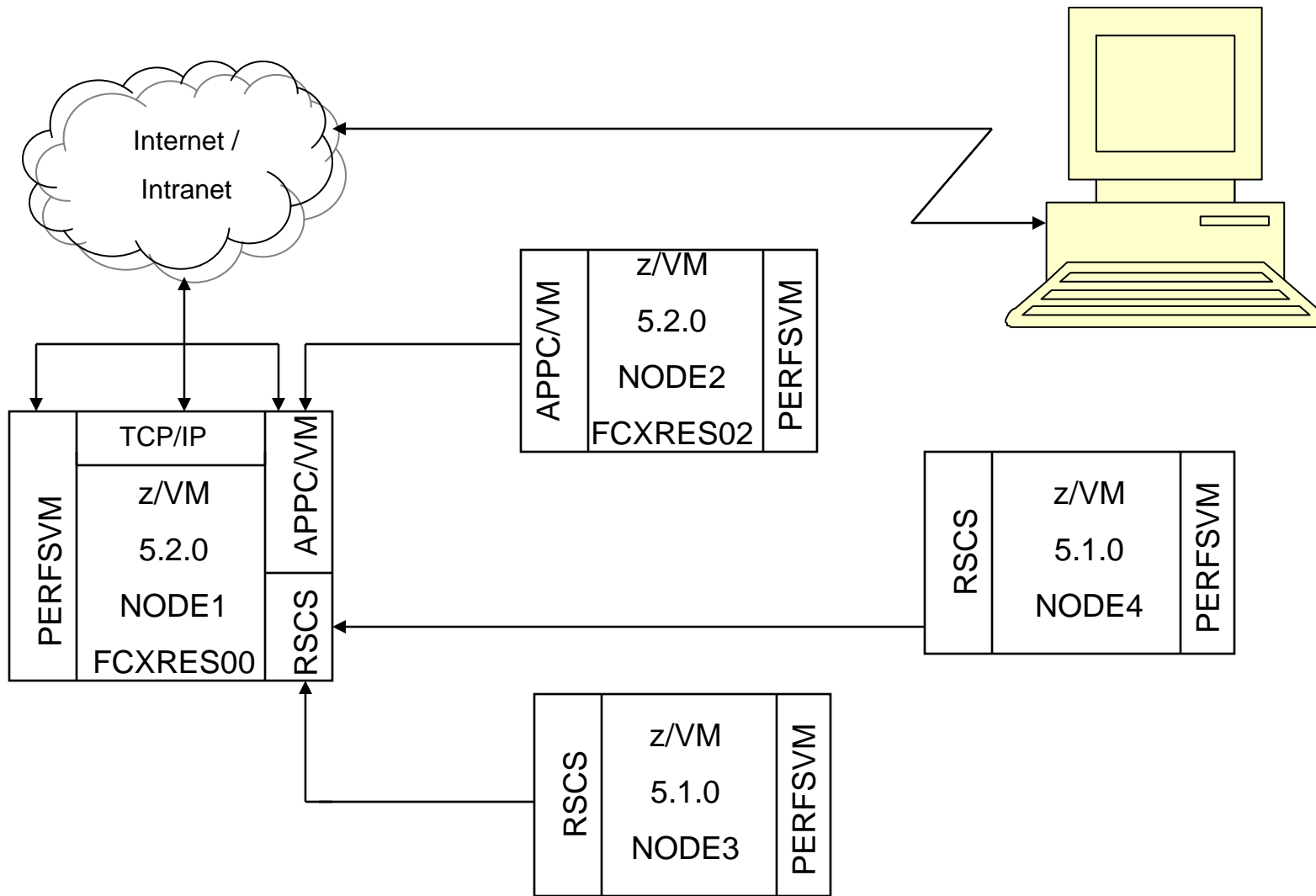
- PERFKIT FL520 will “pull” data from other PERFKIT FL520 systems using APPC/VM when that system is identified in the FCONRMT SYSTEMS file with a resource name
- PERFKIT FL520 will receive data “pushed” from other PERFKIT FL510 systems using RSCS

