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SHARE Session 09481

Automation and Backup Scenarios  
for z/VM and Linux on System z

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## Agenda

- **Requirements for these scenarios**
- **Overview of products being used**
- **Automation scenarios**
  - Can be product agnostic
  - Live demos
  - Configuration options and sample code
- **Backup scenarios (including automation)**
  - Can be product agnostic
  - Live demos
  - Configuration options and sample code
- **Summary**



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# Requirements

*Implementing these Scenarios*

## Automation requirements for z/VM system

- **Take an action based on a message on a console**
  - Provide data from the message to the action
- **Send commands to Linux guests**
- **Schedule an action to occur immediately**
  - Or on a regular schedule
- **Trigger an action if spool usage reaches a specified percent full**
- **Chain any actions (triggered by messages, schedules, etc.)**
- **Suspend and resume message rules, schedules, spool monitors, etc.**
- **Issue commands real-time on a service machine console**
- **Add messages to a console view from local or remote sources**
- **Detect a user ID logging off**

## Backup requirements for z/VM system

- **Define a backup job that limits the backup to a specified set of disks**
- **Customize messages that are displayed when backup is complete**
- **Invoke backup via an “API”**



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Automating Operations  
*Operations Manager for z/VM*

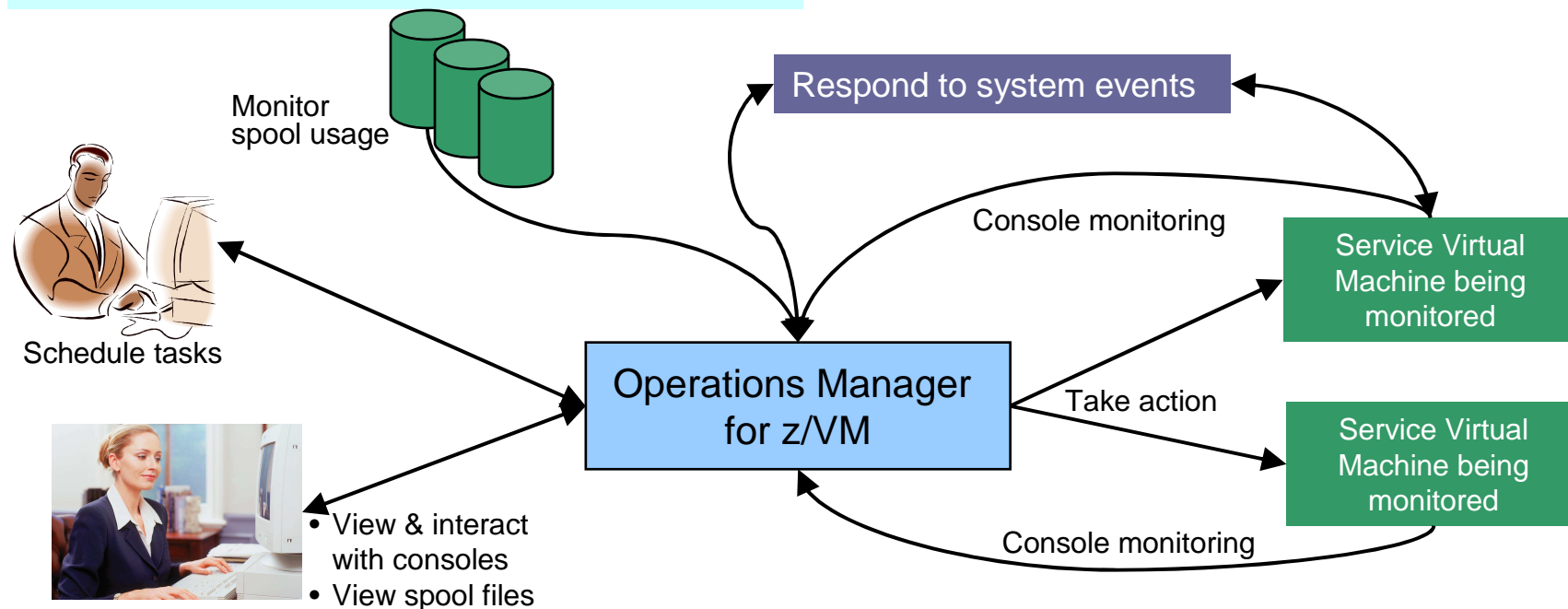
# Operations Manager for z/VM

## Increase productivity

- Authorized users view and interact with monitored virtual machines without logging onto them
- Multiple users view/interact with a virtual machine simultaneously

## Improve system availability

- Monitor virtual machines and processes
- Take automated actions based on console messages
- Reduce problems due to operator error



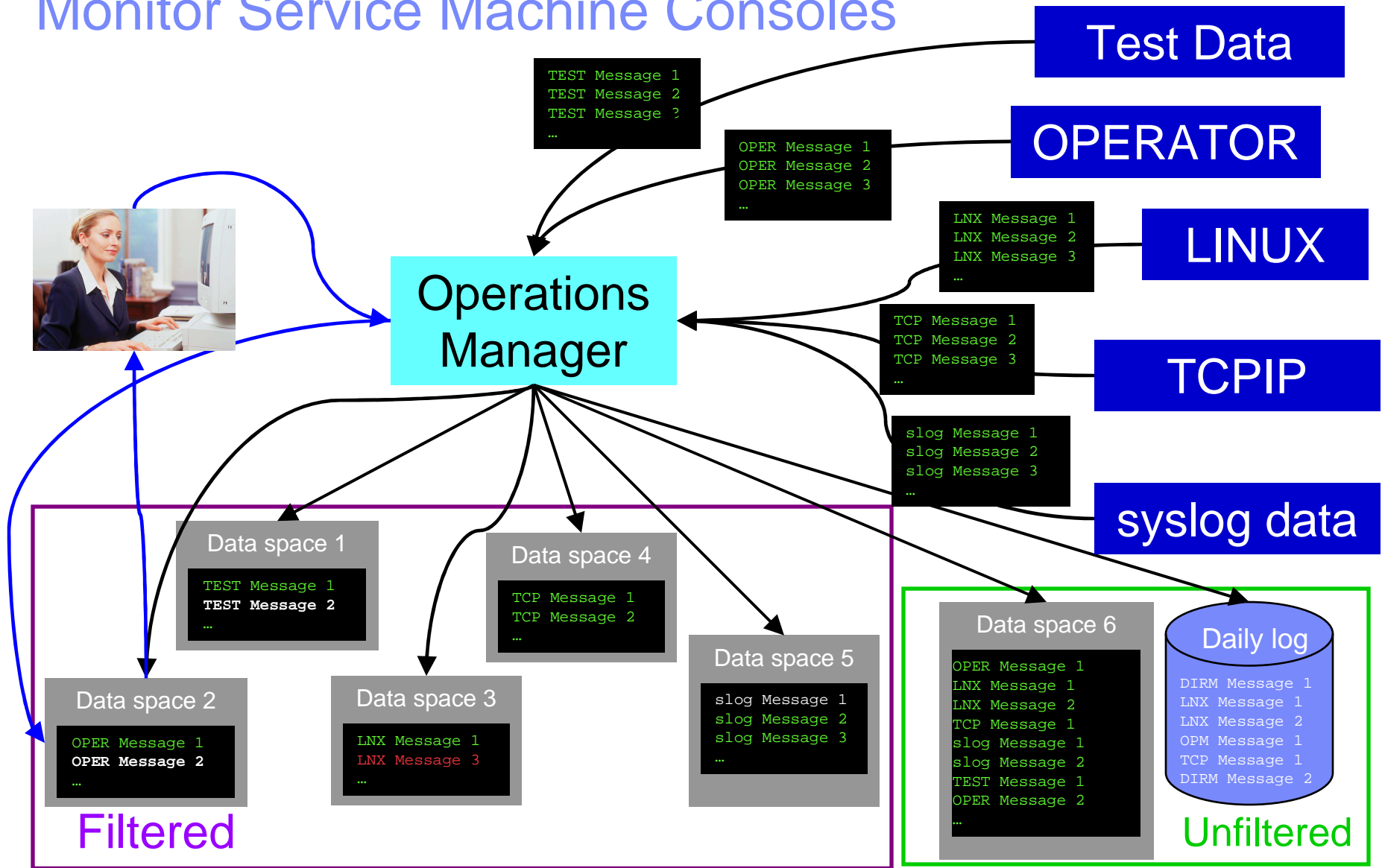
## Automation

- Routine activities done more effectively with minimal operations staff
- Schedule tasks to occur on a regular basis

## Integration

Fulfill take action requests from OMEGAMON XE on z/VM and Linux

# Monitor Service Machine Consoles





## Monitor Service Machines

- **Define rules to**
  - Scan console messages for text matching
    - Includes column, wildcard, and exclusion support
    - Optionally restrict to specific user ID(s)
  - Take actions based on matches
- **Multiple rules can apply to one message**
  - Rules processed in order of definition in the configuration file
  - FINAL option available to indicate no additional rules should be evaluated

## View and Interact with Consoles

- **Authorized users can view live consoles of monitored service machines and guests**
  - Multiple users can view the same console simultaneously
  - No need to logon to the service machine to see its console
  - Test data and Linux syslog data treated as a “console”
  - Views can be defined to look at a group of consoles in one view
- **Full screen mode**
  - Scroll up and down to view and search historical data
  - Auto scroll (on or off) as new output is displayed on the console
  - From command line, issue commands back to the monitored console
- **Amount of data that is visible depends on specified or default data space size**
- **Rules/actions may modify the view**
  - Suppress messages from the console
  - Hold or highlight messages with color, blinking, etc.
- **Authorized users can view the log file**
  - Can also request a copy of the log file from today or a previous day

## Monitor and View Spool Files

- **Create spool monitors to trigger actions when**
  - Percent of spool usage falls within a specified range
  - Percent of spool usage increases at a specified rate
- **Actions triggered can be the same actions used by console monitoring**
- **Authorized users can**
  - Display a list of spool files based on one or more attributes
    - Owner
    - Size
    - Date created
  - From the list the user can
    - View the contents of an individual spool file
    - Transfer, change, or purge a spool file

# Schedule Events and Actions

- **Define schedules**
  - Hourly, daily, weekly, monthly, or yearly, nth weekday of the month
  - Once on specified month, day, year, and time
  - At regular intervals
    - Every x hours and y minutes
  - Within a specified window of time
    - Specify start time
    - Specify conflicting schedules
    - Specify maximum time to defer this schedule
  - Within limits
    - Restrict to specific days of the week: Monday through Sunday plus holidays
    - Restrict to certain hours of the day
  
- **Specify the action associated with the schedule**
  - Actions specified are the same as those for console and spool monitoring

## Respond to System Events

- **Create monitors for z/VM system events (\*VMEVENT) related to user IDs**
  - Logon
  - Logoff
  - Failure condition (typically CP READ)
  - Logoff timeout started
  - Forced sleep started
  - Runnable state entered (VM READ)
  - Free storage limit exceeded
- **Optionally restrict to specific user ID(s)**
- **Specify the action associated with the event**
  - Actions specified are the same as those for schedules and console and spool monitors

## Summary

- **Use Operations Manager to**
  - Automate daily operations
  - Prevent problems rather than react to them
  - Automate reactions to problems when they can't be prevented
  - Improve problem determination procedures
  - Increase programmer and operator productivity



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# Managing Backup and Recovery

## *Backup and Restore Manager for z/VM*

## Product Overview

### ▪ Backup

- Requested by administrators
- Full or incremental
- Flexible selection of disks and files to back up
- Review job before submitting for backup

### ▪ Restore

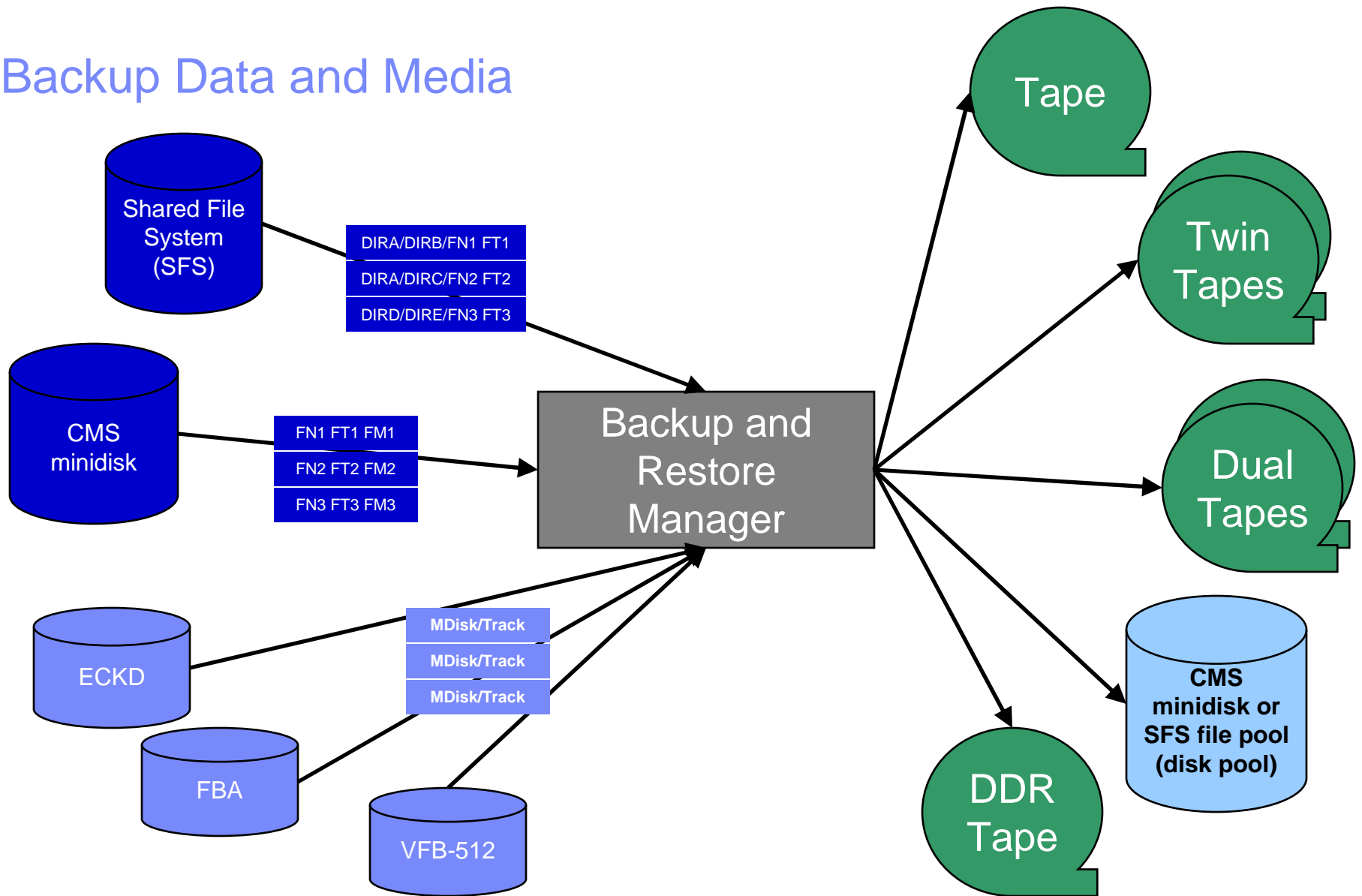
- Performed by users for their own data
- Extending to other users available via exit
- Performed by administrators for any data
- Selection of data to restore
  - Full screen interface or commands

**Catalog in Shared File System (SFS) – presentation on web site for installation and setup**

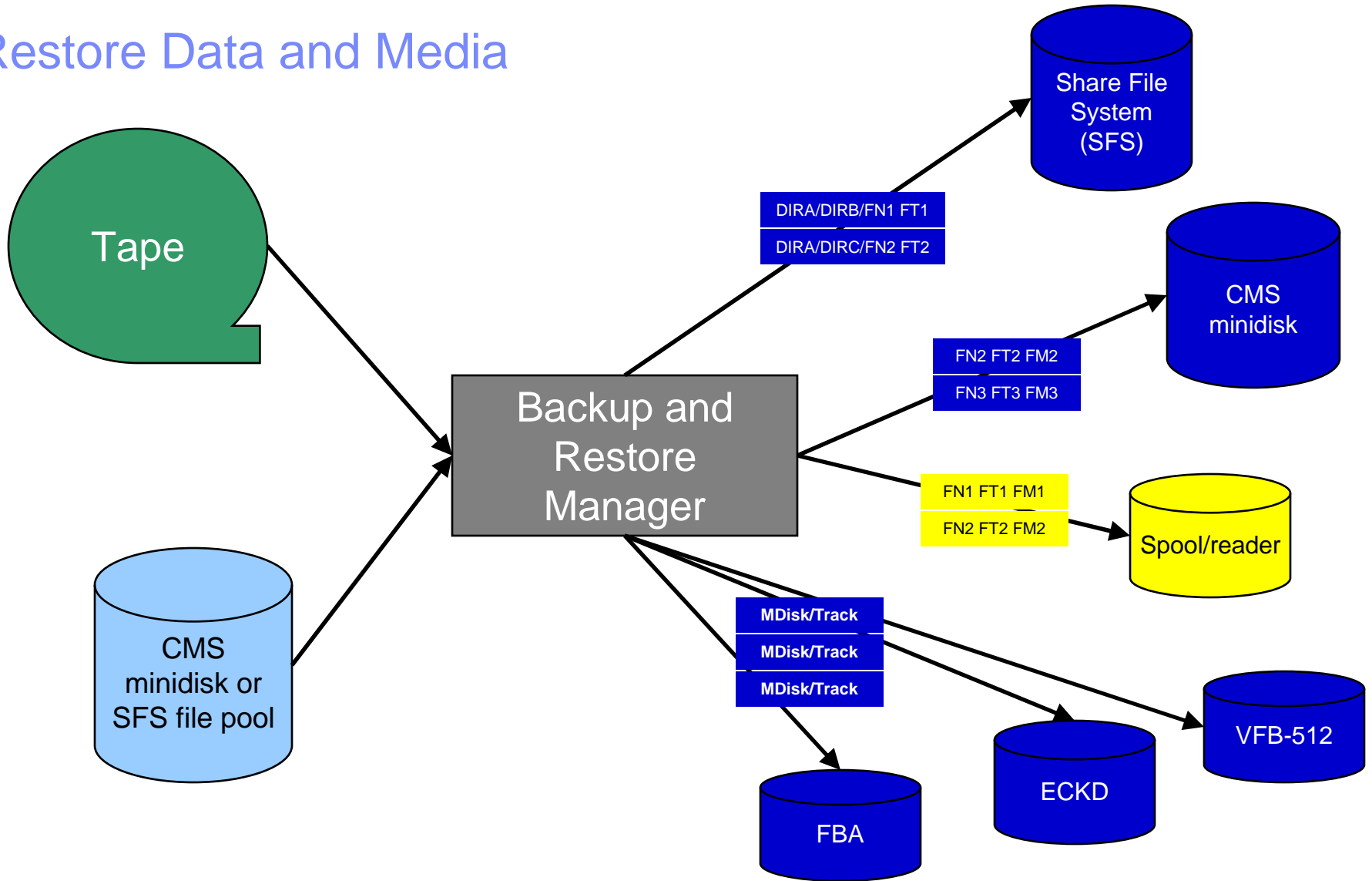
- **Integration with Tape Manager for z/VM**
- **Optional compression of data during backup via exits**
  - Call your own compression algorithm
  - Use IBM provided routine
- **Encryption exits available**
  - Call your own routine
  - Use vendor-written routine, such as V/Soft Software's Encrypt/Backup for z/VM



# Backup Data and Media



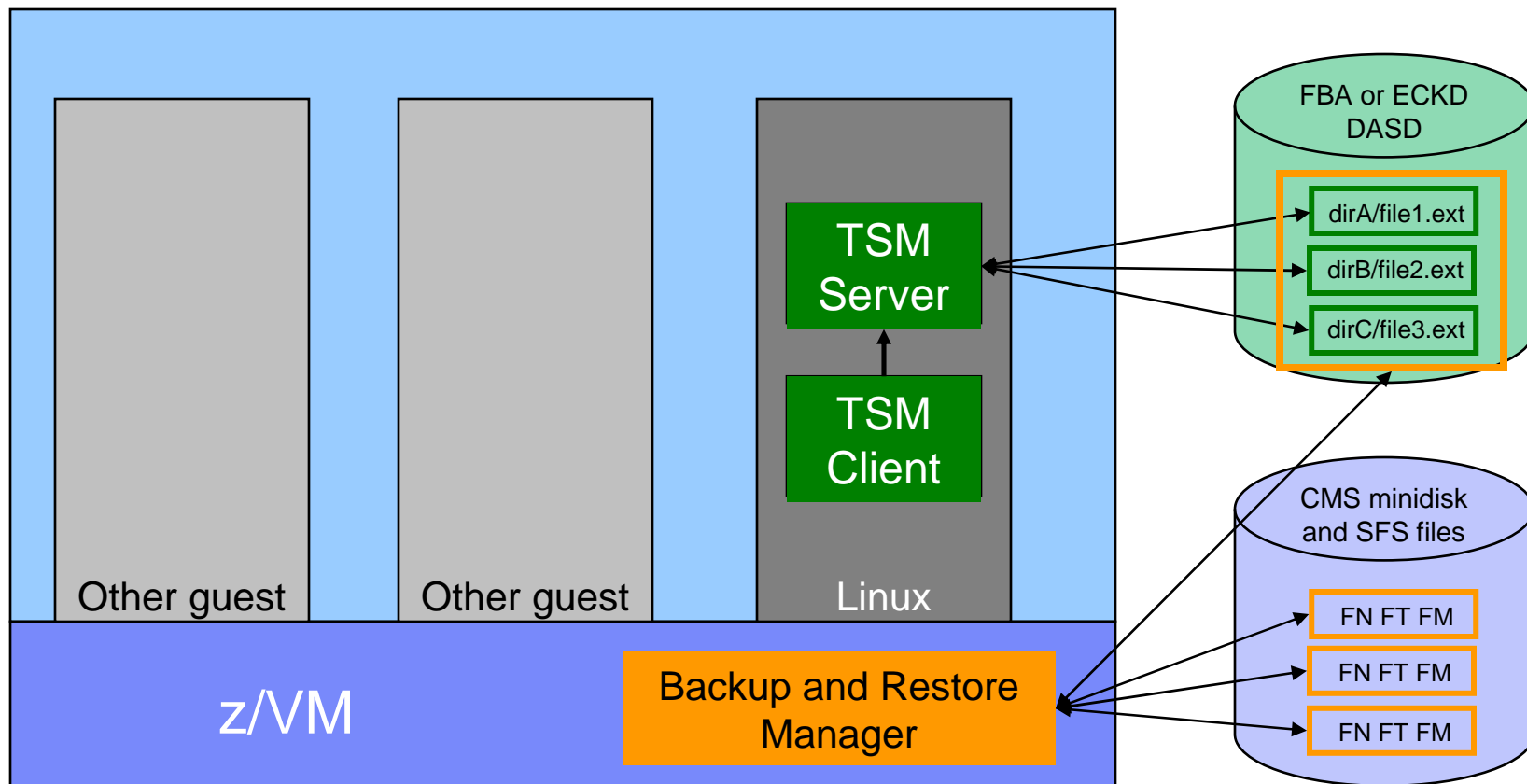
# Restore Data and Media



## Backup and Restore Manager and Linux Guests

### *Using Backup and Restore Manager with Tivoli Storage Manager*

*Choose the solution that meets your needs – or combine for file recovery and DR*



## Key Benefits

- **System backups available for Disaster Recovery**
  - Option to restore using DDR or Backup and Restore Manager
  - Manage retention of DR backups
  - Retrieve a list of tapes associated with a specific backup
    - Pull list for movement to off-site storage
- **Guest backups available for restoring to a previous state or level**
- **Backups of user data available for**
  - Restoring to a previous state or level
  - Replacing files accidentally erased or corrupted
- **Users restore their own data**
  - No administrator interaction required

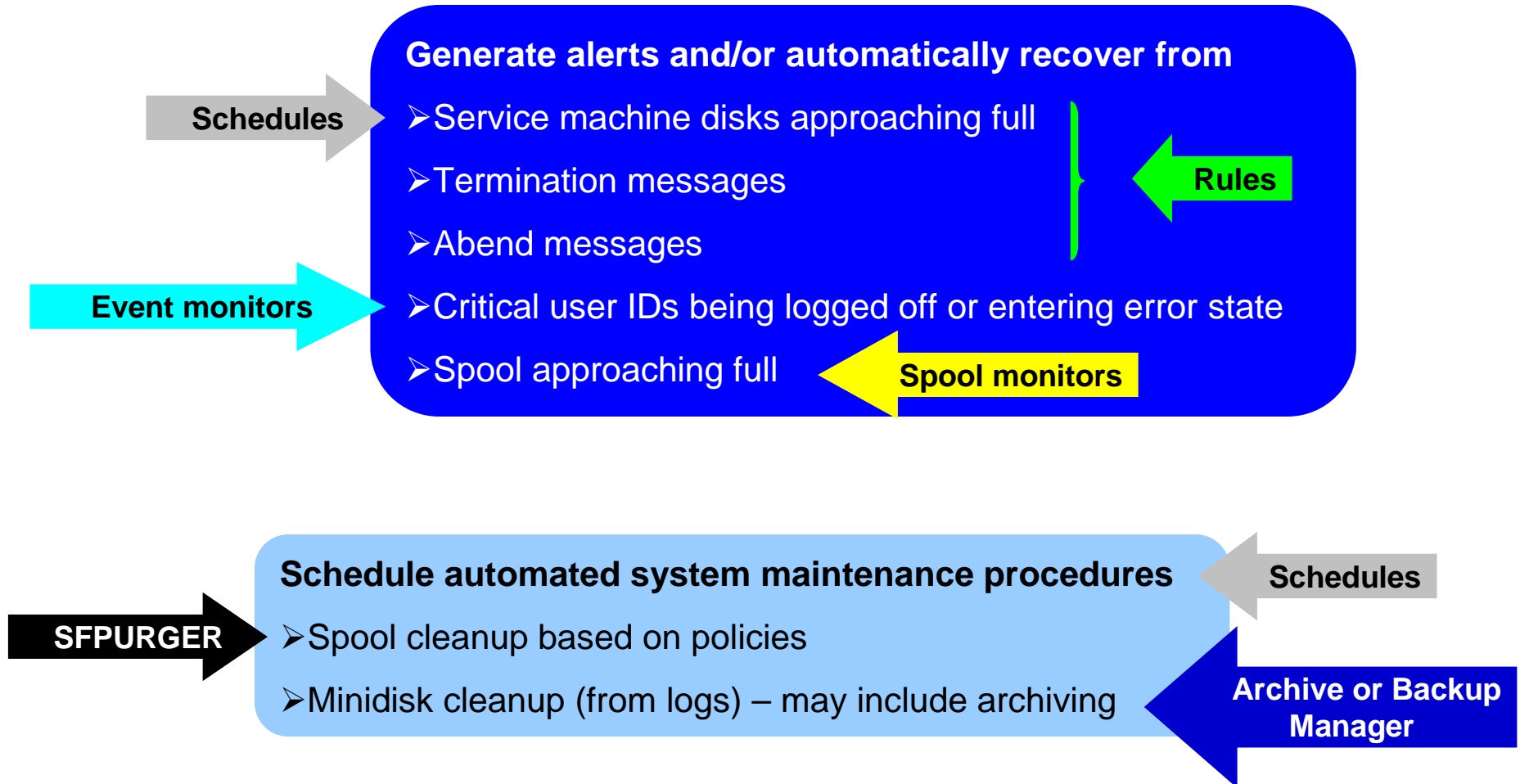
## Key Benefits Cont...

- **Flexible selection of data to back up**
  - Include/exclude
    - Minidisks, directories
    - Real device addresses or volsers
    - Extents
  - Mask by filename, filetype, or SFS path
  - Review a defined backup job before submission
- **Management of backup data**
  - Retention set as part of the backup job
  - Automatic aging and pruning of the backup catalog
    - Including associated tapes and disk pools
  - View/query the list of expired backups
- **Reduced backup window with concurrent processing**
  - Multiple worker service machines sharing the job
  - Suggest one worker service machine for each available tape drive

## Summary

- **Use Backup and Restore Manager to**
  - Perform file-level backups of z/VM data
  - Perform image level backups on non-z/VM guest data
  - Perform disaster recovery backups of entire system
  - Easily find and restore data as needed
  - Manage retention of backup data

## Recommended Practices – Operational Management



# Recommended Practices – Backup and Recovery

## File level backup of z/VM data

- Directory information
- Configuration files
- Log files
- Tools – REXX EXECs, automation scripts, etc.

