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Rocket z/VM Training VM Workshop 2025

From Setup to Insight: Building a Complete z/VM Performance Monitoring Pipeline

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Abstract

- Learn how to rapidly stand up a comprehensive z/VM performance monitoring environment using IBM tools. Beginning with core data collection and the Performance Toolkit, you'll then enable OMEGAMON for deep system and Linux visibility, and finalize your solution with the z/VM Performance Data Pump for data integration and analytics. Walk away with a clear, repeatable blueprint for operational insight.

Free! Bonus disclaimer!!

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Speaker's background: "Embrace the Weird!"

- I wrote my first mainframe programs in 1979 (OS/MVT 21.8F using CALL-OS, FORTRAN, BASIC, and York APL);
  first IBM 370 assembler code in 1980.
  - "I think I'm making progress."

- A one-line career summary: "Deep on IBM Z System virtualization, Unix & Linux; broad on… a bunch of weird stuff."
  - VM since 1979; Various incarnations of Unix since 1983
  - Linux since the beginning of Linux (Slackware, 5.25" floppies, 1993)
  - Enough MVT / VS/1 / MVS / OS/390 / z/OS to be dangerous
  - z/VM Product Engineer at Rocket Software, Inc. since 2003
    - Role expanded beyond z/VM to "Geek of Virtualization and Container Technology on IBM Z" in 2022.
    - More recently: Custodian of Rocket TMON for VSE

Not me ☺

- It continues to be a long, strange trip:
  - IBM 8100, IBM 3650, CADAM, Amoeba, Plan 9, MUSIC, OS/2, UTS, SCO Unix, TeraData, NetWare, HP-UX, AIX, Ultrix, Solaris, Cluster / High-Performance Computing (Linux+Beowulf, Myrinet, InfiniBand),
    Image Processing, Embedded Systems, First IT Security Officer for U. of Arkansas
    - Outside of IT: Gentleman Farmer, Certified Emergency Medical Responder, State of AR Law Enforcement Officer
    - More generally: "I'm having a great career based on working with the weird stuff."

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Outline

Presentation roadmap

- Foundations: Things you should already know or have
- Boundaries: Scope and scale
- Architecture Review: z/VM system organization
- Big Picture: Recommended order of operations
- Enabling and customizing Performance Toolkit
- Enabling IBM Tivoli OMEGAMON XE on z/VM and Linux
- Enabling z/VM Performance Data Pump
- Wrap-up: Q&A, Feedback, Discussion

Things you should already…

- …know: Basic z/VM systems programming / systems administration skills.
- …know: How to navigate the z/VM documentation library.
  - *https://www.vm.ibm.com/library/*
- …have: License to use the z/VM Performance Toolkit feature.
- …have: Some understanding of basic system performance metrics.

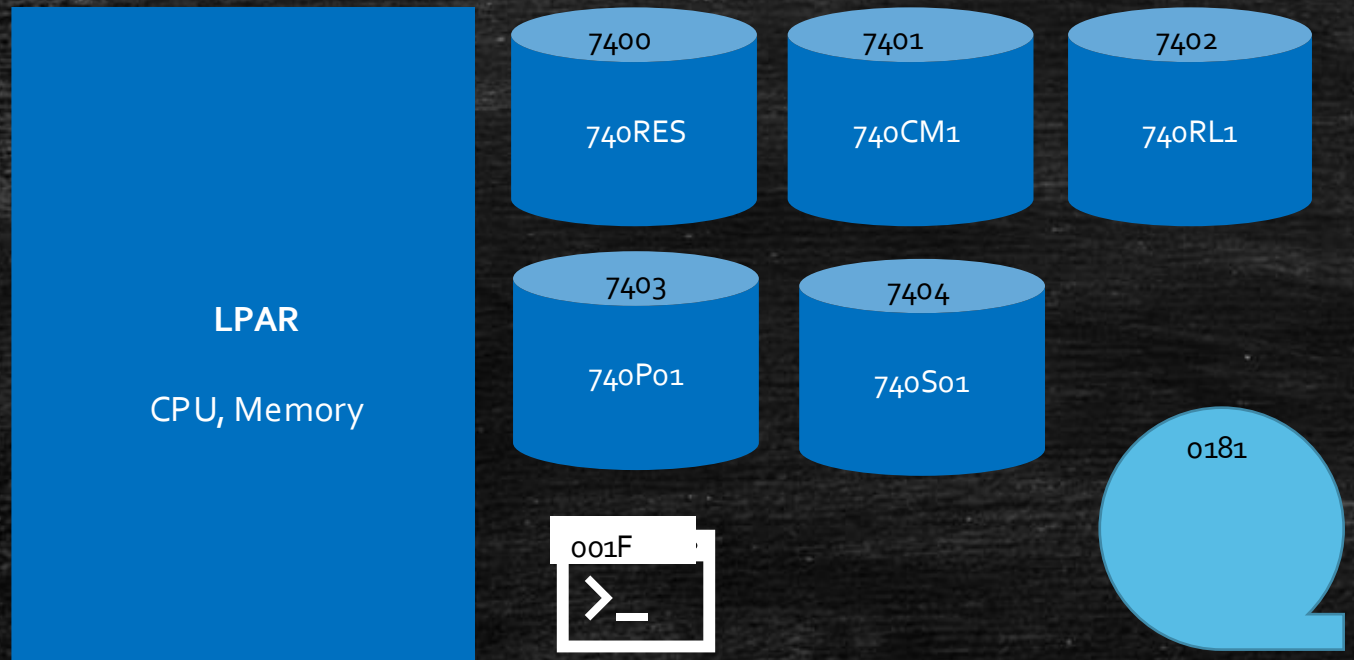
Boundaries: Scope and scale

- ***My*** "one size" is unlikely to fit ***your*** "all."
  - Scope of discussion
    - Focus: IBM z/VM systems management tools
      - *Concepts apply to other tool suites; implementation details (obviously?) differ*
    - (Mostly) focused on non-SSI z/VM configuration
  - IBM documentation is great … as a collection of engineering specifications
    - It's… less great.. As procedural instruction for accomplishing a task
  - Intent: Share enough knowledge to ease deployment and customization

Architecture Review: z/VM system organization

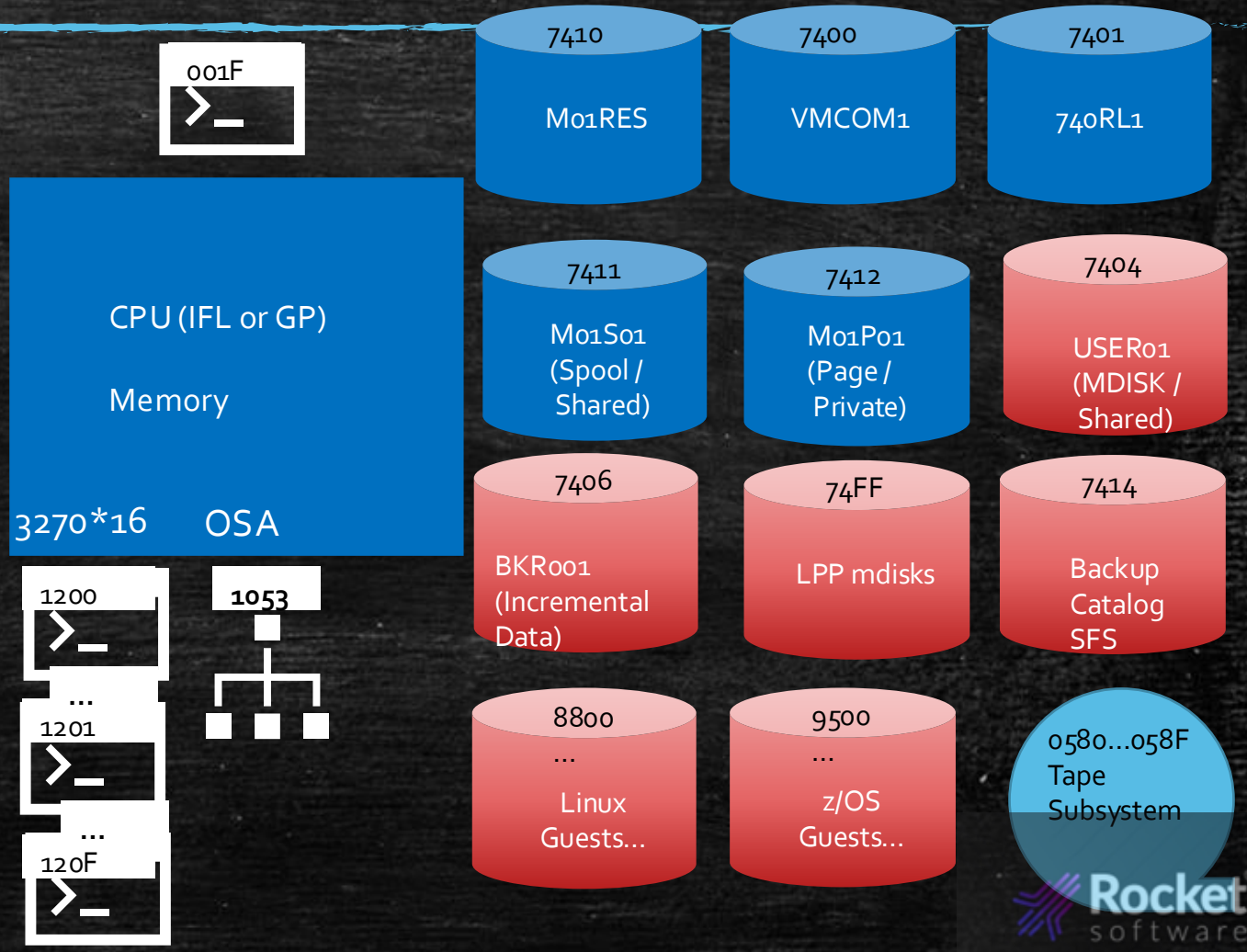
- Many "moving parts" to a fully configured z/VM system
- ***Thousands*** of performance metrics available via CP MONITOR
- "It's better to know."
  - …and knowing makes it easier to handle those inevitable inconvenient questions.