# Web Access



Web Browser Client recognized as **USER4** at **VMSYSA**

# 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.

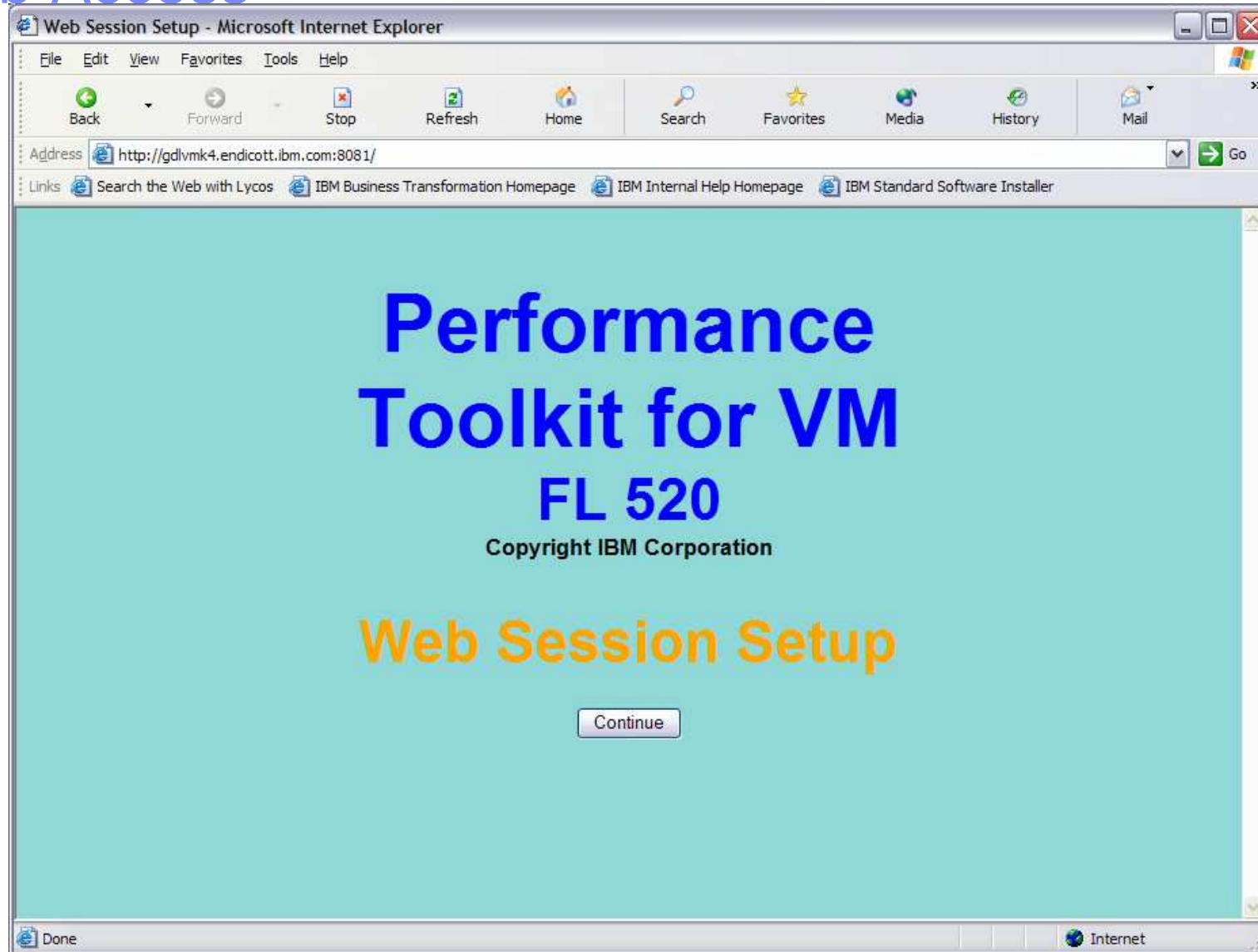


## Web Setup

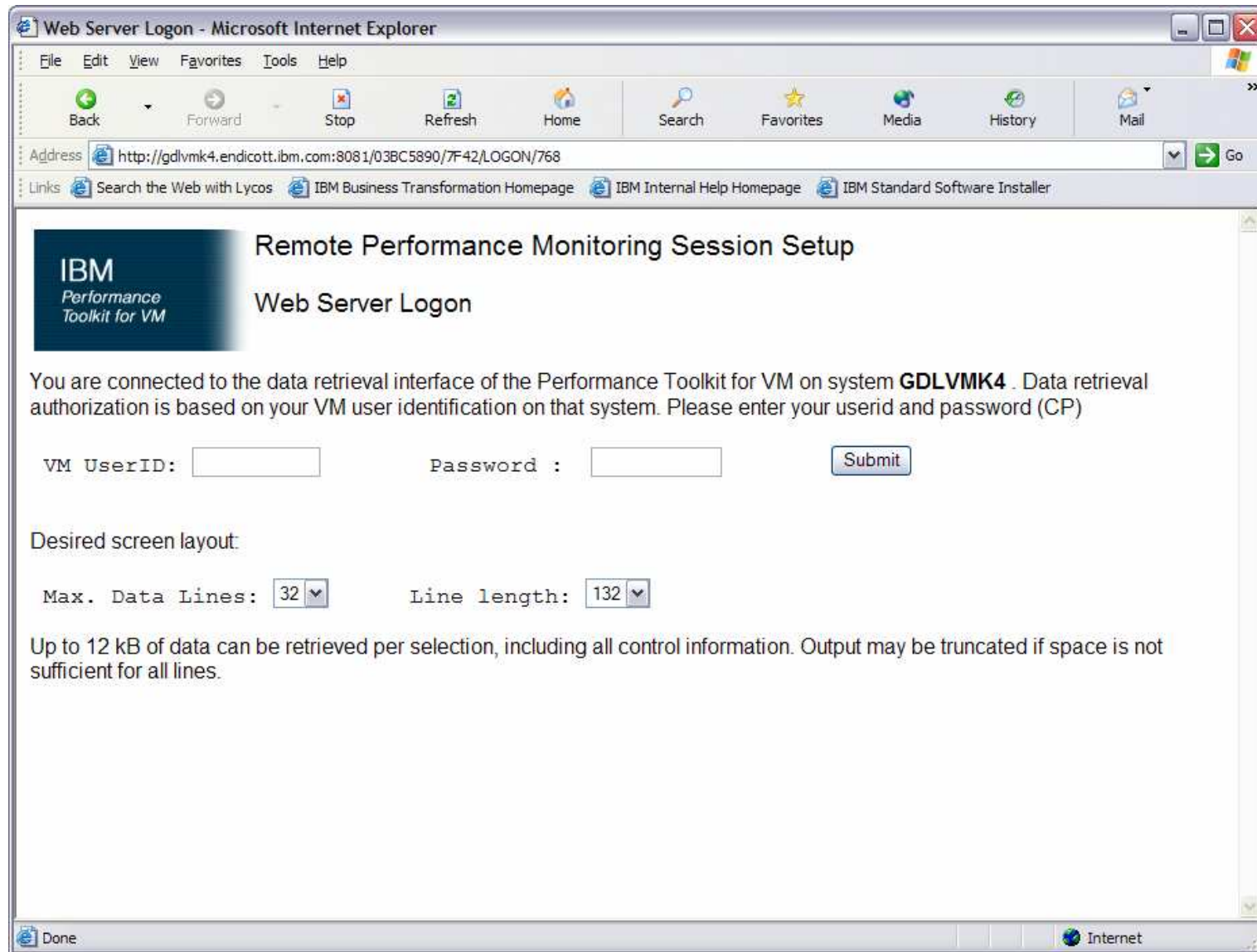
To setup web access you need to:

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 Access



# Web Access



Web Server Logon - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History Mail

Address <http://gdlvmk4.endicott.ibm.com:8081/03BC5890/7F42/LOGON/768> Go

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

## Remote Performance Monitoring Session Setup

### Web Server Logon

**IBM**  
Performance  
Toolkit for VM

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 (CP)

VM UserID:  Password :

Desired screen layout:

Max. Data Lines:  Line length:

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.

Done Internet

# Web Access

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	.....

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

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail

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

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

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

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

Address: http://gdlvmk4.endicott.ibm.com:8081/03916390/9A4A/SO.USER.%CPU

### 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	Diag98	UR	Pq/s	User	Status	Logged	Active	Pages	SPC
>System<	.01	.007	.005	1.6	.1	.0	.0	.0	.0	.0	---	---	1.0	.5	.0	
MROUTE	.20	.117	.103	1.1	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
SSLSEV	.16	.096	.063	1.5	.0	.0	.0	.0	.0	.0	EME,CL0	DISP	1	1	0	
LXGIPV6B	.13	.075	.036	2.1	.0	.0	.0	.0	.0	.0	ESA,CL3	DISP	1	1	0	
LXGIPV6A	.12	.072	.036	2.0	.0	.0	.0	.0	.0	.0	ESA,CL3	DISP	1	1	0	
LXRIPV6A	.12	.072	.038	1.9	.0	.0	.0	.0	.0	.0	ESA,CL3	DISP	1	1	0	
LXRIPV6B	.12	.069	.040	1.7	.0	.0	.0	.0	.0	.0	ESA,CL3	DISP	1	1	0	
TCPIP	.09	.056	.028	2.0	2.8	.0	.0	2.8	.0	.0	ESA,---	DORM	1	1	0	
JA2	.05	.029	.023	1.3	.2	.2	.1	.0	.0	.0	ESA,---	DORM	1	1	0	
PERFSVM	.05	.032	.025	1.3	.2	.2	.1	.0	.0	.0	ESA,---	DORM	1	1	0	
RSCS	.01	.003	.002	1.5	.3	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
SNMPD	.01	.004	.003	1.3	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
TCPIPB	.01	.003	.003	1.0	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
VTAM	.01	.004	.004	1.0	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
AUTOLOG1	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
AVS	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
BUCKETS	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
DATAMOVE	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
DIRMAINT	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
DTCVSW1	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
DTCVSW2	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA,---	DORM	1	1	0	
EREP	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
ESAWEB01	0	0	0	...	0	0	0	0	0	0	ESA,---	DORM	1	0	0	
FARMAN	0	0	0	...	0	0	0	0	0	0	EME,---	DORM	1	0	0	
FTPSECRB	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	XC,---	DORM	1	1	0	
FTPSECUR	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	XC,---	DORM	1	1	0	
FTPSEVRB	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	XC,---	DORM	1	1	0	
FTPSEVRP	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	XC,---	DORM	1	1	0	