**INCLUDE MINIDISK**

**INCLUDE MINIDISK  
INCLUDE RDEVICE  
INCLUDE RDEVVOL**

## Image level backup of Linux guests

- Operating system
- Applications
- Application data (maybe)

## Disaster recovery of z/VM system, including Linux guest

- Dependence on z/OS versus
- Independent recovery in parallel with z/OS

**Back up from z/OS**

**Backup Manager using  
DDRTAPE output spec**



## Reference Information

- **Product Web site**
  - Start at <http://www.ibm.com/software/stormgmt/zvm/>
  - Product pages include
    - Publications
    - Pre-requisites
    - Announcements
    - Presentations
    - White papers
    - Support
- **e-mail**
  - Mike Sine, [sine@us.ibm.com](mailto:sine@us.ibm.com), Technical Marketing
  - Tracy Dean, [tld1@us.ibm.com](mailto:tld1@us.ibm.com), Product Manager
- **White papers on Operations Manager website (Library page)**
  - Routing Linux syslog data
  - Sending alerts from Operations Manager to Netcool/OMNIbus
  - Using Shared File System to store Operations Manager configuration files and automation EXECs
  - Automatically logging on a user at Linux system boot time for easier console management
- **White paper and presentation on Backup and Restore Manager website (Library page)**
  - Getting Started with Installation, including SFS server creation and installation of Backup Mgr
  - Backing up z/VM and Linux on System z – Tivoli Storage Manager vs Backup Manager



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## Demonstration Scenarios

## Demos Available

1. **Send an e-mail based on a console message**
2. **Send an alert to Netcool/OMNIBus based on a console message**
  - a. Using POSTZMSG interface to Netcool/OMNIBus
  - b. Using SNMP interface to Netcool/OMNIBus
3. **Send a message or e-mail based on spool usage**
4. **View and clean up spool files**
5. **Automated spool cleanup**
6. **Archiving DIRMAINT's log files when disk gets full**
7. **Process a file of test messages as a console**
8. **Process Linux syslog data as a console**
9. **Create a central operations console on one z/VM system**
10. **Create a central operations console across multiple z/VM systems**
11. **Integration with OMEGAMON XE on z/VM and Linux - take action based on CPU usage of a Linux guest**
12. **Monitor service machines for logoff – and autolog them**
13. **Perform an incremental backup**
14. **Find and restore a file from the backup catalog**
15. **Automatically shut down, back up, and restart a Linux guest**
16. **Reviewing a disaster recovery backup**
17. **Reviewing other ways to find data in the backup catalog**



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## Automation Scenarios

## Scenario 1: Send an E-mail if Abend or Fatal Message Occurs

- **Watch all monitored consoles for an error message that includes the word “fatal” or “abend”**
  - Message must also contain the word “mail” (for demo purposes only)
- **Send an e-mail if one of the words appears on a console**
- **Dynamically include in the e-mail**
  - Host name of z/VM system where the error occurred
  - User ID that received the error message
  - Indicator of whether the word was fatal or abend
  - Full text of the error message

## Scenario 1: Detailed Steps

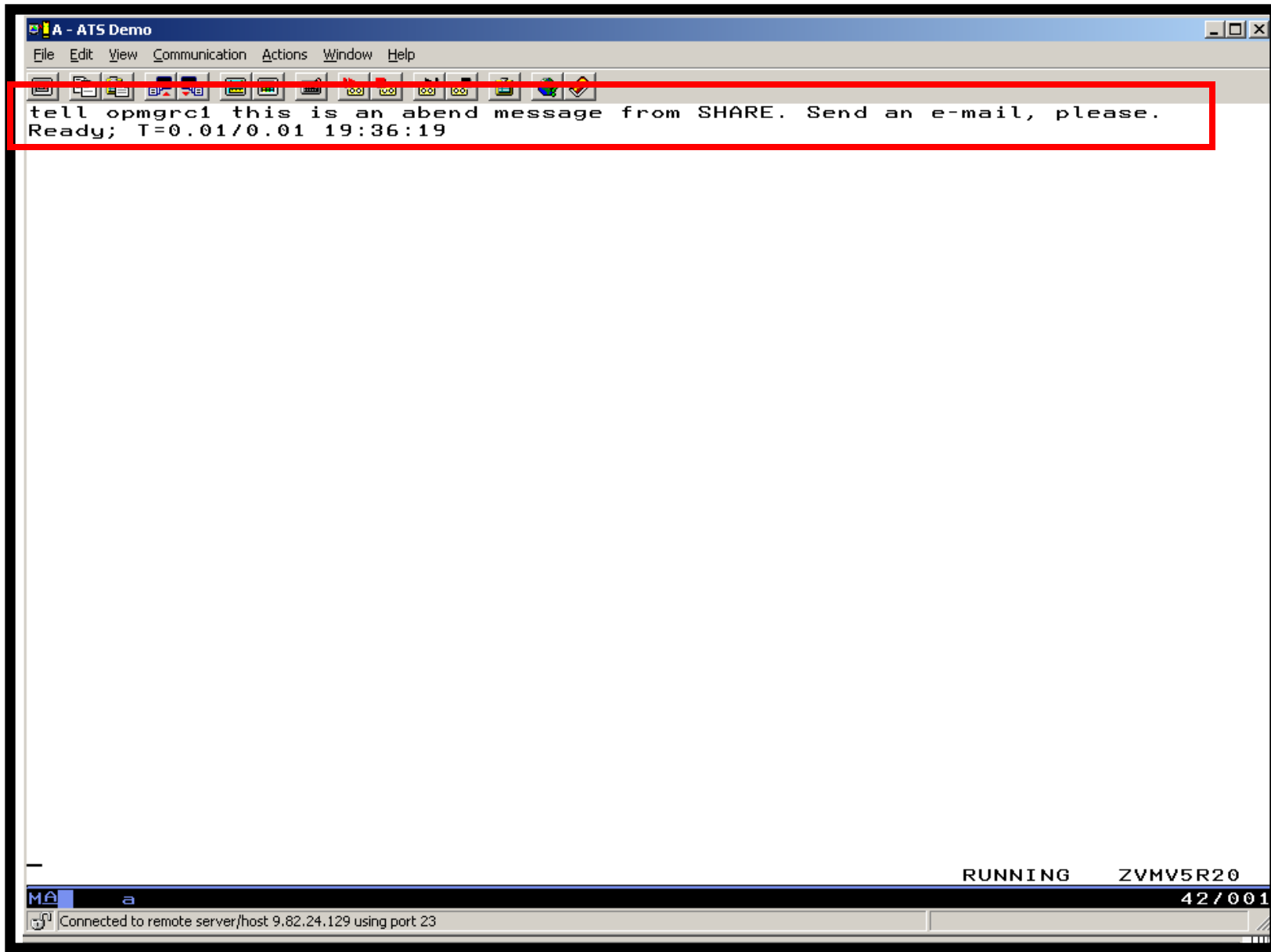
- **From any VM user ID:**

```
tell opmgrc1 this is an abend message from SHARE. Send an e-mail, please.
```

- **From an authorized VM user ID, view the console of OPMGRC1:**

```
gomcmd opmgrm1 viewcon user(opmgrc1)
```

- **Check the inbox of the appropriate person to see the e-mail**



```

A - ATS Demo
File Edit View Communication Actions Window Help
23:59:59
00:00:00 HCPMID6001I TIME IS 00:00:00 EST SUNDAY 02/22/09
00:00:00
00:00:03 HCPMID6001I TIME IS 00:00:00 EST MONDAY 02/23/09
00:00:03
10:24:17 * MSG FROM SINE : this is a fatal message
10:24:27 * MSG FROM SINE : this is a fatal message please send an e-mail
10:24:27 * -- Operations Manager Action EMAIL scheduled for execution -- *
10:25:29 * MSG FROM SINE : this is a fatal message please tell omnibus
10:25:29 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
11:48:50 RDR FILE 0007 SENT FROM SINE PUN WAS 0254 RECS 169K CPY 001 A NOH
12:03:07 RDR FILE 0008 SENT FROM SINE PUN WAS 0256 RECS 169K CPY 001 A NOH
12:03:20 RDR FILE 0009 SENT FROM SINE PUN WAS 0258 RECS 169K CPY 001 A NOH
00:00:01 HCPMID6001I TIME IS 00:00:00 EST TUESDAY 02/24/09
00:00:01
00:51:58 * MSG FROM SINE : test abend message for omnibus
00:51:58 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
00:55:15 * MSG FROM SINE : test abend message for omnibus
00:55:15 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
00:55:41 * MSG FROM SINE : test abend message for omnibus
00:55:41 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
00:56:25 * MSG FROM SINE : test fatal message for omnibus
00:56:25 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
00:58:05 * MSG FROM SINE : test fatal message for omnibus
00:58:05 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
01:01:47 * MSG FROM SINE : test fatal message for omnibus
01:01:47 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
01:02:36 * MSG FROM SINE : test fatal message for omnibus
01:02:36 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
01:03:31 * MSG FROM SINE : test fatal message for omnibus
01:03:31 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
01:04:00 * MSG FROM SINE : test abend error for omnibus
01:04:00 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
14:01:16 * MSG FROM SINE : test fatal error for omnibus
14:01:16 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
14:05:33 * MSG FROM SINE : test abend error for omnibus
14:05:33 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
14:13:43 * MSG FROM SINE : test fatal error for omnibus
14:13:43 * -- Operations Manager Action ALRTOMNI scheduled for execution -- *
19:36:18 * MSG FROM SINE : this is an abend message from SHARE. Send an e-m
19:36:18 * -- Operations Manager Action EMAIL scheduled for execution -- *
OPMGR C1 (Scroll)
MA a 42/001
Connected to remote server/host 9.82.24.129 using port 23
    
```



The screenshot shows the IBM Lotus Notes interface for Tracy Dean. The inbox is filtered for 'holly'. A table of emails is displayed with columns for Who, Date, Time, Size, and Subject. One email is highlighted with a red box:

Who	Date	Time	Size	Subject
OPMGRM1	02/24/2009	04:36 PM	3,066	Abend on user ID OPMGRM1 on z/VM system
Steve Wilkins	02/24/2009	04:03 PM	21,907	Re: Clear_Tdisk question
Marcy Cortes	02/24/2009	04:02 PM	11,358	Re: Clear_Tdisk question

**OPMGRM1@MSINE.WASHINGTON.IBM.COM**  
02/24/2009 11:36 AM  
Default custom expiration date of 02/24/2010

To: Tracy Dean/Beaverton/IBM@IBMUS

cc:

bcc:

Subject: Abend on user ID OPMGRM1 on z/VM system

The following message was received on OPMGRM1 running on MSINE.WASHINGTON.IBM.COM :

```
* MSG FROM SINE      : this is an abend message from SHARE. Send an e-mail, please.
```

DO NOT REPLY - This e-mail was generated by an automated service machine

## Scenario 1: How Do You Do That?

### Rules in Operations Manager:

- \*  
\* Send an e-mail to someone if I see a message containing the word  
\* "fatal" on any monitored console

```
DEFRULE NAME(FATLMAIL),+  
  MATCH(*FATAL*mail*),+  
  EXUSER(ESMTS112),+  
  ACTION(EMAIL),+  
  PARM(FATAL)
```

- \*  
\* Send an e-mail to someone if I see a message containing the word  
\* "abend" on any monitored console

```
DEFRULE NAME(ABNDMAIL),+  
  MATCH(*ABEND*mail*),+  
  EXUSER(ESMTS112),+  
  ACTION(EMAIL),+  
  PARM(ABEND)
```

## Scenario 1: How Do You Do That?

### Action in Operations Manager:

\*

- \* Replace "tld1 at us.ibm.com" with the e-mail address of the user that
- \* should receive the e-mail
- \* Leave &u, &p, and &t as-is. These represent the user ID that had the
- \* "fatal" message, the parameter passed (fatal or abend), and the
- \* text of the message. These will be included in the text of the
- \* e-mail.

```
DEFACTN NAME(EMAIL),+
```

```
COMMAND(EXEC SMTPNOTE tld1 at us.ibm.com &u &p &t),+
```

```
OUTPUT(LOG),+
```

```
ENV(LVM)
```

# Scenario 1: How Do You Do That?

## **SMTPNOTE EXEC (excerpts)**

```
/* */
Parse arg mail_user 'AT' mail_node baduser errtype msgtext
if errtype = 'FATAL' then
  errrtext = 'Fatal error on user ID' baduser 'on z/VM system'
else
  if errtype = 'ABEND' then
    errrtext = 'Abend on user ID' baduser 'on z/VM system'
  else errrtext = msgtext
/* Construct the e-mail */
line.1 = 'OPTIONS: NOACK    LOG    SHORT    NONOTEBOOK ALL CLASS A'
line.2 = 'Date: ' Date() ', ' Time()
line.3 = 'From: Operations Manager for z/VM'
line.4 = 'To: ' mail_user 'at' mail_node
line.5 = 'Subject: ' errrtext
line.6 = 'The following message was received on' baduser 'running on'
line.7 = msgtext
line.8 = ' '
line.9 = 'DO NOT REPLY - This e-mail was generated by an automated service machine
line.0 = 9
'PIPE stem line. | > TEMP NOTE A'
'EXEC SENDFILE TEMP NOTE A (NOTE SMTP'
```

## Scenario 2a: Send an Alert to OMNIbus – Using POSTZMSG

- **Watch all monitored consoles for an error message that includes the word “fatal” or “abend”**
  - Message must also contain the word “omni” (for demo purposes only)
- **Send an alert to OMNIbus if one of the words appears on a console**
  - Use POSTZMSG, running on Linux guest
    - Do not trigger the action if the message is on this guest
- **Dynamically include in the alert**
  - User ID that received the error message
  - Indicator of whether the word was fatal or abend

## Scenario 2a: Detailed Steps

- **View “All Events” in OMNibus**

- **From any VM user ID:**

```
tell opmgrcl this user is abending at SHARE. Tell OMNIBUS.
```

- **From an authorized VM user ID, view the console of OPMGRC1:**

```
gomcmd opmgrml viewcon user(opmgrcl)
```

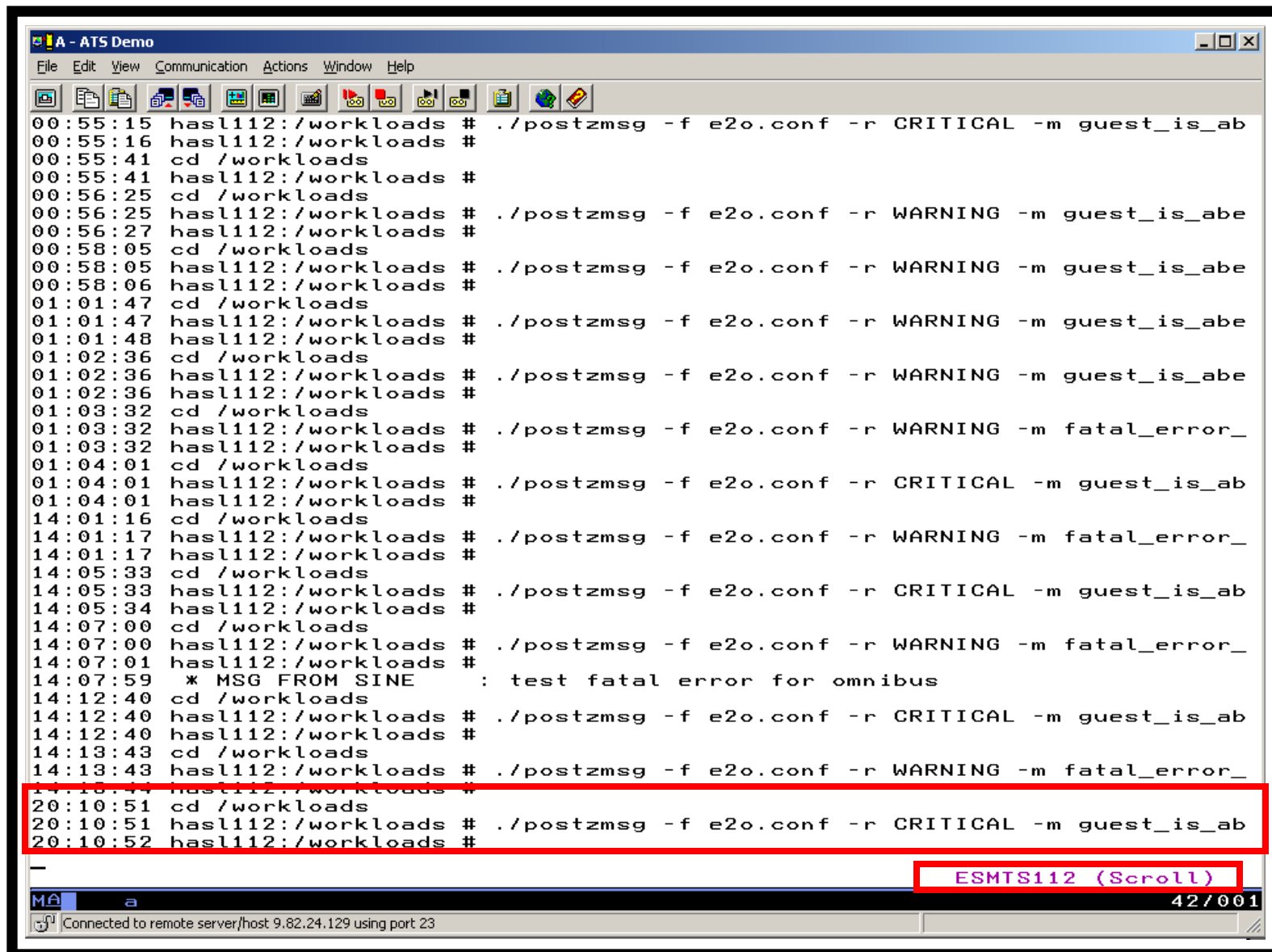
- **From an authorized VM user ID, view the console of the Linux guest that runs POSTZMSG:**

```
gomcmd opmgrml viewcon user(esmts112)
```

- **View the OMNibus console to see the alert**

```
A - ATS Demo
File Edit View Communication Actions Window Help
Ready; T=0.01/0.01 20:10:47
tell opmgrc1 this user is abending at SHARE. Tell OMNIBUS.
Ready; T=0.01/0.01 20:10:52

RUNNING ZVMV5R20
M& a 42/001
Connected to remote server/host 9.82.24.129 using port 23
```



```
A - ATS Demo
File Edit View Communication Actions Window Help
00:55:15 hasl112:/workloads # ./postzmsg -f e2o.conf -r CRITICAL -m guest_is_ab
00:55:16 hasl112:/workloads #
00:55:41 cd /workloads
00:55:41 hasl112:/workloads #
00:56:25 cd /workloads
00:56:25 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m guest_is_abe
00:56:27 hasl112:/workloads #
00:58:05 cd /workloads
00:58:05 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m guest_is_abe
00:58:06 hasl112:/workloads #
01:01:47 cd /workloads
01:01:47 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m guest_is_abe
01:01:48 hasl112:/workloads #
01:02:36 cd /workloads
01:02:36 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m guest_is_abe
01:02:36 hasl112:/workloads #
01:03:32 cd /workloads
01:03:32 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m fatal_error_
01:03:32 hasl112:/workloads #
01:04:01 cd /workloads
01:04:01 hasl112:/workloads # ./postzmsg -f e2o.conf -r CRITICAL -m guest_is_ab
01:04:01 hasl112:/workloads #
14:01:16 cd /workloads
14:01:17 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m fatal_error_
14:01:17 hasl112:/workloads #
14:05:33 cd /workloads
14:05:33 hasl112:/workloads # ./postzmsg -f e2o.conf -r CRITICAL -m guest_is_ab
14:05:34 hasl112:/workloads #
14:07:00 cd /workloads
14:07:00 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m fatal_error_
14:07:01 hasl112:/workloads #
14:07:59 * MSG FROM SINE : test fatal error for omnibus
14:12:40 cd /workloads
14:12:40 hasl112:/workloads # ./postzmsg -f e2o.conf -r CRITICAL -m guest_is_ab
14:12:40 hasl112:/workloads #
14:13:43 cd /workloads
14:13:43 hasl112:/workloads # ./postzmsg -f e2o.conf -r WARNING -m fatal_error_
14:13:43 hasl112:/workloads #
20:10:51 hasl112:/workloads #
20:10:51 hasl112:/workloads # ./postzmsg -f e2o.conf -r CRITICAL -m guest_is_ab
20:10:52 hasl112:/workloads #
-
ESMTS112 (Scroll)
MA a 42/001
Connected to remote server/host 9.82.24.129 using port 23
```



Netcool/OMNIBus Event List : Filter="All Events", View="Default"

File Edit View Alerts Tools Help

All Events Default Top [ OFF ]

Host	Event Group	Summary	Last Occurrence	Count	Prob
OPMGR01	SCARY_EVENT	guest_is_abending	/24/2009 08:10:52 P	1	Prob
hasl112	TEST_EVENT	Test message from hasl112	/12/2009 02:19:10 P	3	Prob
mwbt61	Administrator	Attempt to login as root from host mwbt61 failed	/06/2009 06:19:51 P	1	Prob
hasl112	TEST_EVENT	Test message from hasl112	/12/2009 02:15:45 P	3	Prob
hasl112	MWBTEST	Test Message	/05/2009 05:36:58 P	2	Prob
hasle332	Unix Event List	A e@09522621@09522621:1.0 process e@09522621@09522621:1.0 running on ha	/24/2009 08:06:55 P	1	Prob
East	ATS_A_SrvGroup	Server1 experiencing problems	/20/2009 07:23:37 P	3	Prob
	Unix Event List	A e@OmnibusEventConnector process running on has connected as username	/19/2009 09:13:16 P	1	Prob
hasl112	TEST_EVENT	Test message from hasl112	/12/2009 02:19:52 P	1	Prob
	RAD:Impact	A RAD:Impact process running on has connected as username root	/12/2009 09:24:32 A	1	Prob
hasle332	JJELD	A JJELD process running on hasle332 has connected as username root	/05/2009 10:44:58 A	1	Prob
	RAD:Impact	A RAD:Impact process running on has connected as username root	/05/2009 10:44:19 A	1	Prob
hasl125	TESTEIF	test_message_from_eif_2	/19/2008 03:30:51 P	2	Prob
USIBMWZV.HSLV12	TBSMV3_SOURCE390		/25/2008 05:23:22 P	5	Prob
USIBMWZV.HSLV12	TBSMV3_SOURCE390		/25/2008 05:23:21 P	5	Prob
USIBMWZV.HSLV12	TBSMV3_SOURCE390		/05/2008 09:38:25 A	1	Prob
mwbt61	TEST	Test_Message	/10/2008 02:45:57 P	4	Prob

0 4 8 2 1 2 All Events

No rows selected. 02/24/2009 08:11:30 PM root NCOMS[PRI]

## Scenario 2a: How Do You Do That?

### Rules in Operations Manager:

\*

\* Send an alert to OMNIBUS for fatal errors on consoles

```
DEFRULE NAME(FATLOMNI),+  
  MATCH(*fatal*omni*),+  
  EXUSER(ESMTS112),+  
  ACTION(ALRTOMNI),+  
  PARM(FATAL)
```

\*

\* Send an alert to OMNIBUS for abends on consoles

```
DEFRULE NAME(ABNDOMNI),+  
  MATCH(*abend*omni*),+  
  EXUSER(ESMTS112),+  
  ACTION(ALRTOMNI),+  
  PARM(ABEND)
```

## Scenario 2a: How Did You Do That?

### Action in Operations Manager:

\*

\* Call POSTZMSG on a Linux guest to send alert to OMNIBUS

```
DEFACTN NAME(ALRTOMNI),+
```

```
  COMMAND(EXEC POSTZMSG &u &p),+
```

```
  OUTPUT(LOG),+
```

```
  ENV(LVM)
```

## Scenario 2a: How Did You Do That?

### POSTZMSG EXEC (excerpts)

```
/* */
Parse arg baduser errtype
if errtype = 'ABEND' then
  do
    zerrtype = 'CRITICAL'
    cmdpart2 = '-m guest_is_abending hostname='baduser
    cmdpart4 = 'sub_origin=tcp SCARY_EVENT OpsMgr'
  end
else
  do
    zerrtype = 'WARNING'
    cmdpart2 = '-m fatal_error_on_guest hostname='baduser
    cmdpart4 = 'sub_origin=tcp WARN_EVENT OpsMgr'
  end
cmdpart1 = './postzmsg -f e2o.conf -r' zerrtype
cmdpart3 = 'sub_source=postzmsg origin='baduser
'CP SEND ESMTS112 cd /workloads'
'CP SEND ESMTS112' cmdpart1 cmdpart2 cmdpart3 cmdpart4
```

## Scenario 2b: Send an Alert to OMNIbus – Using SNMP

- **Watch all monitored consoles for an error message that includes the word “abend”**
  - Message must also contain the word “snmp” (for demo purposes only)
- **Send an alert to OMNIbus if this word appears on a console**
  - Use SNMPTRAP command on z/VM
- **Dynamically include in the alert**
  - IP address of the z/VM system where the error occurred
  - User ID that received the error message
  - Text of the abend message

## Scenario 2b: Detailed Steps

- **View “All Events” in OMNIbus**

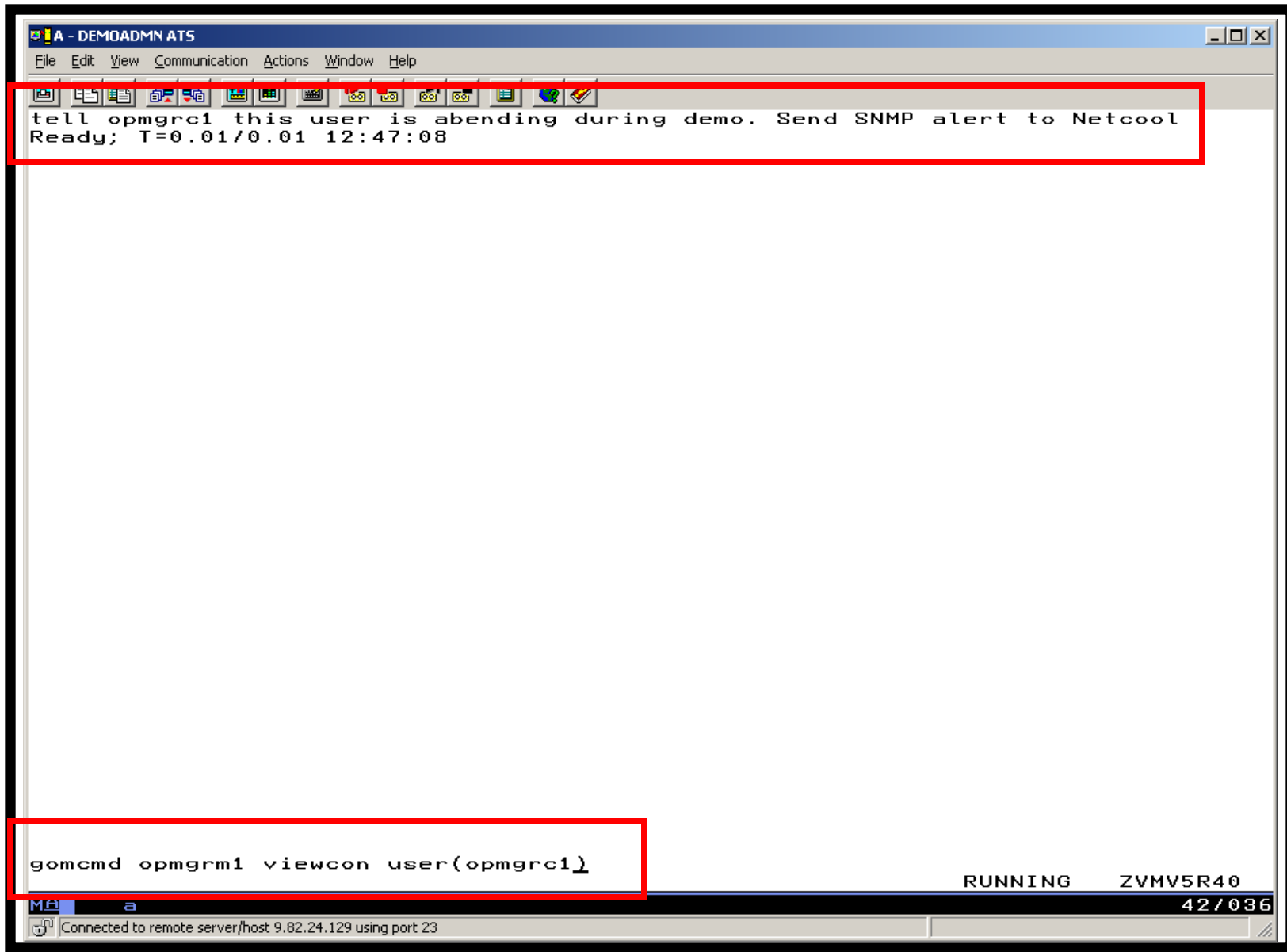
- **From any VM user ID:**

```
tell opmgrc1 this user is abending during demo. Send SNMP alert to Netcool
```

- **From an authorized VM user ID, view the console of OPMGRC1:**

```
gomcmd opmgrml viewcon user(opmgrc1)
```

- **View the OMNIbus console to see the alert**

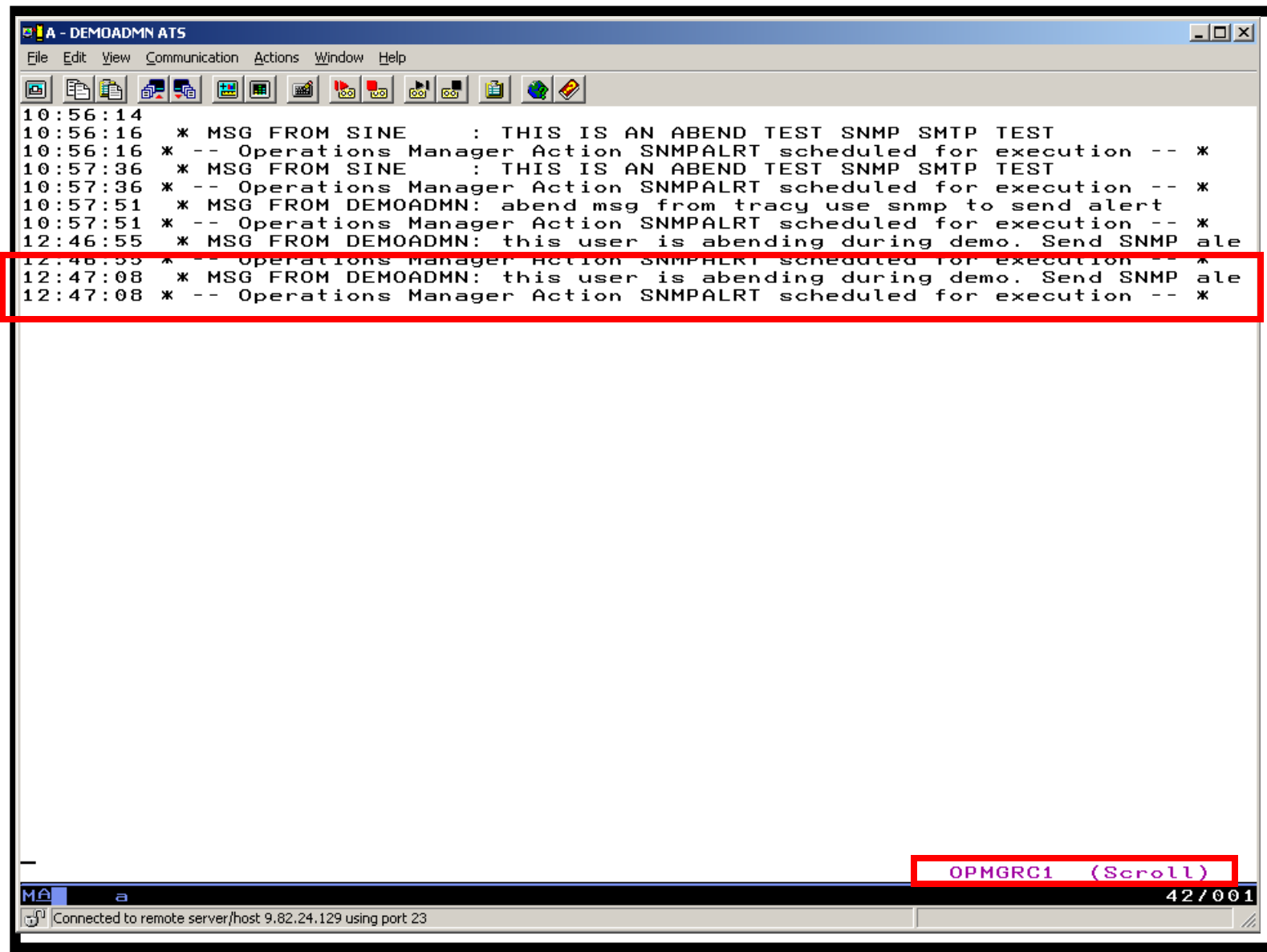


The screenshot shows a terminal window titled "A - DEMOADMIN ATS". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
tell opmgrc1 this user is abending during demo. Send SNMP alert to Netcool  
Ready; T=0.01/0.01 12:47:08
```

At the bottom of the terminal, there is a status bar with the following information:

```
gomcmd opmgrm1 viewcon user(opmgrc1) RUNNING ZVMV5R40  
MA a 42/036  
Connected to remote server/host 9.82.24.129 using port 23
```



```
A - DEMOADMN ATS
File Edit View Communication Actions Window Help
10:56:14
10:56:16 * MSG FROM SINE      : THIS IS AN ABEND TEST SNMP SMTP TEST
10:56:16 * -- Operations Manager Action SNMPALRT scheduled for execution -- *
10:57:36 * MSG FROM SINE      : THIS IS AN ABEND TEST SNMP SMTP TEST
10:57:36 * -- Operations Manager Action SNMPALRT scheduled for execution -- *
10:57:51 * MSG FROM DEMOADMN: abend msg from tracy use snmp to send alert
10:57:51 * -- Operations Manager Action SNMPALRT scheduled for execution -- *
12:46:55 * MSG FROM DEMOADMN: this user is abending during demo. Send SNMP ale
12:46:55 * -- Operations Manager Action SNMPALRT scheduled for execution -- *
12:47:08 * MSG FROM DEMOADMN: this user is abending during demo. Send SNMP ale
12:47:08 * -- Operations Manager Action SNMPALRT scheduled for execution -- *