Architecture Review: Minimal z/VM system organization



Architecture Review: Somewhat more realistic z/VM system organization

- Expands on the minimum:
- CPU, Memory, Console, OSA, Tape
- …DASD
  - The z/VM minimum set, **plus**…
  - System infrastructure volumes
    - *Program products, non-IBM SFS, installation materials, additional page / spool capacity, RACF database…*
  - User / Guest volumes
    - *i.e. production workload data*
- …TAPE
  - *Though perhaps not actual, physical "tape"*



Big Picture:
Suggested order of operations

- "Once z/VM installation is complete…"
  - …but ideally, before you deploy production workload
- The minimum: Performance Toolkit (PTK)
  - Basic "green screen" function
  - Web interface
- Enterprise-grade monitoring: OMEGAMON for z/VM and Linux
  - z/VM performance data integration with enterprise-wide OMEGAMON
- A little something extra: Performance Data Pump
  - z/VM performance data integration with modern observability tools

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Foundation:
z/VM Performance Toolkit (PTK) – 3270

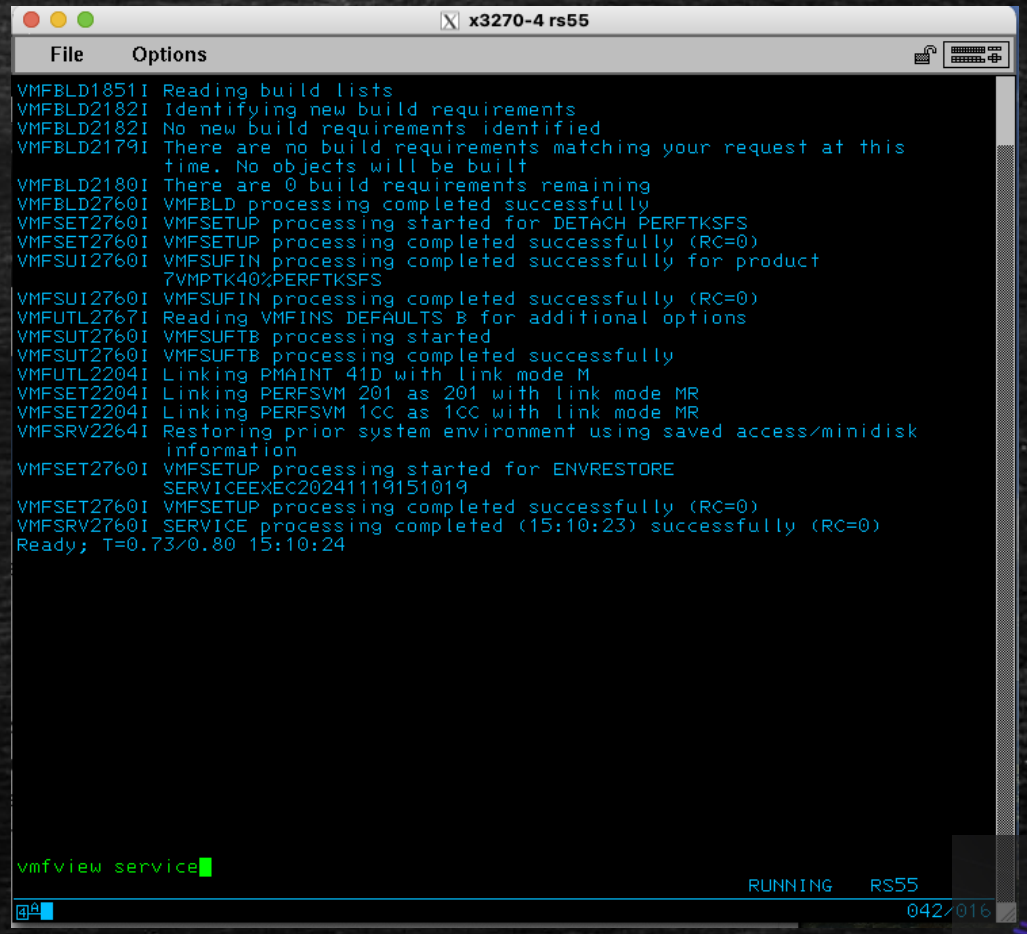
- What does it do?
  - Consumes: CP MONITOR data – raw z/VM performance metrics
  - Produces: A variety of human-readable z/VM performance reports
- How do I turn it on and make it useful?
  - Take the following steps:

z/VM Performance Toolkit (PTK): Enable & Customize

- Verify your license entitlement (PTK is a separately licensed feature of z/VM)
- Enable PTK
  - Details: Performance Toolkit for VM, FL740 Memo to Users (GI13-4368-03)
- Customize PTK for use
  - Program Directory (GI13-4361-03)
    - https://www.vm.ibm.com/progdir/
  - z/VM: Performance Toolkit Reference (SC24-6303-74) and
  - z/VM: Performance Toolkit Guide (SC24-6302-74)
    - https://www.vm.ibm.com/library/740pdfs.html

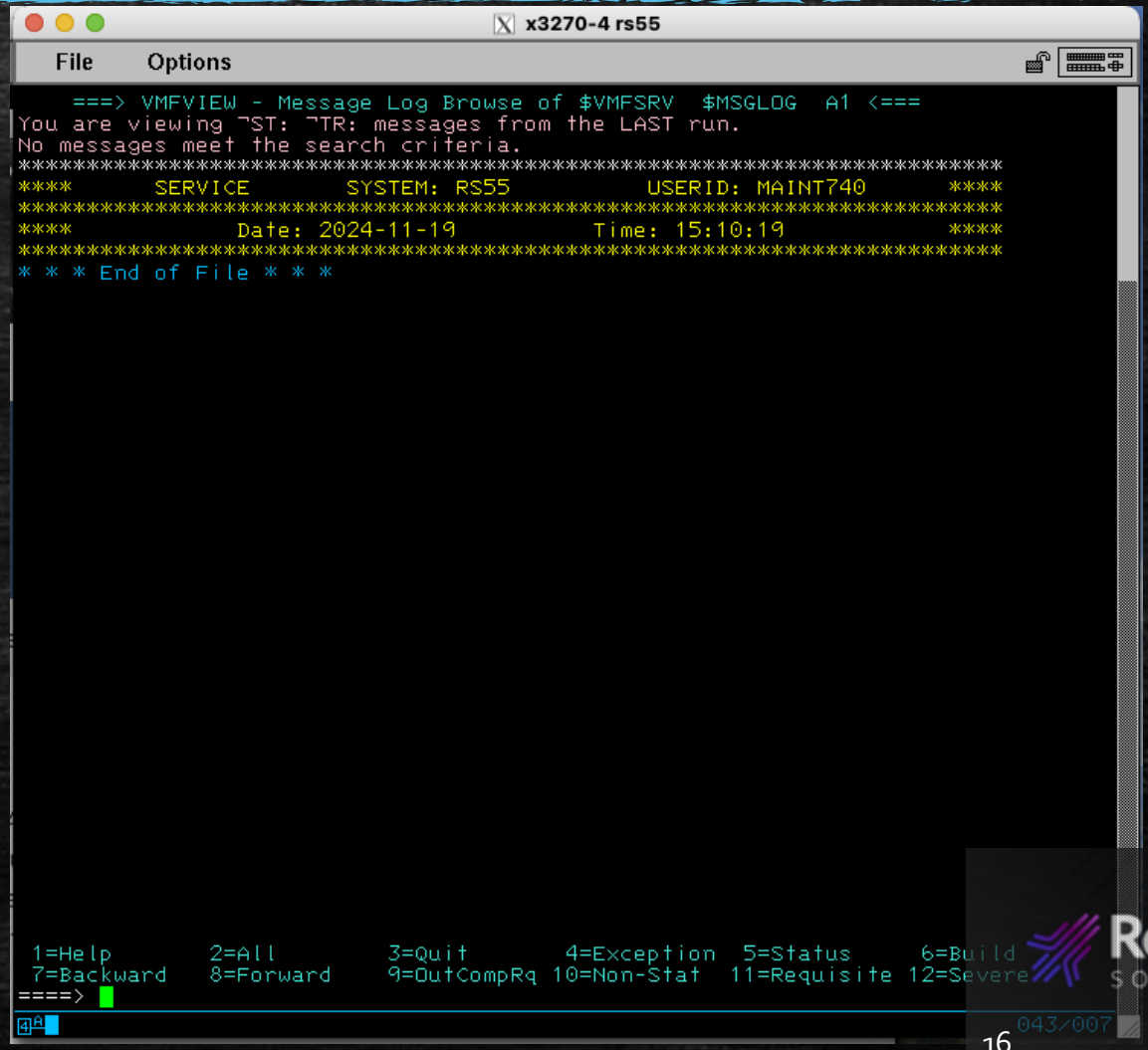
z/VM Performance Toolkit (PTK): Enable & ~~Customize~~

- As MAINT740…
- Follow instructions in the Program Directory, Ch. 6, Section 6.1
- Check your work
  - **VMFVIEW SERVICE**



z/VM Performance Toolkit (PTK): Enable & ~~Customize~~

- As MAINT740…
- Follow instructions in the Program Directory, Ch. 6, Section 6.1
- Check your work
  - **VMFVIEW SERVICE**



z/VM Performance Toolkit (PTK): ~~Enable~~ & Customize

- As MAINT740…
- Continue with Program Directory section 6.3 (Tailoring Performance Toolkit for z/VM Customization Files
- Example: Update FCONX $PROFILE to disable (enormous) daily reports using LOCALMOD

```
– LOCALMOD PERFTK FCONX $PROFILE
```

z/VM Performance Toolkit (PTK): ~~Enable~~ & Customize

Change:

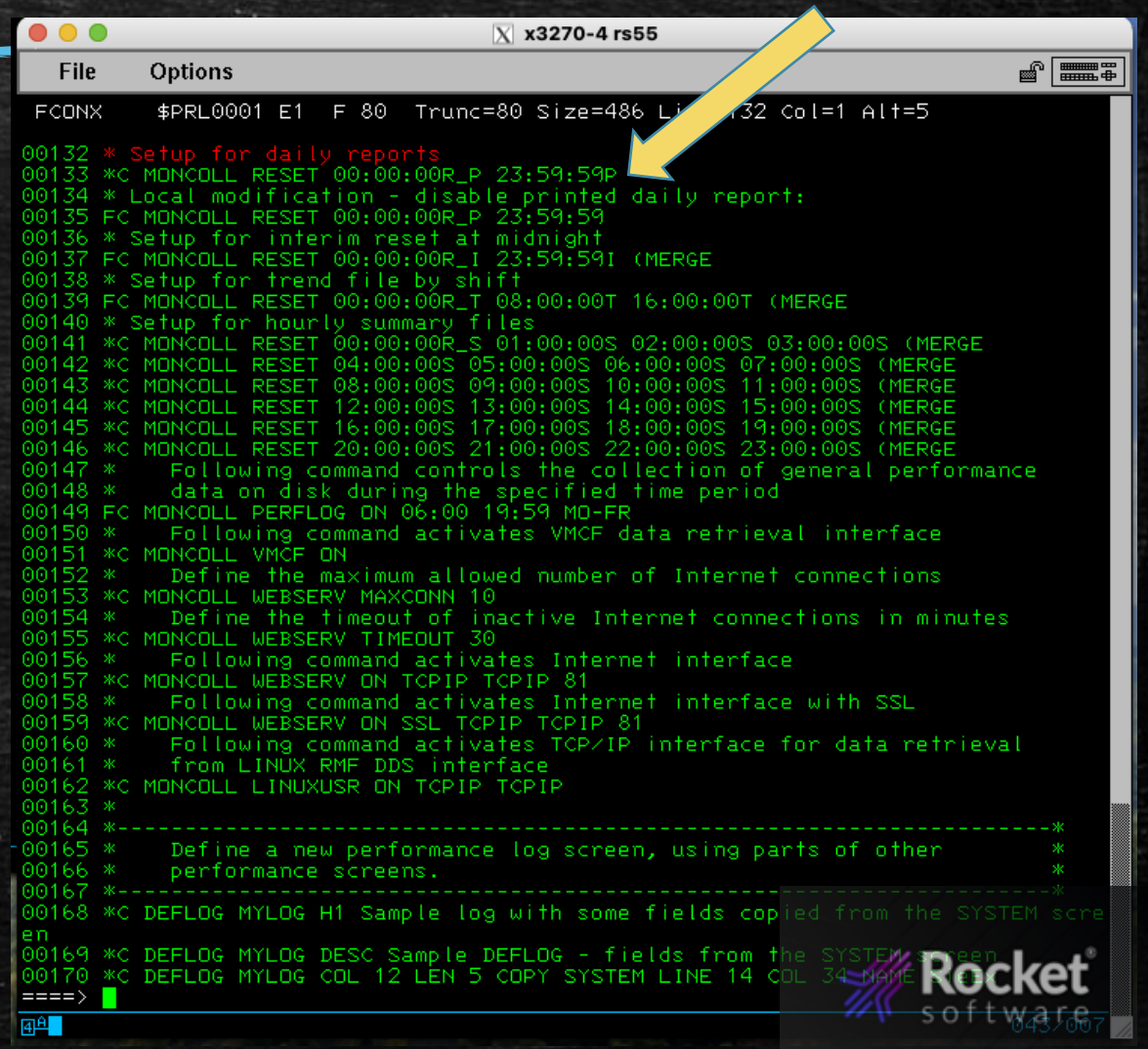
FC MONCOLL RESET 00:00:00R_P 23:59:59P

…(line 133, commented out with a "*") to…

FC MONCOLL RESET 00:00:00R_P 23:59:59

…(line 135, trailing "P" removed)