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

Address: http://gdlvmk4.endicott.ibm.com:8081/03916390/ID56/HE.04.011

General User Resource Utilization (GDLVMK4)  
 Select a user for user details or [IDLEUSER](#) for a list of idle users

Command Refresh Systems Menu Fow Help  Auto-Refresh

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

userid	%CPU	TCPU	VCPU	Ratio	Total	DASD	Avoid	Diag98	UR	Pq/s	User Status	Logged	Active	Pages	SPq/s	MDC	Insert	Share	Nr	Use
>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. <a href="#">Return</a>																				
<a href="#">PERFSVM</a>	.05	.031	.025	1.2	.1	.1	.1	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	3.0%			
<a href="#">RSCS</a>	.01	.003	.002	1.5	.3	.0	.0	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	100			
<a href="#">TCPIP</a>	.01	.003	.003	1.0	.0	.0	.0	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	3000			
<a href="#">VTAM</a>	.01	.004	.004	1.0	.0	.0	.0	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	100			
<a href="#">AUTOLOG1</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">AVS</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">BUCKETS</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">DATAMOVE</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">DIRMAINT</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">DTCVSW1</a>	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	100			
<a href="#">DTCVSW2</a>	.00	.000	.000	...	.0	.0	.0	.0	.0	.0	ESA,---,DORM	1	1	0	.00	.0	100			
<a href="#">EREP</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			
<a href="#">FSAWER01</a>	0	0	0	...	0	0	0	0	0	0	ESA,---,DORM	1	0	0	0	0	100			

Address: http://gdlvmk4.endicott.ibm.com:8081/03916390/8854/HE.04.011

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL520 VM63857) - 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:8081/03916390/4C8B/FCXBUTN?v=%2F03916390%2F4C8B%2F&form=02&s=Refresh&ar=on> Go

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

### Resource Utilization Details for Selected User (GDLVMK4)

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 : .000%	Proj. WSET : 7682	Pgs moved >2GB> : .0/s
VF overhead : .000%	Reserved pgs : 0	Main > XSTORE : .0/s
VF emulation : .000%	Locked pages : 0	XSTORE > main : .0/s
VF load rate : .000/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 : .000	

#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,SIMV	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

Address: http://gdlvmk4.endicott.ibm.com:8081/03916390/D5F7/DEV.A503

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

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 BVP/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

## 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>



IBM  
Performance  
Toolkit for VM

# Graphics

## Graphics

PERFKIT Graphics include:

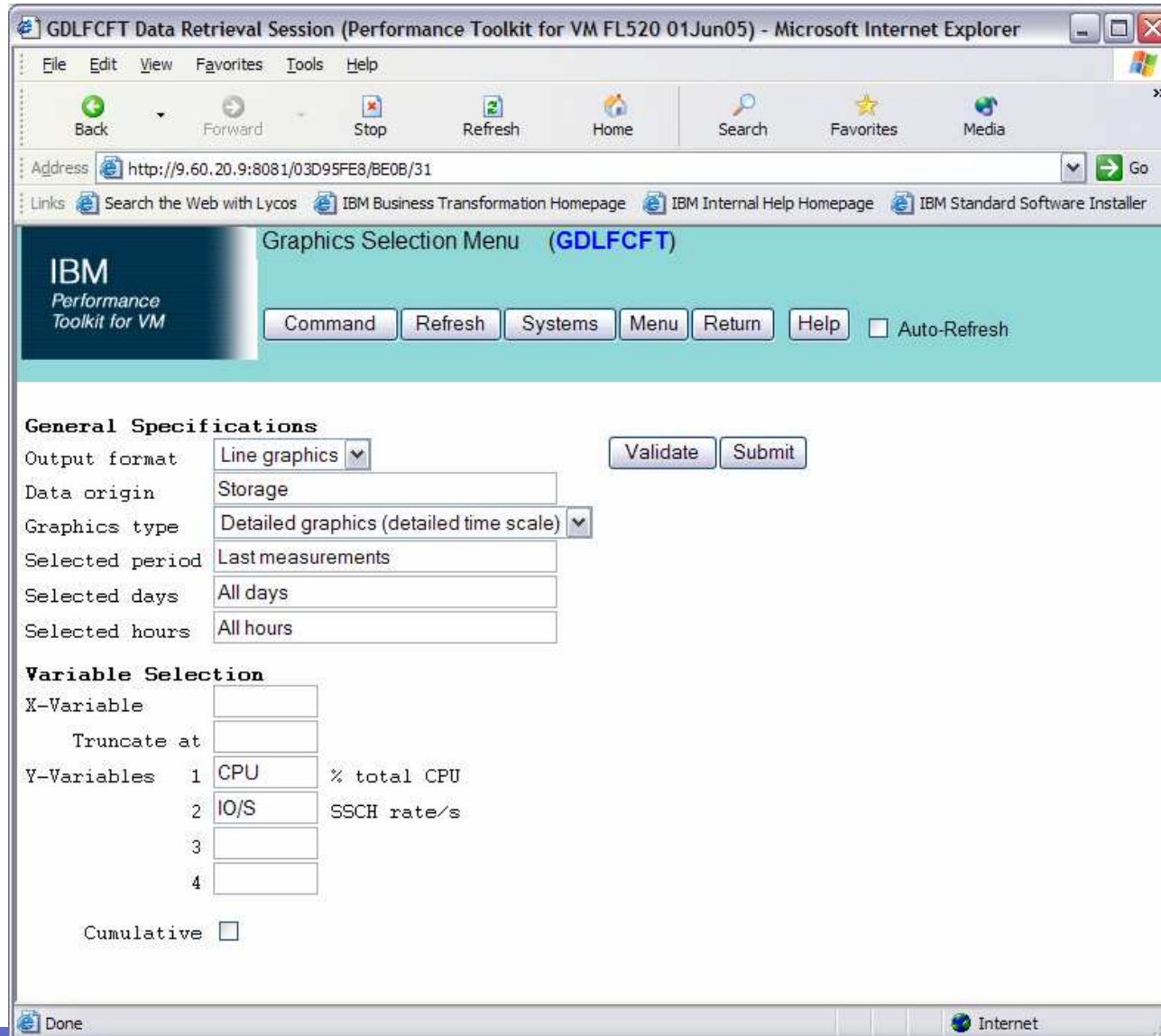
- PLOTS – using 3270 and characters like \*, o, =, /
- GDDM Graphics – using 3270 and GDDM
- Browser – using your web browser

Graphs can be created from:

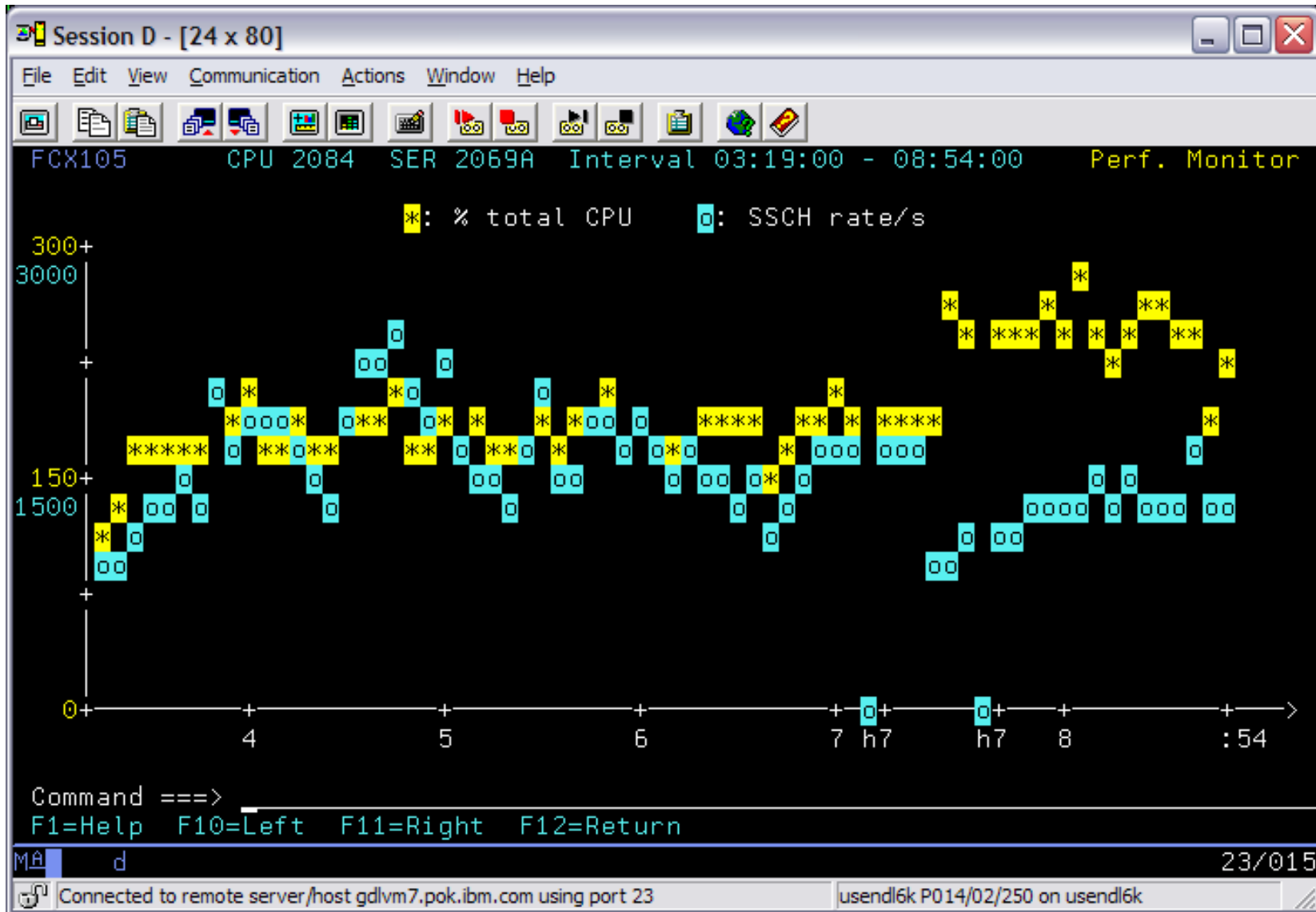
- Storage – using data just collected
- History Files – using data saved from an earlier time