OPMGRC1 (Scroll)
MA a 42/001
Connected to remote server/host 9.82.24.129 using port 23
```



Netcool/OMNIBus Event List : Filter="All Events", View="Default"

File Edit View Alerts Tools Help

All Events Default Top [ OFF ]

Node	Alert Group	Summary	Last Occurrence(+)	Count	Type	Expire Time	
mwbtp	TEST	Test_Message	07/10/2008 02:45:57 PM	4	Problem	Not Set	
hasl125	TESTEIF	test_message_from_eif_2	08/19/2008 03:30:51 PM	2	Problem	Not Set	USSJAVA
USIBMWZV.HSLV12	TBSMV3_SOURCE390		09/05/2008 09:38:25 AM	1	Problem	Not Set	USIBMWZ
OPMGRC1	WARN_EVENT	fatal_error_on_guest	04/24/2009 11:26:56 AM	2	Problem	Not Set	OpsMgr
hasle313:LZ	ITM_Linux_CPU	Linux_High_CPU_Overload[(Idle_CPU<10.	02/10/2010 07:39:46 PM	1	ITM Problem	Not Set	ITM
hasle332	JJELD	A JJELD process running on hasle332 ha	02/14/2010 11:05:10 PM	1	Problem	Not Set	
9.65.208.193	Generic	Egp Neighbour Loss	02/15/2010 09:00:59 PM	3	Type Not Set	Not Set	mttrapd
Primary:HASLE337:	ITM_NT_Monitored_Log	NT_Log_Space_Low[(%_Usage>=95 ) ON	02/16/2010 12:12:47 PM	1	ITM Problem	Not Set	ITM
Primary:HASLE337:	ITM_NT_Monitored_Log	NT_Log_Space_Low[(%_Usage>=95 ) ON	02/16/2010 12:12:47 PM	1	ITM Problem	Not Set	ITM
9.82.24.129	Generic	Cold Start	03/03/2010 02:25:12 PM	1	Type Not Set	Not Set	mttrapd
hasle332	IducMissed	Disconnecting e@09522621@09522621:1.	03/03/2010 04:54:00 PM	1	Problem	Not Set	
hasle332	Unix Event List	A e@09522621@09522621:1.0 process e	03/08/2010 08:09:44 AM	1	Problem	Not Set	
OPMGRC1	SCARY_EVENT	guest_is_abending	03/08/2010 12:25:42 PM	28	Problem	Not Set	OpsMgr
WSCZPLEX:MVS:SY	ITM_Sysplex_DASD_Gr	KM5_No_Sysplex_DASD_Filter_Warn[(Vol	03/09/2010 03:42:32 PM	2	ITM Problem	Not Set	ITM
Primary:HASLE337:	ITM_NT_Logical_Disk	NT_Logical_Disk_Space_Warning[(%_Fre	03/09/2010 04:28:37 PM	3	ITM Problem	Not Set	ITM
Primary:HASLE327:	ITM_NT_Monitored_Log	NT_Log_Space_Low[(%_Usage>=95 ) ON	03/11/2010 03:27:47 PM	1	ITM Problem	Not Set	ITM
HIAVSYSL:MVS:SY	ITM_Sysplex_DASD_Gr	KM5_No_Sysplex_DASD_Filter_Warn[(Vol	03/11/2010 03:38:17 PM	1	ITM Problem	Not Set	ITM
hasle313:PA	ITM_Disk_Utilization_LT	Warning threshold for disk utilization on o	03/11/2010 11:24:46 PM	1	ITM Problem	Not Set	ITM
hasle332		mttrapd probe on hasle332: Heartbeat Me	03/12/2010 12:37:53 PM	2312	Type Not Set	Not Set	mttrapd
9.82.24.129	Generic	Authentication	03/12/2010 12:50:23 PM	1652	Type Not Set	Not Set	mttrapd
9.82.24.129	Z/VM SNMP	this user is abending during demo. Send	03/12/2010 12:46:23 PM	9	Problem	Not Set	mttrapd

0 4 12 2 1 2 All Events

0 row(s) inserted, 1 row(s) updated and 0 row(s) deleted. 03/12/2010 12:52:37 PM root NCOMS[PRJ]

## Scenario 2b: How Do You Do That?

### Rule and action in Operations Manager:

\*

\* Send an alert to OMNIbus using SNMP for abend

\* msgs on consoles

```
DEFRULE NAME (ABNDSNMP) , +
```

```
  MATCH ( *abend*snmp* ) , +
```

```
  ACTION ( SNMPALRT ) , +
```

```
  PARM ( ABEND )
```

\*

```
DEFACTN NAME ( SNMPALRT ) , +
```

```
  COMMAND ( EXEC SNMP2OMN &T ) , +
```

```
  ENV ( SVM )
```

## Scenario 2b: How Did You Do That?

### **SNMP2OMN EXEC**

```
/* SNMP2OMN action routine for Operations Mgr */  
address command  
parse arg ":" msgtext  
msgtext2 = "'msgtext '"  
/* Send message */  
snmptrap trape 1.1 number 30 1.2 text "UXZVM001" 1.3 text msgtext2 ent 1.3.6.1.4.1.9545.6  
exit
```

## Scenario 2b: Additional Steps Required on z/VM

- **SNMPD user ID configured and running**
- **Update files on TCPMAINT 198 disk**
  - Add OMNIbus IP address to SNMPTRAP DEST file
  - Open SNMPD and SNMPQE ports in PROFILE TCPIP
  - Update SNMPMIBX TEXT section of MIB\_EXIT DATA
- **Give OPMGRM1 and OPMGRSn access to SNMPTRAP command**
  - On TCPMAINT 592 disk

## Scenario 2b: Additional Steps Required on OMNibus

- **Install the IBM Tivoli Netcool/OMNibus SNMP Probe**
  - Install it on same platform as target OMNibus server
- **Customize operational information in the probe properties (mttrapd.props)**
  - Listening port, heartbeat interval, mibs and mibs locations, etc.
- **Customize the probe rules (mttrapd.rules)**
  - Map variables created by the probe (from data extracted from the SNMP trap) into the desired OMNibus event fields
    - Default mappings for the SNMP generic traps (trap types 0-5)
    - Enterprise-specific traps (trap type 6) require customization
- **Documentation for installation and customization**
  - IBM Tivoli Netcool/OMNibus SNMP Probe Reference Guide (SC23-6003-04)

## Scenarios 2a and 2b – POSTZMSG vs SNMP

### ■ Using POSTZMSG

- Can direct the alert to only the IP address(es) you specify
- Need a Linux guest running and logged on that can run POSTZMSG and must be on the same z/VM system
  - Can be overcome by using a socket interface to send POSTZMSG command to the guest
- Limit of 160 characters on POSTZMSG command sent to Linux guest (using CP SEND)
  - Can't always send full text of message
  - Can be overcome by using a socket interface to send POSTZMSG command to the guest

### ■ Using SNMP

- No requirement for a Linux guest. SNMP runs on z/VM.
- No limit on message size
- All SNMP alerts on z/VM go the same set of IP addresses

## Scenario 3:

### Send a Message or E-mail if Spool Usage is Too High

- **Operations Manager monitors the spool usage (percent full)**
- **Usage exceeds the specified limit**
  - For demo purposes, we'll dynamically resume (re-activate) an existing spool monitor that requires the spool to only be 25% full
- **Automatically send an e-mail to someone who can evaluate and take action**
- **For demo purposes, suspend (de-activate) the spool monitor when complete**

## Scenario 3: Detailed Steps

- **From an authorized VM user ID, see the spool usage:**

```
gomcmd opmgrm1 viewspl
```

- **From a user ID with Operations Manager privileges:**

```
gomcmd opmgrm1 resume spool(splfull12)
```

- **Check the Operations Manager log to see the spool monitor triggered:**

```
gomcmd opmgrm1 viewlog
```

- **Check the inbox of the appropriate person to see the e-mail**

- **From a user ID with Operations Manager privileges:**

```
gomcmd opmgrm1 suspend spool(splfull12)
```



B - DEMOADMN ATS

File Edit View Communication Actions Window Help

System: ZVMV5R40      Spool: 48% Used      Files: 0% Used      1 of 339  
 Max: 2.4G      Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
BLDSEG	0022	T	RDR	CON	8K	NONE	11/18	15:19:45			
TCPMAINT	0011	T	RDR	CON	8K	NONE	11/18	14:42:34			
TCPMAINT	0010	T	RDR	CON	8K	NONE	11/18	14:26:11			
TCPMAINT	0008	T	RDR	CON	8K	NONE	11/09	17:41:40			
TCPMAINT	0009	T	RDR	CON	12K	NONE	11/09	17:41:25			
TCPMAINT	0007	T	RDR	CON	8K	NONE	11/09	17:00:28			
TCPMAINT	0006	T	RDR	CON	16K	NONE	10/27	16:02:16			
OPERATOR	0015	T	RDR	CON	20K	NONE	10/27	16:02:14			
TCPMAINT	0003	T	RDR	CON	8K	NONE	05/26	15:47:09			
TCPMAINT	0002	T	RDR	CON	4K	NONE	05/26	15:47:03			
TCPMAINT	0001	T	RDR	CON	4K	NONE	05/26	15:46:54			
MAINT	0087	T	RDR	CON	8K	NONE	05/26	15:39:32			
MAINT	0062	A	RDR	PUN	4K	NONE	05/06	15:02:06			
MAINT	0053	T	RDR	CON	4K	NONE	03/16	16:39:52			
MAINT	0120	T	RDR	CON	16K	NONE	11/18	16:56:56			
TCPMAINT	0013	T	RDR	CON	8K	NONE	11/18	16:56:33			
MAINT	0117	T	RDR	CON	16K	NONE	11/18	15:22:33			
MAINT	0118	T	RDR	CON	4K	NONE	11/18	15:22:28			
MAINT	0119	T	RDR	CON	4K	NONE	11/18	15:22:28			
MAINT	0085	T	RDR	CON	4K	NONE	05/26	15:37:45			
MAINT	0083	A	RDR	PUN	4K	NONE	05/26	15:37:45			
MAINT	0027	T	RDR	CON	4K	NONE	12/18	09:20:43			
MAINT	0028	T	RDR	CON	4K	NONE	12/18	09:20:43			
MAINT	0014	T	RDR	CON	4K	NONE	08/21	16:02:18			
MAINT	0015	T	RDR	CON	4K	NONE	08/21	15:08:03			
MAINT	0003	T	RDR	CON	4K	NONE	08/21	14:40:03			
MAINT	0016	T	RDR	CON	4K	NONE	08/21	15:08:03			
TCPMAINT	0012	T	RDR	CON	8K	NONE	11/18	15:22:28			

MA b      05/001

Connected to remote server/host 9.82.24.129 using port 23

The screenshot shows a terminal window with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. The terminal content is as follows:

```
Ready; T=0.01/0.01 18:58:40  
gomcmd opmgrm1 resume spool(splfull2)  
Ready; T=0.01/0.01 19:00:02
```

A red box highlights the command `gomcmd opmgrm1 resume spool(splfull2)` and its output. At the bottom of the terminal, another red box highlights the command `gomcmd opmgrm1 viewlog_`. The status bar at the bottom right shows `RUNNING ZVMV5R40` and `31/023`. The status bar at the bottom left shows `MA b` and `Connected to remote server/host 9.82.24.129 using port 23`.


```

b - DEMOADMN ATS
File Edit View Communication Actions Window Help
03/14/2010 18:35:50 GOMCMD0216L BKRCATLG "BKRCAT8510I 03/14/10 18:35:50 WAKEUP
03/14/2010 18:35:50 GOMCMD0216L BKRCATLG "BKRCAT8512I The stack contains 0 ent
03/14/2010 18:37:56 GOMCMD0216L BKRBAKUP "BKRBAK8510I 03/14/10 18:37:56 WAKEUP
03/14/2010 18:37:56 GOMCMD0216L BKRBAKUP "BKRBAK8512I The stack contains 0 ent
03/14/2010 18:50:50 GOMCMD0216L BKRCATLG "BKRCAT8510I 03/14/10 18:50:50 WAKEUP
03/14/2010 18:50:50 GOMCMD0216L BKRCATLG "BKRCAT8512I The stack contains 0 ent
03/14/2010 18:52:04 GOMCMD0201L DEMOADMN "VIEWSPL" VID=DEMOADMN SRC=MASIUCV C
03/14/2010 18:52:56 GOMCMD0216L BKRBAKUP "BKRBAK8510I 03/14/10 18:52:56 WAKEUP
03/14/2010 18:52:56 GOMCMD0216L BKRBAKUP "BKRBAK8512I The stack contains 0 ent
03/14/2010 18:55:19 GOMCMD0201L DEMOADMN "VIEWSPL" VID=DEMOADMN SRC=MASIUCV C
03/14/2010 18:59:23 GOMCMD0224L MAINT EVENT TYPE 0 VID=*VMEVENT SRC=MASIUCV
03/14/2010 18:59:23 GOMCMD0224L MAINT EVENT TYPE 5 VID=*VMEVENT SRC=MASIUCV
03/14/2010 19:00:02 GOMCMD0201L DEMOADMN "RESUME SPOOL(SPLFULL2)" VID=DEMOADMN
03/14/2010 19:00:06 GOMSM00403I SPOOL ALERT: MONITOR SPLFULL2 USAGE CONDITI
03/14/2010 19:00:06 GOMSM00401I SPOOL USE: MONITOR SPLFULL2 SPACE 48 PERCENT,
03/14/2010 19:00:06 GOMSM00402I SPOOL CHG: MONITOR SPLFULL2 SPACE 0 PERCENT, F
03/14/2010 19:00:06 GOMACT0260I SPOOL SPLFULL2 ACTION SPLEMAIL TRIGGERED BY
03/14/2010 19:00:06 GOMACT0262I ACTION SPLEMAIL BEGIN FOR SPOOL SERVER OPMG
03/14/2010 19:00:06 GOMACT0269L COMMAND "EXEC SMTPNOTE TLD1 AT US.IBM.COM 48 S
03/14/2010 19:00:06 GOMACT0270L DMSXS0587I XEDIT:
03/14/2010 19:00:06 GOMACT0270L NOTE OPMGRM1 NOTE A1 sent to TLD1 at US.IBM.CO
03/14/2010 19:00:06 GOMACT0267I ACTION SPLEMAIL END RC=0 SERVER OPMGRM1
03/14/2010 19:00:06 GOMCMD0216L SMTP "RDR FILE 0065 SENT FROM OPMGRM1 PUN
03/14/2010 19:00:06 GOMCMD0216L SMTP "* From SMTP: Received Spool File 006
03/14/2010 19:00:08 GOMCMD0216L SMTP "* From SMTP: Mail delivered to: <TLD
03/14/2010 19:00:28 GOMCMD0201L DEMOADMN "VIEWLOG" VID=DEMOADMN SRC=MASIUCV C
03/14/2010 19:01:06 GOMSM00403I SPOOL ALERT: MONITOR SPLFULL2 USAGE CONDITI
03/14/2010 19:01:06 GOMSM00401I SPOOL USE: MONITOR SPLFULL2 SPACE 48 PERCENT,
03/14/2010 19:01:06 GOMSM00402I SPOOL CHG: MONITOR SPLFULL2 SPACE 0 PERCENT, F
03/14/2010 19:01:06 GOMACT0260I SPOOL SPLFULL2 ACTION SPLEMAIL TRIGGERED BY
MASALOG
MA b 31/001
Connected to remote server/host 9.82.24.129 using port 23

```

The screenshot shows the IBM Lotus Notes interface. The search bar contains 'lucie' and the search results are displayed in a table. The table has columns for Sender, Subject, Date, and Size. The search results are grouped into 'High Importance' and 'Normal' categories. The 'Normal' category contains five entries, all with the subject 'Spool is 48% full on z/VM system' and the sender 'OPMGRM1'. The dates range from 03/14/2010 05:00 PM to 03/14/2010 05:04 PM. The sizes are all 3K. Red boxes highlight the subject and sender information for the first two entries in the 'Normal' group, and the date and size for the last two entries.

Sender	Subject	Date	Size
[Redacted]	[Redacted]	[Redacted]	38K
[Redacted]	[Redacted]	[Redacted]	26K
[Redacted]	[Redacted]	[Redacted]	86K
OPMGRM1	Spool is 48% full on z/VM system	03/14/2010 05:04 PM	3K
OPMGRM1	Spool is 48% full on z/VM system	03/14/2010 05:03 PM	3K
OPMGRM1	Spool is 48% full on z/VM system	03/14/2010 05:02 PM	3K
OPMGRM1	Spool is 48% full on z/VM system	03/14/2010 05:01 PM	3K
OPMGRM1	Spool is 48% full on z/VM system	03/14/2010 05:00 PM	3K



**Spool is 48% full on z/VM system**  
**OPMGRM1** to: Tracy Dean  
 Default custom expiration date: 03/14/2011 03/14/2010 05:04 PM [Show Details](#)

---

The following message was received on GDP4.GDPSPLEX.WSCLAB.WASHINGTON.IBM.COM :  
 Spool is 48% full on z/VM system

DO NOT REPLY - This e-mail was generated by an automated service machine

## Scenario 3: How Do You Do That?

### Spool monitor and action in Operations Manager:

\*  
\*

```
DEFSMON NAME(SPLFULL2),+  
  USAGE(025-099),+  
  ACTION(SPLEMAIL),+  
  PARM(SPOOL)
```

\*

```
DEFACTN NAME(SPLEMAIL),+  
  COMMAND(EXEC SMTPNOTE tld1 at us.ibm.com &4 &p),+  
  ENV(LVM)
```

## Scenario 3: How Do You Do That?

### **SMTPNOTE EXEC (excerpts)**

```
/* */
Parse arg mail_user dummyat mail_node baduser errtype msgtext
if errtype = 'ABEND' then
  errtext = 'Abend on user ID' baduser 'on z/VM system'
else
  if errtype = 'SPOOL' then do
    errtext = 'Spool is' baduser'% full on z/VM system'
    msgtext = errtext
  end
  else errtext = msgtext /* Construct the e-mail */
line.1 = 'OPTIONS: NOACK    LOG    SHORT    NONOTEBOOK ALL CLASS A'
line.2 = 'Date: ' Date() ',' Time()
line.3 = 'From: Operations Manager for z/VM'
line.4 = 'To: ' mail_user 'at' mail_node
line.5 = 'Subject: ' errtext
...
line.7 = msgtext
line.8 = ' '
line.9 = 'DO NOT REPLY - This e-mail was generated by an automated service machine
line.0 = 9
'PIPE stem line. | > TEMP NOTE A'
'EXEC SENDFILE TEMP NOTE A (NOTE SMTP'
```

## Scenario 4: Find and View Spool Files – Clean up the Spool

- **Authorized user specifies spool search criteria**
  - By user ID
  - By date
  - By file size
- **Result list presented**
  - Sort
  - Open/view a specific spool file
  - Purge, modify metadata, or transfer a file

## Scenario 4: Detailed Steps

- **From an authorized VM user ID, view the spool files:**

```
gomcmd opmgrm1 viewspl
```

- **Sort by date**

- Put cursor on date column header and hit F6

- **Find the spool files just sent and type PURGE next to them**

- **From an authorized VM user ID, view the log to see that the spool monitor is no longer triggered:**

```
gomcmd opmgrm1 viewlog
```



A - ATS Demo

File Edit View Communication Actions Window Help

System: ZVMV5R20

Spool: 85% Used      Files: 0% Used      1 of 1075  
 Max: 4.8G            Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
	OPERATNS	0008	D	RDR	DMP	379M	NONE	10/12	16:58:40	CPDUMP	CPDUMP
	OPERATNS	0010	D	RDR	DMP	511M	NONE	05/20	21:04:24	CPDUMP	CPDUMP
	PERFSVM	0339	A	RDR	PRT	101M	NONE	01/04	15:00:28	BRSZVM44	DUMP
	PERFSVM	0690	A	RDR	PRT	8M	SYS	01/13	23:00:07		
	MAINT	0217	T	RDR	CON	16K	SYS	12/16	12:19:02		
	ESMTS109	0074	A	RDR	CON	8M	SYS	11/11	17:48:59		
	SLESA100	0003	A	RDR	PUN	10M	NONE	11/11	17:38:57	INITRD	BIN
	SLESA100	0001	A	RDR	PUN	7M	NONE	11/11	17:38:45	VMRDR	IKR
	SLESA100	0002	A	RDR	PUN	4K	NONE	11/11	17:38:52	PARM	FILE
	SLESA114	0007	A	RDR	PUN	7M	NONE	10/15	12:20:46	VMRDR	IKR
	SLESA114	0009	A	RDR	PUN	10M	NONE	10/15	12:20:50	INITRD	BIN
	RHAT104	0059	A	RDR	PUN	16M	NONE	09/10	11:01:13	INITRD	IMG
	SINE	0150	A	RDR	PUN	17M	NONE	09/10	10:55:21	INITRD	IMG
	ESMTS109	0072	A	RDR	CON	4K	NONE	10/27	15:20:07		
	ESMTS109	0071	A	RDR	CON	4K	NONE	10/27	09:33:25		
	ESMTS109	0070	A	RDR	CON	4K	NONE	10/27	09:26:57		
	ESMTS109	0069	A	RDR	CON	8K	NONE	10/27	07:44:46		
	TCPMAINT	0030	A	RDR	PRT	4K	NONE	10/23	18:27:58	TCP/IP	MESSAGE
	OPERATOR	0039	A	RDR	PRT	4K	NONE	10/23	18:27:58	TCP/IP	MESSAGE
	SLESA114	0006	A	RDR	CON	1M	NONE	10/15	12:20:39		
	SLESA114	0008	A	RDR	PUN	4K	NONE	10/15	12:20:50	PARM	FILE
	RHAT104	0057	A	RDR	PUN	4M	NONE	09/10	11:01:10	KERNEL	IMG
	RHAT100	0008	A	RDR	PUN	7M	NONE	08/29	10:00:41	VMRDR	IKR
	SINE	0145	A	RDR	PUN	5M	NONE	08/29	09:50:23	BKR120	SERVLINK
	SINE	0143	A	RDR	PUN	5M	NONE	08/29	09:48:36	BKR120	VMARC
	SINE	0117	A	RDR	PUN	16M	NONE	08/13	12:18:54	INITRD	IMG
	BKRADMIN	0021	T	RDR	CON	4K	NONE	09/23	13:29:27	WORKER	OUTPUT
	RHAT104	0060	A	RDR	PUN	4K	NONE	09/10	11:01:20	REDHAT	CONF
	RHAT104	0058	A	RDR	PUN	4K	NONE	09/10	11:01:13	GENERIC	PARM
	RHAT104	0055	A	RDR	CON	72K	NONE	09/10	10:42:30		
	SINE	0144	A	RDR	PUN	1M	NONE	08/29	09:50:18	UK27376	SERVLINK
	SINE	0142	A	RDR	PUN	1M	NONE	08/29	09:48:23	UK18212	VMARC
	SINE	0141	A	RDR	PUN	1M	NONE	08/29	09:46:20	UK31492	SERVLINK
	SINE	0140	A	RDR	PUN	1M	NONE	08/29	09:46:12	UK18212	SERVLINK
	SINE	0139	A	RDR	PUN	1M	NONE	08/29	09:46:11	UK19969	SERVLINK
	SINE	0138	A	RDR	PUN	988K	NONE	08/29	09:46:11	UK23333	SERVLINK
	ESMTS101	0010	A	RDR	PUN	7M	NONE	08/14	14:25:22	VMRDR	IKR
	ESMTS101	0012	A	RDR	PUN	10M	NONE	08/14	14:25:25	INITRD	BIN
	5697J06B	0003	T	RDR	CON	4K	NONE	08/18	14:11:31	VMFINS	CONSOLE

MA a 05/001

Connected to remote server/host 9.82.24.129 using port 23

**A - ATS Demo**

File Edit View Communication Actions Window Help

System: ZVMV5R20 Spool: 85% Used Files: 0% Used 1 of 1075  
 Max: 4.8G Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
	OPMGR1	0011	A	RDR	PUN	17M	NONE	02/24	20:40:23	INITRD	IMG
	SINE	0267	A	RDR	PUN	17M	NONE	02/24	20:40:17	INITRD	IMG
	OPMGR1	0010	A	RDR	PUN	17M	NONE	02/24	20:40:11	INITRD	IMG
	SINE	0265	A	RDR	PUN	17M	NONE	02/24	20:40:03	INITRD	IMG
	MAINT	0241	T	RDR	CON	4K	NONE	02/24	14:10:31		
	SINE	0264	A	PRT	CON	12K	NONE	02/24	00:51:44		
	MAINT	0240	T	RDR	CON	4K	NONE	02/23	11:58:22		
	OPMGR1	0007	A	RDR	PUN	17M	NONE	02/23	11:48:44	INITRD	IMG
	SINE	0248	A	RDR	PUN	17M	NONE	02/23	11:46:14	INITRD	IMG
	SINE	0247	A	RDR	PUN	17M	NONE	02/23	11:45:38	INITRD	IMG
	SINE	0246	A	RDR	PUN	17M	NONE	02/23	11:45:08	INITRD	IMG
	SINE	0245	A	RDR	CON	12K	NONE	02/23	10:21:58		
	SINE	0244	A	RDR	CON	4K	NONE	02/20	23:10:25		
	SINE	0243	A	RDR	CON	4K	NONE	02/20	18:05:30		
	MAINT	0239	T	RDR	CON	4K	NONE	02/19	15:44:50		
	PERFSVM	0727	A	PRT	PRT	1M	NONE	02/19	00:00:39	FCOMMON	LISTING
	PERFSVM	0726	A	PRT	PRT	1M	NONE	02/18	00:00:39	FCOMMON	LISTING
	SINE	0241	A	RDR	CON	4K	NONE	02/17	09:37:41		
	SMTP	0015	T	PRT	CON	12K	NONE	02/17	08:44:08		
	RICHARD	0010	A	RDR	PUN	4K	NONE	02/17	08:41:39	SMTP	NOTE
	SINE	0240	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0239	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0238	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0237	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	OPMGR1	0003	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	TCPMAINT	0038	T	RDR	CON	8K	NONE	02/17	08:28:43		
	TCPMAINT	0037	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	OPERATOR	0046	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	PERFSVM	0725	A	PRT	PRT	1M	NONE	02/17	00:00:39	FCOMMON	LISTING
	SINE	0236	A	RDR	CON	4K	NONE	02/16	18:04:33		
	BISHOP	0048	T	RDR	CON	4K	NONE	02/16	14:08:44		
	MAINT	0238	T	RDR	CON	4K	NONE	02/16	14:05:32		
	SINE	0235	A	RDR	CON	4K	NONE	02/16	09:43:25		
	PERFSVM	0724	A	PRT	PRT	1M	NONE	02/16	00:00:39	FCOMMON	LISTING
	PERFSVM	0723	A	PRT	PRT	1M	NONE	02/15	00:00:39	FCOMMON	LISTING
	OPERATOR	0045	T	PRT	CON	12K	NONE	02/14	18:06:32		
	RICHARD	0008	T	PRT	CON	8K	NONE	02/14	18:04:27		
	PERFSVM	0722	A	PRT	PRT	1M	NONE	02/14	00:00:39	FCOMMON	LISTING
	RICHARD	0007	A	RDR	PUN	4K	NONE	02/13	10:55:19	LNXMSG	EXEC

MA a 05/001

Connected to remote server/host 9.82.24.129 using port 23

A - ATS Demo

File Edit View Communication Actions Window Help

System: ZVMV5R20 Spool: 85% Used Files: 0% Used 1 of 1075  
 Max: 4.8G Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
purge	OPMGR1	0011	A	RDR	PUN	17M	NONE	02/24	20:40:23	INITRD	IMG
=	SINE	0267	A	RDR	PUN	17M	NONE	02/24	20:40:17	INITRD	IMG
=	OPMGR1	0010	A	RDR	PUN	17M	NONE	02/24	20:40:11	INITRD	IMG
=	SINE	0265	A	RDR	PUN	17M	NONE	02/24	20:40:03	INITRD	IMG
-	MAINT	0241	T	RDR	CON	4K	NONE	02/24	14:10:31		
	SINE	0264	A	PRT	CON	12K	NONE	02/24	00:51:44		
	MAINT	0240	T	RDR	CON	4K	NONE	02/23	11:58:22		
	OPMGR1	0007	A	RDR	PUN	17M	NONE	02/23	11:48:44	INITRD	IMG
	SINE	0248	A	RDR	PUN	17M	NONE	02/23	11:46:14	INITRD	IMG
	SINE	0247	A	RDR	PUN	17M	NONE	02/23	11:45:38	INITRD	IMG
	SINE	0246	A	RDR	PUN	17M	NONE	02/23	11:45:08	INITRD	IMG
	SINE	0245	A	RDR	CON	12K	NONE	02/23	10:21:58		
	SINE	0244	A	RDR	CON	4K	NONE	02/20	23:10:25		
	SINE	0243	A	RDR	CON	4K	NONE	02/20	18:05:30		
	MAINT	0239	T	RDR	CON	4K	NONE	02/19	15:44:50		
	PERFSVM	0727	A	PRT	PRT	1M	NONE	02/19	00:00:39	FCONMON	LISTING
	PERFSVM	0726	A	PRT	PRT	1M	NONE	02/18	00:00:39	FCONMON	LISTING
	SINE	0241	A	RDR	CON	4K	NONE	02/17	09:37:41		
	SMTP	0015	T	PRT	CON	12K	NONE	02/17	08:44:08		
	RICHARD	0010	A	RDR	PUN	4K	NONE	02/17	08:41:39	SMTP	NOTE
	SINE	0240	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0239	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0238	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0237	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	OPMGR1	0003	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	TCPMAINT	0038	T	RDR	CON	8K	NONE	02/17	08:28:43		
	TCPMAINT	0037	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	OPERATOR	0046	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	PERFSVM	0725	A	PRT	PRT	1M	NONE	02/17	00:00:39	FCONMON	LISTING
	SINE	0236	A	RDR	CON	4K	NONE	02/16	18:04:33		
	BISHOP	0048	T	RDR	CON	4K	NONE	02/16	14:08:44		
	MAINT	0238	T	RDR	CON	4K	NONE	02/16	14:05:32		
	SINE	0235	A	RDR	CON	4K	NONE	02/16	09:43:25		
	PERFSVM	0724	A	PRT	PRT	1M	NONE	02/16	00:00:39	FCONMON	LISTING
	PERFSVM	0723	A	PRT	PRT	1M	NONE	02/15	00:00:39	FCONMON	LISTING
	OPERATOR	0045	T	PRT	CON	12K	NONE	02/14	18:06:32		
	RICHARD	0008	T	PRT	CON	8K	NONE	02/14	18:04:27		
	PERFSVM	0722	A	PRT	PRT	1M	NONE	02/14	00:00:39	FCONMON	LISTING
	RICHARD	0007	A	RDR	PUN	4K	NONE	02/13	10:55:19	LNXMSG	EXEC

MA a 08/002

Connected to remote server/host 9.82.24.129 using port 23

A - ATS Demo

File Edit View Communication Actions Window Help

System: ZVMV5R20

Spool: 84% Used      Files: 0% Used      1 of 1071  
 Max: 4.8G            Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
	MAINT	0241	T	RDR	CON	4K	NONE	02/24	14:10:31		
	SINE	0264	A	PRT	CON	12K	NONE	02/24	00:51:44		
	MAINT	0240	T	RDR	CON	4K	NONE	02/23	11:58:22		
	OPMGR1	0007	A	RDR	PUN	17M	NONE	02/23	11:48:44	INITRD	IMG
	SINE	0248	A	RDR	PUN	17M	NONE	02/23	11:46:14	INITRD	IMG
	SINE	0247	A	RDR	PUN	17M	NONE	02/23	11:45:38	INITRD	IMG
	SINE	0246	A	RDR	PUN	17M	NONE	02/23	11:45:08	INITRD	IMG
	SINE	0245	A	RDR	CON	12K	NONE	02/23	10:21:38		
	SINE	0244	A	RDR	CON	4K	NONE	02/20	23:10:25		
	SINE	0243	A	RDR	CON	4K	NONE	02/20	18:05:30		
	MAINT	0239	T	RDR	CON	4K	NONE	02/19	15:44:50		
	PERFSVM	0727	A	PRT	PRT	1M	NONE	02/19	00:00:39	FCONMON	LISTING
	PERFSVM	0726	A	PRT	PRT	1M	NONE	02/18	00:00:39	FCONMON	LISTING
	SINE	0241	A	RDR	CON	4K	NONE	02/17	09:37:41		
	SMTP	0015	T	PRT	CON	12K	NONE	02/17	08:44:08		
	RICHARD	0010	A	RDR	PUN	4K	NONE	02/17	08:41:39	SMTP	NOTE
	SINE	0240	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0239	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0238	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	SINE	0237	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	OPMGR1	0003	A	RDR	PUN	4K	NONE	02/17	08:28:43	SMTP	NOTE
	TCPMAINT	0038	T	RDR	CON	8K	NONE	02/17	08:28:43		
	TCPMAINT	0037	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	OPERATOR	0046	A	RDR	PRT	4K	NONE	02/17	08:28:36	TCPIP	MESSAGE
	PERFSVM	0725	A	PRT	PRT	1M	NONE	02/17	00:00:39	FCONMON	LISTING
	SINE	0236	A	RDR	CON	4K	NONE	02/16	18:04:33		
	BISHOP	0048	T	RDR	CON	4K	NONE	02/16	14:08:44		
	MAINT	0238	T	RDR	CON	4K	NONE	02/16	14:05:32		
	SINE	0235	A	RDR	CON	4K	NONE	02/16	09:43:25		
	PERFSVM	0724	A	PRT	PRT	1M	NONE	02/16	00:00:39	FCONMON	LISTING
	PERFSVM	0723	A	PRT	PRT	1M	NONE	02/15	00:00:39	FCONMON	LISTING
	OPERATOR	0045	T	PRT	CON	12K	NONE	02/14	18:06:32		
	RICHARD	0008	T	PRT	CON	8K	NONE	02/14	18:04:27		
	PERFSVM	0722	A	PRT	PRT	1M	NONE	02/14	00:00:39	FCONMON	LISTING
	RICHARD	0007	A	RDR	PUN	4K	NONE	02/13	10:55:19	LNXMSG	EXEC
	PERFSVM	0721	A	PRT	PRT	1M	NONE	02/13	00:00:39	FCONMON	LISTING
	PERFSVM	0720	A	PRT	PRT	1M	NONE	02/12	00:00:39	FCONMON	LISTING
	ESMTS103	0020	A	PRT	CON	3M	NONE	02/11	20:08:57		
	PERFSVM	0719	A	PRT	PRT	1M	NONE	02/11	00:00:39	FCONMON	LISTING

MA a 05/001

Connected to remote server/host 9.82.24.129 using port 23