Then: Save changes with the XEDIT "FILE" command.



z/VM Performance Toolkit (PTK): ~~Enable~~ & Customize

Change:

FC MONCOLL RESET 00:00:00R_P 23:59:59P

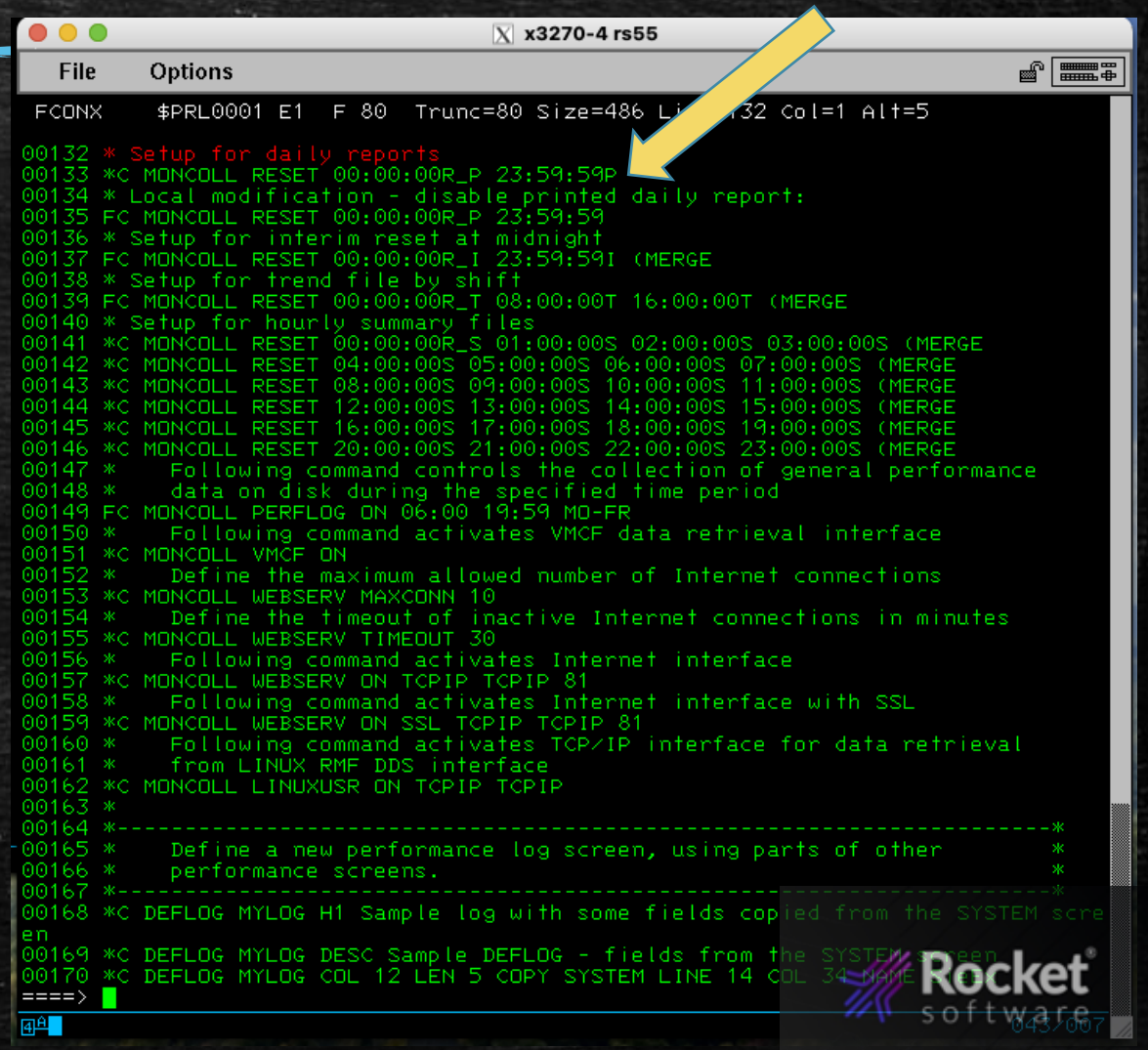
…(line 133, commented out with a "") to…*

FC MONCOLL RESET 00:00:00R_P 23:59:59

…(line 135, trailing "P" removed)

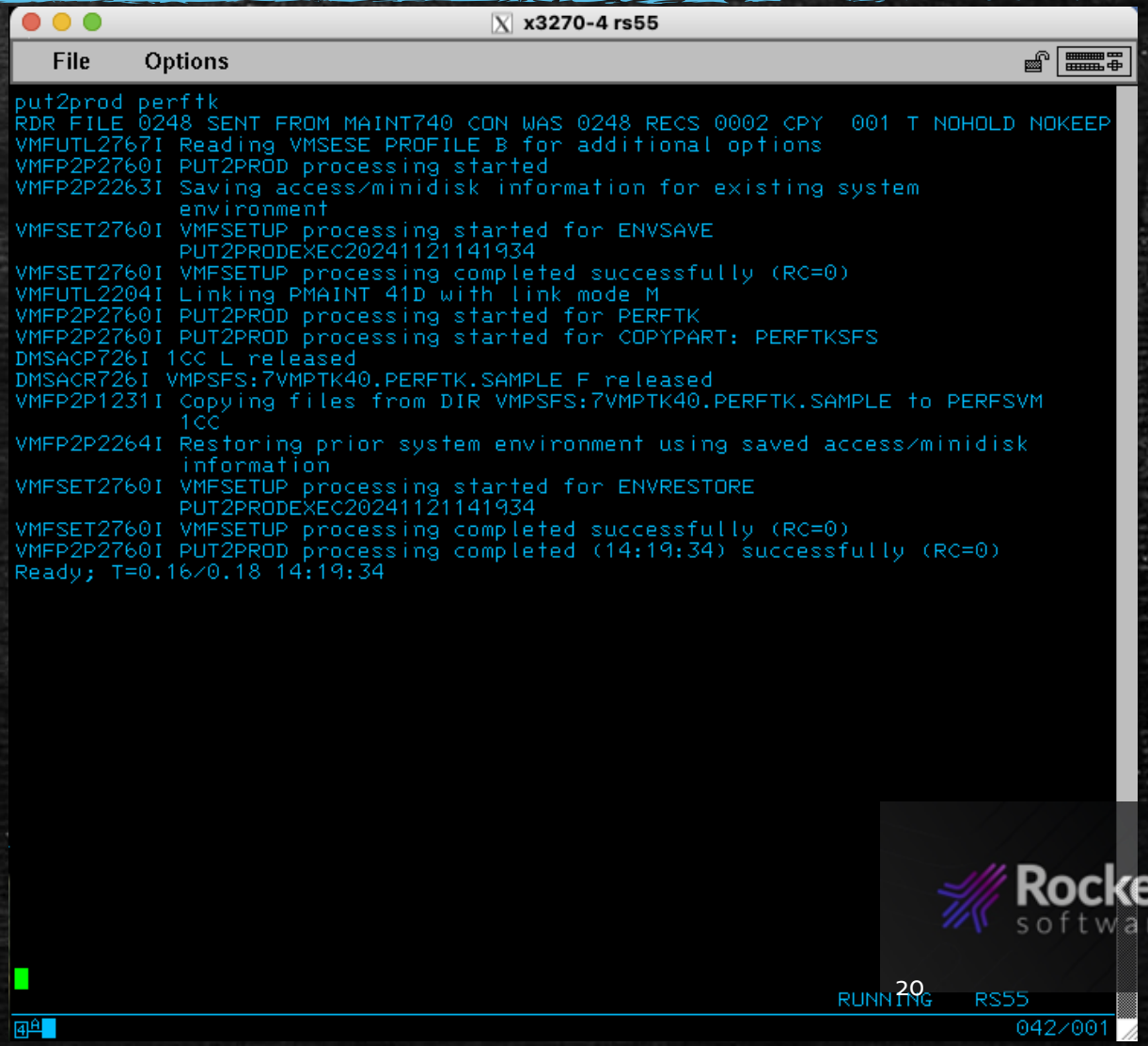
~~Then: Save changes with the XEDIT "FILE" command…~~

Then: Issue command **SERVICE PERFTK BUILD** to deploy the updated version of FCONX $PROFILE for use.



z/VM Performance Toolkit (PTK): ~~Enable, Customize,~~ and Deploy

- Continue as MAINT740
- Issue command **PUT2PROD PERFTK** to deploy any local modifications and/or pending service process updates into production.



z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and “smoke test”

- “So, now what?”
- LOGOFF from MAINT740
- Log on to user PERFSVM.
- **ACCESS (NOPROF** to suppress execution of PROFILE EXEC
- Review and customize PERFSVM’s PROFILE EXEC
- Best practice: Always have a fall-back plan
  - **COPY PROFILE EXEC A = EXECORIG = (OLDDATE**

z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and "smoke test"

- While logged in as PERFSVM
- **`XEDIT PROFILE EXEC`**
- Enable CP MONITOR data collection
- "Interesting stuff" starts at line 40 of the IBM-provided default…

In the IBM-supplied default system configuration, Performance Toolkit executes in user PERFSVM. You can log on as PERFSVM to view real-time system performance information using the 3270 user interface.

For first time use, systems secured using RACF (or other External Security Manager) may need to enable login credentials for user PERFSVM. Collaborate with your security administrator to establish credentials according to your organization's security policy.