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

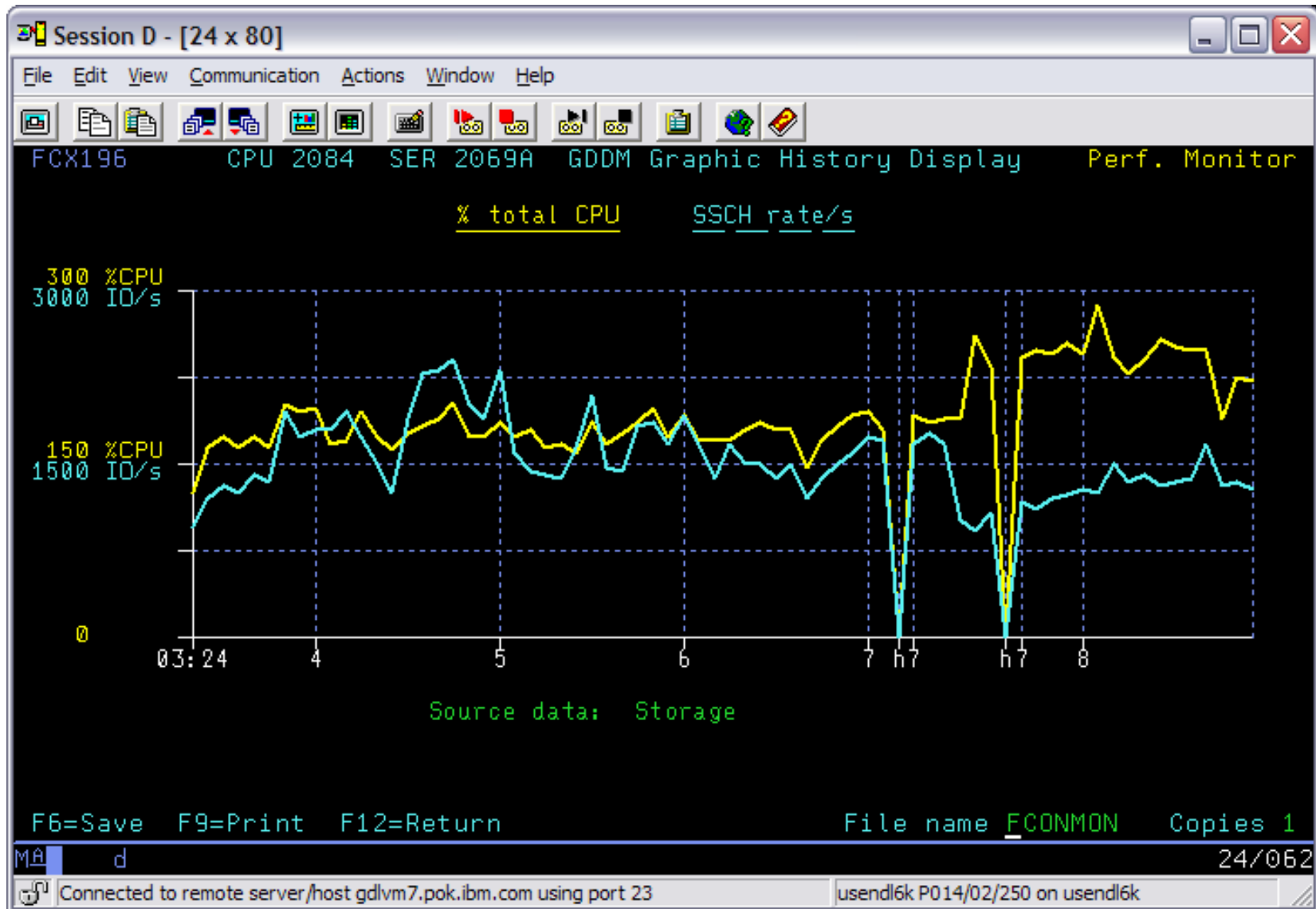
# Graphics



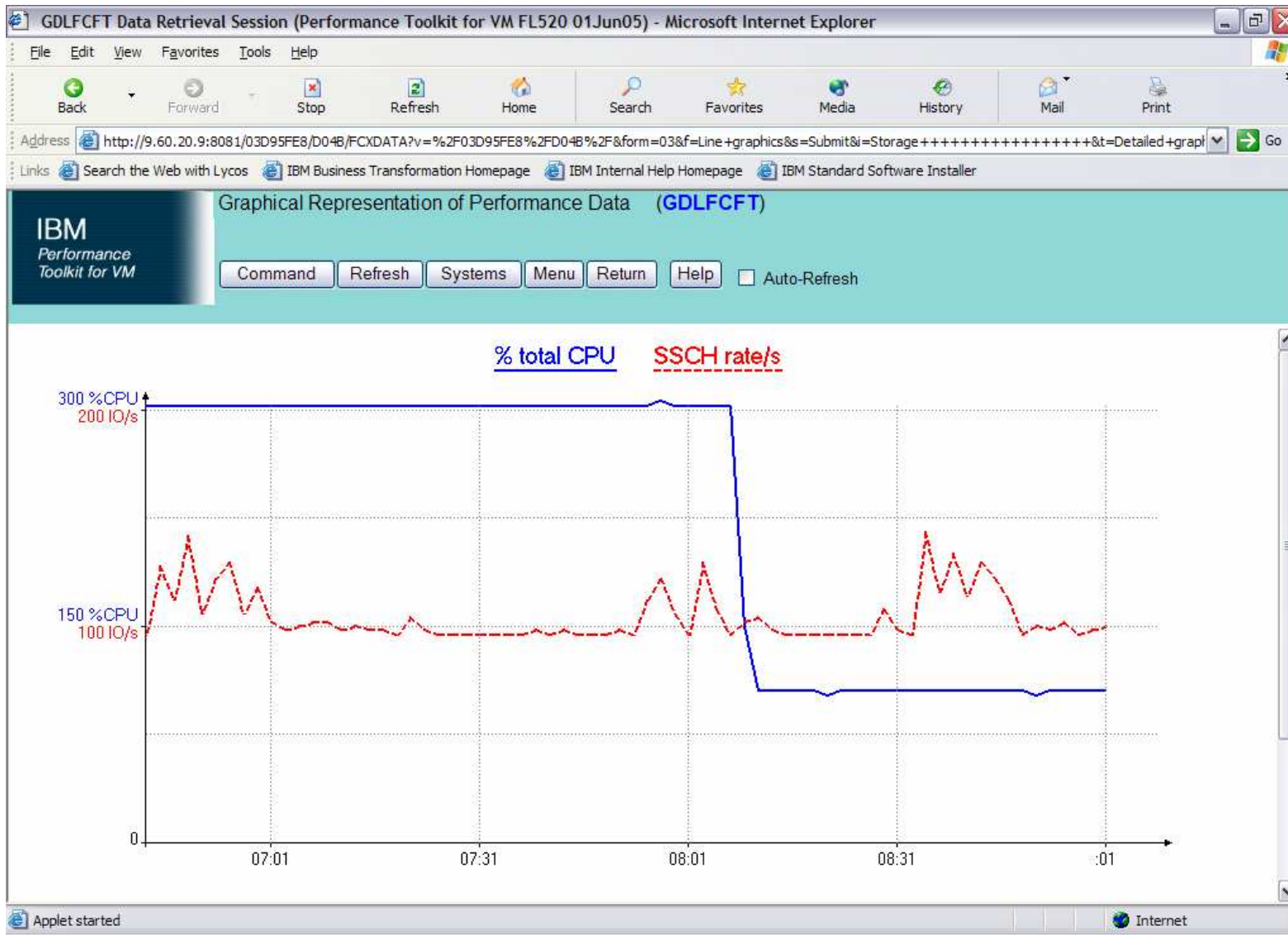
# Graphics - PLOT



# Graphics - GDDM



# Graphics - WEB





# Graphics – Output Format

**IBM Performance Toolkit for VM**

**Graphics Selection Menu (GDLFCFT)**

Command Refresh Systems Menu Return Help  Auto-Refresh

**General Specifications**

Output format: Line graphics

Data origin: Line graphics

Graphics type: Simple plot  
Detailed graphics (detailed time scale)

Selected period: FROM 07:00

Selected days: All days

Selected hours: All hours

**Variable Selection**

X-Variable: ACT Active users  
Truncate at:

Y-Variables:

1	CPU	% total CPU
2	IO/S	SSCH rate/s
3	LOGN	Logged users
4	QX	Q0/2/3 users

Cumulative

# Graphics – Data Origin

**GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL510 IN63739) - Microsoft Internet Explorer**

Address: <http://gdlvmk4.endicott.ibm.com:8089/03C99FD8/0AA7/FCXDATA?v=%2F03C99FD8%2F0AA7%2F&form=03&f=Line+graphics&s=Validate&w=x++++&t=Detailed+graphics+%2> Go

**IBM Performance Toolkit for VM**

**Graphics Selection Menu (GDLVMK4)**

Command Refresh Systems Menu Return Help  Auto-Refresh

**General Specifications**

Output format: Line graphics

Data origin: **STOrage** Invalid: Select from pull-down menu

Graphics type: **STOrage** (scale)

Selected period: File ACUM HISTSUM A

Selected days: File 20050803 HISTLOG A

Selected hours: File 20050802 HISTLOG1 A

File 20050729 HISTLOG2 A

File 20050728 HISTLOG2 A

File ACUM PERFHIST A

File FCONX FCXTREND A

**Variable Select**

X-Variable: File GDLVMK4 FCXTREND A

Truncate at: File 060904 PERFLOG1 A

File 060804 PERFLOG2 A

Y-Variables: 1 File GDLVMK4 RMONLOG A

2 C1ES

3

4

Cumulative

Done Internet

# Graphics – Graphics type

**IBM Performance Toolkit for VM**

Graphics Selection Menu (GDLVMK4)

Command Refresh Systems Menu Return Help  Auto-Refresh

**General Specifications**

Output format: Line graphics

Data origin: File 20050802 HISTLOG1 A

Graphics type: Detailed graphics (detailed time scale)

Selected period: Detailed graphics (detailed time scale)

Selected days: Summary graphics (coarse time scale)

Selected hours: Variable correlation

Selected hours: All hours

**Variable Selection**

X-Variable:

Truncate at:

Y-Variables:

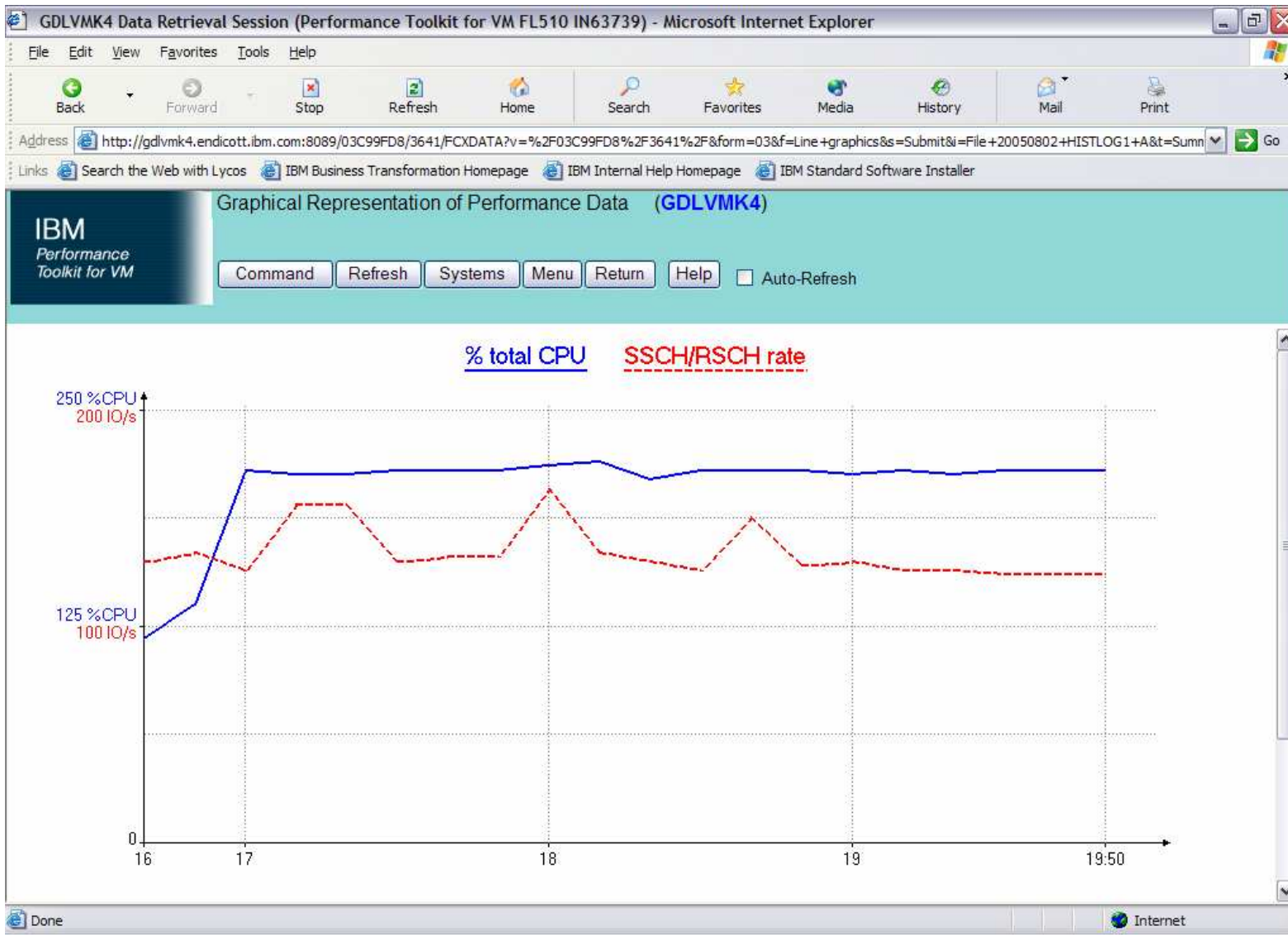
1	CPU	% total CPU
2	CIES	C11 time slice
3	<input type="text"/>	
4	<input type="text"/>	

Cumulative

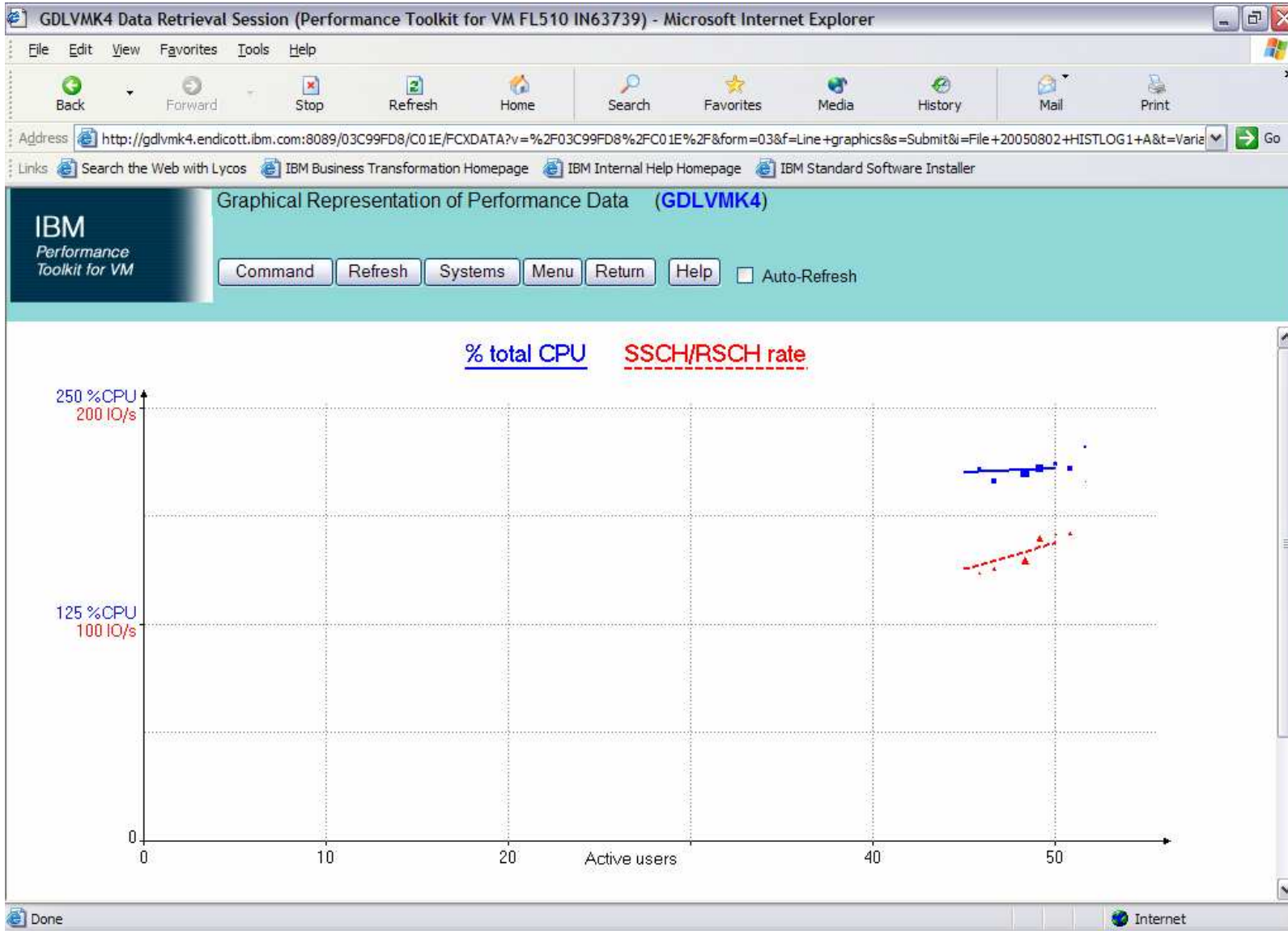
# Graphics – Detailed



# Graphics - Summary



# Graphics – Variable Correlation



# Graphics – Variables – use REDISP command

**IBM Performance Toolkit for VM**

Graphics Selection Menu (GDLVMK4)

redispl

**General Specifications**

Output format: Line graphics

Data origin: File 20050802 HISTLOG1 A

Graphics type: Variable correlation

Selected period: FROM 15:30

Selected days: All days

Selected hours: All hours

**Variable Selection**

X-Variable: ACT Active users

Truncate at:

Y-Variables:

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

Cumulative

# Graphics – REDISP headings

GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL510 IN63739) - Microsoft Internet Explorer

Address: <http://gdlvmk4.endicott.ibm.com:8089/03C99FD8/D644/FCXBUTN?v=%2F03C99FD8%2FD644%2F&form=02&c=redisp&s=Submit>

General Performance Data by Time (GDLVMK4)

Command Refresh Menu Back Right Help  Auto-Refresh

Interval 22:03:00-10:01:37, on 2005/08/03

TIME	CPU	%CP	%EM	%WT	%SY	%VEC	%VEM	IO/S	VIO/S	PG/S	XPG/S	DIAG	PRIV	LOGN	ACT	TR-T	NT-T	CIES	TR-Q	NT-Q	TR/S	NT/S	ITR	%PQ	%
09:32	110	75	35	690	4	0	0	133	13	54	140	59	634	97	48	.00	.22	.05	.0	1.4	.4	6.7	12.2	0	
09:33	119	83	36	681	4	0	0	202	95	97	199	377	844	97	51	.00	.19	.05	.0	1.2	.5	6.5	11.2	0	
09:34	115	81	34	685	3	0	0	130	12	20	164	58	848	97	48	.00	.15	.05	.0	1.1	.4	7.5	12.3	0	
09:35	50	29	21	750	4	0	0	181	55	207	291	71	1137	96	49	.00	.22	.05	.0	1.4	.5	6.2	25.1	0	
09:36	39	20	20	761	7	0	0	223	55	469	693	72	1896	96	46	.00	.22	.05	.0	1.3	.4	6.2	31.6	0	
09:37	63	41	22	737	3	0	0	126	13	27	142	58	571	96	46	.00	.22	.05	.0	1.3	.3	6.0	19.4	0	
09:38	46	28	19	754	4	0	0	141	25	68	251	75	861	96	48	.00	.34	.05	.0	2.0	.4	5.8	26.3	0	
09:39	52	32	20	748	5	0	0	149	26	95	192	69	1141	96	48	.00	.67	.05	.0	3.2	.4	4.9	21.1	0	
09:40	19	8	10	781	4	0	0	139	17	64	95	67	693	96	49	.00	.30	.05	.0	1.8	.4	6.0	66.8	0	
09:41	16	7	9	784	3	0	0	126	10	24	26	68	726	96	46	.00	.18	.05	.0	1.2	.3	7.2	88.8	0	
09:42	34	16	17	766	4	0	0	144	20	92	110	69	905	96	47	.00	.41	.05	.0	2.4	.3	6.0	38.8	0	
09:43	17	7	10	783	4	0	0	137	11	108	128	75	832	96	48	.00	.11	.05	.0	.8	.4	8.1	89.3	0	
09:44	15	6	8	785	3	0	0	121	7	11	44	67	575	96	46	.00	.20	.05	.0	1.4	.3	7.0	92.9	0	
09:45	18	8	10	782	4	0	0	132	8	93	91	65	784	96	48	.00	.21	.05	.0	1.4	.3	6.4	72.2	0	
09:46	15	7	9	785	3	0	0	126	10	16	17	67	738	96	46	.00	.23	.05	.0	1.5	.4	6.7	84.6	0	
09:47	16	7	9	784	3	0	0	124	8	21	2	65	783	96	46	.00	.16	.05	.0	1.1	.3	7.2	85.2	0	
09:48	25	12	13	775	3	0	0	129	18	4	3	75	649	96	48	.00	.32	.05	.0	2.0	.4	6.3	50.9	0	
09:49	22	10	12	778	5	0	0	173	10	421	294	66	2098	96	47	.00	.13	.05	.0	.8	.3	6.3	57.2	0	
09:50	16	7	9	784	4	0	0	135	11	92	189	76	969	96	48	.00	.12	.05	.0	.8	.4	6.9	82.3	0	
09:51	17	8	9	783	4	0	0	149	34	100	177	87	938	96	46	.00	4.12	.05	.0	27.6	.4	6.7	77.6	0	
09:52	21	10	12	779	4	0	0	188	75	44	71	102	2234	96	48	.26	.21	.05	.1	1.3	.6	6.3	59.5	0	
09:53	25	11	14	775	4	0	0	128	16	11	17	114	3363	96	48	.00	.24	.05	.0	1.4	.5	6.2	49.5	0	
09:54	22	11	12	778	3	0	0	130	17	3	2	102	663	96	47	.00	.28	.05	.0	1.6	.5	6.0	55.9	0	
09:55	19	9	11	781	3	0	0	132	18	19	5	105	649	96	49	.00	.31	.05	.0	2.1	.5	6.9	69.3	0	
09:56	18	8	10	782	3	0	0	130	16	4	1	108	1360	96	49	.00	.28	.05	.0	1.8	.8	6.3	70.1	0	
09:57	16	7	9	784	3	0	0	130	18	4	6	104	745	96	48	.00	.25	.05	.0	1.6	.8	6.5	85.5	0	
09:58	17	8	10	783	3	0	0	133	17	25	4	112	677	96	50	.00	.19	.05	.0	1.2	.7	6.1	73.5	0	
09:59	18	8	10	782	4	0	0	151	16	213	139	105	1266	96	49	.00	.16	.05	.0	1.2	.5	7.3	75.5	0	
10:00	18	8	10	782	3	0	0	135	17	52	102	107	768	96	48	.00	.13	.05	.0	.8	.5	6.6	74.3	0	
10:01	16	7	10	784	3	0	0	134	24	26	39	179	731	96	48	.00	.16	.05	.0	1.1	.5	7.0	82.8	0	



# Graphics – Variables from pull down

The screenshot shows a Microsoft Internet Explorer window titled "GDLVMK4 Data Retrieval Session (Performance Toolkit for VM FL510 IN63739)". The address bar contains a URL starting with "http://gdlvmk4.endicott.ibm.com:8089/03C99FD8/4CB0/FCXDATA?v=%2F03C99FD8%2F4CB0%2F&form=03&f=Line+graphics&s=Validate&i=File+20050802+HISTLOG1+A&t=Var".

The main content area is titled "GDLVMK4" and includes buttons for "Systems", "Menu", "Return", "Help", and "Auto-Refresh". Below these are "Validate" and "Submit" buttons. A pull-down menu is open, listing the following variables:

- El\_Time (Elapsed time)
- Samples (Nr. of samples)
- #CPU (Nr of processors)
- CPU (% total CPU)
- %US (% user CPU)
- %CP (% supervisor CPU)
- %EM (% emulation CPU)
- %SY (% system CPU)
- %Spin (% spin CPU)
- %WT (% wait state)
- %LogLd (% logical CPU)
- %VEC (% total vector)
- %VEM (% vector emulat)
- VECLD (Vector load rate)
- PRIV (Inst. simul./s)
- DIAG (DIAG instr./s)
- SIGP (SIGP rate)
- IO/S (SSCH/RSCH rate)
- %Empt (% PLDV empty)
- #Usrs (Users in PLDV)
- #Mast (Users mast. PLDV)
- VMSstl (VMDBK steal rate)
- ToMast (VMDBKs to master)
- AvEmp (Avail-list empty)
- Dspth (Users dispatched)
- SIE (SIE instr. rate)
- <----- Next Frame ----->
- El\_Time (Elapsed time)

Below the menu, a red error message reads: "Invalid: Select from pull-down menu". The "Cumulative" checkbox is unchecked.