```

A - ATS Demo
File Edit View Communication Actions Window Help
02/24/2009 20:52:48 GOMACT0267I ACTION SPL7 END RC=0 SERVER OPMGRM1
02/24/2009 20:52:48 GOMCMD0216L SMTP /* From SMTP: Received Spool File 006
02/24/2009 20:52:48 GOMCMD0216L SMTP /* From SMTP: Mail delivered to: TLD
02/24/2009 20:53:48 GOMSM00403I SPOOL ALERT: MONITOR SPL7 USAGE CONDITI
02/24/2009 20:53:48 GOMSM00401I SPOOL USE: MONITOR SPL7 SPACE 85 PERCENT,
02/24/2009 20:53:48 GOMSM00402I SPOOL CHG: MONITOR SPL7 SPACE 0 PERCENT, F
02/24/2009 20:53:48 GOMACT0260I SPOOL SPL7 ACTION SPL7 TRIGGERED BY
02/24/2009 20:53:48 GOMACT0262I ACTION SPL7 BEGIN FOR SPOOL SERVER OPMG
02/24/2009 20:53:48 GOMACT0269L COMMAND "EXEC SMTPNOTE TLD1 AT US.IBM.COM SPOO
02/24/2009 20:53:48 GOMACT0270L DMSXSU587I XEDIT:
02/24/2009 20:53:48 GOMACT0270L NOTE OPMGRM1 NOTE A1 sent to TLD1 at US.IBM.CO
02/24/2009 20:53:48 GOMACT0267I ACTION SPL7 END RC=0 SERVER OPMGRM1
02/24/2009 20:53:48 GOMCMD0216L SMTP /* From SMTP: Received Spool File 006
02/24/2009 20:54:48 GOMCMD0216L SMTP /* From SMTP: Mail delivered to: TLD
02/24/2009 20:54:48 GOMSM00403I SPOOL ALERT: MONITOR SPL7 USAGE CONDITI
02/24/2009 20:54:48 GOMSM00401I SPOOL USE: MONITOR SPL7 SPACE 85 PERCENT,
02/24/2009 20:54:48 GOMSM00402I SPOOL CHG: MONITOR SPL7 SPACE 0 PERCENT, F
02/24/2009 20:54:48 GOMACT0260I SPOOL SPL7 ACTION SPL7 TRIGGERED BY
02/24/2009 20:54:48 GOMACT0262I ACTION SPL7 BEGIN FOR SPOOL SERVER OPMG
02/24/2009 20:54:48 GOMACT0269L COMMAND "EXEC SMTPNOTE TLD1 AT US.IBM.COM SPOO
02/24/2009 20:54:48 GOMACT0270L DMSXSU587I XEDIT:
02/24/2009 20:54:48 GOMACT0270L NOTE OPMGRM1 NOTE A1 sent to TLD1 at US.IBM.CO
02/24/2009 20:54:48 GOMACT0267I ACTION SPL7 END RC=0 SERVER OPMGRM1
02/24/2009 20:54:48 GOMCMD0216L SMTP /* From SMTP: Received Spool File 007
02/24/2009 20:55:48 GOMCMD0216L SMTP /* From SMTP: Mail delivered to: TLD
02/24/2009 20:55:48 GOMSM00403I SPOOL ALERT: MONITOR SPL7 USAGE CONDITI
02/24/2009 20:55:48 GOMSM00401I SPOOL USE: MONITOR SPL7 SPACE 85 PERCENT,
02/24/2009 20:55:48 GOMSM00402I SPOOL CHG: MONITOR SPL7 SPACE 0 PERCENT, F
02/24/2009 20:55:48 GOMACT0260I SPOOL SPL7 ACTION SPL7 TRIGGERED BY
02/24/2009 20:55:48 GOMACT0262I ACTION SPL7 BEGIN FOR SPOOL SERVER OPMG
02/24/2009 20:55:48 GOMACT0269L COMMAND "EXEC SMTPNOTE TLD1 AT US.IBM.COM SPOO
02/24/2009 20:55:48 GOMACT0270L DMSXSU587I XEDIT:
02/24/2009 20:55:48 GOMACT0270L NOTE OPMGRM1 NOTE A1 sent to TLD1 at US.IBM.CO
02/24/2009 20:55:48 GOMACT0267I ACTION SPL7 END RC=0 SERVER OPMGRM1
02/24/2009 20:55:48 GOMCMD0216L SMTP /* From SMTP: Received Spool File 007
02/24/2009 20:55:48 GOMCMD0216L SMTP /* From SMTP: Mail delivered to: TLD
02/24/2009 20:56:41 GOMCMD0223I USER SINE ISSUED COMMAND "PURGE OPMGRC1 R
02/24/2009 20:56:41 GOMCMD0223I USER SINE ISSUED COMMAND "PURGE SINE R
02/24/2009 20:56:41 GOMCMD0223I USER SINE ISSUED COMMAND "PURGE OPMGRC1 R
02/24/2009 20:56:41 GOMCMD0223I USER SINE ISSUED COMMAND "PURGE SINE R
02/24/2009 20:58:59 GOMCMD0201L SINE "VIEWLOG" VID=SINE SRC=MASIUCV C
MASALOG (Scroll)
42/001
Connected to remote server/host: 9.82.24.129 using port 23
    
```

## Scenario 5: Automated Spool Clean Up

- **Use z/VM SFPURGER utility to manage spool files based on criteria, e.g.**
  - User ID
  - Days in spool
  - Class
  - Number of records
- **Automate SFPURGER execution**
  - Regularly scheduled using Operations Manager
  - Triggered by Operations Manager spool monitor

## Scenario 5: Detailed Steps

- **From an authorized VM user ID, view the spool files for a specific user:**

```
gomcmd opmgrm1 viewspl user(tstadmin2)
```

- **Send a file to this user as class Z**

```
sendfile profile exec a tstadmin2 (class z
```

- **View spool files for this user again to see the new file**

```
gomcmd opmgrm1 viewspl user(tstadmin2)
```

- **Delete any existing schedules called DEMO**

```
gomcmd opmgrm1 delschd name(demo)
```

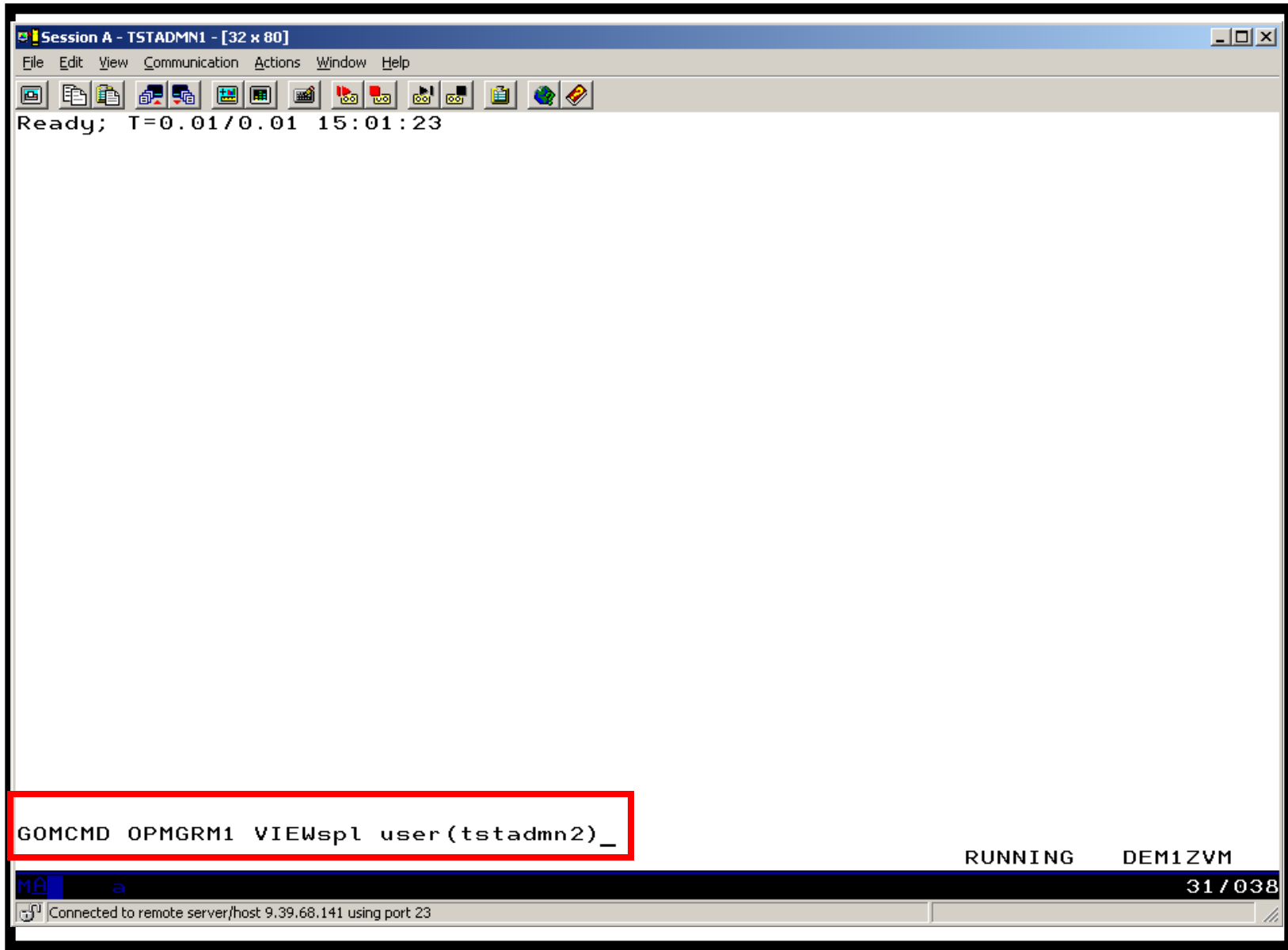
- **Schedule SFPURGER for execution**

- It will purge any files of class Z

```
gomcmd opmgrm1 defsched name(demo),action(sfpurger),WHEN(now)
```

- **View spool files for this user again to see the new file is gone**

```
gomcmd opmgrm1 viewspl user(tstadmin2)
```





Session A - TSTADMN1 - [32 x 80]

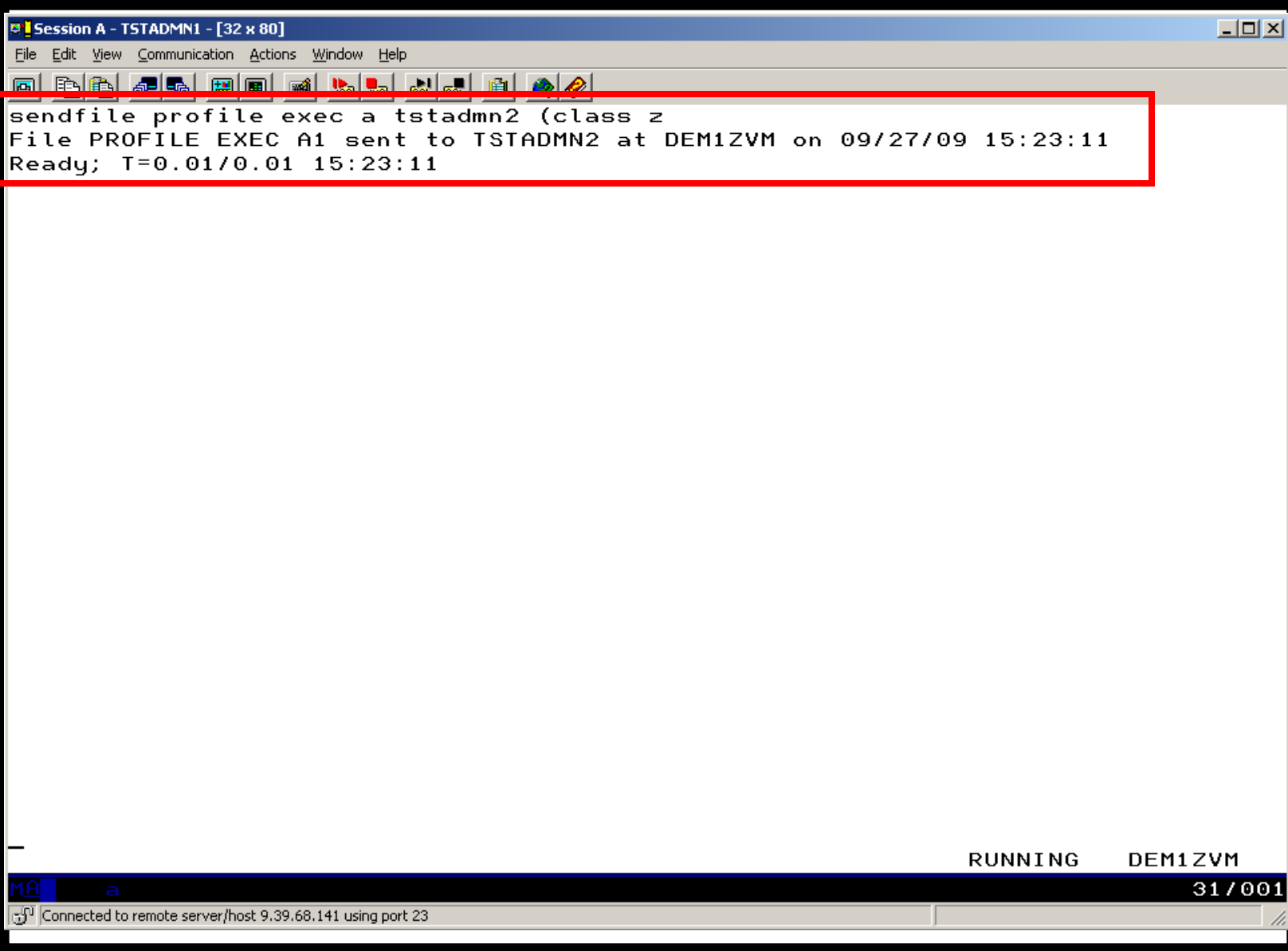
File Edit View Communication Actions Window Help

System: DEM1ZVM Spool: 5% Used Files: 0% Used 1 of 2  
 Max: 2.4G Max: 1655640

Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
TSTADMN2	0004	A	RDR	PUN	576K	NONE	04/20	04:55:56	AMV1004	BADARC
TSTADMN2	0006	A	RDR	PUN	64K	NONE	08/25	11:07:21	TSTADMN1	NETLOG

MA a 05/001

Connected to remote server/host 9.39.68.141 using port 23



The screenshot shows a terminal window titled "Session A - TSTADMN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main area of the terminal displays the following text:

```
sendfile profile exec a tstadm2 (class z  
File PROFILE EXEC A1 sent to TSTADMN2 at DEM1ZVM on 09/27/09 15:23:11  
Ready; T=0.01/0.01 15:23:11
```

A red rectangular box highlights the first three lines of the terminal output. At the bottom of the terminal window, there is a status bar with the text "RUNNING DEM1ZVM" and "31 / 001". Below the status bar, a small icon and the text "Connected to remote server/host 9.39.68.141 using port 23" are visible.

Session A - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

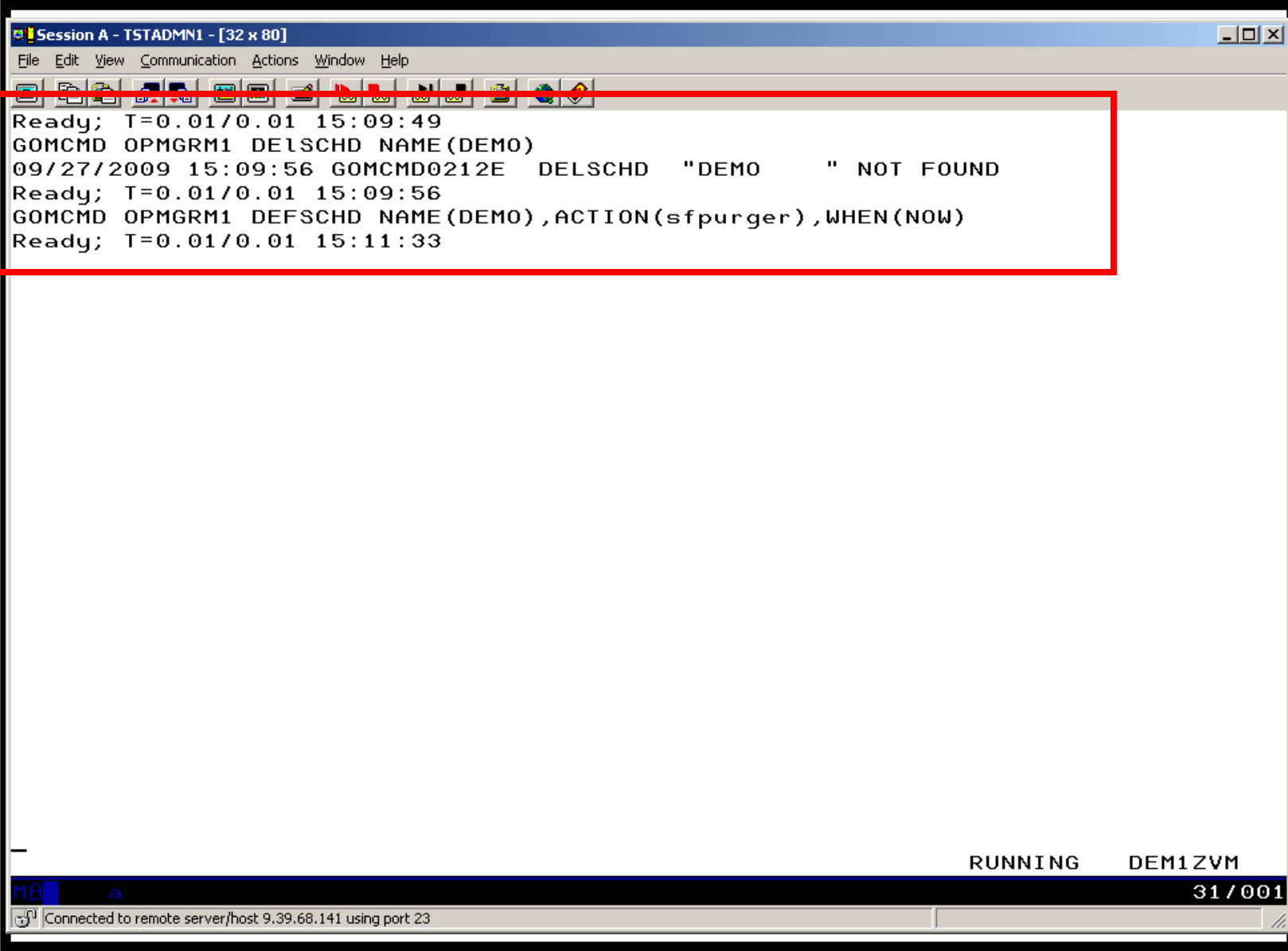
System: DEM1ZVM    Spool: 5% Used    Files: 0% Used    1 of 3  
 Max: 2.4G    Max: 1655640

Cmd

Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
TSTADMN2	0004	A	RDR	PUN	576K	NONE	04/20	04:55:56	AMV1004	BADARC
TSTADMN2	0006	A	RDR	PUN	64K	NONE	08/25	11:07:21	TSTADMN1	NETLOG
TSTADMN2	0009	Z	RDR	PUN	4K	NONE	09/27	15:23:11	PROFILE	EXEC

MA a 05/001

Connected to remote server/host 9.39.68.141 using port 23



The screenshot shows a terminal window titled "Session A - TSTADMIN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main area of the terminal displays the following text:

```
Ready; T=0.01/0.01 15:09:49
GOMCMD OPMGRM1 DELSCHED NAME(DEMO)
09/27/2009 15:09:56 GOMCMD0212E  DELSCHED "DEMO  " NOT FOUND
Ready; T=0.01/0.01 15:09:56
GOMCMD OPMGRM1 DEFSCHED NAME(DEMO),ACTION(sfpurger),WHEN(NOW)
Ready; T=0.01/0.01 15:11:33
```

A red rectangular box highlights the first four lines of the terminal output. At the bottom of the terminal window, there is a status bar with the text "RUNNING DEM1ZVM" and "31 / 001". Below the status bar, there is a connection information bar that reads "Connected to remote server/host 9.39.68.141 using port 23".

```

Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
09/27/2009 15:26:29 GOMCMD0216L LYSYSLOG "(11)DB2[2000]: Open of log file "/hs
09/27/2009 15:26:37 GOMCMD0201L TSTADMN1 "DELSCHD NAME(DEMO)" VID=TSTADMN1 SRC
09/27/2009 15:26:37 GOMCMD0201L TSTADMN1 "DEFSCHD NAME(DEMO),ACTION(SFPURGER),
09/27/2009 15:26:49 GOMCMD0201L TSTADMN1 "VIEWLOG" VID=TSTADMN1 SRC=MASIUCV C
09/27/2009 15:26:59 GOMACT0260I SCHEDULE DEMO ACTION SFPURGER TRIGGERED BY
09/27/2009 15:26:59 GOMACT0262I ACTION SFPURGER BEGIN FOR SCHEDULE SERVER OPMG
09/27/2009 15:26:59 GOMACT0269L COMMAND "EXEC SFPURGER FORCE"
09/27/2009 15:26:59 GOMACT0270L DMSCYS2452I SFPURGER OPTIONS file processed ..
09/27/2009 15:26:59 GOMACT0270L DMSCYS2452I SFPURGER starting at 15:26:59 on 2
09/27/2009 15:26:59 GOMACT0270L DMSCYS2453I Running in FORCE mode - RUN09270.
09/27/2009 15:26:59 GOMACT0270L DMSCYS2470I Using SFPURGER MODULE with SFPTRAC
09/27/2009 15:26:59 GOMACT0270L DMSCYS2456I Erasing old output files till 2009
09/27/2009 15:26:59 GOMACT0270L
09/27/2009 15:26:59 GOMACT0270L DMSCYS2496I Control card scan complete.
09/27/2009 15:26:59 GOMACT0270L
09/27/2009 15:26:59 GOMACT0270L DMSCYS2459I Examining output file ...
09/27/2009 15:26:59 GOMACT0270L DMSCYS2462I Spool file scanning begins ...
09/27/2009 15:26:59 GOMACT0270L DMSCYS2482I Executing: CP PURGE TSTADMN2 RDR 0
09/27/2009 15:26:59 GOMACT0270L 0000001 FILE PURGED
09/27/2009 15:26:59 GOMACT0270L DMSCYS2463I 1 of the 286 spool files HAVE been
09/27/2009 15:26:59 GOMACT0270L DMSCYS2485I 0 of the 286 spool files HAVE been
09/27/2009 15:26:59 GOMACT0270L DMSCYS2486I 0 of the 286 spool files HAVE been
09/27/2009 15:26:59 GOMACT0270L RDR FILE 0014 SENT FROM OPMGRM1 CON WAS 0014
09/27/2009 15:26:59 GOMACT0270L DMSCYS2466I Run terminating - Return code 0.
09/27/2009 15:26:59 GOMACT0270L DMSCYS2465I SFPURGER RUN09270 has ended.
09/27/2009 15:26:59 GOMACT0267I ACTION SFPURGER END RC=0 SERVER OPMGRM1
09/27/2009 15:26:59 GOMCMD0216L OPERATOR "OPMGRM1: DMSCYS2452I SFPURGER starti
09/27/2009 15:26:59 GOMCMD0216L OPERATOR "OPMGRM1: DMSCYS2453I Running in FORC
09/27/2009 15:26:59 GOMCMD0216L OPERATOR "OPMGRM1: DMSCYS2456I Erasing old out
09/27/2009 15:26:59 GOMCMD0216L OPERATOR "OPMGRM1: DMSCYS2459I Examining outpu
-
MASALOG
MA a 31/001
Connected to remote server/host 9.39.68.141 using port 23

```

Session A - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

System: DEM1ZVM Spool: 5% Used Files: 0% Used 1 of 2  
 Max: 2.4G Max: 1655640

Cmd	Owner	File	CLS	QUE	TYP	Size	Hold	Date	Time	Name	Type
-	TSTADMN2	0004	A	RDR	PUN	576K	NONE	04/20	04:55:56	AMV1004	BADARC
-	TSTADMN2	0006	A	RDR	PUN	64K	NONE	08/25	11:07:21	TSTADMN1	NETLOG

MA a 05/001

Connected to remote server/host 9.39.68.141 using port 23

## Scenario 5: How Do You Do That?

### Action in Operations Manager to call z/VM's SFPURGER EXEC

```
*  
DEFACTN NAME(SFPURGER),+  
  COMMAND(EXEC SFPURGER FORCE),+  
  OUTPUT(LOG),+  
  ENV(LVM)
```

### SFPURGER OPTIONS file

```
* Send console log to user ID TSTADMN1 at demo node  
CONSOLE  TSTADMN1 DEM1ZVM  
* Erase LOG and RUN files that are more than 3 days old  
KEEPDAY  21  
* Set prime shift start and end times  
PRIMSHFT 07:30:00 16:30:00  
* Use defaults for the following:  
*  MSGTYPE  SORTMOD  SFPCNTL  SOSCNTL  SFPMOD  APPEND  
SFPCNTL  SFPTRACY
```

## Scenario 5: How Do You Do That?

### SFPTRACY CONTROL

\* Ignore any spool files found in the NSS queue (privilege class E)

```
QUEUE NSS                                ACTION IGNORE
```

\*

\* Purge any spool files found in class Z

```
CLASS Z                                  ACTION PURGE
```

**Make sure OPMGRM1 links and accesses MAINT 193 disk for access to SFPURGER functions**



## Scenario 6: Detecting Disk Full Conditions of Logging IDs

- **Operations Manager monitors the console of a user ID that does logging**
  - DIRMAINT, for example
- **Disk full or early warning message triggers a rule/action in Operations Manager**
  - Quiesce or shut down DIRMAINT
  - Send the log files to a separate service machine
  - Erase the log files from DIRMAINT's logging disk
  - Restart DIRMAINT
  - Separately, other service machine automatically archives all files it receives (in Archive Manager for z/VM)
  - Log files are safely archived in Archive Manager and DIRMAINT is running with a clean log disk
- **Get a copy of the console for further review/debugging**

## Scenario 6: Detailed Steps

- **From an authorized VM user ID, view the DIRMAINT console:**

```
gomcmd opmgrml viewcon user(dirmaint)
```

- **In the console view**

- Issue CMS commands to copy old (large) log files to DIRMAINT's log disk

```
cms copyfile dirmaint tlog0914 t = tlog0912 h
```

- Verify the logging disk is more than 75% full

```
cms q disk
```

- Run DIRMAINT's hourly processing now

```
exec dvhourly
```

- Verify the logging disk is less than 75% full

```
cms q disk
```

- **Exit the console view and find the files in the archive**

```
amvlist
```

- Type "archlogs" in the owner field and press ENTER

- **Request a copy of the console for further review/debugging**

```
gomcmd opmgrml viewcon user(dirmaint),mode(rdr)
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 22:56:04
DVHWA12140I Waiting for work on 09/02/24 at 22:56:04.
DVHWA12143I Wakeup caused by timer file entry on 09/02/24 at 23:01:02.
DVHWA12143I Processing event number 00005 scheduled for ==/==/== at
DVHWA12143I +01:00:0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.02/0.02 23:01:02
DVHREQ2290I Request is: CMS EXEC DVHOURLY
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.03/0.03 23:01:03
DVHWA12140I Waiting for work on 09/02/24 at 23:01:03.
DVHWA12142I Wakeup caused by elapsed time on 09/02/24 at 23:06:03.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:06:03
DVHWA12140I Waiting for work on 09/02/24 at 23:06:03.
DVHWA12142I Wakeup caused by elapsed time on 09/02/24 at 23:11:03.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:11:03
DVHWA12140I Waiting for work on 09/02/24 at 23:11:03.
* -- Operations Manager VIEWCON session from TSTADMN1 entered the following --
cms acc 333 t
DVHWA12146I Wakeup caused by console attention on 09/02/24 at 23:12:15.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:12:16
DVHREQ2290I Request is: CMS acc 333 t
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.02/0.03 23:12:17
DVHWA12140I Waiting for work on 09/02/24 at 23:12:17.
cms copyfile dirmaint tlog0914 t = tlog0912 h_
DIRMAINT (Scroll)
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
[Icons]
DVHWAI2140I Waiting for work on 09/02/24 at 23:01:03.
DVHWAI2142I Wakeup caused by elapsed time on 09/02/24 at 23:06:03.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:06:03
DVHWAI2140I Waiting for work on 09/02/24 at 23:06:03.
DVHWAI2142I Wakeup caused by elapsed time on 09/02/24 at 23:11:03.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:11:03
DVHWAI2140I Waiting for work on 09/02/24 at 23:11:03.
* -- Operations Manager VIEWCON session from TSTADMN1 entered the following --
cms acc 333 t
DVHWAI2146I Wakeup caused by console attention on 09/02/24 at 23:12:15.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:12:16
DVHREQ2290I Request is: CMS acc 333 t
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.02/0.03 23:12:17
DVHWAI2140I Waiting for work on 09/02/24 at 23:12:17.
* -- Operations Manager VIEWCON session from TSTADMN1 entered the following --
cms copyfile dirmaint tlog0914 t = tlog0912 h
DVHWAI2146I Wakeup caused by console attention on 09/02/24 at 23:14:06.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:14:06
DVHREQ2290I Request is: CMS copyfile dirmaint tlog0914 t = tlog0912 h
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.03/0.03 23:14:08
DVHWAI2140I Waiting for work on 09/02/24 at 23:14:08.
DVHWAI2142I Wakeup caused by elapsed time on 09/02/24 at 23:19:08.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:19:08
DVHWAI2140I Waiting for work on 09/02/24 at 23:19:08.
-
DIRMAINT (Scroll)
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
cms copyfile dirmaint tlog0914 t = tlog0910 h
DVHWAI2146I Wakeup caused by console attention on 09/02/24 at 23:24:42.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:24:42
DVHREQ2290I Request is: CMS copyfile dirmaint tlog0914 t = tlog0910 h
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.03/0.03 23:24:43
DVHWAI2140I Waiting for work on 09/02/24 at 23:24:43
* -- Operations Manager VIEWCON session from TSTADMN1 entered the following --
cms q disk
DVHWAI2146I Wakeup caused by console attention on 09/02/24 at 23:25:08.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:25:08
DVHREQ2290I Request is: CMS q disk
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.

```

LABEL	VDEV	M	STAT	CYL	TYPE	BLKSZ	FILES	BLKS USED-(%)	BLKS LEFT	BLK TOTA
DIR155	155	A	R/W	9	3390	4096	12	80-05	1540	162
DRM491	191	C	R/W	15	3390	4096	250	1311-49	1389	270
DRM11F	11F	D	R/W	8	3390	4096	47	568-39	872	144
DIR1DF	1DF	E	R/W	9	3390	4096	124	265-16	1355	162
DIR1DB	1DB	C	R/W	9	3390	4096	10	144-00	1476	162
DIR1AA	1AA	H	R/W	9	3390	4096	10	1385-85	235	162
MNT190	190	S	R/O	100	3390	4096	687	14513-81	3487	1800
DIR333	333	T	R/W	5	3390	4096	2	505-56	395	90
MNT19E	19E	Y/S	R/O	250	3390	4096	1102	28088-62	16912	4500
DIR1FA	1FA	Z	R/W	9	3390	4096	0	7-00	1613	162