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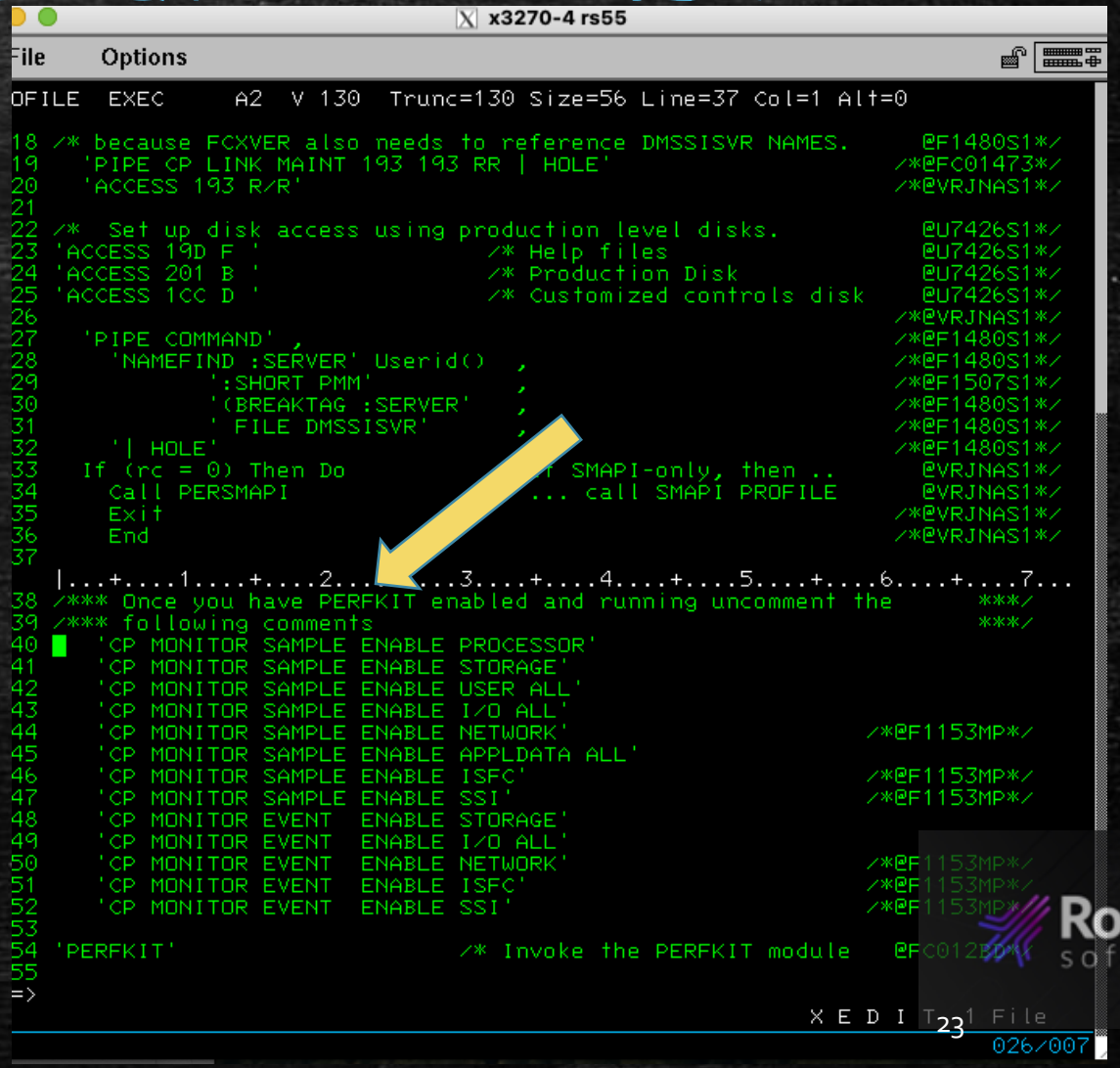
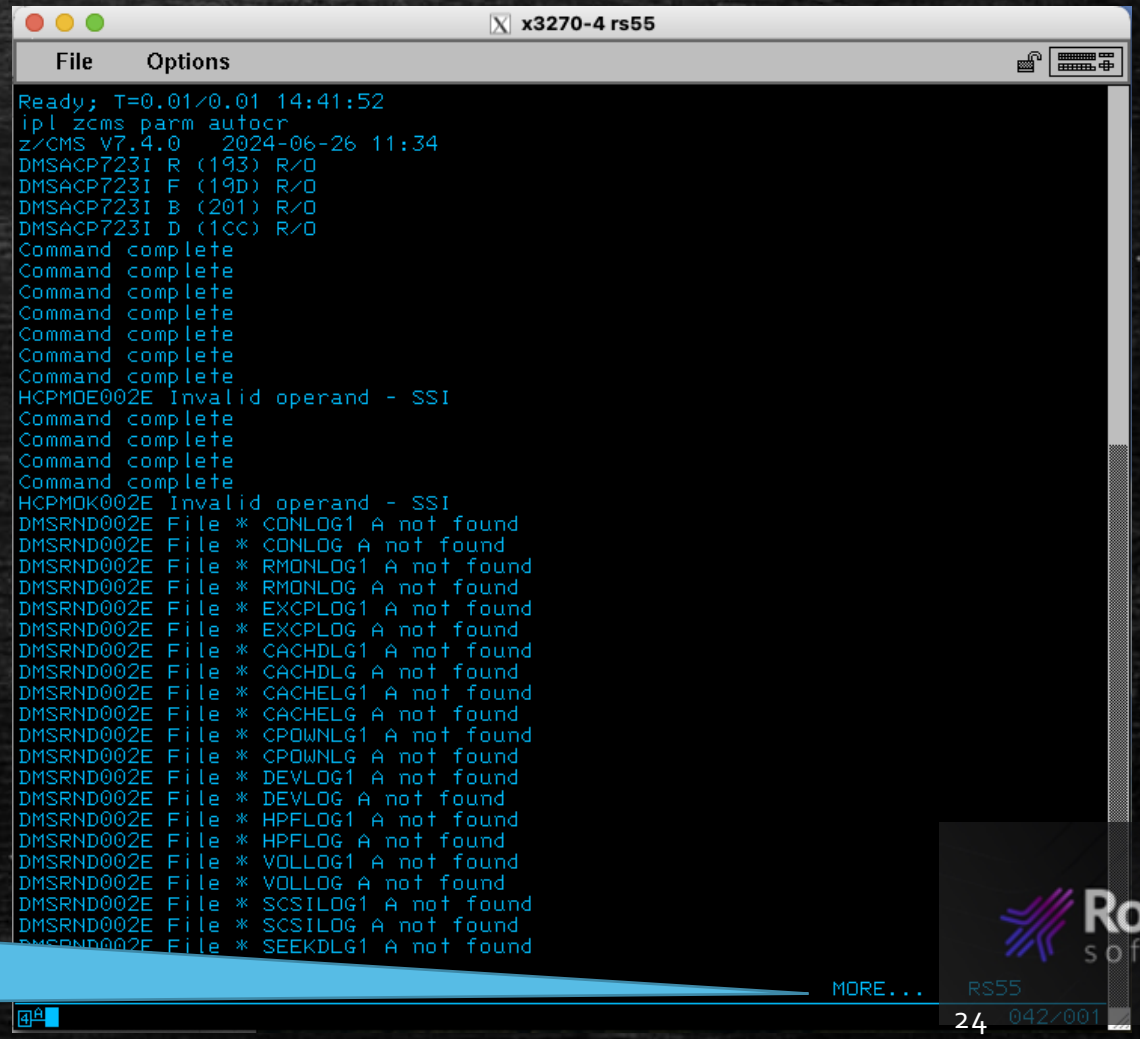
z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and “smoke test”

- PERFSVM
- **XEDIT PROFILE EXEC**
- Enable CP MONITOR data collection
- “Interesting stuff” starts at line 40 of the IBM-provided default.
- Remove REXX comment marks (“/*”, “*/”) from CP MONITOR commands.



z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and “smoke test”

- After saving changes, “**IPL ZCMS PARM AUTOCR**” to start PERFSVM.

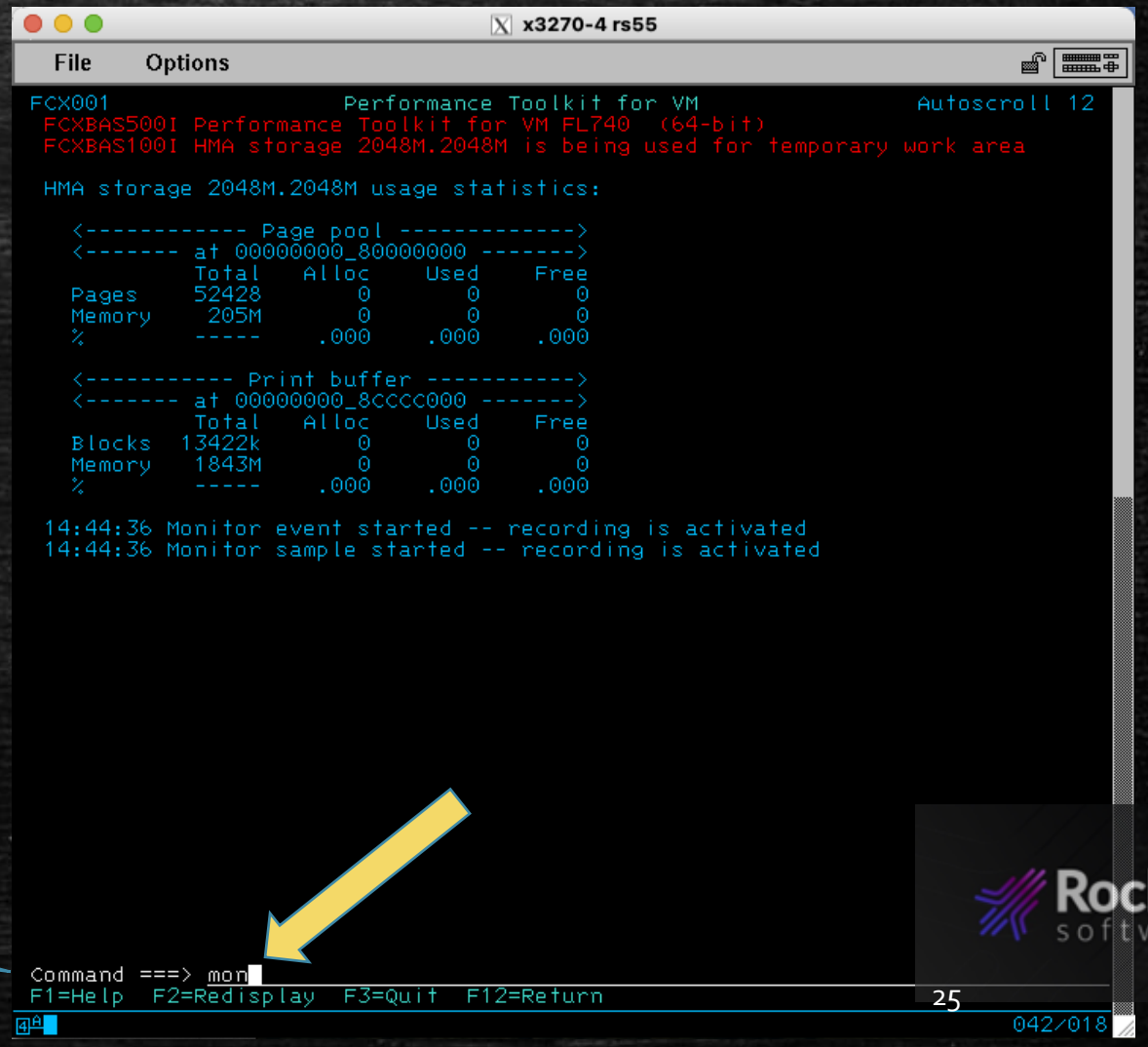


Press <PA2> or <CLEAR> when the screen goes into “**MORE...**” status. Note that messages HCPMOE002E and HCPMOK002E can be ignored. These will be displayed if your z/VM system is not configured for SSI (Single System Image).

z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and "smoke test"

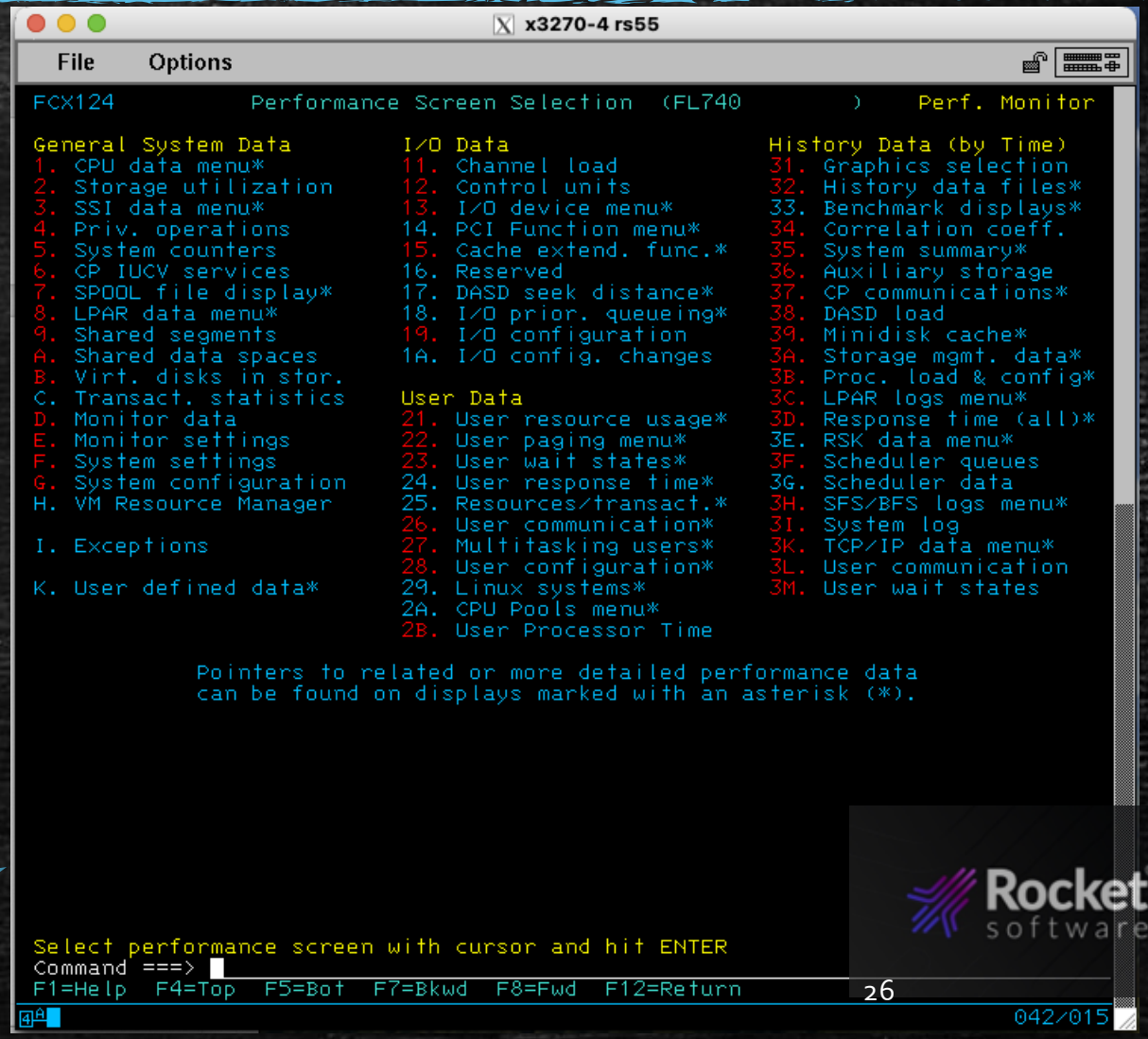
- After saving changes, "IPL ZCMS PARM AUTOCR" to start PERFSVM.
- At the "Command ===>" prompt, enter MON to go to the Performance Screen Selection display.