# Cumulative Graphs

**IBM Performance Toolkit for VM**

Graphics Selection Menu (GDLVMK4)

Command Refresh Systems Menu Return Help  Auto-Refresh

**General Specifications**

Output format: Line graphics

Data origin: Storage

Graphics type: Detailed graphics (detailed time scale)

Selected period: Last measurements

Selected days: All days

Selected hours: All hours

**Variable Selection**

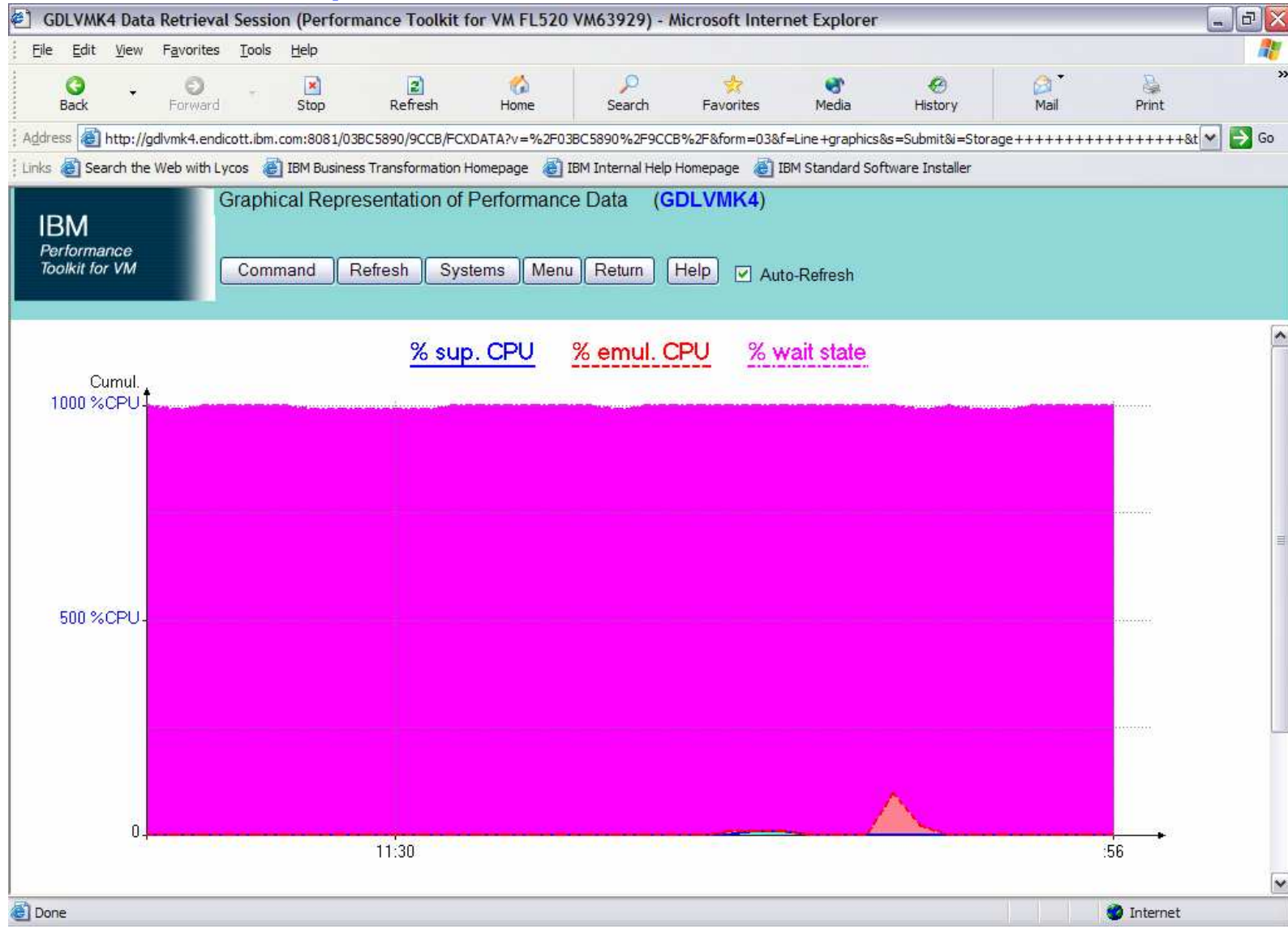
X-Variable:

Truncate at:

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

Cumulative

# 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**
  - 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 \*
- SUMREC                    FCONX 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



## Perfkit feature levels

- **FL440 – with z/VM 4.4.0**
  - First introduction
  - Mostly RTM replacement
- **FL510 – with z/VM 5.1.0**
  - Added BATCH mode
  - Mostly VMPRF replacement
  - Linux Appldata support
- **FL520 – with z/VM 5.2.0**
  - Mostly 64 bit
  - New/Changed reports for system execution space

## Performance Toolkit for VM FL440

- **z/VM Version 4.4 provides monitor data for**
  - Virtual Switch activity
  - VM Resource Manager operation
  - Processor type information
- **New Displays**
  - VSWITCH display
  - VMRM display with VM Resource Manager data
  - PROCSUM display
- **Modified Displays**
  - Processor type added on LPAR and LPARLOG displays

## Performance Toolkit for VM FL510

- **LINUX APPLDATA support**
  - Use APPLDATA
  - Reduce dependence on RMF/DDS
- **VMPRF replacement function**
  - "BATCH" mode
  - "VMPRF" migration aid mode
- **Support new z/VM capability**
  - New report for SCSI devices
- **Web access thru Secure Socket Layer (SSL)**

## Performance Toolkit for VM FL520

- **Changed Reports**
  - PAGELOG was split into PAGELOG, STORLOG, AVAILLOG
  
- **New Reports**
  - QEBSM, QEBSMLOG
  - UQDIO, UQDIOLOG
  - DEMANDLOG
  - SXSAVAIL, SXSPAGE, SXSDEFER, SXSUTIL

## References

- **General information**
  - <http://www.vm.ibm.com/related/perfkit/>
- **Performance Toolkit Book**
  - [http://publibz.boulder.ibm.com/bookmgr\\_OS390/libraryserver/zvmv5r2/](http://publibz.boulder.ibm.com/bookmgr_OS390/libraryserver/zvmv5r2/)
- **Comparison to VMPRF**
  - <http://www.vm.ibm.com/related/perfkit/pkitprf.html>
- **Comparison to RTM**
  - <http://www.vm.ibm.com/related/perfkit/pkitrtm.html>
- **RMF PM setup information**
  - <http://www-1.ibm.com/servers/eserver/zseries/zos/rmf/rmfhtmls/pmweb/pmlin.htm>
- **Redbook:**
  - <http://www.redbooks.ibm.com/abstracts/sg246059.html>
- **Whitepaper: What's new in Performance Toolkit for VM in z/VM V5.1**
  - <http://www.vm.ibm.com/library/gm130637.pdf>