```

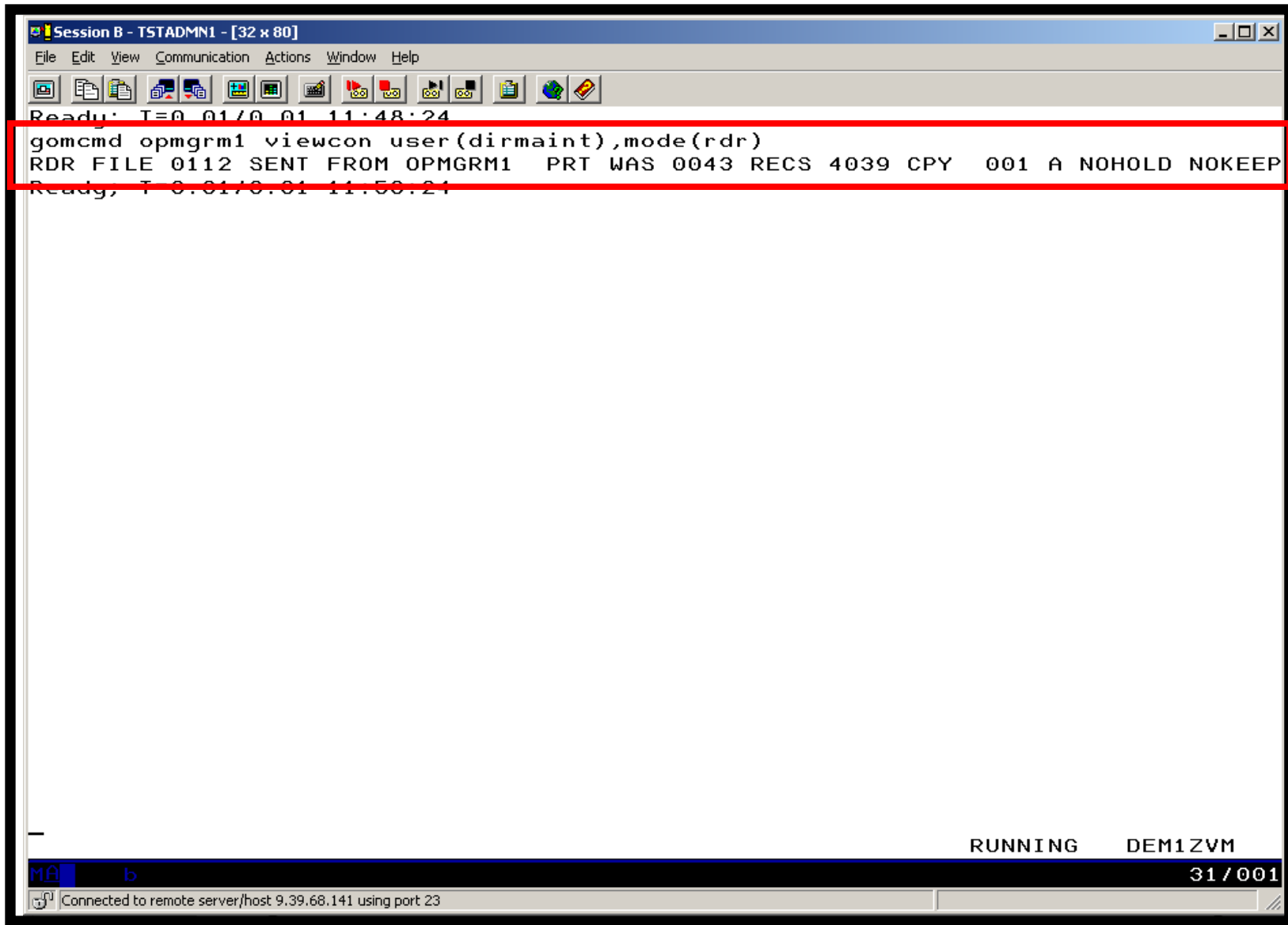
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2009/02/24; T=0.02/0.03 23:25:09
DVHWAI2140I Waiting for work on 09/02/24 at 23:25:09.
-
DIRMAINT (Scroll)
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23

```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
23:29:24 * -- Operations Manager VIEWCON session from TSTADMN1 entered the foll
23:29:24 cms exec dvhourly
23:29:24 DVHWA12148I Wakeup caused by console attention on 09/02/24 at 23:29:24
23:29:24 DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:29:24
23:29:25 DVHREQ2290I Request is: CMS exec dvhourly
23:29:25 DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted
23:29:25 DVHRLY3895W Disk 01AA is 75% full, exceeding its
23:29:25 * -- Operations Manager Action DIRML0GB scheduled for execution -- *
23:29:33 DVHRLY3895W WARNING threshold of 75%.
23:29:33 DVHRLY3888I Hourly processing started, with 8 log
23:29:33 DVHRLY3886I files.
23:29:33 DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
23:29:33 DVHREQ2289I = 0.
23:29:33 DIRMAINT DEM1ZVM. - 2009/02/24; T=0.04/0.04 23:29:25
23:29:33 DVHWA12140I Waiting for work on 09/02/24 at 23:29:25.
23:29:33 DVHWA12141I Wakeup caused by *MSG on 09/02/24 at 23:29:25 from OPMGRM
23:29:33 DIRMAINT DEM1ZVM. - 2009/02/24; T=0.01/0.01 23:29:25
23:29:33 DVHREQ2290I Request is: REQUEST 74 SHUTDOWN
23:29:33 DVHREQ2288I Your SHUTDOWN request for OPMGRM1 at * has been accepted.
23:29:33 DVHREQ2288I Your SHUTDOWN request for OPMGRM1 at * has been accepted.
23:29:33 DVHSHU2193I A shutdown command has been issued by
23:29:33 DVHSHU2193I OPMGRM1 from DEM1ZVM.
23:29:33 DVHSHU2198A The DIRMAINT service machine is logging
23:29:33 DVHSHU2198A off.
23:29:33 CONNECT= 00:01:30 VIRTCPU= 000:00 40 TOTCPU= 000:00 47
23:29:33 LOGOFF AT 23:29:27 CST TUESDAY 02/24/09
23:29:33 PRT FILE 0791 SENT FROM DIRMAINT CON WAS 0791 RECS 0095 CPY 001 0 HOL
23:29:33 DASD 0191 LINKED R/W; R/O BY DATAMOVE
23:29:33 DASD 011F LINKED R/W; R/O BY DATAMOVE
23:29:33
-
DIRMAINT
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23

```



The screenshot shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
Ready; T=0.01/0.01 11:48:24  
gomcmd opmgrm1 viewcon user(dirmaint),mode(rdr)  
RDR FILE 0112 SENT FROM OPMGRM1 PRT WAS 0043 RECS 4039 CPY 001 A NOHOLD NOKEEP  
Ready; T=0.01/0.01 11:50:24
```

At the bottom of the terminal, there is a status bar with the text "RUNNING DEM1ZVM" and "31/001". The bottom-most line of the window shows "Connected to remote server/host 9.39.68.141 using port 23".

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
0112 PEEK A0 V 204 Trunc=204 Size=4037 Line=0 Col=1 Alt=0
File VIEWCON DIRMAINT from OPMGRM1 at DEM1ZVM Format is PRINT.
*** Top of File ***
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.01/0.01 06:56:02
DVHWAI2140I Waiting for work on 10/09/24 at 06:56:02.
DVHWAI2143I Wakeup caused by timer file entry on 10/09/24 at 07:01:01.
DVHWAI2143I Processing event number 00005 scheduled for ==/==/== at
DVHWAI2143I +01:00:0.
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.01/0.01 07:01:01
DVHREQ2290I Request is: CMS EXEC DVHOURLY
DVHREQ2288I Your CMS request for DIRMAINT at * has been accepted.
DVHRLY3886I Hourly processing started; with 0 log
DVHRLY3886I files.
DVHREQ2289I Your CMS request for DIRMAINT at * has completed; with RC
DVHREQ2289I = 0.
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.02/0.02 07:01:02
DVHWAI2140I Waiting for work on 10/09/24 at 07:01:02.
DVHWAI2142I Wakeup caused by elapsed time on 10/09/24 at 07:06:02.
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.01/0.01 07:06:02
DVHWAI2140I Waiting for work on 10/09/24 at 07:06:02.
DVHWAI2142I Wakeup caused by elapsed time on 10/09/24 at 07:11:02.
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.01/0.01 07:11:02
DVHWAI2140I Waiting for work on 10/09/24 at 07:11:02.
DVHWAI2142I Wakeup caused by elapsed time on 10/09/24 at 07:16:02.
DIRMAINT DEM1ZVM. - 2010/09/24; T=0.01/0.01 07:16:02
DVHWAI2140I Waiting for work on 10/09/24 at 07:16:02.
DVHWAI2142I Wakeup caused by elapsed time on 10/09/24 at 07:21:02.
1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X EDIT 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```



## Scenario 6: How Do You Do That?

### Console rule and action in Operations Manager:

```
DEFRULE NAME(DIRMLOG) , +  
  MATCH( *DVHRLY3895*01AA* ) , +  
  USER(DIRMAINT) , +  
  ACTION(DIRMLOG)
```

\*

```
DEFACTN NAME(DIRMLOG) , +  
  INPUT(AHI) , +  
  NEXTACTN(DIRMLOGB)
```

\*

```
DEFACTN NAME(DIRMLOGB) , +  
  COMMAND(EXEC DIRM1AA &U) , +  
  ENV(LVM)
```

### Authorize Operations Manager to issue DIRM SHUTDOWN – from MAINT issue

```
DIRM AUTHFOR OPMGRM1 CMDLEVEL 150A CMDSET O
```

## Scenario 6: How Do You Do That?

### **DIRM1AA EXEC (excerpts):**

```
Parse Upper Arg Tuser . ;
/* Try to shut DIRMAINT down. */
Say 'DIRM1AA - Issuing DIRM SHUTDOWN ....';
Address CMS 'DIRM SHUTDOWN';

Address Command 'CP LINK' Tuser '1AA' Dev 'MR';
Address CMS 'ACCESS' Dev Fm;

Address Command 'PIPE CMS LISTFILE DIRMAINT *LOG*' Fm '( NOHEADER',
'| STEM FILES.';
Do I = 1 to Files.0;
  Parse Upper Var Files.I Fn Ft .;
  Address CMS 'SENDFILE' Fn Ft Fm 'TO ARCHLOGS';
  If Rc = 0 then Do;
    Sent = Sent+1;
    Address CMS 'ERASE' Fn Ft Fm;
  End
Address Command 'CP XAUTOLOG' Tuser;
```

## Scenario 7: Process a File of Test Messages as a Console

- **Create a file containing lines of test messages**
  - Test rules and actions without creating critical conditions
- **Use Operations Manager to send the file for processing**
  - Treat it as the console of one user
  - Send it again treating it as the console of another user
  - Notice triggered rules and actions are different
- **View the “consoles” of these two users**

## Scenario 7: Detailed Steps

- **Create or view a file of test messages**

```
xedit test consdata a
```

- Notice the “hello” message in the file

- **From a z/VM user ID, send the test file to Operations Manager**

- Send it twice, specifying two different “owning” user IDs. One generates a message and one doesn’t:

```
gomrsif test consdata a 9.39.64.72 63000 tstadm8
```

```
gomrsif test consdata a 9.39.64.72 63000 tstuser8
```

- **From an authorized z/VM user ID, view the consoles of the owning user IDs:**

```
gomcmd opmgrm1 viewcon user(tstadm8)
```

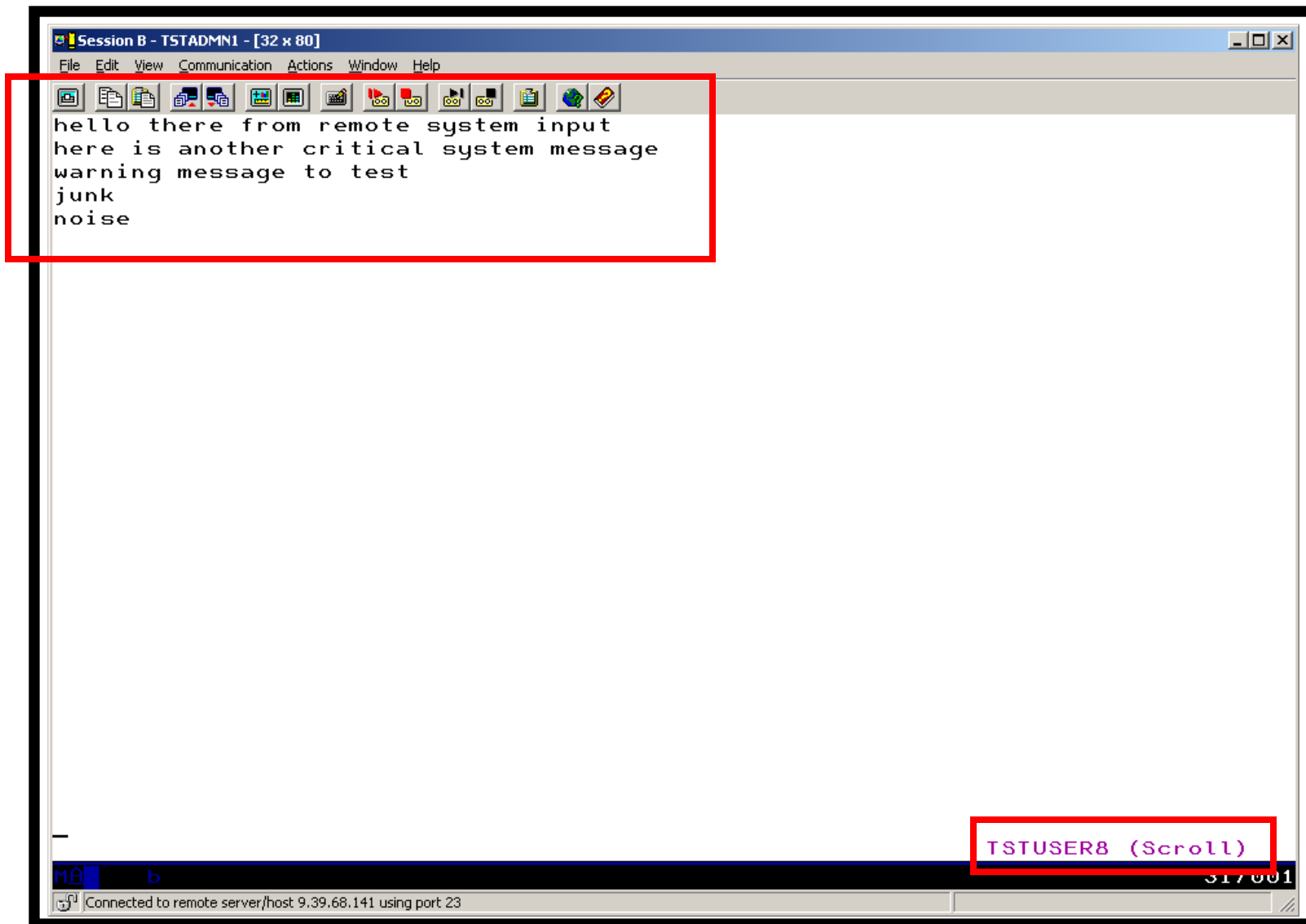
```
gomcmd opmgrm1 viewcon user(tstuser8)
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
TEST CONSDATA A1 F 80 Trunc=80 Size=5 Line=0 Col=1 Alt=0
====>
T...+...1...+...2...+...3...+...4...+...5...+...6...+...7...
00000 * * * Top of File * * *
00001 hello there from remote system input
00002 here is another critical system message
00003 warning message to test
00004 junk
00005 noise
00006 * * * End of File * * *
MA b 02/007
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Ready; T=0.01/0.01 13:38:15
gomrsif test consdata a 9.39.68.141 63000 tstadm8
Connecting to 9.39.68.141
Sending TEST CONSDATA A to 9.39.68.141
13:39:12 * MSG FROM OPMGRM1 : HELLO BACK FROM TSTADMN8.
Ready; T=0.01/0.01 13:39:12
gomrsif test consdata a 9.39.68.141 63000 tstuser8
Connecting to 9.39.68.141
Sending TEST CONSDATA A to 9.39.68.141
Ready; T=0.01/0.01 13:39:18

RUNNING DEM1ZVM
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
hello there from remote system input
* -- Operations Manager Action TESTEX  scheduled for execution -- *
here is another critical system message
warning message to test
junk
noise
TSTADMIN8 (Scroll)
31/001
MA b
Connected to remote server/host 9.39.68.141 using port 23
```





## Scenario 7: How Do You Do That?

### Console rule and action in Operations Manager:

\*

```
DEFRULE NAME (TESTEX) , +  
    MATCH ( *HELLO* ) , +  
    MCOL ( 001 : 030 ) , +  
    ACTION ( TESTEX ) , +  
    EXGROUP ( TSTUSERS )
```

\*

```
DEFACTN NAME (TESTEX) , +  
    COMMAND ( CP MSG TSTADMN1 HELLO BACK FROM &U. ) , +  
    OUTPUT ( LOG ) , +  
    ENV ( LVM )
```

## Scenario 7: How Do You Do That?

### **Set up TCP/IP listener for test data and define group of consoles:**

\*

```
DEFTCPA NAME (TESTDATA) , +  
    TCPUSER (TCPIP) , +  
    TCPAPPL (GOMRSIF) , +  
    TCPADDR (000.000.000.000) , +  
    TCPPORT (63000)
```

\*

```
DEFGROUP NAME (TSTUSERS) , +  
    USER (TSTUSER*)
```

### **Update TCP/IP configuration to allow Operations Manager to listen on the specified port**

## Scenario 8: Process Linux Syslog Data as a Console

- **Route syslog data from a Linux guest to Operations Manager for z/VM**
  - Supports syslog and syslog-ng
  - syslog-ng includes hostname or IP address in message
- **Treat it as the console of a “fake” user ID**
- **Trigger rules and actions based on syslog data**
- **View the “console” containing syslog data**
- **Option to create one console per syslog or combine multiple syslogs into one console**

## Scenario 8: Detailed Steps

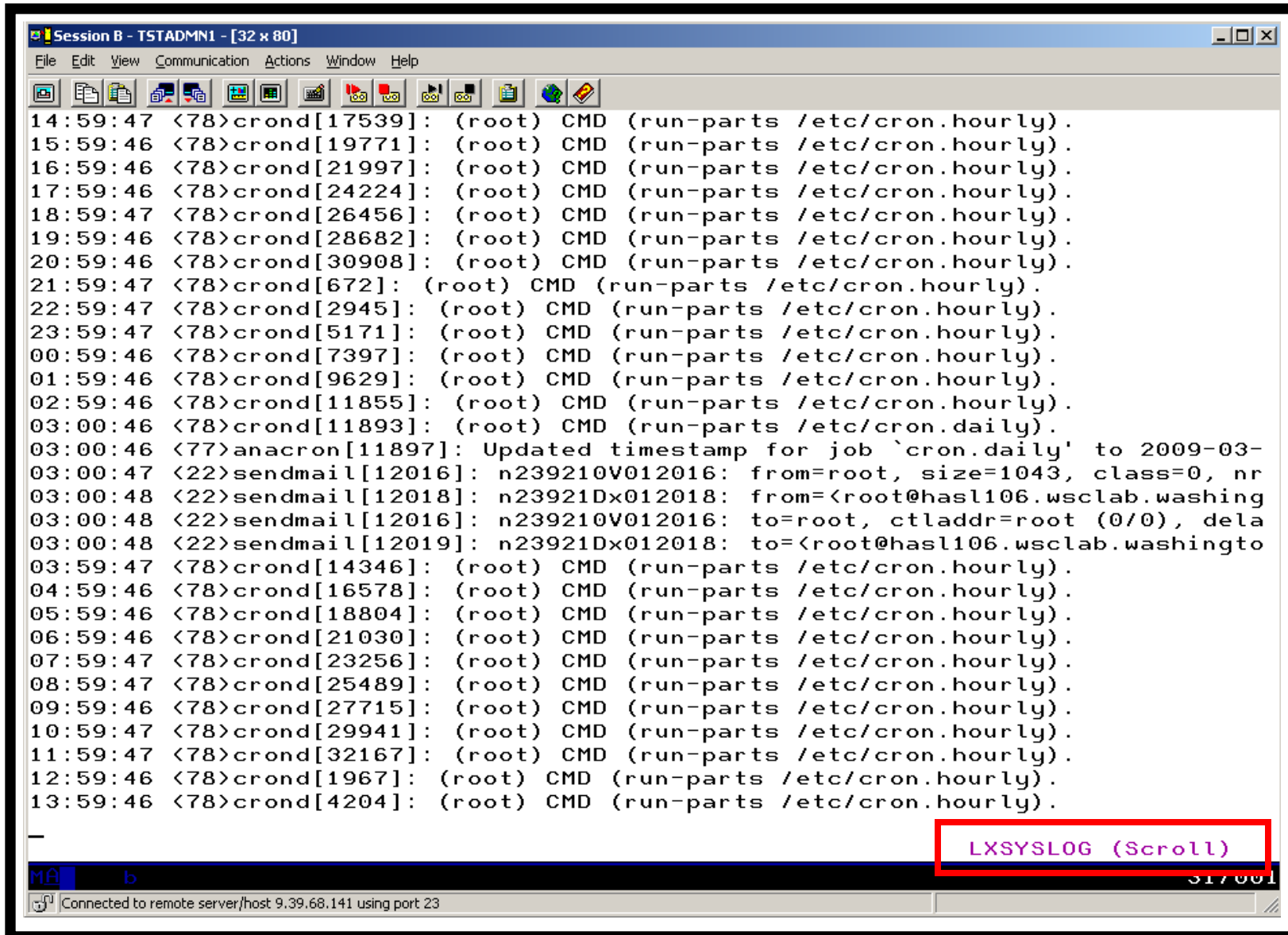
- **From an authorized z/VM user ID, view any syslog data already received**

```
gomcmd opmgrm1 viewcon user(lxsyslog)
```

- **Use PUTTY to connect to a Linux guest**
- **Login as root and issue the command**

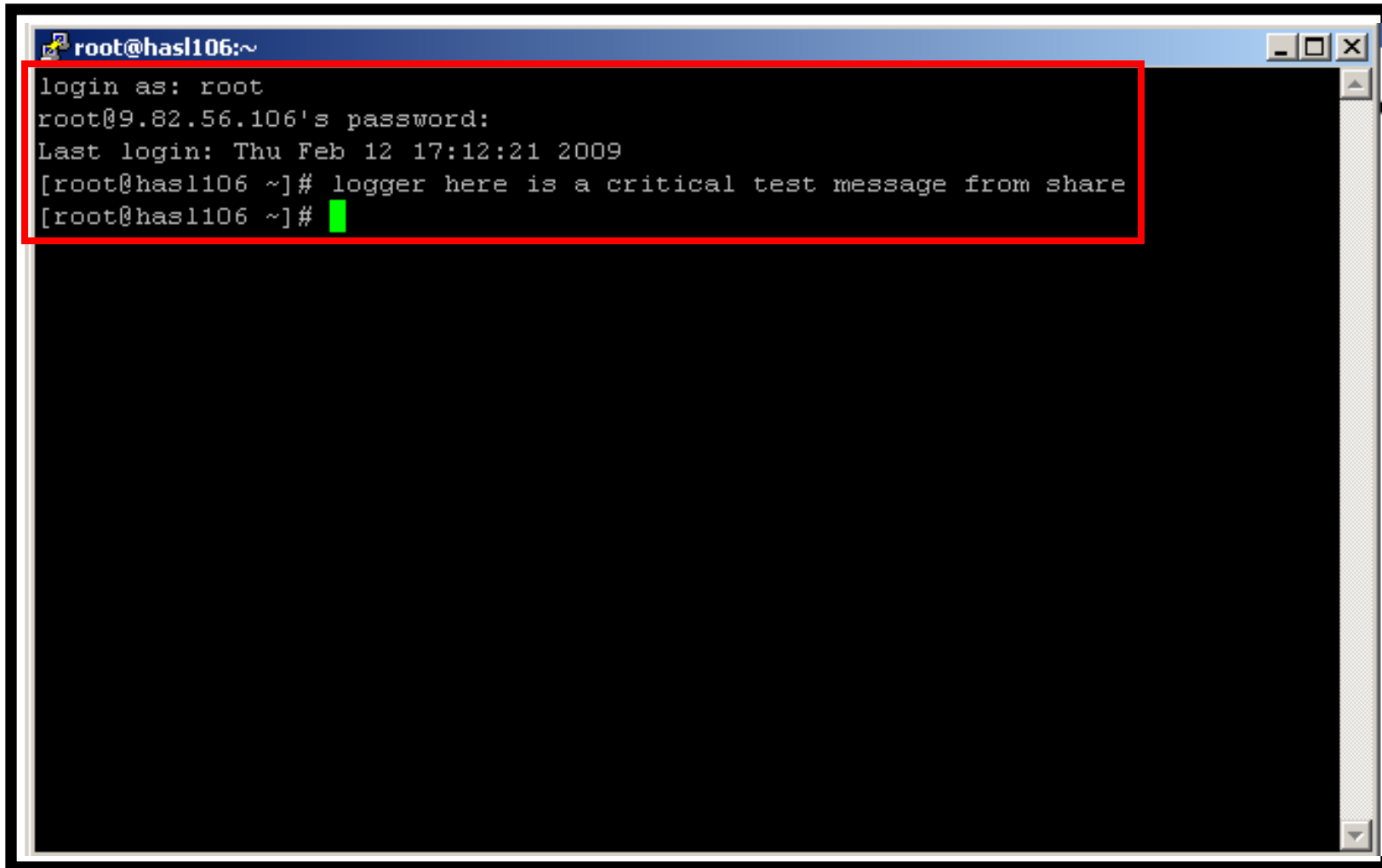
```
logger here is a critical test message from SHARE
```

- **Return to the VIEWCON session**
  - See the message in the syslog “console”
  - Using syslog, so no hostname or IP address
- **Repeat from a different Linux guest that uses syslog-ng**



The image shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window contains a list of system logs. Most entries are for cron jobs running hourly, such as "14:59:47 <78>crond[17539]: (root) CMD (run-parts /etc/cron.hourly)". There are also entries for anacron updates and sendmail messages. A red box highlights the text "LXSYSLOG (Scroll)" in the bottom right corner of the terminal output. The terminal status bar at the bottom shows "Connected to remote server/host 9.39.68.141 using port 23".

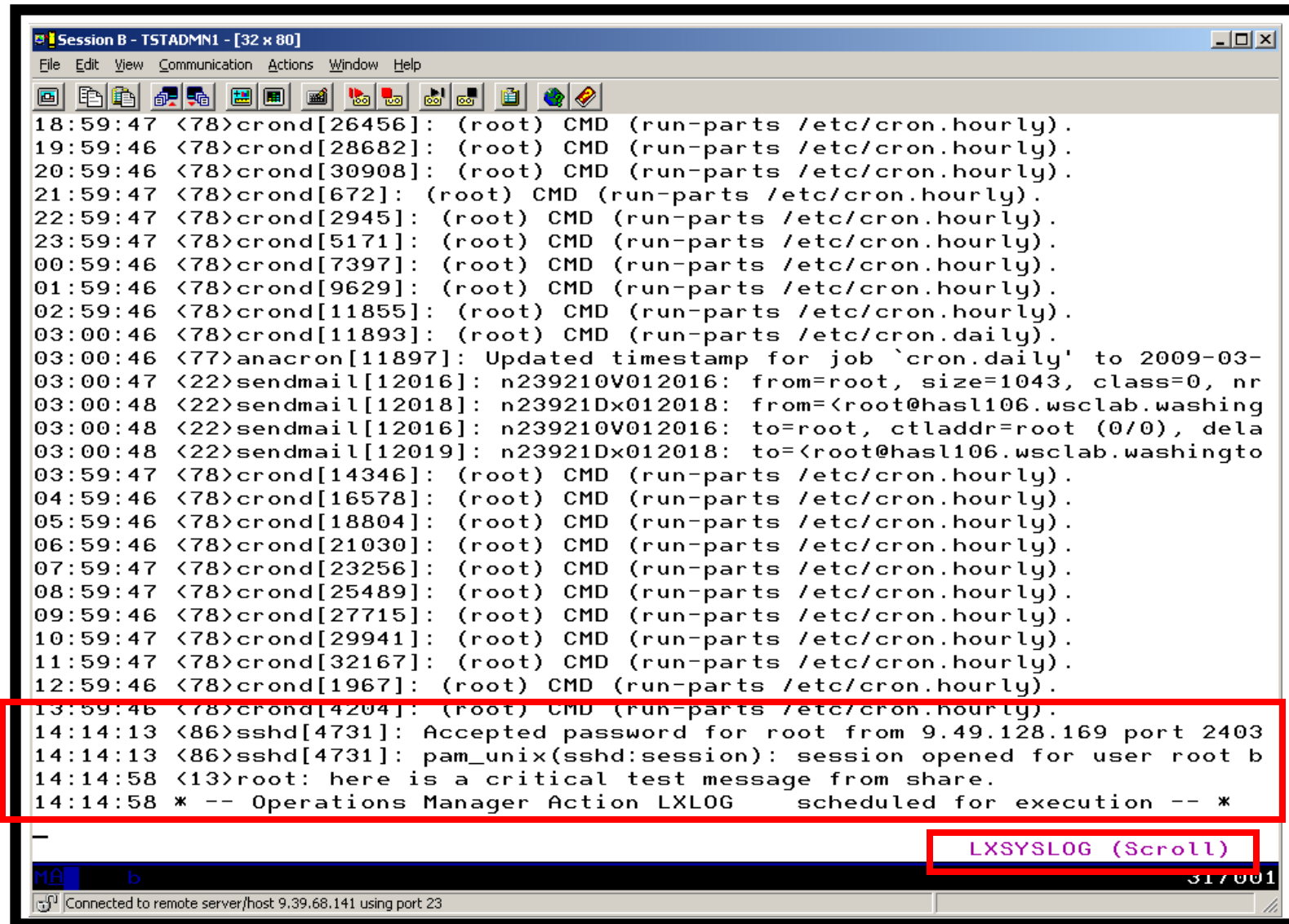
```
14:59:47 <78>crond[17539]: (root) CMD (run-parts /etc/cron.hourly).
15:59:46 <78>crond[19771]: (root) CMD (run-parts /etc/cron.hourly).
16:59:46 <78>crond[21997]: (root) CMD (run-parts /etc/cron.hourly).
17:59:46 <78>crond[24224]: (root) CMD (run-parts /etc/cron.hourly).
18:59:47 <78>crond[26456]: (root) CMD (run-parts /etc/cron.hourly).
19:59:46 <78>crond[28682]: (root) CMD (run-parts /etc/cron.hourly).
20:59:46 <78>crond[30908]: (root) CMD (run-parts /etc/cron.hourly).
21:59:47 <78>crond[672]: (root) CMD (run-parts /etc/cron.hourly).
22:59:47 <78>crond[2945]: (root) CMD (run-parts /etc/cron.hourly).
23:59:47 <78>crond[5171]: (root) CMD (run-parts /etc/cron.hourly).
00:59:46 <78>crond[7397]: (root) CMD (run-parts /etc/cron.hourly).
01:59:46 <78>crond[9629]: (root) CMD (run-parts /etc/cron.hourly).
02:59:46 <78>crond[11855]: (root) CMD (run-parts /etc/cron.hourly).
03:00:46 <78>crond[11893]: (root) CMD (run-parts /etc/cron.daily).
03:00:46 <77>anacron[11897]: Updated timestamp for job `cron.daily' to 2009-03-
03:00:47 <22>sendmail[12016]: n239210V012016: from=root, size=1043, class=0, nr
03:00:48 <22>sendmail[12018]: n23921Dx012018: from=<root@hasl106.wsclab.washing
03:00:48 <22>sendmail[12016]: n239210V012016: to=root, ctladdr=root (0/0), dela
03:00:48 <22>sendmail[12019]: n23921Dx012018: to=<root@hasl106.wsclab.washingto
03:59:47 <78>crond[14346]: (root) CMD (run-parts /etc/cron.hourly).
04:59:46 <78>crond[16578]: (root) CMD (run-parts /etc/cron.hourly).
05:59:46 <78>crond[18804]: (root) CMD (run-parts /etc/cron.hourly).
06:59:46 <78>crond[21030]: (root) CMD (run-parts /etc/cron.hourly).
07:59:47 <78>crond[23256]: (root) CMD (run-parts /etc/cron.hourly).
08:59:47 <78>crond[25489]: (root) CMD (run-parts /etc/cron.hourly).
09:59:46 <78>crond[27715]: (root) CMD (run-parts /etc/cron.hourly).
10:59:47 <78>crond[29941]: (root) CMD (run-parts /etc/cron.hourly).
11:59:47 <78>crond[32167]: (root) CMD (run-parts /etc/cron.hourly).
12:59:46 <78>crond[1967]: (root) CMD (run-parts /etc/cron.hourly).
13:59:46 <78>crond[4204]: (root) CMD (run-parts /etc/cron.hourly).
-
LXSYSLOG (Scroll)
```



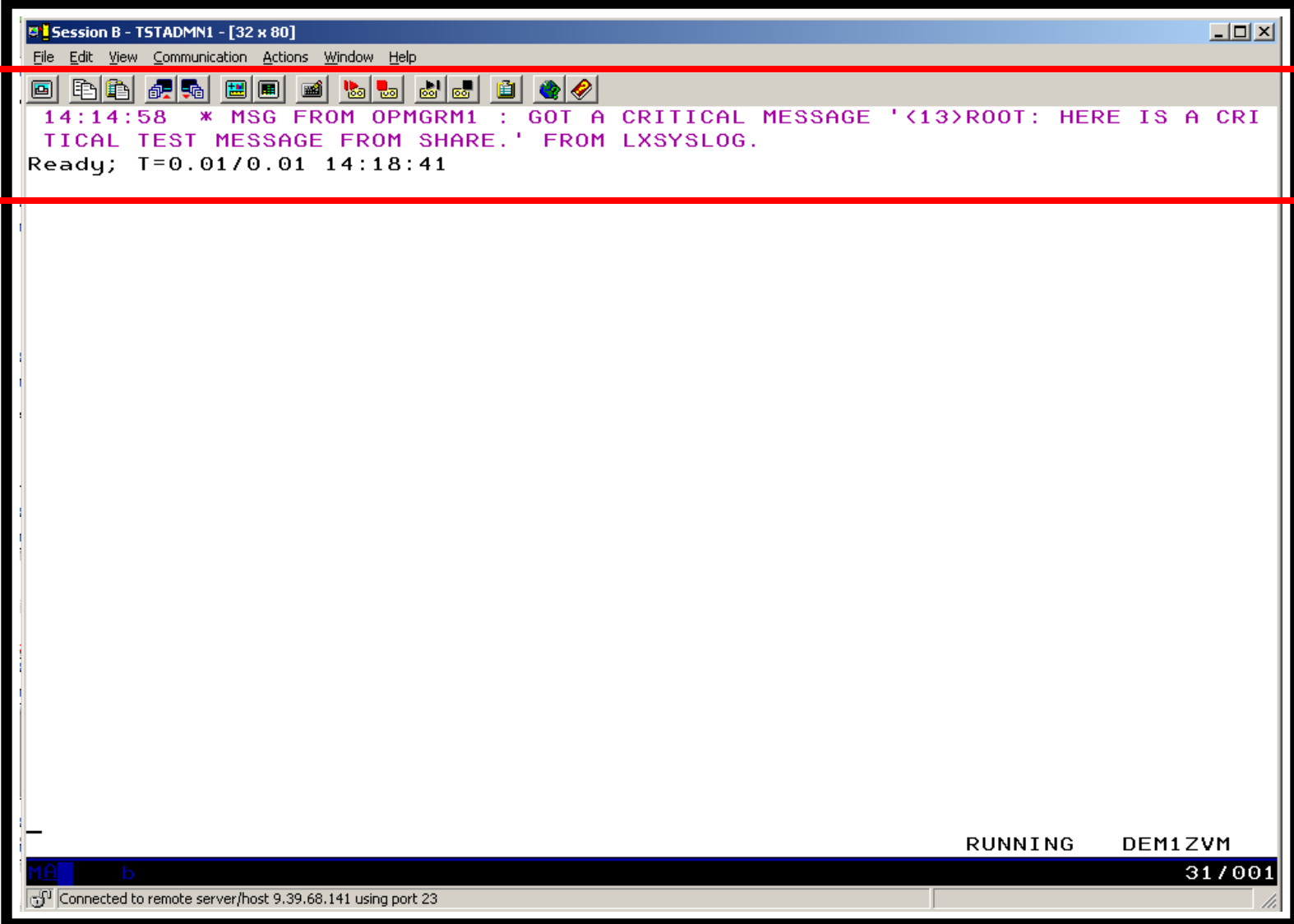
A terminal window titled "root@has1106:~" with standard window controls. The terminal output is as follows:

```
login as: root
root@9.82.56.106's password:
Last login: Thu Feb 12 17:12:21 2009
[root@has1106 ~]# logger here is a critical test message from share
[root@has1106 ~]# █
```

The first four lines of the terminal output are enclosed in a red rectangular box.



```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
18:59:47 <78>crond[26456]: (root) CMD (run-parts /etc/cron.hourly).
19:59:46 <78>crond[28682]: (root) CMD (run-parts /etc/cron.hourly).
20:59:46 <78>crond[30908]: (root) CMD (run-parts /etc/cron.hourly).
21:59:47 <78>crond[672]: (root) CMD (run-parts /etc/cron.hourly).
22:59:47 <78>crond[2945]: (root) CMD (run-parts /etc/cron.hourly).
23:59:47 <78>crond[5171]: (root) CMD (run-parts /etc/cron.hourly).
00:59:46 <78>crond[7397]: (root) CMD (run-parts /etc/cron.hourly).
01:59:46 <78>crond[9629]: (root) CMD (run-parts /etc/cron.hourly).
02:59:46 <78>crond[11855]: (root) CMD (run-parts /etc/cron.hourly).
03:00:46 <78>crond[11893]: (root) CMD (run-parts /etc/cron.daily).
03:00:46 <77>anacron[11897]: Updated timestamp for job `cron.daily' to 2009-03-
03:00:47 <22>sendmail[12016]: n239210V012016: from=root, size=1043, class=0, nr
03:00:48 <22>sendmail[12018]: n23921Dx012018: from=<root@hasl106.wsclab.washing
03:00:48 <22>sendmail[12016]: n239210V012016: to=root, ctladdr=root (0/0), dela
03:00:48 <22>sendmail[12019]: n23921Dx012018: to=<root@hasl106.wsclab.washingto
03:59:47 <78>crond[14346]: (root) CMD (run-parts /etc/cron.hourly).
04:59:46 <78>crond[16578]: (root) CMD (run-parts /etc/cron.hourly).
05:59:46 <78>crond[18804]: (root) CMD (run-parts /etc/cron.hourly).
06:59:46 <78>crond[21030]: (root) CMD (run-parts /etc/cron.hourly).
07:59:47 <78>crond[23256]: (root) CMD (run-parts /etc/cron.hourly).
08:59:47 <78>crond[25489]: (root) CMD (run-parts /etc/cron.hourly).
09:59:46 <78>crond[27715]: (root) CMD (run-parts /etc/cron.hourly).
10:59:47 <78>crond[29941]: (root) CMD (run-parts /etc/cron.hourly).
11:59:47 <78>crond[32167]: (root) CMD (run-parts /etc/cron.hourly).
12:59:46 <78>crond[1967]: (root) CMD (run-parts /etc/cron.hourly).
13:59:46 <78>crond[4204]: (root) CMD (run-parts /etc/cron.hourly).
14:14:13 <86>sshd[4731]: Accepted password for root from 9.49.128.169 port 2403
14:14:13 <86>sshd[4731]: pam_unix(sshd:session): session opened for user root b
14:14:58 <13>root: here is a critical test message from share.
14:14:58 * -- Operations Manager Action LXLOG scheduled for execution -- *
-
LXSYSLOG (Scroll)
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

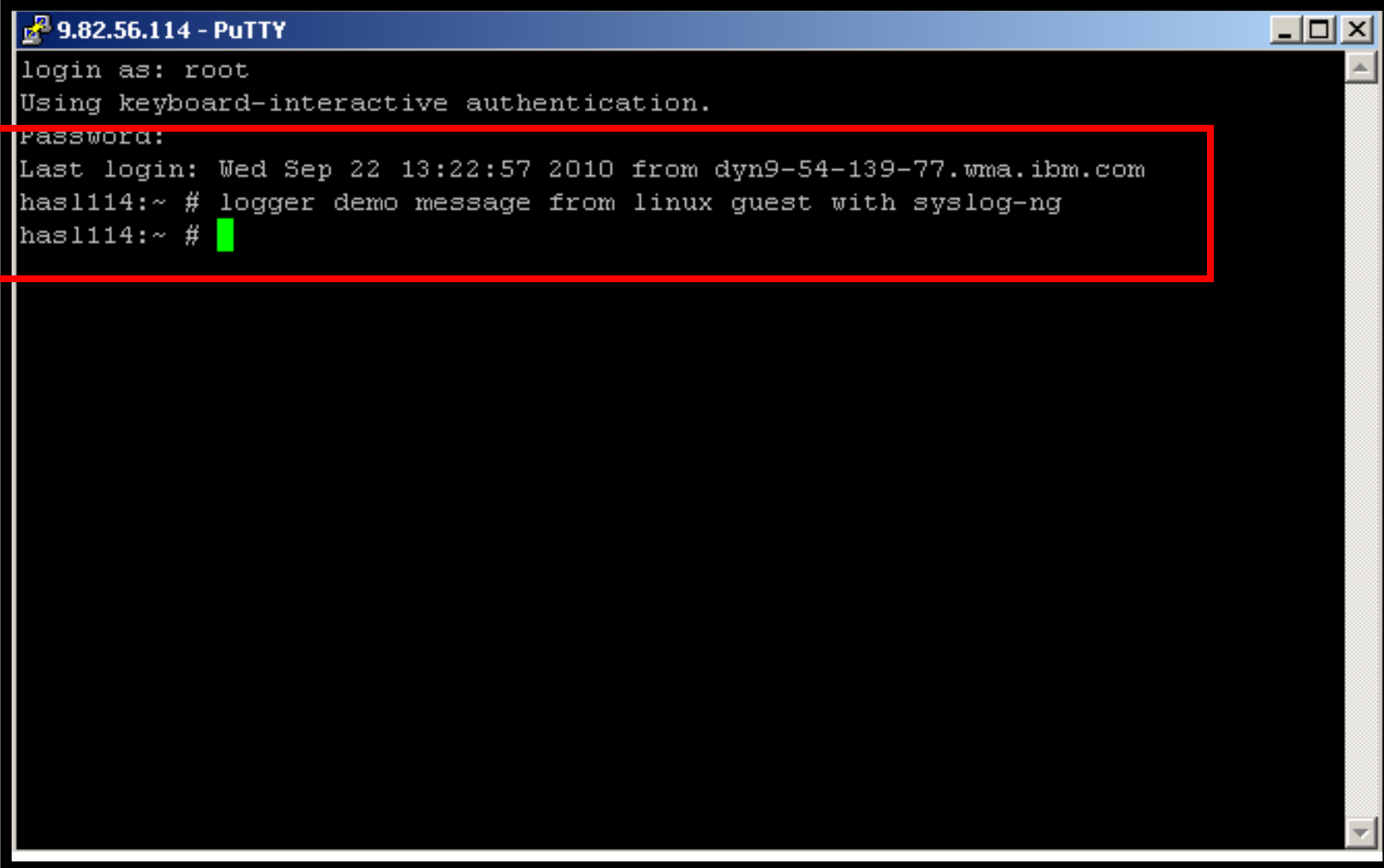


The screenshot shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main content area displays the following text:

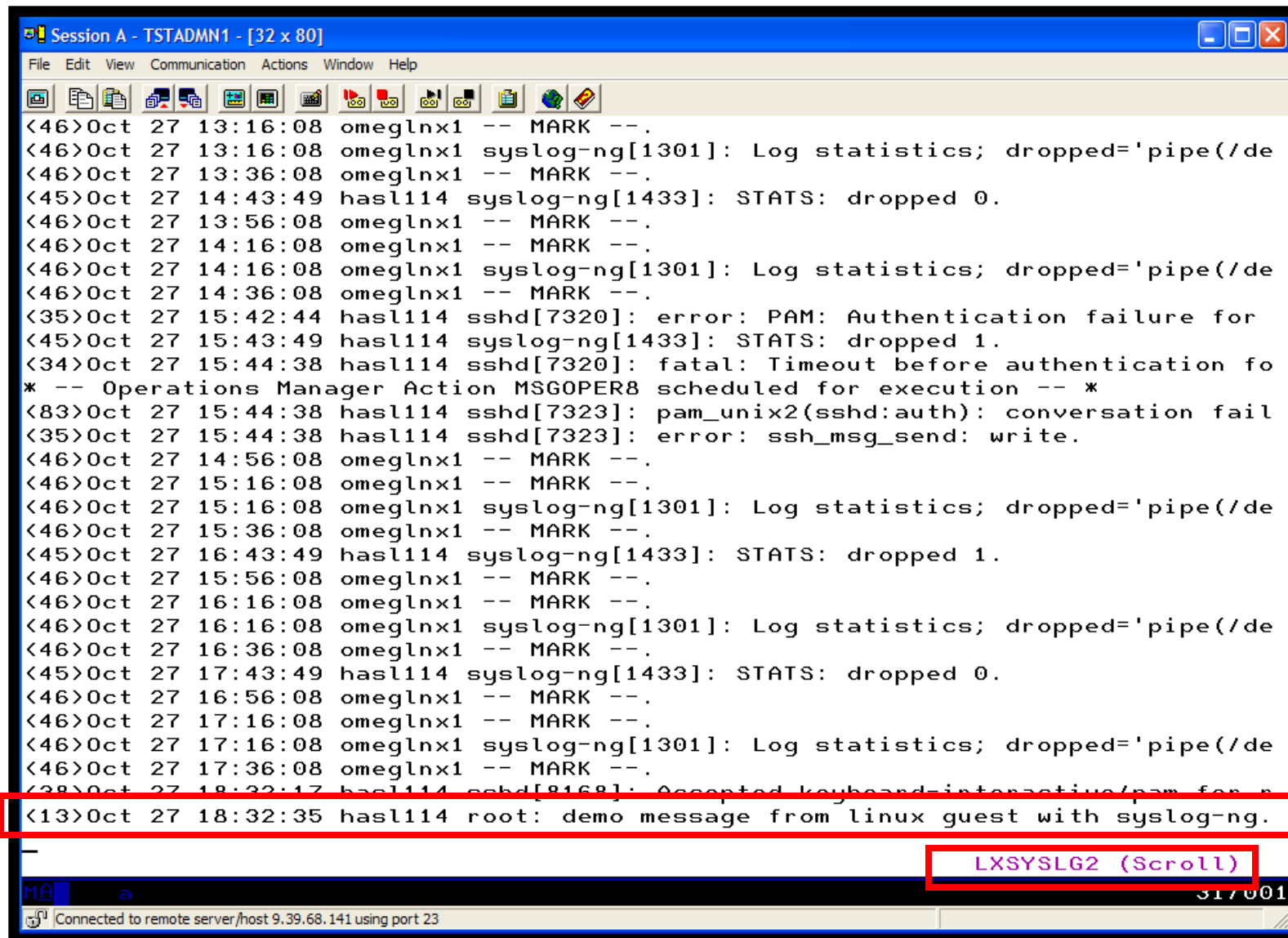
```
14:14:58 * MSG FROM OPMGRM1 : GOT A CRITICAL MESSAGE '<13>ROOT: HERE IS A CRI  
TICAL TEST MESSAGE FROM SHARE.' FROM LXSYSLOG.  
Ready; T=0.01/0.01 14:18:41
```

The text is highlighted with a red rectangular box. At the bottom of the terminal window, the status bar shows "RUNNING DEM1ZVM" and "31/001". The bottom-most status bar indicates "Connected to remote server/host 9.39.68.141 using port 23".

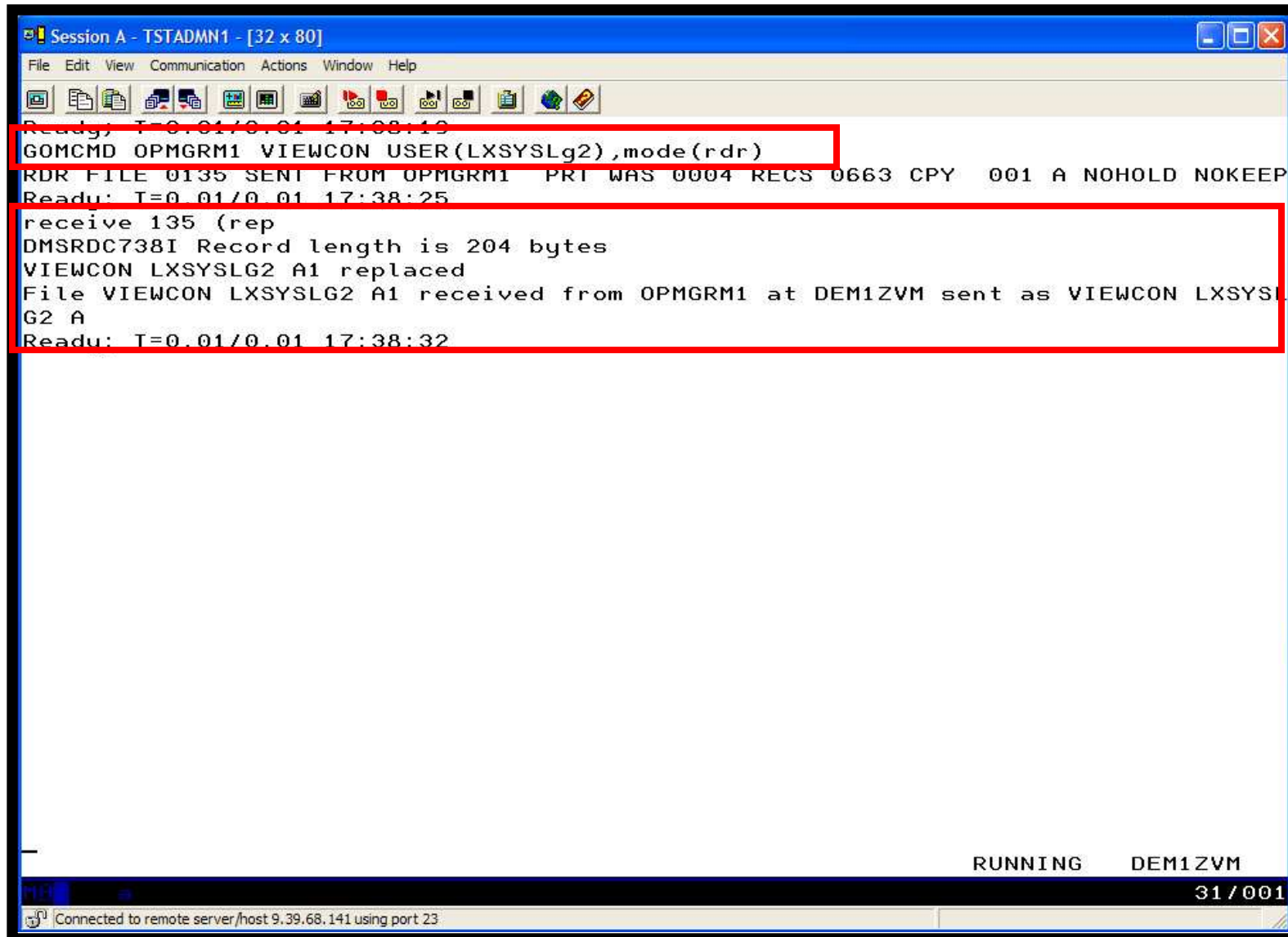




```
9.82.56.114 - PuTTY
login as: root
Using keyboard-interactive authentication.
Password:
Last login: Wed Sep 22 13:22:57 2010 from dyn9-54-139-77.wma.ibm.com
has114:~ # logger demo message from linux guest with syslog-ng
has114:~ # █
```



```
Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
<46>Oct 27 13:16:08 omeqlnx1 -- MARK --.
<46>Oct 27 13:16:08 omeqlnx1 syslog-ng[1301]: Log statistics; dropped='pipe(/de
<46>Oct 27 13:36:08 omeqlnx1 -- MARK --.
<45>Oct 27 14:43:49 hasl114 syslog-ng[1433]: STATS: dropped 0.
<46>Oct 27 13:56:08 omeqlnx1 -- MARK --.
<46>Oct 27 14:16:08 omeqlnx1 -- MARK --.
<46>Oct 27 14:16:08 omeqlnx1 syslog-ng[1301]: Log statistics; dropped='pipe(/de
<46>Oct 27 14:36:08 omeqlnx1 -- MARK --.
<35>Oct 27 15:42:44 hasl114 sshd[7320]: error: PAM: Authentication failure for
<45>Oct 27 15:43:49 hasl114 syslog-ng[1433]: STATS: dropped 1.
<34>Oct 27 15:44:38 hasl114 sshd[7320]: fatal: Timeout before authentication fo
* -- Operations Manager Action MSGOPER8 scheduled for execution -- *
<83>Oct 27 15:44:38 hasl114 sshd[7323]: pam_unix2(sshd:auth): conversation fail
<35>Oct 27 15:44:38 hasl114 sshd[7323]: error: ssh_msg_send: write.
<46>Oct 27 14:56:08 omeqlnx1 -- MARK --.
<46>Oct 27 15:16:08 omeqlnx1 -- MARK --.
<46>Oct 27 15:16:08 omeqlnx1 syslog-ng[1301]: Log statistics; dropped='pipe(/de
<46>Oct 27 15:36:08 omeqlnx1 -- MARK --.
<45>Oct 27 16:43:49 hasl114 syslog-ng[1433]: STATS: dropped 1.
<46>Oct 27 15:56:08 omeqlnx1 -- MARK --.
<46>Oct 27 16:16:08 omeqlnx1 -- MARK --.
<46>Oct 27 16:16:08 omeqlnx1 syslog-ng[1301]: Log statistics; dropped='pipe(/de
<46>Oct 27 16:36:08 omeqlnx1 -- MARK --.
<45>Oct 27 17:43:49 hasl114 syslog-ng[1433]: STATS: dropped 0.
<46>Oct 27 16:56:08 omeqlnx1 -- MARK --.
<46>Oct 27 17:16:08 omeqlnx1 -- MARK --.
<46>Oct 27 17:16:08 omeqlnx1 syslog-ng[1301]: Log statistics; dropped='pipe(/de
<46>Oct 27 17:36:08 omeqlnx1 -- MARK --.
<38>Oct 27 18:32:17 hasl114 sshd[8168]: Accepted keyboard-interactive/pam for r
<13>Oct 27 18:32:35 hasl114 root: demo message from linux guest with syslog-ng.
-
LXSYSLG2 (Scroll)
317001
MA a
Connected to remote server/host 9.39.68.141 using port 23
```



The screenshot shows a terminal window titled "Session A - TSTADMN1 - [32 x 80]". The window contains the following text:

```
Ready: T=0.01/0.01 17:38:19  
GOMCMD OPMGRM1 VIEWCON USER(LXSYSLG2),mode(rdr)  
RDR FILE 0135 SENT FROM OPMGRM1 PRT WAS 0004 RECS 0663 CPY 001 A NOHOLD NOKEEP  
Ready: T=0.01/0.01 17:38:25  
receive 135 (rep  
DMSRDC738I Record length is 204 bytes  
VIEWCON LXSYSLG2 A1 replaced  
File VIEWCON LXSYSLG2 A1 received from OPMGRM1 at DEM1ZVM sent as VIEWCON LXSYSL  
G2 A  
Ready: T=0.01/0.01 17:38:32
```

At the bottom right of the terminal, the status "RUNNING DEM1ZVM" is displayed, along with a page indicator "31 / 001". The status bar at the bottom of the window shows "Connected to remote server/host 9.39.68.141 using port 23".

```

Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
VIEWCON LXSYSLG2 A1 F 204 Trunc=204 Size=663 Line=0 Col=1 Alt=0
====>
T...+...1...+...2...+...3...+...4...+...5...+...6...+...7..

==== * * * Top of File * * *
==== 10/22/2010 11:39:59 <43>Oct 22 12:34:53 hasl114 syslog-ng[1433]: Connect
==== 10/22/2010 11:47:31 <45>Oct 22 12:43:25 hasl114 syslog-ng[1433]: STATS:
==== 10/22/2010 11:57:08 <46>Oct 22 11:56:07 omeglnx1 -- MARK --.
==== 10/22/2010 11:57:08 <43>Oct 22 11:56:07 omeglnx1 syslog-ng[1301]: I/O er
==== 10/22/2010 11:57:08 <43>Oct 22 11:56:07 omeglnx1 syslog-ng[1301]: Connec
==== 10/22/2010 12:05:21 <12>Oct 22 13:01:15 hasl114 zmd: ShutdownManager (WA
==== 10/22/2010 12:05:21 <12>Oct 22 13:01:15 hasl114 zmd: ShutdownManager (WA
==== 10/22/2010 12:16:08 <46>Oct 22 12:16:07 omeglnx1 -- MARK --.
==== 10/22/2010 12:16:08 <46>Oct 22 12:16:07 omeglnx1 syslog-ng[1301]: Log st
==== 10/22/2010 12:36:08 <46>Oct 22 12:36:07 omeglnx1 -- MARK --.
==== 10/22/2010 12:47:31 <45>Oct 22 13:43:25 hasl114 syslog-ng[1433]: STATS:
==== 10/22/2010 12:56:08 <46>Oct 22 12:56:07 omeglnx1 -- MARK --.
==== 10/22/2010 13:16:08 <46>Oct 22 13:16:07 omeglnx1 -- MARK --.
==== 10/22/2010 13:16:08 <46>Oct 22 13:16:07 omeglnx1 syslog-ng[1301]: Log st
==== 10/22/2010 13:36:08 <46>Oct 22 13:36:07 omeglnx1 -- MARK --.
==== 10/22/2010 13:47:31 <45>Oct 22 14:43:25 hasl114 syslog-ng[1433]: STATS:
==== 10/22/2010 13:56:08 <46>Oct 22 13:56:07 omeglnx1 -- MARK --.
==== 10/22/2010 14:16:08 <46>Oct 22 14:16:07 omeglnx1 -- MARK --.
==== 10/22/2010 14:16:08 <46>Oct 22 14:16:07 omeglnx1 syslog-ng[1301]: Log st
==== 10/22/2010 14:36:08 <46>Oct 22 14:36:07 omeglnx1 -- MARK --.
==== 10/22/2010 14:47:31 <45>Oct 22 15:43:25 hasl114 syslog-ng[1433]: STATS:
==== 10/22/2010 14:56:08 <46>Oct 22 14:56:07 omeglnx1 -- MARK --.
==== 10/22/2010 15:16:08 <46>Oct 22 15:16:07 omeglnx1 -- MARK --.
==== 10/22/2010 15:16:08 <46>Oct 22 15:16:07 omeglnx1 syslog-ng[1301]: Log st
==== 10/22/2010 15:36:08 <46>Oct 22 15:36:07 omeglnx1 -- MARK --.
==== 10/22/2010 15:47:31 <45>Oct 22 16:43:26 hasl114 syslog-ng[1433]: STATS:

```

02/007

Connected to remote server /host 9.39.68.141 using port 23

## Scenario 8: How Do You Do That?

### Console rule and action in Operations Manager:

\*

```
DEFRULE NAME(LXLOG),+  
  MATCH(*critical test message*),+  
  ACTION(LXLOG),+  
  USER(LXSYSLOG)
```

\*

```
DEFACTN NAME(LXLOG),+  
  COMMAND(CP MSG TSTADMN1 Got a critical message '&T' from &U.),+  
  OUTPUT(LOG),+  
  ENV(LVM)
```

## Scenario 8: How Do You Do That?

- **Set up TCP/IP listener for syslog data**

\*

```
DEFTCPA NAME(LNXSYSLG),+  
  TCPUSER(TCPIP),+  
  TCPAPPL(GOMRSYL),+  
  TCPADDR(000.000.000.000),+  
  TCPPORT(00514),+  
  PARM(LXSYSLOG03330417UTF8)
```

\*

```
DEFTCPA NAME(LNXSYSL2),+  
  TCPUSER(TCPIP),+  
  TCPAPPL(GOMRSYL),+  
  TCPADDR(000.000.000.000),+  
  TCPPORT(00515),+  
  PARM(LXSYSLG203330417UTF8)
```

- **Update TCP/IP configuration to allow Operations Manager to listen for UDP traffic on the specified port(s)**

- Ports 514 and 515 used here

- **Update the Linux guest to send its syslog data to the IP address and port of your z/VM system**

## Scenario 9: Create a Central Operations Console on One z/VM System

- **Use Operations Manager to watch for error, warning, fatal messages on service machine consoles**
  - DIRMAINT, TCP/IP, RACF, etc.
  - Linux guests
  - Linux syslog
- **Route these messages to a central operations console**
- **Operations staff watches operations console for signs of trouble**
  - View individual service machine consoles for more details when needed

## Scenario 9: Detailed Steps

- **From an authorized z/VM user ID, put “abend”, “fatal”, and error messages on DIRMAINT console**

```
msgnoh dirmaint this is a test abend message
```

```
msgnoh dirmaint this is a fake fatal message
```

```
msgnoh dirmaint DMSxxxxxxxxxE here is a made-up CMS error msg
```

- **View the “Operations Console” to see the messages**

```
gomcmd opmgrml viewcon user(oper8)
```

- **Note the fatal message is red and abend message is highlighted and will be held when other messages come in**



## Scenario 9: Detailed Steps

- **From another user ID, run an EXEC to send multiple messages to the Operations Console**

```
lotsmsgs
```

- **View the “Operations Console” to see the messages**

```
gomcmd opmgrml viewcon user(oper8)
```

- **Watch the scrolling, held messages, etc.**

The screenshot shows a terminal window titled "Session A - TSTADMIN1 - [32 x 80]". The window contains a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. The main content area displays the following text:

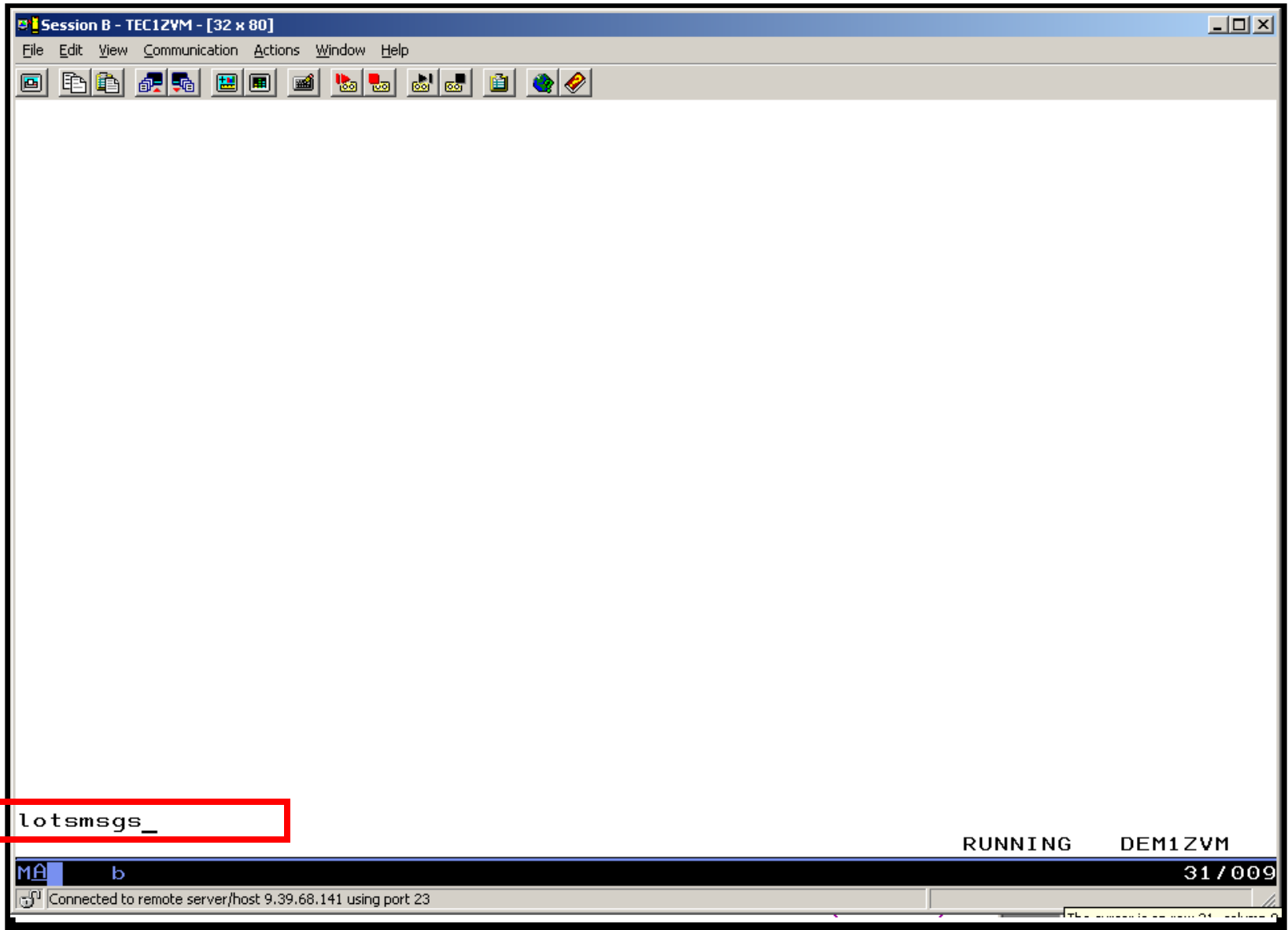
```
msgnoh dirmaint this is a test abend message
Ready; T=0.01/0.01 10:36:23
msgnoh dirmaint this is a fake fatal message
Ready; T=0.01/0.01 10:36:29
msgnoh dirmaint DMSxxxxxxxE here is a made-up CMS error msg
Ready; T=0.01/0.01 10:36:39
```

A red rectangular box highlights this entire block of text. Below this, the terminal shows a command prompt with the following command entered:

```
gomcmd opmgrm1 viewcon user(oper8)
```

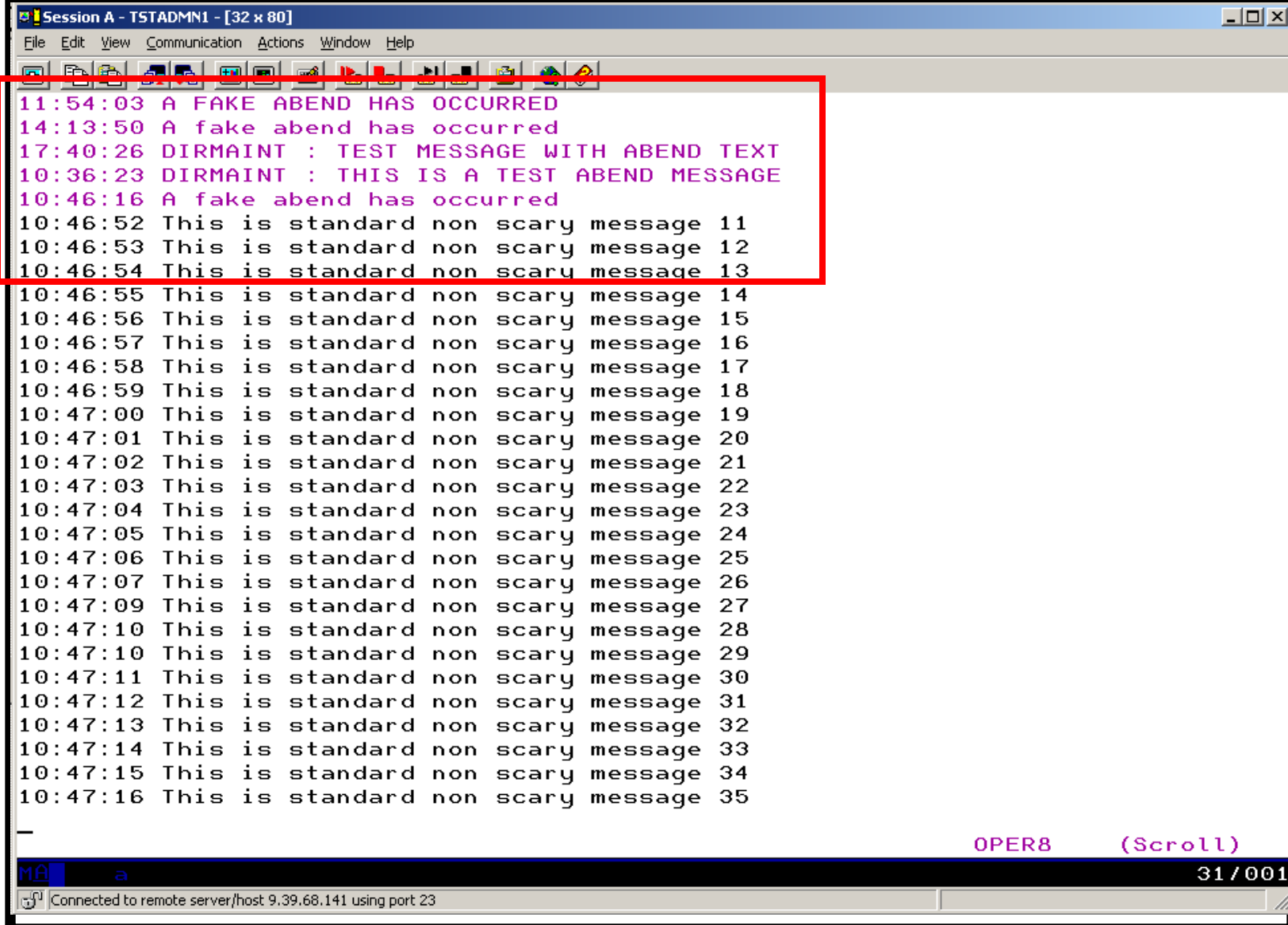
At the bottom of the terminal window, the status bar displays "RUNNING DEM1ZVM" and "31/001". The bottom-most status bar indicates "Connected to remote server/host 9.39.68.141 using port 23".

```
Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
11:54:03 A FAKE ABEND HAS OCCURRED
14:13:50 A fake abend has occurred
14:14:32 This is standard non scary message 17
14:14:33 This is standard non scary message 18
14:14:34 This is standard non scary message 19
14:14:35 This is standard non scary message 20
14:14:36 This is standard non scary message 21
14:14:37 This is standard non scary message 22
14:14:38 This is standard non scary message 23
14:14:39 This is standard non scary message 24
14:14:39 This is standard non scary message 25
14:14:41 This is standard non scary message 26
14:14:42 This is standard non scary message 27
14:14:42 This is standard non scary message 28
14:14:43 This is standard non scary message 29
14:14:44 This is standard non scary message 30
14:14:46 This is standard non scary message 31
14:14:47 This is standard non scary message 32
14:14:48 This is standard non scary message 33
14:14:49 This is standard non scary message 34
14:14:50 This is standard non scary message 35
17:39:47 DIRMAINT : TEST MESSAGE WITH FATAL TEXT
17:40:26 DIRMAINT : TEST MESSAGE WITH ABEND TEXT
00:00:00 HCPMID6001I  TIME IS 00:00:00 CDT FRIDAY 10/02/09
00:00:00
23:59:59 HCPMID6001I  TIME IS 00:00:00 CDT SATURDAY 10/03/09
23:59:59
10:36:23 DIRMAINT : THIS IS A TEST ABEND MESSAGE
10:36:28 DIRMAINT : THIS IS A FAKE FATAL MESSAGE
10:36:39 DIRMAINT : DMSXXXXXXE HERE IS A MADE-UP CMS ERROR MSG
-
OPER8 (Scroll)
MA a 31 / 001
Connected to remote server/host 9.39.68.141 using port 23
```



```

Session A - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
11:54:03 A FAKE ABEND HAS OCCURRED
14:13:50 A fake abend has occurred
17:40:26 DIRMAINT : TEST MESSAGE WITH ABEND TEXT
10:36:23 DIRMAINT : THIS IS A TEST ABEND MESSAGE
10:46:16 A fake abend has occurred
10:46:23 This is standard non scary message 8
10:46:25 This is standard non scary message 9
10:46:26 This is standard non scary message 10
10:46:26 This is standard non scary message 11
10:46:27 This is standard non scary message 12
10:46:28 This is standard non scary message 13
10:46:29 This is standard non scary message 14
10:46:30 This is standard non scary message 15
10:46:31 This is standard non scary message 16
10:46:32 This is standard non scary message 17
10:46:33 This is standard non scary message 18
10:46:34 This is standard non scary message 19
10:46:35 This is standard non scary message 20
10:46:36 This is standard non scary message 21
10:46:37 This is standard non scary message 22
10:46:38 This is standard non scary message 23
10:46:39 This is standard non scary message 24
10:46:40 This is standard non scary message 25
10:46:41 A fake fatal message
10:46:42 This is standard non scary message 1
10:46:43 This is standard non scary message 2
10:46:44 This is standard non scary message 3
10:46:45 This is standard non scary message 4
10:46:47 This is standard non scary message 5
10:46:48 This is standard non scary message 6
-
OPER8 (Scroll)
31/001
Connected to remote server/host 9.39.68.141 using port 23
    
```



```
Session A - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
11:54:03 A FAKE ABEND HAS OCCURRED
14:13:50 A fake abend has occurred
17:40:26 DIRMAINT : TEST MESSAGE WITH ABEND TEXT
10:36:23 DIRMAINT : THIS IS A TEST ABEND MESSAGE
10:46:16 A fake abend has occurred
10:46:52 This is standard non scary message 11
10:46:53 This is standard non scary message 12
10:46:54 This is standard non scary message 13
10:46:55 This is standard non scary message 14
10:46:56 This is standard non scary message 15
10:46:57 This is standard non scary message 16
10:46:58 This is standard non scary message 17
10:46:59 This is standard non scary message 18
10:47:00 This is standard non scary message 19
10:47:01 This is standard non scary message 20
10:47:02 This is standard non scary message 21
10:47:03 This is standard non scary message 22
10:47:04 This is standard non scary message 23
10:47:05 This is standard non scary message 24
10:47:06 This is standard non scary message 25
10:47:07 This is standard non scary message 26
10:47:09 This is standard non scary message 27
10:47:10 This is standard non scary message 28
10:47:10 This is standard non scary message 29
10:47:11 This is standard non scary message 30
10:47:12 This is standard non scary message 31
10:47:13 This is standard non scary message 32
10:47:14 This is standard non scary message 33
10:47:15 This is standard non scary message 34
10:47:16 This is standard non scary message 35
-
OPER8 (Scroll)
MA a 31 / 001
Connected to remote server/host 9.39.68.141 using port 23
```

## Scenario 9: How Do You Do That?

### Console rules in Operations Manager:

```
*
DEFRULE NAME(ABEND),+
  MATCH(*abend*),+
  EXUSER(OPER8),+
  ACTION(MSGOPER8)
*
DEFRULE NAME(FATAL),+
  MATCH(*fatal*),+
  EXUSER(OPER8),+
  ACTION(MSGOPER8)
*
DEFRULE NAME(EMSGS),+
  MATCH(DMS*E),+
  MCOL(001:011),+
  EXUSER(OPER8),+
  ACTION(MSGOPER8)
```

### Action in Operations Manager:

```
*
DEFACTN NAME(MSGOPER8),+
  COMMAND(CP MSGNOH OPER8 &U : &T),+
  OUTPUT(LOG),+
  ENV(LVM)
```

## Scenario 9: How Do You Do That?

### Console rules in Operations Manager:

```
*  
DEFRULE NAME (ABENDHLT) , +  
    MATCH ( *abend* ) , +  
    USER ( OPER8 ) , +  
    ACTION ( HLTHOLD )  
*  
DEFRULE NAME ( FATALRED ) , +  
    MATCH ( *fatal* ) , +  
    USER ( OPER8 ) , +  
    ACTION ( RED )
```

### Actions in Operations Manager:

```
*  
DEFACTN NAME ( HLTHOLD ) , +  
    INPUT ( AHI , HLD )  
*  
DEFACTN NAME ( HILITE ) , +  
    INPUT ( AHI )  
*  
DEFACTN NAME ( RED ) , +  
    INPUT ( CRE )
```

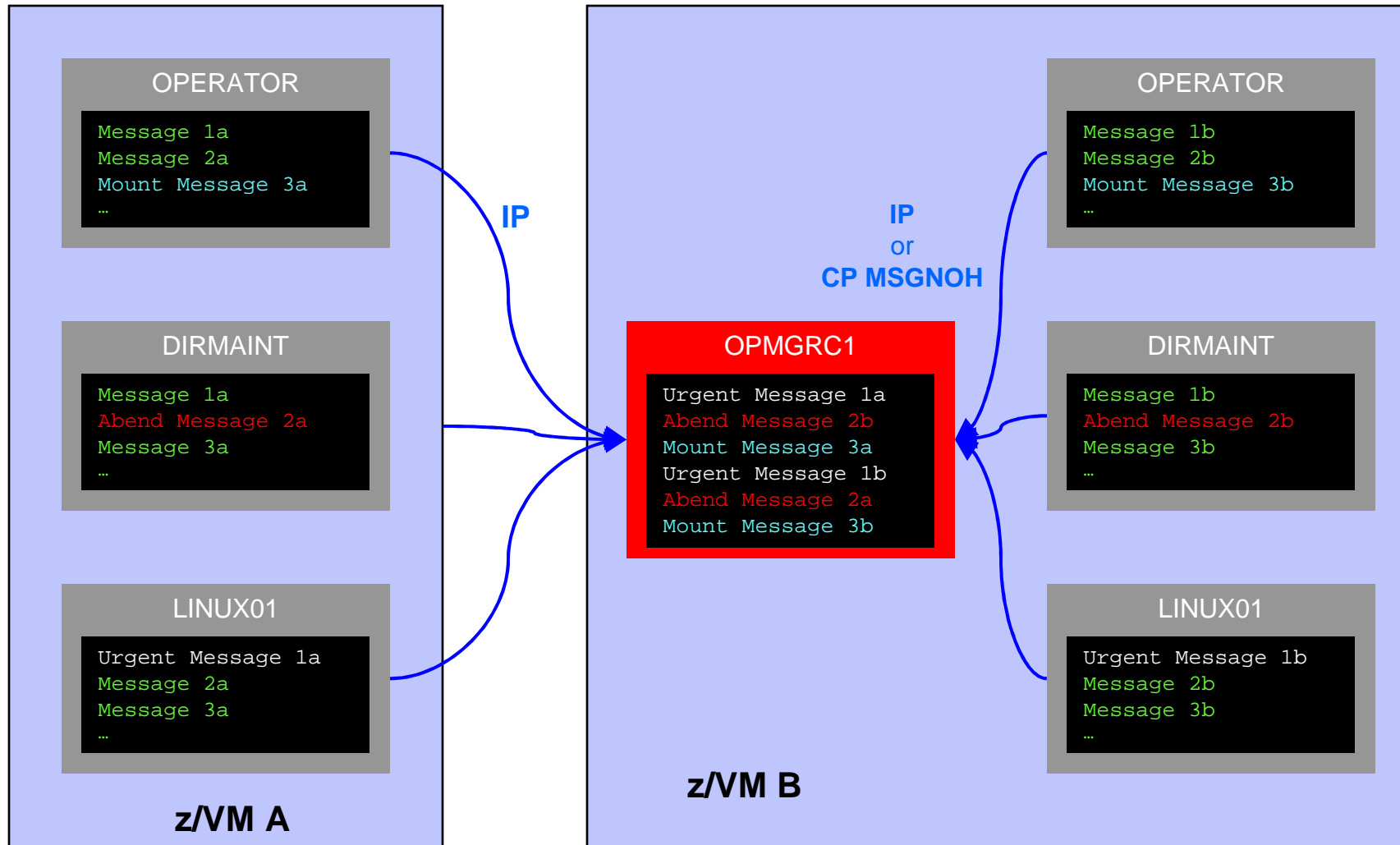


## Scenario 10:

### Create a Central Operations Console across multiple z/VM systems

- **Use Operations Manager to watch for error, warning, fatal messages on service machine consoles on one or more systems**
  - OPERATOR, DIRMAINT, TCP/IP, RACF, etc.
  - Linux guests
  - Linux syslog
- **Route these messages to a central operations console on one of the z/VM system**
- **Operations staff watches one operations console for signs of trouble across multiple z/VM systems**
  - View individual service machine consoles for more details when needed

# Creating a Central Console Across Multiple LPARs



## Scenario 10: Detailed Steps

- **On System A (DEM1ZVM) put an “error” message on the OPERATOR console**
  - Must contain the text “remote error”

```
msgnoh operator here is a remote error message
```

- **View the “Operations Console” (user ID OPMGRC1) on System B (ZVMV5R40) to see the message**

```
gomcmd opmgrml viewcon user(opmgrc1)
```

- **Note the message received on OPMGRC1 on ZVMV5R40 from OPERATOR on DEM1ZVM**

The screenshot shows a terminal window titled "Session C - TSTADMN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
id
TSTADMN1 AT DEM1ZVM VIA RSCS 01/12/11 09:36:12 CST WEDNESDAY
Ready; T=0.01/0.01 09:36:12
```

At the bottom of the terminal, there is a message from 'msgnoh' and the user's status:

```
msgnoh operator here is a remote error message
```

Below the message, the user's status is shown as "RUNNING DEM1ZVM". At the very bottom of the terminal, there is a status bar with "MA c" on the left and "31 / 001" on the right. Below the terminal window, there is a status bar that says "Connected to remote server/host 9.39.68.141 using port 23".

The image shows a terminal window titled "B - DEMOADMN ATS". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal output shows the result of an "id" command, which is highlighted with a red box. The output is: "id DEMOADMN AT ZVMV5R40 VIA RSCS 01/12/11 11:15:16 EDT WEDNESDAY Ready: T=0 01/12/11 11:15:16". At the bottom of the terminal, a command "gomcmd opmgrm1 viewcon user(opmgrc1)\_ " is entered and highlighted with a red box. The status bar at the bottom shows "MA b" on the left, "31/037" on the right, and "Connected to remote server/host 9.82.24.129 using port 23" at the bottom left.

```
B - DEMOADMN ATS
File Edit View Communication Actions Window Help
id
DEMOADMN AT ZVMV5R40 VIA RSCS 01/12/11 11:15:16 EDT WEDNESDAY
Ready: T=0 01/12/11 11:15:16

gomcmd opmgrm1 viewcon user(opmgrc1)_
RUNNING ZVMV5R40
MA b 31/037
Connected to remote server/host 9.82.24.129 using port 23
```

```

B - DEMOADMN ATS
File Edit View Communication Actions Window Help
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT TUESDAY 01/04/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT WEDNESDAY 01/05/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT THURSDAY 01/06/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT FRIDAY 01/07/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT SATURDAY 01/08/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT SUNDAY 01/09/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT MONDAY 01/10/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT TUESDAY 01/11/11
00:00:00
21:56:42 hello there from remote system input
21:56:42 * -- Operations Manager Action TESTEX2  scheduled for execution -- *
21:56:42 hello there from remote system input
21:56:42 * -- Operations Manager Action TESTEX  scheduled for execution -- *
21:56:42 here is another critical system message
21:56:42 warning message to test
21:56:42 junk
21:56:42 noise
00:00:00 HCPMID6001I  TIME IS 00:00:00 EDT WEDNESDAY 01/12/11
00:00:00
10:36:13 FROM DEM1ZVM:  * MSG FROM TSTADMN1: error message on dem1zvm
11:23:21 FROM DEM1ZVM: ERROR MESSAGE ON DEM1ZVM
11:30:20 FROM OPERATOR ON DEM1ZVM: MSGNOH OPERATOR HERE IS A REMOTE ERROR MESSA
11:32:55 FROM OPERATOR ON DEM1ZVM: HERE IS A REMOTE ERROR MESSAGE
-
OPMGRC1 (Scroll)
MA b 31/001
Connected to remote server/host 9.82.24.129 using port 23
    
```

## Scenario 10: How Do You Do That?

### Console rule in Operations Manager on System A:

\*

```
DEFRULE NAME(OPERMSGS),+  
  MATCH(*remote error*),+  
  USER(OPERATOR),+  
  ACTION(MSG2GBRG)
```

### Action in Operations Manager on System A:

\*

```
DEFACTN NAME(MSG2GBRG),+  
  COMMAND(EXEC MSG2OPS OPMGRC1 From &u on DEM1ZVM: &t),+  
  OUTPUT(LOG),+  
  ENV(LVM)
```

## Scenario 10: How Do You Do That?

### MSG2OPS EXEC on System A:

```
/* Send a message to a console in Ops Mgr on another system */
/* */
trace r
Address Command
Parse arg cons_user msgtext
'PIPE var msgtext | > TEMP NOTE A'
'EXEC GOMRSIF TEMP NOTE A 9.82.24.129 63000' cons_user
Exit
```

Central Console (OPMGRC1)

```
graph TD
    A[IP address of System B] --> B[Central Console (OPMGRC1)]
    B --> C[9.82.24.129 63000]
```

IP address of System B



## Scenario 10: How Do You Do That?

### **TCP/IP listener definition in Operations Manager on System B:**

\*

```
DEFTCPA NAME( TESTDATA ), +  
  TCPUSER( TCPIP ), +  
  TCPAPPL( GOMRSIF ), +  
  TCPADDR( 000.000.000.000 ), +  
  TCPPORT( 63000 )
```

- **May also need to update TCP/IP on System B to allow Operations Manager to listen on port 63000**
- **Can alternatively use TELL (instead of GOMRSIF) to send messages from System A to System B, but requires RSCS**

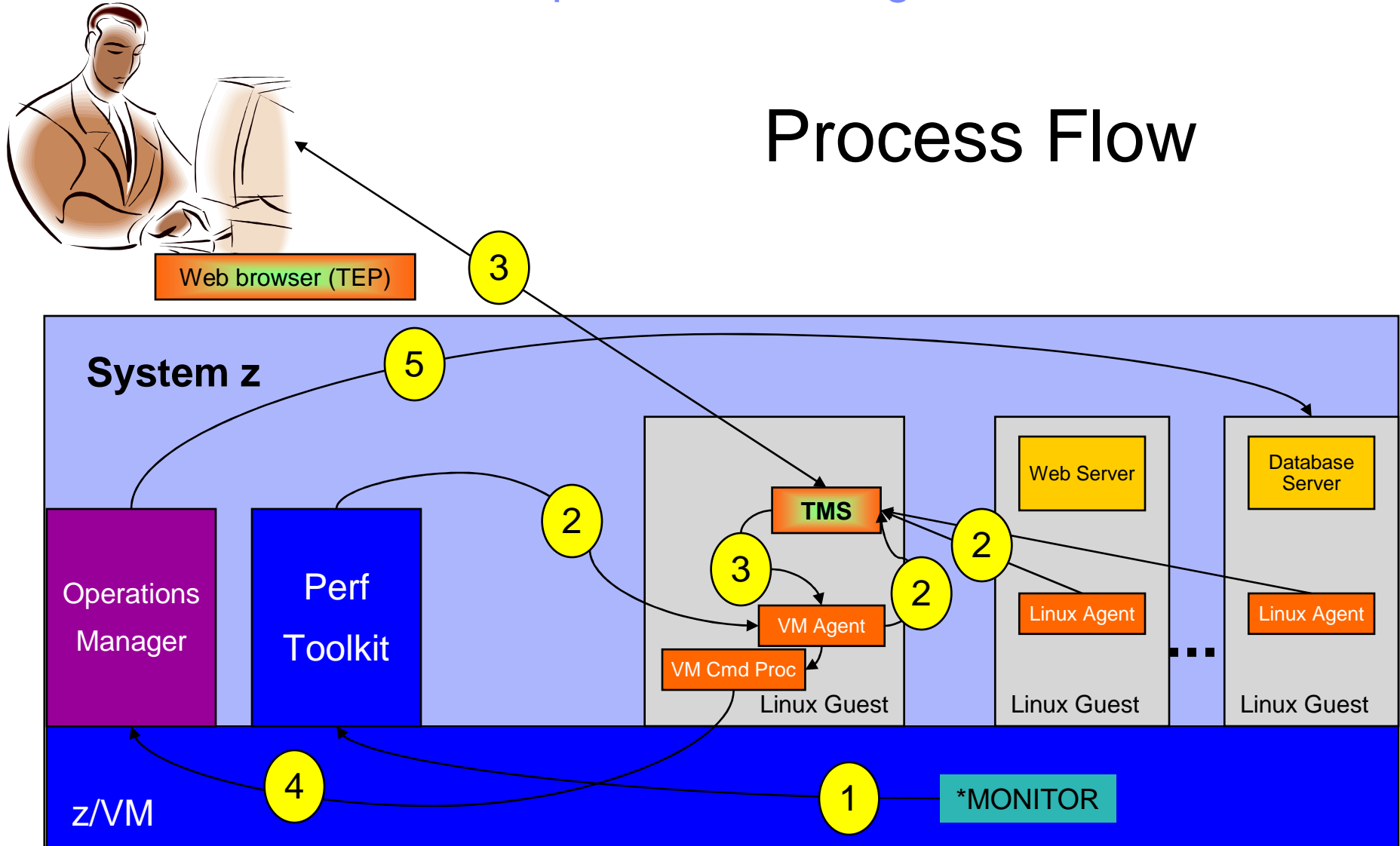
## Scenario 11

### Integration with OMEGAMON XE on z/VM and Linux

- **Use Operations Manager to take action based on a triggered situation in OMEGAMON XE on z/VM and Linux**
- **Virtual CPU consumption is high for a Linux guest**
- **OMEGAMON detects the situation, creates an event, and sends message to Operations Manager**
- **Action is triggered by a rule in Operations Manager**
- **Operations Manager checks SHARE status of guest and issues CP commands to tune the guest**
  - SET QUICKDSP
  - SET SHARE
- **Event is resolved in OMEGAMON when virtual CPU consumption of guest is back down**

# OMEGAMON XE and Operations Manager for z/VM

## Process Flow



## Scenario 11: Detailed Steps

- **Create and start an application on a Linux guest that uses more than 20% of virtual CPU**
  - HOG command on our demo system
- **Updates to Tivoli Enterprise Portal**
  - z/VM CPU graph shows guest CPU % as it runs the application
  - Event pops up on situation event console to say higher than 20%
- **Use Operations Manager to watch z/VM user console used by OMEGAMON**
  - Message receive from OMEGAMON to address high CPU on the guest
  - Message from Operations Manager indicating action is triggered
- **Updates on Tivoli Enterprise Portal**
  - CPU used by that guest decreases below 20%
  - Event closed (removed from the event console)

The screenshot displays the IBM Tivoli Performance Viewer interface with the following components:

- Top Panel:**
  - Navigation:** Shows a tree view of system components including High CPU, Linux Systems, z/OS Systems, and z/VM Systems.
  - has1107:LZ Process View from Linux Agent:** A bar chart showing CPU usage for various processes. The y-axis lists processes like mingetty, cms, xinetd, kauditd, klogd, kjournald, pdflush, ksoftirqd/0, and zmd. The x-axis represents Linux Virtual CPU % from 0 to 100. A legend indicates 'Process Busy CPU (Percent)'.
  - Situation Event Console:** A table with columns for Severity, Status, Owner, Situation Name, and Dis.
- Bottom Panel:**
  - z/VM CPU Percent View from Performance Toolkit:** A line graph showing 'has1107:LZ Real CPU %' over time. The y-axis ranges from 8 to 40, and the x-axis shows time from 13:56:30 to 14:07:00. The graph shows a sharp peak around 13:57:00.
  - Terminal:** Displays system configuration output for user SLES1107, showing absolute shares for various processes (e.g., CP, ZAAP, IFL, ZIIP) set to 100%.
- Status Bar:**
  - Hub Time: Fri, 03/12/2010 05:53 PM
  - Server Available
  - HighCPU - hasle330.wsclab.washington.ibm.com - ats03

The screenshot displays the IBM Tivoli Monitoring console interface. The main window shows a tree view of systems under 'High CPU' and a 'z/VM CPU Percent View from Performance Tool' graph. A 'Take Action' dialog box is open, showing the following details:

- Action Name:** HIGH CPU - hog command
- Command:** /atsshare/unixload/linux/hog -t 32000
- Destination Systems:**
  - BOSPA.ESMTS105:LZ
  - BOSPA.ESMTS117:LZ
  - BOSPA.ESMTS118:LZ
  - hasl102:LZ
  - hasl103:LZ
  - hasl107:LZ
  - hasl108:LZ
  - hasl112:LZ
  - hasle310:LZ
  - hasle312:LZ
  - hasle325:LZ
  - hasle328:LZ
  - hasle330:LZ

The background shows a graph of CPU usage over time, with a peak around 13:57:30. The 'Situation Event Console' on the right displays system status information, including absolute shares for various components like ZIIP, CP, ZAAP, IFL, and ICF.

The screenshot displays the IBM Tivoli Monitoring console for a system named 'HighCPU - hasle330.wsclab.washington.ibm.com - ats03'. The interface is divided into several panes:

- Navigation Tree (Left):** Shows a hierarchy of systems including 'High CPU', 'Linux Systems', 'z/OS Systems', and 'z/VM Systems'. The selected system is 'has1107.LZ' under 'z/VM Linux Sy'.
- Process View (Top Center):** A 3D bar chart titled 'has1107.LZ Process View from Linux Agent'. The Y-axis lists processes: 'date', 'khelper', 'gdm', 'syslog-ng', 'pdf flush', and 'hog'. The X-axis is 'Linux Virtual CPU %' (0-100). A legend indicates 'Process Busy CPU (Percent)'. The 'hog' process shows a significant spike in CPU usage.
- Situation Event Console (Top Right):** A table showing system events. One event is highlighted:
 

Severity	Status	Owner	Situation Name	Dis
Critical	Open		Demo_CPU_high	
- z/VM CPU Percent View (Bottom Left):** A 2D line chart titled 'z/VM CPU Percent View from Performance Toolkit'. The Y-axis is 'CPU %' (0-40) and the X-axis is 'Time' (14:00:00 to 14:50:00). A blue line shows 'has1107.LZ Real CPU %' which starts at ~16%, drops to ~8% at 14:05:00, and then gradually increases to ~18% by 14:50:00.
- Terminal (Bottom Right):** A terminal window showing system logs for user 'SLES107'. The logs include:
 