After Performance Toolkit initialization completes, the initial PTK command prompt will be displayed. Enter **MON** at the command prompt to go into the Performance Screen Selection display:



z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and "smoke test"

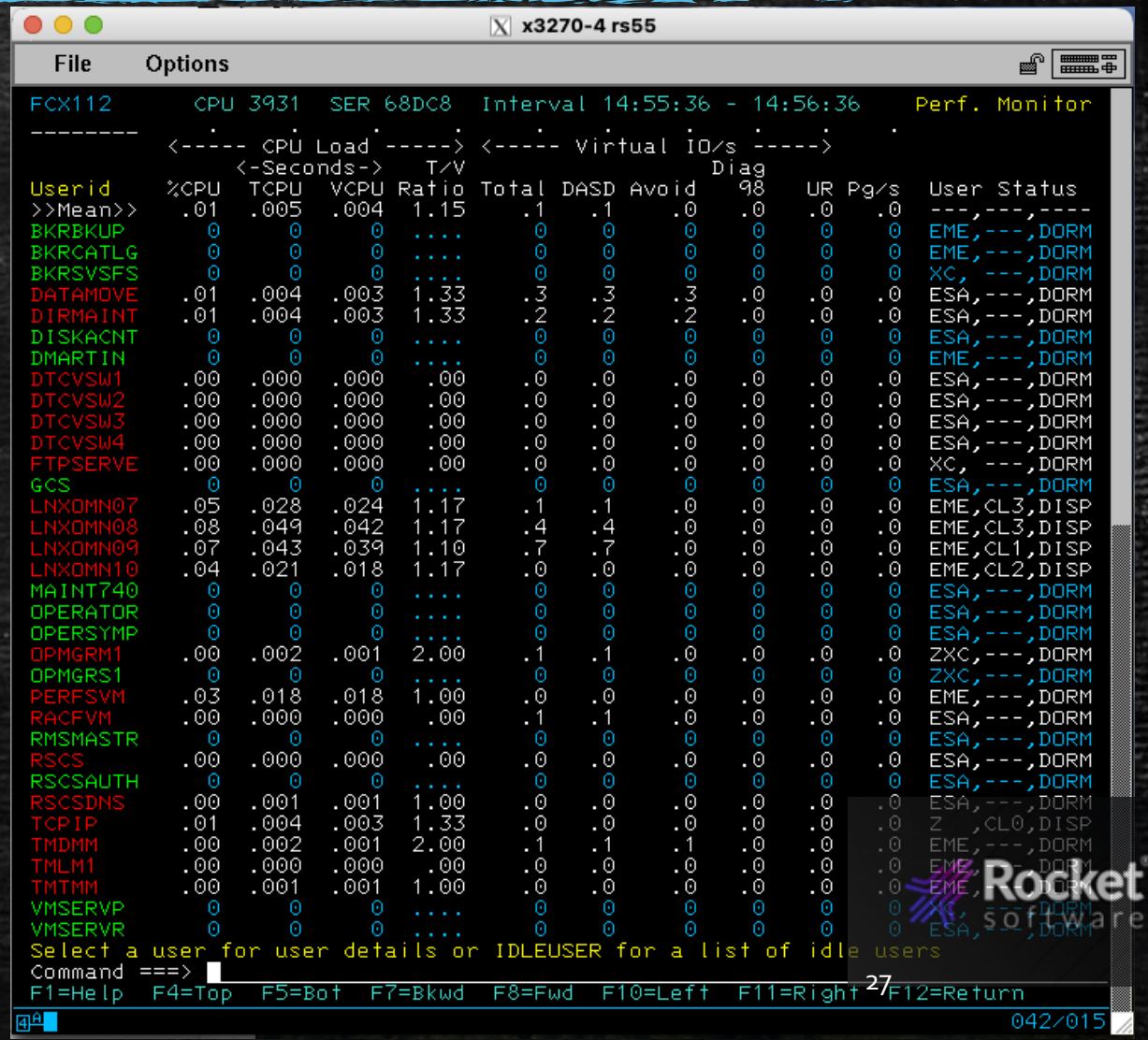
- After saving changes, "IPL ZCMS PARM AUTOCR" to start PERFSVM.
- At the "Command ===>" prompt, enter MON to go to the Performance Screen Selection display.
- Options in RED are available (based on CP MONITOR data)
- Example: 21…



In the above color scheme, report numbers in RED indicate reports which are available because the supporting CP monitor data metrics are being collected. Move the cursor to one of the highlighted numbers and press <Enter> to view the report. Here is an example based on selecting item 21 (User resource usage):

z/VM Performance Toolkit (PTK): ~~Enable, Customize, Deploy,~~ and “smoke test”

- After saving changes, “IPL ZCMS PARM AUTOCR” to start PERFSVM.
- At the “Command ===>” prompt, enter MON to go to the Performance Screen Selection display.
- Options in RED are available (based on CP MONITOR data)
- Example: 21…



z/VM Performance Toolkit (PTK): Enable, Customize, Deploy, and "smoke test"

- Refer to *z/VM: Performance Toolkit Guide*, Chapter 3 ("A Guided Tour") for a comprehensive introduction to Performance Toolkit.

- Refer to *z/VM: Performance Toolkit Reference*, Chapter 2 ("Performance Toolkit Reports") for a detailed description of individual reports.

- When finished, press <PF12> repeatedly to exit Performance Toolkit and return to a CMS "Ready;" prompt. Enter **CP LOGOFF** to sign off PERFSVM and end the session.

Beyond the Minimum:
z/VM Performance Toolkit (PTK) – Browser Interface

- Three steps, but the documentation path is non-obvious.
- 1) Update z/VM TCPIP configuration
- 2) Update the PERFSVM CP directory to enable APPC/VM connections
- 3) Create / Update three PERFSVM configuration files

PTK: Enabling the web browser interface
1) Update z/VM TCPIP configuration

- Detailed Guidance:
  - z/VM: Performance Toolkit Guide, Chapter 2 "Preparing Performance Toolkit", heading "Implementation"
- Supporting details:
  - z/VM: TCP/IP Planning and Customization, Chapter 16 "Configuring the TCP/IP Server", heading "PORT Statement"
- Task: Update PROFILE TCPIP
  - Assign a port for use by PERFSVM
  - Examples use port 81

PTK: Enabling the web browser interface
1) Update z/VM TCPIP configuration

- Detailed Guidance:
  - z/VM: Performance Toolkit Guide, Chapter 2 "Preparing Performance Toolkit", heading "Implementation"
- Supporting details:
  - z/VM: TCP/IP Planning and Customization, Chapter 16 "Configuring the TCP/IP Server", heading "PORT Statement"
- Task: Update PROFILE TCPIP
  - Assign a port for use by PERFSVM
  - Examples use port 81
- …

```
81    TCP PERFSVM    NOAUTOLOG ; Performance Toolkit
```

Refer to z/VM: Performance Toolkit Guide, Chapter 2 "Preparing Performance Toolkit" under the heading "Implementation" for detailed guidance. Supporting details can be found in z/VM: TCP/IP Planning and Customization, Chapter 16 "Configuring the TCP/IP Server" under the heading "PORT Statement".

- Yes; you could do this dynamically via OBEYFILE
- Yes; TCPIP must be restarted after PROFILE TCPIP changes are saved

PTK: Enabling the web browser interface
2) Update PERFSVM CP directory to enable APPC/VM connections

- Add the following IUCV statements to PERFSVM's CP directory entry:

```
…
IUCV *IDENT FCXSYSTM GLOBAL
IUCV *IDENT FCXRES00 GLOBAL
…
```

Note: PERFSVM must go through a LOGOFF / LOGON cycle to activate these changes.

Note: For more complex configurations, refer to z/VM: Performance Toolkit Guide, Chapter 2 "Preparing Performance Toolkit" under the heading "APPC/VM Interface for Performance Data Retrieval".

LOGOFF / LOGON required to make PERFSVM directory changes active

PTK: Enabling the web browser interface
3) Create / Update three PERFSVM configuration files

- Two new files:
  - **FCONRMT AUTHORIZ**
  - **FCONRMT SYSTEMS**
- One existing file:
  - **FCONX $PROFILE**
- …all on PERFSVM's A-disk
  - PERFSVM 191 (MDISK installation)
  - VMSYS:PERFSVM. (SFS installation)

LOGOFF / LOGON required to make PERFSVM directory changes active

PTK: Enabling the web browser interface
3) Create FCONRMT AUTHORIZ

- Create file **FCONRMT AUTHORIZ**:

```
sysname PERFSVM S&FSERV
sysname SYSPROG1 DATA
sysname PERFADM1 DATA
```

  - *…where "sysname" is the name of your z/VM system.*
  - *…where SYSPROG1 and PERFADM1 are z/VM users who are authorized to view system performance data via the Performance Toolkit browser interface.*
  - *SYSPROG1 and PERFADM1 will be prompted to authenticate using z/VM password credentials when a browser session is opened.*

1) Identify the store-and-forward server (PERFSVM in our one-system example).
2) Identify z/VM users allowed to authenticate and interact with PERFSVM via the browser interface.

PTK: Enabling the web browser interface
3) Create FCONRMT SYSTEMS

- Create file **FCONRMT SYSTEMS**:

```
sysname PERFSVM ESA N FCXRES00
```

  - *…where "sysname" is the name of your z/VM system.*

Identify the systems involved in our monitoring scheme. The example assumes a single z/VM system, NOT sharing data from other z/VM systems..

PTK: Enabling the web browser interface
3) Modify **FCONX $PROFILE** to enable browser interface:

- Modify file **FCONX $PROFILE**:

```
FC MONCOLL WEBSERV ON TCPIP TCPIP 81

FC MONCOLL VMCF ON
```

  - *Best Practice: use the VMSES/E "LOCALMOD" command to manage customization of **FCONX $PROFILE**.*

*If you *know* you're going to do this at initial deployment, make the appropriate changes when you do the initial customization of FCONX $PROFILE.*

PTK: Enabling the web browser interface
3) Modify **FCONX $PROFILE** to enable browser interface:

- Modify file **FCONX $PROFILE**:

```
FC MONCOLL WEBSERV ON TCPIP TCPIP 81

FC MONCOLL VMCF ON
```

  - *Best Practice: use the VMSES/E "LOCALMOD" command to manage customization of **FCONX $PROFILE**.*

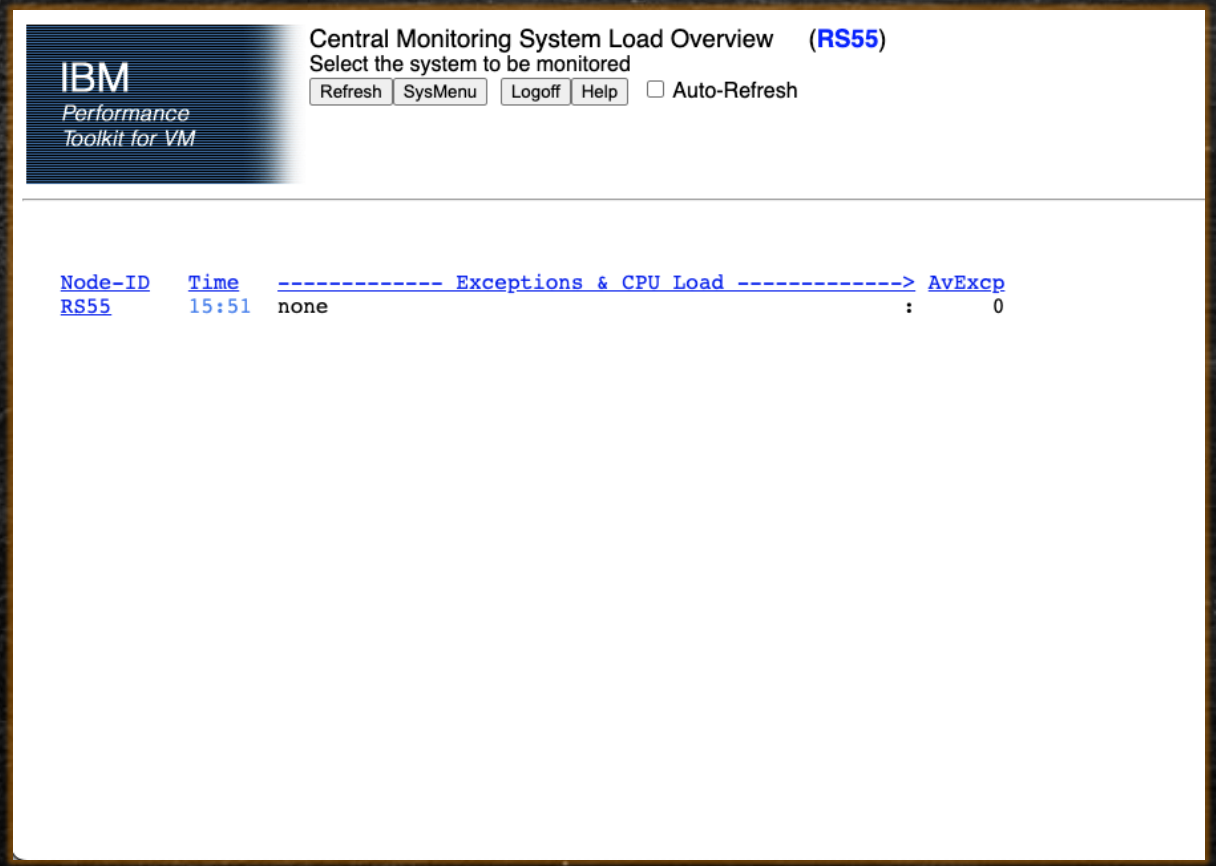
- Restart TCPIP to pick up PROFILE TCPIP changes
- Restart PERFSVM to pick up PERFSVM changes

Reminder: TCP/IP restart is disruptive. All existing connections will be dropped.
Make sure to add PERFSVM to XAUTOLOG so it is always collecting data

PTK: Enabling the web browser interface "Smoke test"

- http://my.vmsystem.corp.com:81
- Userid / Password authentication challenge
- Example displays

PTK: Enabling the web browser interface "Smoke test"

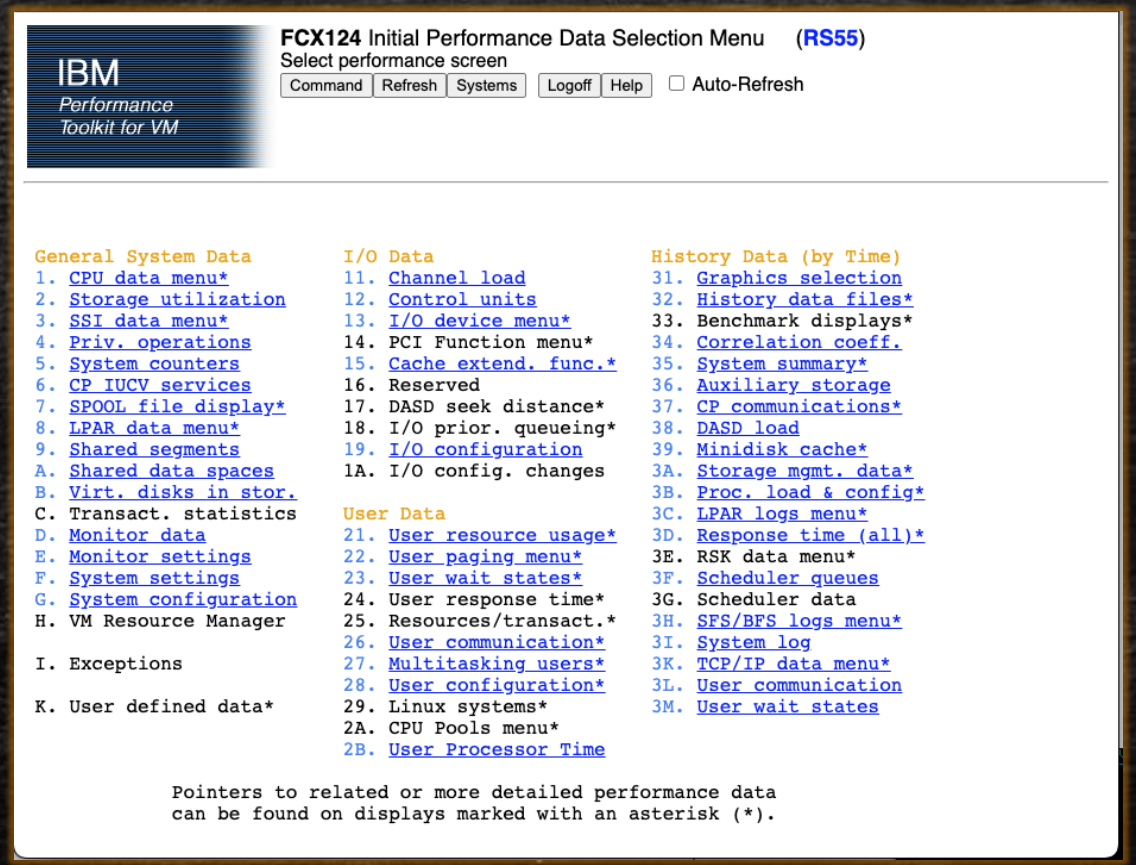


http://my.vmsystem.corp.com:81

After the userid / password authentication challenge, you should see…

System selection dialogue

PTK: Enabling the web browser interface "Smoke test"



IBM Performance Toolkit for VM

FCX124 Initial Performance Data Selection Menu (RS55)

Select performance screen

Command | Refresh | Systems | Logoff | Help | ☐ Auto-Refresh

General System Data
1. CPU data menu*
2. Storage utilization
3. SSI data menu*
4. Priv. operations
5. System counters
6. CP IUCV services
7. SPOOL file display*
8. LPAR data menu*
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*

I/O Data
11. Channel load
12. Control units
13. I/O device menu*
14. PCI Function menu*
15. Cache extend. func.*
16. Reserved
17. DASD seek distance*
18. I/O prior. queueing*
19. I/O configuration
1A. I/O config. changes

User Data
21. User resource usage*
22. User paging menu*
23. User wait states*
24. User response time*
25. Resources/transact.*
26. User communication*
27. Multitasking users*
28. User configuration*
29. Linux systems*
2A. CPU Pools menu*
2B. User Processor Time

History Data (by Time)
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. LPAR logs menu*
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://my.vmsystem.corp.com:81

After the System Selection dialogue, you should see…

Report Selection menu

Numbering & arrangement resemble the 3270 UI. Report availability (based on CP MONITOR data settings) is indicated by an **active** hyperlink.

PTK:
“Well, that was a lot…”

- Yes. Yes, it was.
- Details offered because the documentation path is complex.
- Remember the goals:
  - *Provide a simplified workflow.*
  - *“Just enough” to get PTK switched on and working for a single z/VM system.*
- Advanced study:
  - You can do a lot more with PTK if you are managing multiple z/VM systems.

Enterprise-grade monitoring: OMEGAMON XE on z/VM and Linux

- What does it do?
  - Consumes: z/VM performance metrics produced by Performance Tool Kit
  - Produces: z/VM integration with OMEGAMON enterprise-wide monitoring
- How do I turn it on and make it useful?
  - Take the following steps:

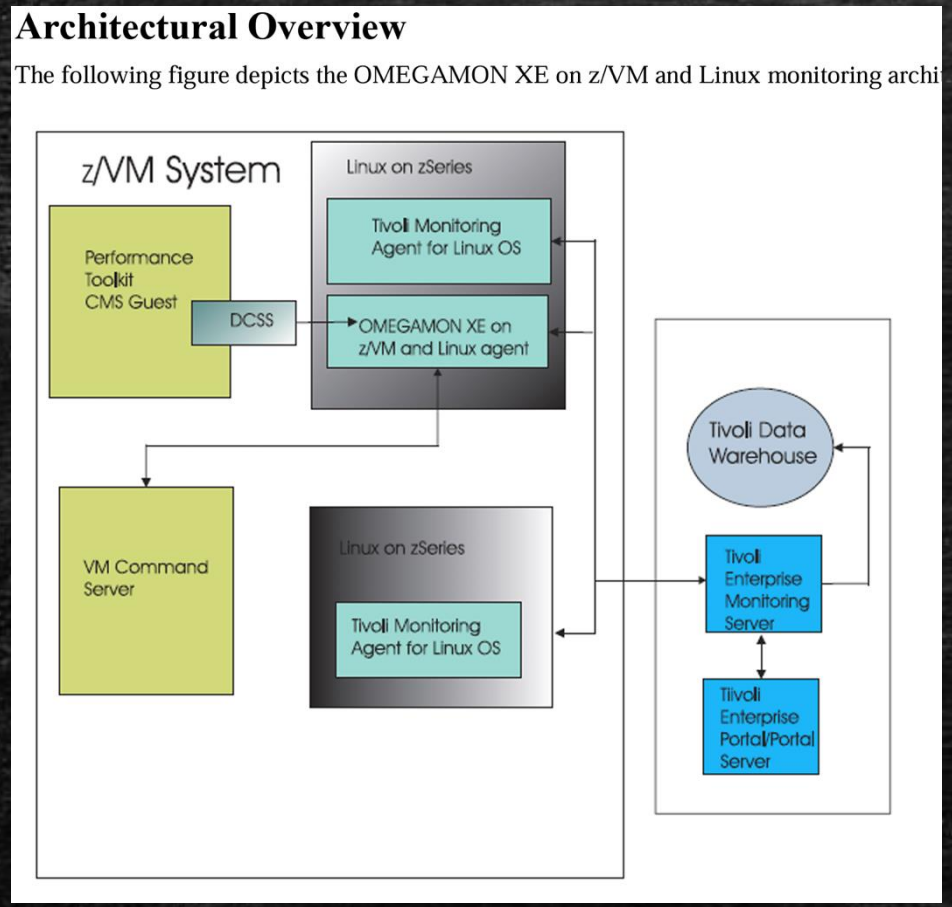
OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- Assumptions
  - OMEGAMON enterprise-wide infrastructure already in place (TEPS, TEMS, z/OS systems…)
  - Goal: Add z/VM LPAR metrics to "big picture"

  - z/VM Performance Tool Kit (PTK) is already configured
    - OMZVM consumes data generated by PTK

  - A z/VM Linux guest system is available to host OMZVM monitoring agent
    - Almost all OMZVM function executes as Linux application
    - Exception: The "Take Action" server
      - *Not discussed here, but not difficult to deploy*

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

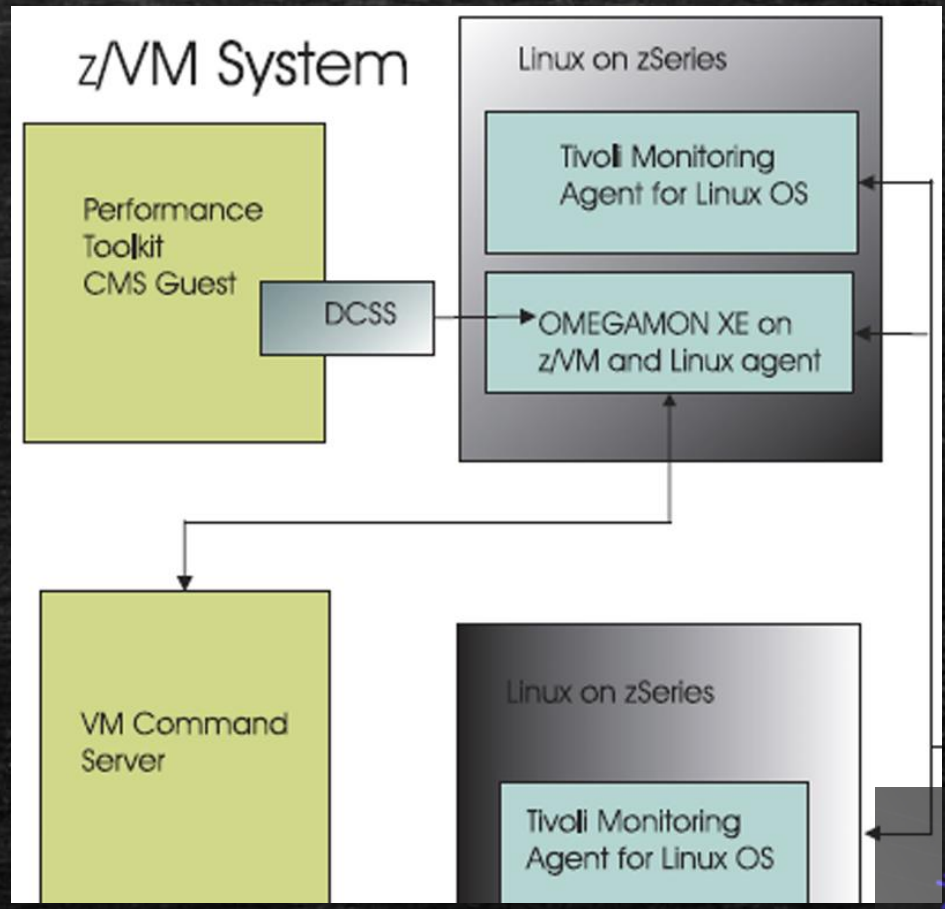


- Full OMEGAMON infrastructure consists of a ***lot*** of components…

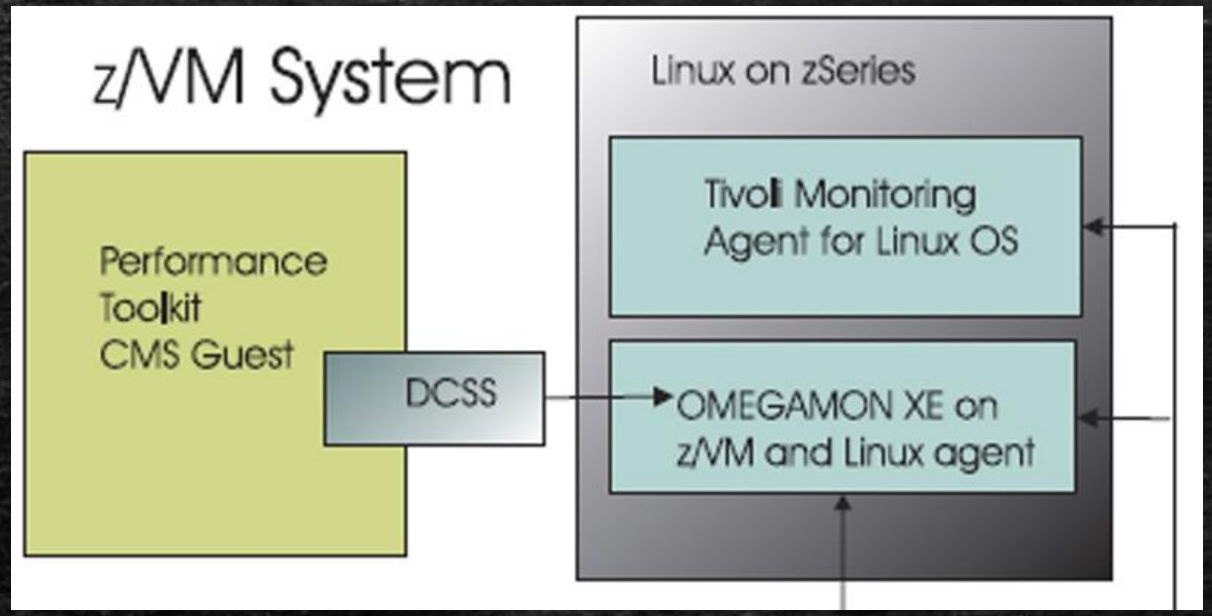
- *Diagram courtesy of "OMEGAMON XE for z/VM and Linux v4.3.0 FP3 Installation and Configuration Cook Book" (John Harris John_Harris@us.ibm.com)*

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- …even after we limit scope to discussion of z/VM and Linux as a guest of z/VM…

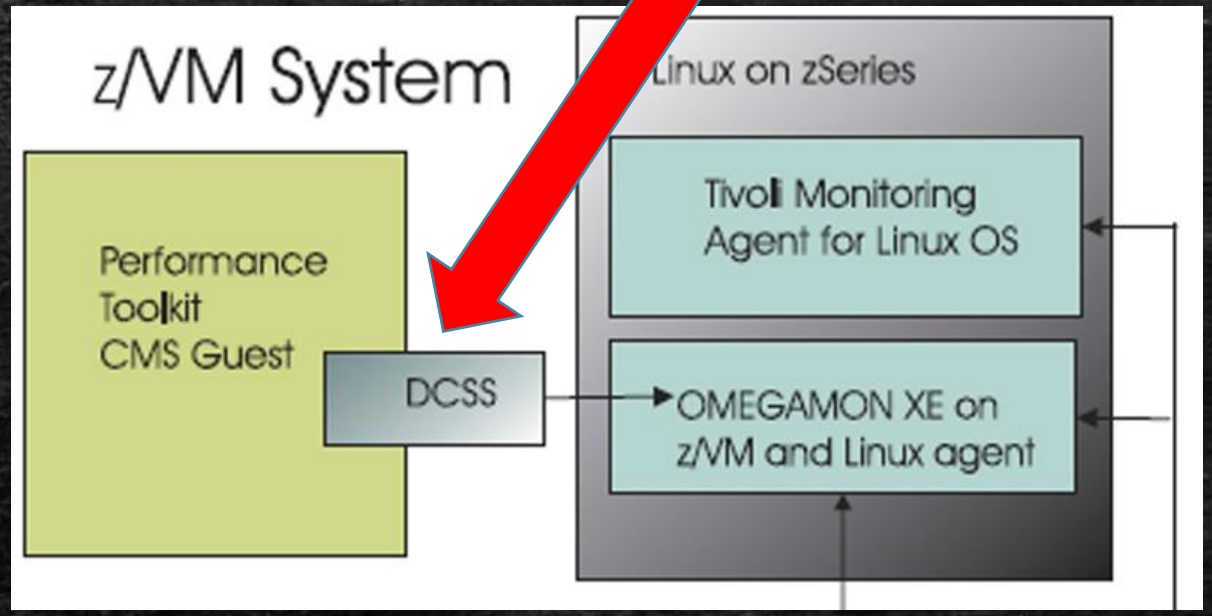


OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment



…but most of the installation and configuration problems involve setting up the interface between PTK and OMZVM.

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment



...but most of the installation and configuration problems involve setting up the interface between PTK and OMZVM.

Setting up the DCSS requires a solid understanding of both z/VM and Linux on IBM z.

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- A DCSS is Shared Memory
- DCSSs provide a mechanism for multiple guest operating systems to access the same memory space.
- "It's a data sharing solution."

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- "It's a data sharing solution, so…"
- CP MONITOR capabilities produce raw metrics, consumed by PERFSVM.
- PERFSVM (PTK): Creates & maintains data in the "PERFOUT" DCSS.
  - …among other functions.
- The OMZVM "VL" agent, a Linux application, consumes that data.
- PERFSVM and Linux share a common set of virtual memory pages.

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration~~, and Deployment~~

- "It's just arithmetic."
  - …in hexadecimal.
  - …with page ranges.

- z/VM 7.4 "PERFOUT" default:

```
CP QUERY NSS NAME PERFOUT MAP

FILE FILENAME FILETYPE MINSIZE  BEGPAG ENDPAG TYPE CL #USERS PARMREGS VMGROUP

0028 PERFOUT  DCSS       N/A    46000  465FF   SN  A  00000   N/A       N/A
```

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration~~, and Deployment~~

- Example: a Linux guest ("OMEGALNX") with a 2G virtual memory footprint:
  - **00000000 – 45FFFFFF** – private OMEGALNX pages
  - **46000000 – 465FFFFF** – shared (PERFOUT + OMEGALNX) DCSS pages
  - **46600000 – 805FFFFF** – private OMEGALNX pages

- In "OMEGALNX" CP directory:

```
…
CP DEFINE STORAGE CONFIG 0.1120M 1126M.928M
…
```

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- Planning & Configuration steps: z/VM-side
  - Review PERFOUT page range; delete/re-define if necessary
  - Update OMZVM "VL" agent Linux guest memory layout
    - *…the "CP DEFINE STORAGE CONFIG" example from the previous slide*
  - LOGOFF/LOGON "VL" agent Linux guest so that directory updates take effect

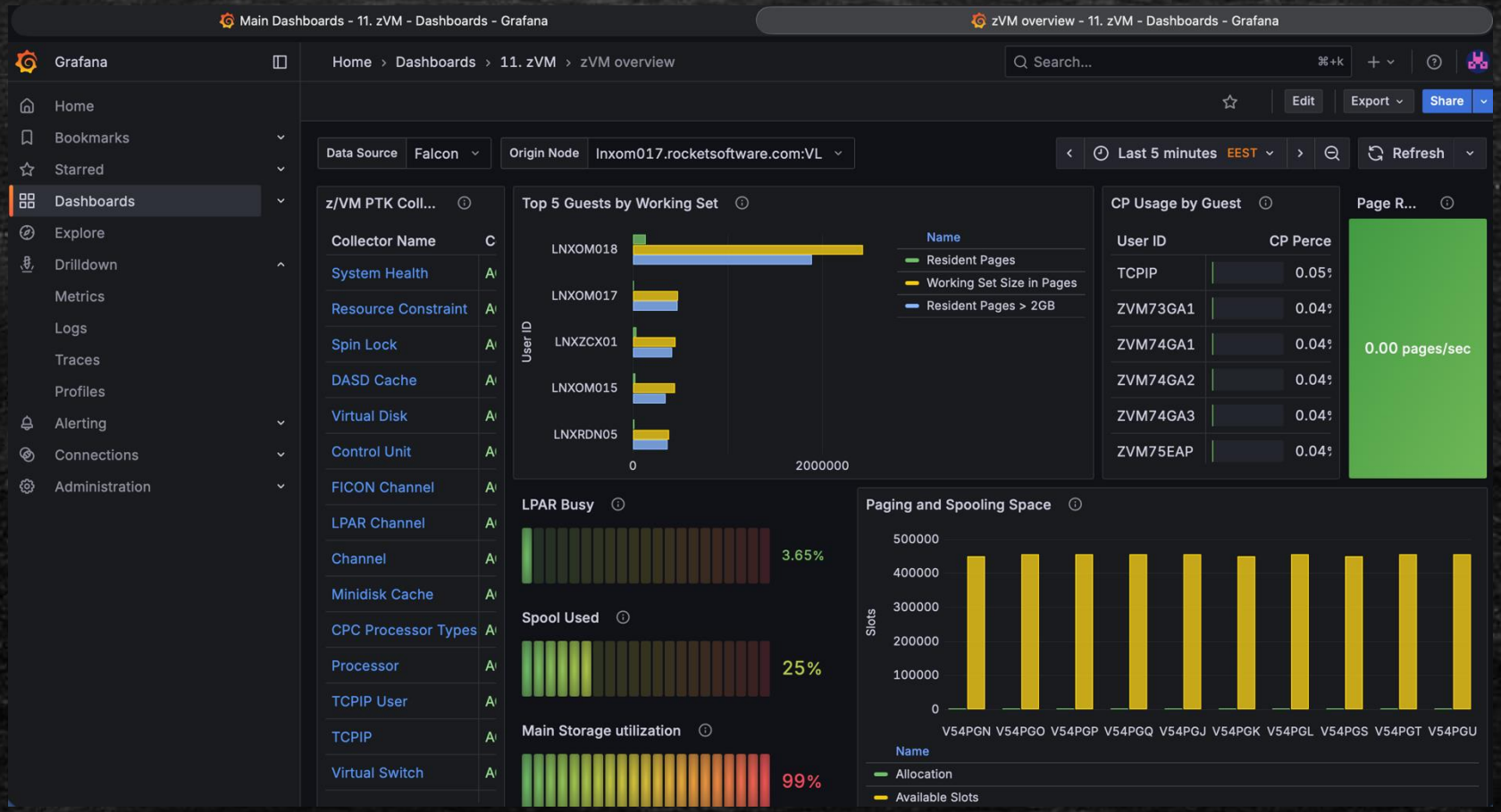
  - Update **FCONX $PROFILE**
    - *Uncomment / Add "**FC MONCOLL SEGOUT ON PERFOUT**"*

Remember to rebuild and restart PERFSVM after these changes

OMEGAMON XE on z/VM and Linux (OMZVM): Planning, Configuration, and Deployment

- Configuration & Deployment steps: Linux-side
  - Great supplemental resource:
    - "OMEGAMON XE for z/VM and Linux Installation and Configuration Cook Book"
  - Be sure you have the latest "Fix Pack" (download from IBM Fix Central)
  - Unpack and execute the install script
    - *OMEGAMON TEP & TEMS hostnames or IP addresses*
    - *PTK shared DCSS name (default: PERFOUT)*
  - If necessary, update Linux startup procedures
    - Load the DCSSBLK device driver
    - Connect the PERFOUT DCSS
  - Start the **VL** agent
  - Pro tip: PERFSVM *must* be running *before* attempting to start the **VL** agent
    - *Message **KVLAL0005E** in **VL** agent logs indicates problems with the PERFOUT DCSS*

Include a screenshot of new Grafana for OM zVM



What about z/VM Performance Data Pump?

- Why do I care?
  - 21st-century buzzwords: "Observability"
  - 21st-century function: There's a *lot* going on with Grafana

- Before you begin:
  - Verify your license entitlement
  - DATAPUMP is part of z/VM Performance Tool Kit

- Start **here**: https://www.vm.ibm.com/related/perfkit/datapump/
- Details **here**: https://www.vm.ibm.com/related/perfkit/datapump/setup-v5.pdf

Broad Strokes: What about z/VM Performance Data Pump?

- Review the available documentation
  - IBM z/VM 7.4 documentation library: z/VM: Performance (SC24-6301-74)
    - *Appendix I. z/VM Performance Data Pump*
    - …plus additional materials cited on previous slide
- z/VM 7.3: Apply service for VM66687
  - Not applicable for z/VM 7.4; it's part of the 7.4 base.
- Set up a Linux server
  - "Bring your own Linux"
  - Host system for **Influx**DB (database to hold metrics gathered by DATAPUMP svm) and **Grafana** (data visualization and analysis)
  - Recommendation: Dedicate a small z/VM Linux guest
    - OMZVM users: Could host alongside the **VL** agent

Doc is very good. Easiest to deploy InfluxDB and Grafana as Docker containers

Broad Strokes: What about z/VM Performance Data Pump?

- Set up a Linux server
  - "Bring your own Linux"
  - Host system for **Influx**DB (database to hold metrics gathered by DATAPUMP svm) and **Grafana** (data visualization and analysis)
  - Suggestion: Set up a dedicated small z/VM Linux guest
    - OMZVM users: Could host alongside the **VL** agent; no compatibility issues identified
  - Customize InfluxDB and Grafana
    - *Excellent details in the IBM-provided documentation*

- Configure the DATAPUMP service virtual machine
  - Pre-defined in z/VM 7.4
  - Don't overlook the **MDXSETUP** step of instructions
    - *I did… the first time.*
  - Customize …

Broad Strokes:
What about z/VM Performance Data Pump?

- Configure the DATAPUMP service virtual machine
  - Pre-defined in z/VM 7.4
  - Don't overlook the **MDXSETUP** step of instructions
    - *I did… the first time.*
  - Customize DATAPUMP configuration file "**DEFAULT DATAPUMP**"
    - Found on DATAPUMP's "A-disk"; SFS default location is **VMPSFS:DATAPUMP.**
    - Defines the connection between (CMS) DATAPUMP svm and (Linux) InfluxDB instance
  - Test!
    - Details in the IBM-provided documentation
  - Automate!
    - Add to AUTOLOG1 / AUTOLOG2 **PROFILE EXEC**

Broad Strokes: What about z/VM Performance Data Pump?

- What's this thing good for, really?
- Looking at z/VM performance data
  - Keywords: Observability, Visualization, Dashboard
- Active development going on in this space!
  - Watch:
    - z/VM New Function: http://www.vm.ibm.com/newfunction/index.html
    - z/VM Performance Data Pump: https://www.vm.ibm.com/related/perfkit/datapump/
  - As recently as…
    - April 2025: z/VM Energy Consumption
    - May 2025: z/VM Neural Network Processor dashboard
      - *…z16: Usage by topology*
      - *…z17: Sharing of AI Accelerators*

Summary

- "It's all about fiddly little details"
  - Performance Tool Kit setup is mostly a z/VM sysprog / sysadmin job
  - OMEGAMON for z/VM and Linux setup requires a solid understanding of…
    - z/VM concepts and facilities (PTK, CP MONITOR setup, "what's this DCSS thing?")
    - Linux sysadmin skills (package installation)
    - OMEGAMON infrastructure (VL agent "plugs in" to a complex environment)
    - Documentation path is complex because the target environments are complex
  - Performance Data Pump
    - Requires moderate "domain specific" knowledge for both z/VM and Linux
    - Container packaging of InfluxDB and Grafana simplify this task
    - IBM-provided documentation provides excellent guidance

Questions, Comments, Feedback…?

- "I would rather have questions that cannot be answered than answers that cannot be questioned."

Richard Feynman (1918 – 1988), Theoretical Physicist

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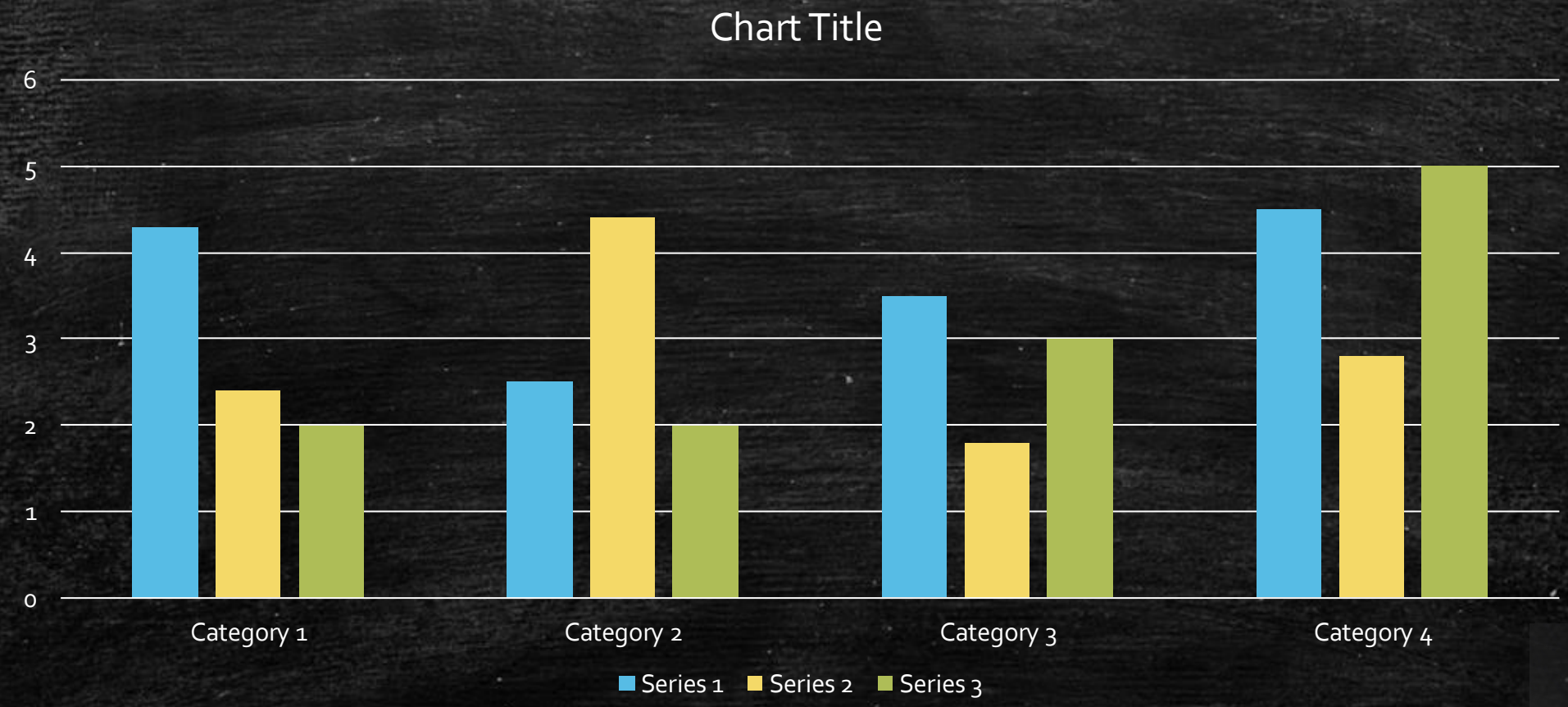

Two Content Layout with Table

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Class	Group A	Group B
Class 1	82	95
Class 2	76	88
Class 3	84	90

Two Content Layout with SmartArt

Group A

- Task 1
- Task 2

Group B

- Task 1
- Task 2

Group C

- Task 1

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