```

03/12/2010 17:52:00          MAXIMUM SHARE = LIMIT HARD AB
03/12/2010 17:52:00 USER SLES107: CP  ABSOLUTE SHARE = 100%
03/12/2010 17:52:00          MAXIMUM SHARE = NO LIMIT
03/12/2010 17:52:00          ZAAP ABSOLUTE SHARE = 100%
03/12/2010 17:52:00          MAXIMUM SHARE = NO LIMIT
03/12/2010 17:52:00          IPL ABSOLUTE SHARE = 100%
03/12/2010 17:52:00          MAXIMUM SHARE = NO LIMIT
03/12/2010 17:52:00          ICF ABSOLUTE SHARE = 100%
03/12/2010 17:52:00          MAXIMUM SHARE = NO LIMIT
03/12/2010 17:52:00          ZIIP ABSOLUTE SHARE = 100%
03/12/2010 17:52:00          MAXIMUM SHARE = NO LIMIT
03/12/2010 17:52:00 +-----+
03/12/2010 17:52:00 |The absolute share of 100% has been reset for SLE
03/12/2010 17:52:00 +-----+
03/12/2010 17:52:00 Ready: T=0.01/0.01 17:52:00
03/12/2010 17:56:31 * MSG FROM OMEGACMD: GUEST SLES107 NEEDS CPU PRI
03/12/2010 17:56:31 * -- Operations Manager Action GUSTCPUB scheduled
            
```

At the bottom of the console, there are status indicators: 'Hub Time: Fri, 03/12/2010 05:56 PM', 'Server Available', and the system name 'HighCPU - hasle330.wsclab.washington.ibm.com - ats03'.

The screenshot displays the IBM Tivoli Monitoring console interface. The main window is titled "HighCPU - hasle330.wsclab.washington.ibm.com - ats03". It features a navigation pane on the left showing a tree structure of systems, including "High CPU", "Linux Systems", "z/OS Systems", and "z/VM Systems". The central pane shows a "has1107:LZ Process View from Linux Agent" with a bar chart titled "Process Busy CPU (Percent)". The x-axis is labeled "Linux Virtual CPU %" and ranges from 0 to 100. The y-axis lists processes: hog, pdflush, syslog-ng, gdm, khelper, and date. The "hog" process shows a significant spike in CPU usage. To the right, the "Situation Event Console" displays a table with the following data:

Severity	Status	Owner	Situation Name	Dis
Critical	Open		Demo_CPU_high	

Below the main view, there is a "z/VM CPU Percent View from Performance Toolkit" window showing a line graph of "has1107:LZ Real CPU %" over time. The x-axis is labeled "Time" and ranges from 14:00:00 to 14:55:00. The y-axis ranges from 0 to 40. The graph shows a steady increase in CPU usage, with a sharp spike reaching approximately 38% at 14:55:00. To the right of this graph is a "Terminal" window displaying system logs:

```

17:52:00 +-----+
17:52:00 Ready; T=0.01/0.01 17:52:00
17:56:31 * MSG FROM OMEGACMD: GUEST SLES107 NEEDS CPU PRIORITY
17:56:31 * -- Operations Manager Action GUSTCPUB scheduled for executi
17:58:08 * -- Operations Manager VIEWCON session from ATS01 entered
17:58:08 q share sles107
17:58:08 USER SLES107: CP ABSOLUTE SHARE = 5%
17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
17:58:08 ZAAP ABSOLUTE SHARE = 5%
17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
17:58:08 IFL ABSOLUTE SHARE = 5%
17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
17:58:08 ICF ABSOLUTE SHARE = 5%
17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
17:58:08 ZIIP ABSOLUTE SHARE = 5%
17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
17:58:08 Ready; T=0.01/0.01 17:58:09
    
```

At the bottom of the console, there are status indicators: "Hub Time: Fri, 03/12/2010 05:57 PM", "Server Available", and the window title "HighCPU - hasle330.wsclab.washington.ibm.com - ats03".



The screenshot displays the IBM Performance Toolkit interface for monitoring a z/VM Linux system. It is divided into several panes:

- Navigation Pane (Left):** Shows a tree view of system components including High CPU, Linux Systems, z/OS Systems, z/VM Systems, and various z/VM Linux System components like Channel, CP Owne, DASD, LPAR, and Network.
- has107:LZ Process View from Linux Agent (Top Center):** A bar chart showing the CPU usage of various processes. The y-axis lists processes like mingetty, cms, xinetd, kaudtd, klogd, kjournald, pdflush, ksoftirqd/0, and zmd. The x-axis represents Linux Virtual CPU % from 0 to 100. A legend indicates 'Process Busy CPU (Percent)'.
- Situation Event Console (Top Right):** A table with columns for Severity, Status, Owner, Situation Name, and Dis.
- z/VM CPU Percent View from Performance Toolkit (Bottom Left):** A line graph showing the real CPU usage of 'has107:LZ Real CPU %' over time. The y-axis ranges from 8 to 40, and the x-axis shows time from 14:05:00 to 14:56:00. The usage starts around 16%, drops to 8%, and then gradually increases to about 18% before a sharp spike to over 36% at 14:56:00.
- Terminal (Bottom Right):** Shows system logs and configuration details for user SLES107. Key messages include:
  - 17:52:00 Ready; T=0.01/0.01 17:52:00
  - 17:56:31 \* MSG FROM OMEGACMD: GUEST SLES107 NEEDS CPU PRIORITY
  - 17:56:31 \* -- Operations Manager Action GUSTCPUB scheduled for executi
  - 17:58:08 \* -- Operations Manager VIEWCON session from ATS01 entered
  - 17:58:08 q share sles107
  - 17:58:08 USER SLES107: CP ABSOLUTE SHARE = 5%
  - 17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
  - 17:58:08 ZAAP ABSOLUTE SHARE = 5%
  - 17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
  - 17:58:08 IFL ABSOLUTE SHARE = 5%
  - 17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
  - 17:58:08 ICF ABSOLUTE SHARE = 5%
  - 17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
  - 17:58:08 ZIIP ABSOLUTE SHARE = 5%
  - 17:58:08 MAXIMUM SHARE = LIMITHARD ABSOLUTE 5%
  - 17:58:08 Ready; T=0.01/0.01 17:58:09

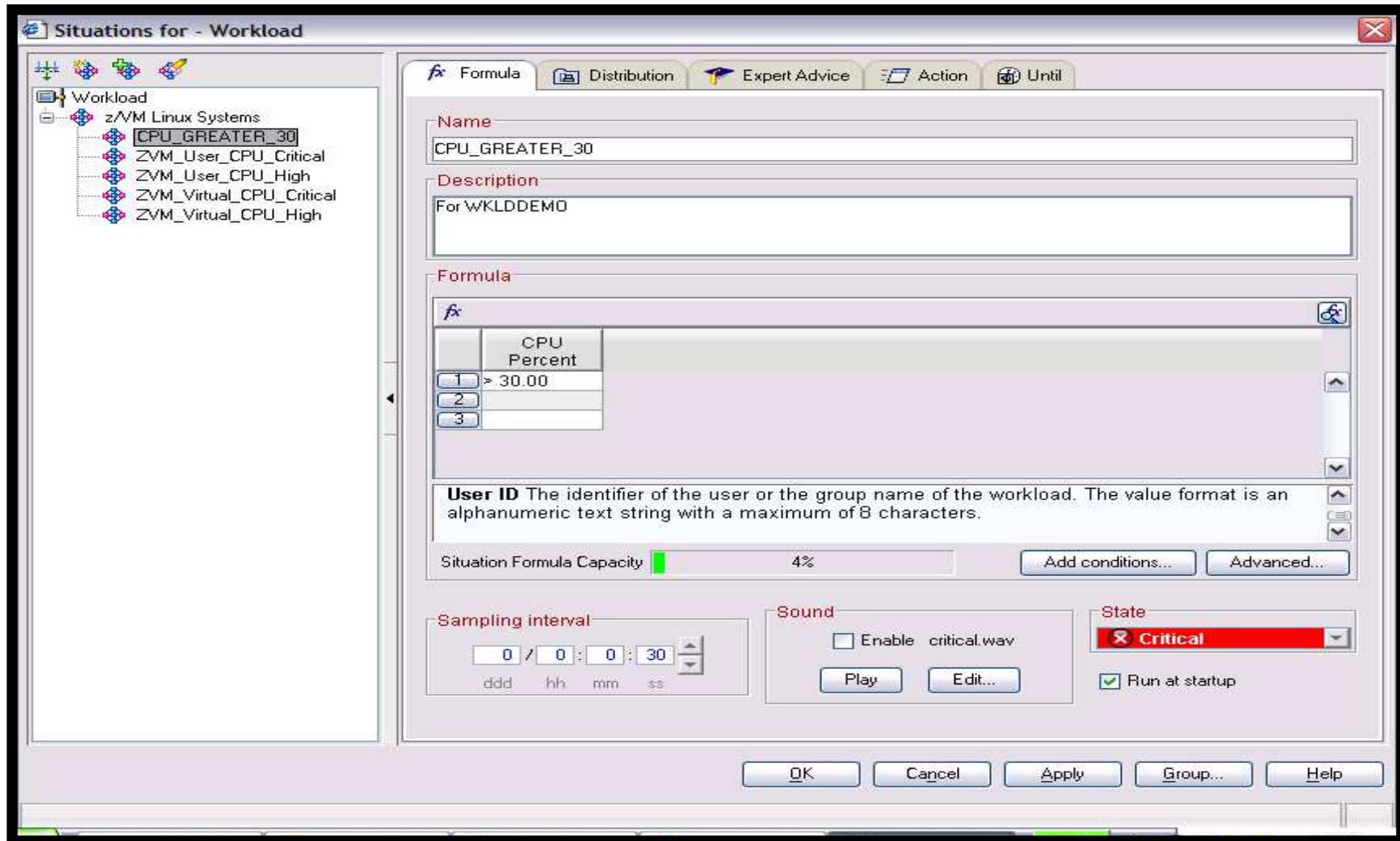
At the bottom of the interface, there are status indicators: 'Hub Time: Fri, 03/12/2010 05:59 PM', 'Server Available', and the connection path 'HighCPU - hasle330.wsclab.washington.ibm.com - ats03'.

## Scenario 11: How Do You Do That?

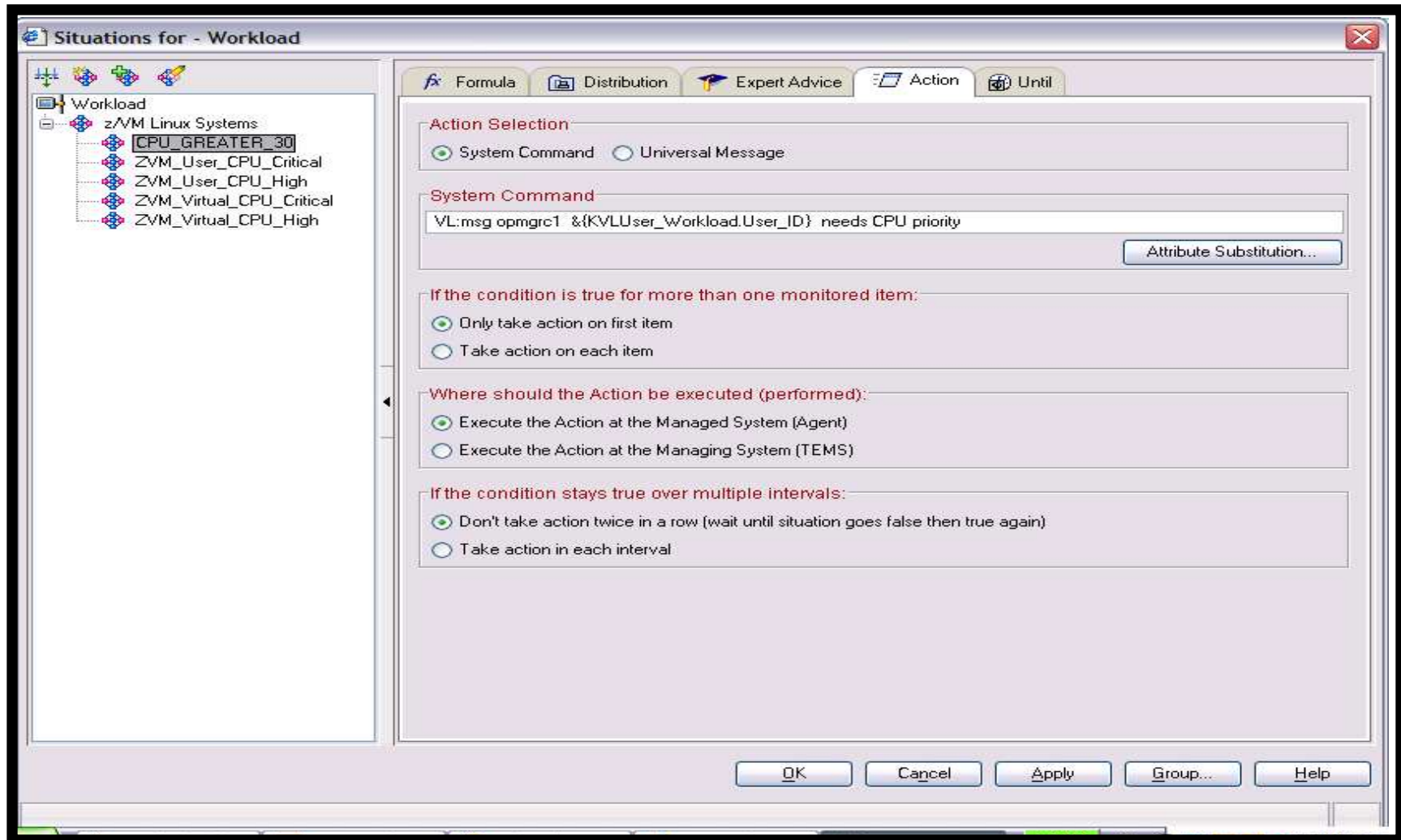
### Rules in Operations Manager:

```
*  
* Adjust SHARE of Linux guest if CPU usage is too high  
* Watch for message from OMEGAMON  
DEFRULE NAME(GUSTCPU),+  
  MATCH(*NEEDS CPU PRIORITY*),+  
  ACTION(GUESTCPU)  
  
*  
* Highlight message from OMEGAMON and call EXEC to check and adjust  
* SHARE of Linux guest  
DEFACTN NAME(GUESTCPU),+  
  INPUT(AHI),+  
  NEXTACTN(GUSTCPUB)  
  
*  
DEFACTN NAME(GUSTCPUB),+  
  COMMAND(EXEC VCPU &4),+  
  ENV(LVM),+  
  OUTPUT(LOG)
```

# Scenario 11: Detailed Steps OMEGAMON Configuration



# Scenario 11: Detailed Steps OMEGAMON Configuration



## Scenario 12:

### Monitor Service Machines for LOGOFF Status – and AUTOLOG them

- **Monitor specific service machines to make sure they stay logged on**
  - Demo will monitor TSTADMN2 user ID
  - If it changes from logged on to logged off status, then restart it
- **Dynamically pass the user ID to the action**
  - Re-use action for multiple user IDs

```
Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Ready; T=0.01/0.01 15:59:31

GOMCMD OPMGRM1 VIEWCON USER(tstadm2)_

RUNNING DEM1ZVM
MA a 31 / 038
Connected to remote server /host 9.39.68.141 using port 23
```

```
Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
11:57:57 z/VM V5.4.0      2009-09-23 15:29
11:57:57 DMSACP723I C (198) R/O
11:57:57 Ready; T=0.01/0.01 11:57:57
11:58:08 CONNECT= 00:00:10 VIRTCPU= 000:00.00 TOTCPU= 000:00.00
11:58:08 LOGOFF AT 11:58:08 CST TUESDAY 03/01/11 BY MAINT
11:58:12 z/VM V5.4.0      2009-09-23 15:29
11:58:12 DMSACP723I C (198) R/O
11:58:12 Ready; T=0.01/0.01 11:58:12
11:59:35 * -- Operations Manager VIEWCON session from TSTADMN1 entered the foll
11:59:35 id
11:59:35 TSTADMN2 AT DEM1ZVM  VIA RSCS      03/01/11 11:59:35 CST      TUESDAY
11:59:35 Ready; T=0.01/0.01 11:59:35
00:00:00 HCPMID6001I  TIME IS 00:00:00 CST WEDNESDAY 03/02/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 CST THURSDAY 03/03/11
00:00:00
TSTADMN2 (Scroll)
31 / 001
Connected to remote server /host 9.39.68.141 using port 23
```

```

Session B - MAINT on TEC1ZVM - [32 x 80]
File Edit View Communication Actions Window Help
id
MAINT AT DEM1ZVM VIA RSCS 03/03/11 16:02:56 CST THURSDAY
Ready; T=0.01/0.01 16:02:56
q tstadm2
TSTADMN2 - DSC
Ready; T=0.01/0.01 16:04:05
force tstadm2
USER DSC LOGOFF AS TSTADMN2 USERS = 32 FORCED BY MAINT
Ready; T=0.01/0.01 16:04:10
q tstadm2
TSTADMN2 - DSC
Ready; T=0.01/0.01 16:04:18

RUNNING DEM1ZVM
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
    
```



```
Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
11:57:57 z/VM V5.4.0      2009-09-23 15:29
11:57:57 DMSACP723I C (198) R/O
11:57:57 Ready; T=0.01/0.01 11:57:57
11:58:08 CONNECT= 00:00:10 VIRTCPU= 000:00.00 TOTCPU= 000:00.00
11:58:08 LOGOFF AT 11:58:08 CST TUESDAY 03/01/11 BY MAINT
11:58:12 z/VM V5.4.0      2009-09-23 15:29
11:58:12 DMSACP723I C (198) R/O
11:58:12 Ready; T=0.01/0.01 11:58:12
11:59:35 * -- Operations Manager VIEWCON session from TSTADMN1 entered the foll
11:59:35 id
11:59:35 TSTADMN2 AT DEM1ZVM  VIA RSCS      03/01/11 11:59:35 CST      TUESDAY
11:59:35 Ready; T=0.01/0.01 11:59:35
00:00:00 HCPMID6001I  TIME IS 00:00:00 CST WEDNESDAY 03/02/11
00:00:00
00:00:00 HCPMID6001I  TIME IS 00:00:00 CST THURSDAY 03/03/11
00:00:00
16:04:10 CONNECT= 52:05:57 VIRTCPU= 000:00.00 TOTCPU= 000:00.00
16:04:10 LOGOFF AT 16:04:10 CST THURSDAY 03/03/11 BY MAINT
16:04:13 z/VM V5.4.0      2009-09-23 15:29
16:04:13 DMSACP723I C (198) R/O
16:04:13 Ready; T=0.01/0.01 16:04:13

TSTADMN2 (Scroll)
31 / 001
Connected to remote server /host 9.39.68.141 using port 23
```

## Scenario 12: How Do You Do That?

### Console rule and action in Operations Manager:

\*

```
DEFEMON NAME(ADMIN2) , +  
  TYPE(1) , +  
  USER(TSTADMN2) , +  
  ACTION(AUTOLOG1)
```

\*

```
DEFACTN NAME(AUTOLOG1) , +  
  COMMAND(CP SLEEP 3 SEC) , +  
  NEXTACTN(AUTOLOG2) , +  
  OUTPUT(LOG) , +  
  ENV(OPMGRS1)
```

\*

```
DEFACTN NAME(AUTOLOG2) , +  
  COMMAND(CP XAUTOLOG &3) , +  
  OUTPUT(LOG) , +  
  ENV(OPMGRS1)
```



IBM Software

# Backup and Recovery Scenarios *Including Automation*

## Scenario 13: Performing an Incremental Backup

- **Administrator previously performed a full backup**
- **Incremental job defined, using last full backup as its base**
- **Change a file on user's A-disk**
- **Submit incremental job for review**
- **Submit incremental job for backup processing**
- **Use Operations Manager to monitor backup servers**

## Scenario 13: Detailed Steps

- **From a z/VM user ID, change a file**

```
xedit b b a
```

- **From an authorized z/VM user ID, submit a backup job for review**

```
smsg bkrbkup review increm01
```

- **Review the resulting files in the reader (LINKFAIL and JOB files)**

- **From an authorized z/VM user ID, submit a backup job for backup processing**

```
smsg bkrbkup submit increm01
```

- **View the console of the backup servers to see the processing**

```
gomcmd opmgrml viewcon user(backup)
```

```

Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
B B A1 V 80 Trunc=80 Size=42 Line=29 Col=1 Alt=2
====>
00029 Change made at 15:53pm eastern time April 19, 2008
00030 Change made at 14:44 cet May 5, 2008
00031 Change made at 08:45 pt July 3, 2008
00032 Change made at 08:56am pt July 11, 2008
00033 Change made at 11:04am pt July 15, 2008
00034 Change made at 10:16am pt August 4, 2008
00035 Change made at 08:10am pt Sept 11, 2008
00036 Change made at 09:12am pt Sept 18, 2008
00037 Change made at 2:00pm pt Oct 23, 2008
00038 Change made at 16:27pm Brasil Nov 11, 2008
00039 Change made at 11:31am et Dec 9, 2008
00040 Change made at 11:00am et Dec 20, 2008
00041 Change made at 15:45 ct Jan 14, 2009
00042 Change made at 12:45 pt Mar 3, 2009
00043 * * * End of File * * *
MA a 02/007
Connected to remote server/host 9.39.68.141 using port 23
    
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
smsg bkrbkup review increm01
Ready: T=0 01/0 01 14:48:54
BKRBAK8529I Processing REVIEW INCREM01 command for TSTADMN1.
RDR FILE 0050 SENT FROM BKRBKUP PUN WAS 0007 RECS 0006 CPY 001 A NOHOLD NOKEEP
RDR FILE 0051 SENT FROM BKRBKUP PUN WAS 0008 RECS 0081 CPY 001 A NOHOLD NOKEEP
RDR FILE 0052 SENT FROM BKRBKUP PUN WAS 0009 RECS 0082 CPY 001 A NOHOLD NOKEEP
File INCREM01 LINKFAIL D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
BKRMAK9102W 2 minidisks were selected by INCLUDE/EXCLUDE processing but could
not be CP LINKed.
BKRMAK8559I INCLUDE / EXCLUDE processing for job INCREM01 selected 149 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job INCREM01 has been set to 2.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespace will be filtered with path mask "*".
BKRMAK8583I Sending results to TSTADMN1 for review.
File INCREM00 JOB D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
File INCREM01 JOB D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
Return code "8" from command REVIEW INCREM01 at 03/03/09 14:48:58.

RUNNING DEM1ZVM
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

Session B - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

Cmd	Filename	Filetype	Class	User	at Node	Hold	Records	Date	Time
-	INCREM01	LINKFAIL	PUN A	BKRBKUP	DEM1ZVM	NONE	6	3/03	14:48:58
-	INCREM00	JOB	PUN A	BKRBKUP	DEM1ZVM	NONE	81	3/03	14:48:58
-	INCREM01	JOB	PUN A	BKRBKUP	DEM1ZVM	NONE	82	3/03	14:48:58

1= Help      2= Refresh      3= Quit      4= Sort(type)      5= Sort(date)      6= Sort(user)  
 7= Backward      8= Forward      9= Receive      10=      11= Peek      12= Cursor

====>

X E D I T 1 File

MA b 03/001

Connected to remote server/host 9.39.68.141 using port 23



The screenshot shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window contains the following text:

```
0050      PEEK      A0  V 87  Trunc=87 Size=2 Line=0 Col=1 Alt=0
File INCREM01 LINKFAIL from BKRKBUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
DATAMOVE 05F0      108 "HCPLNM108E DATAMOVE 05F0 not linked; void $$$$$$ not m
ounted"
DATAMOVE 05FF      108 "HCPLNM108E DATAMOVE 05FF not linked; void $$$$$$ not m
ounted"
*** End of File ***

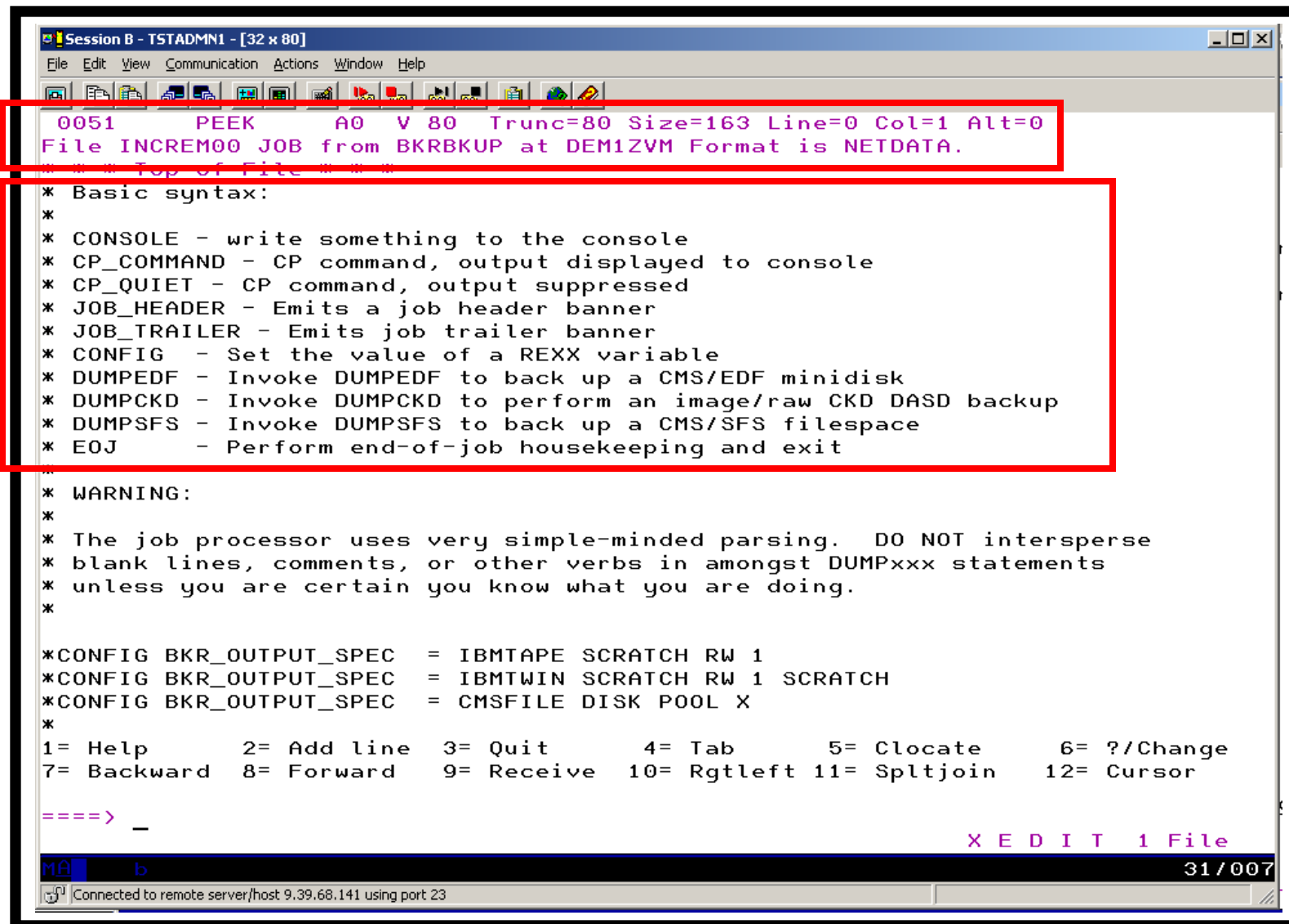
1= Help      2= Add line  3= Quit    4= Tab     5= Clocate   6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _

X E D I T  1 File

MA  b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

Two red boxes highlight the first two lines of the output. The first box highlights the PEEK command output, and the second box highlights the two DATAMOVE error messages.



```
Session B - TSTADMNI - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=0 Col=1 Alt=0
File INCREM00 JOB from BKR BKUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
* Basic syntax:
*
* CONSOLE - write something to the console
* CP_COMMAND - CP command, output displayed to console
* CP_QUIET - CP command, output suppressed
* JOB_HEADER - Emits a job header banner
* JOB_TRAILER - Emits job trailer banner
* CONFIG - Set the value of a REXX variable
* DUMPEDF - Invoke DUMPEDF to back up a CMS/EDF minidisk
* DUMPCKD - Invoke DUMPCKD to perform an image/raw CKD DASD backup
* DUMPSFS - Invoke DUMPSFS to back up a CMS/SFS filespace
* EOJ - Perform end-of-job housekeeping and exit
*
* WARNING:
*
* The job processor uses very simple-minded parsing. DO NOT intersperse
* blank lines, comments, or other verbs in amongst DUMPxxx statements
* unless you are certain you know what you are doing.
*
*CONFIG BKR_OUTPUT_SPEC = IBMTAPE SCRATCH RW 1
*CONFIG BKR_OUTPUT_SPEC = IBMTWIN SCRATCH RW 1 SCRATCH
*CONFIG BKR_OUTPUT_SPEC = CMSFILE DISK POOL X
*
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate  6= ?/Change
7= Backward  8= Forward   9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0 V 80 Trunc=80 Size=163 Line=32 Col=1 Alt=0
File INCREM00 JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
CONFIG BKR_OUTPUT_SPEC = CMSFILE INCREM01 DISKPOOL *
* Next two lines override default system tape pool set in BKRSYSTEM CONFIG
* CONFIG BKR_JOB_EUM_POOL_OWNER = xxxxxxxxx
* CONFIG BKR_JOB_EUM_POOL_NAME = xxxxxxxxx
CP_COMMAND TERM MORE 50 10
CP_COMMAND TERM HOLD ON
CP_COMMAND SPOOL CONSOLE TO BKRADMIN CLASS T TERM START NAME INCREM01 20090303
CP_COMMAND TERM LINES 255
CONFIG BKR_JOB_WORKERS = 2
CONFIG BKR_JOB_NAME     = INCREM01
CONFIG BKR_JOB_INSTANCE = $$INST$$
CONFIG BKR_JOB_OWNER    = BKRADMIN
CONFIG BKR_JOB_MASTER   = BKRBKUP
CONFIG BKR_JOB_TOKEN    = 20090303
CONFIG BKR_JOB_CMS_FILEMASK = * * *
CONFIG BKR_JOB_SFS_PATHMASK = *
CONFIG BKR_JOB_BACKUP_RESERVED_AS_IMAGE = NO
CONFIG BKR_JOB_SUPPRESS_IMAGE = YES
CONFIG BKR_JOB_CATALOG = Y
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate   6= ?/Change
7= Backward  8= Forward   9= Receive 10= Rgtright 11= Spltjoin 12= Cursor
====> _
X E D I T 1 File
31/007
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=76 Col=1 Alt=0
File INCREM00 JOB from BKR BKUP at DEM1ZVM Format is NETDATA.
JOB HEADER
DUMPCKD $ALLOC$ 0A02 $$$DRIVER$$$
DUMPCKD $DIRECT$ 0A04 $$$DRIVER$$$
DUMPCKD AMVADMIN 0191 $$$DRIVER$$$
DUMPEDF AMVWRK01 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPCKD AMVWRK03 0191 $$$DRIVER$$$
DUMPEDF ARCHLOGS 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF AUTOLOG1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF AVSVM 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF BKR BKUP 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF BKRCATLG 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF BKRWRK02 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPCKD BKRWRK04 0191 $$$DRIVER$$$
DUMPEDF BLDNUC 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF BLDSEG 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF CFCONSOL 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF CNTRLCON 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DATAMOVE 01AA $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DATAMOVE 02AA $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DIRMAINT 01AA $$$FMASK$$$ $$$DRIVER$$$
DUMPCKD DIRMAINT 01DE $$$DRIVER$$$
DUMPEDF DIRMAINT 0155 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DIRMAINT 01DB $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DIRMAINT 02DB $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF DIRMSAT 0155 $$$FMASK$$$ $$$DRIVER$$$
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate      6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin   12= Cursor
====> _
X E D I T  1 File
MA  b 31/007
Connected to remote server/host 9.39.68.141 using port 23
    
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=139 Col=1 Alt=0
File INCREM00 JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
DUMPCKD TMTMM 0210 $$$DRIVER$$
DUMPEDF TSTADMIN1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTADMIN3 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTUSER1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTUSER3 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF VMKERB 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF VMRMADMN 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF X25IPI 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 02B2 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 02A6 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 0100 $$$FMASK$$$ $$$DRIVER$$$
CONSOLE *** Could not LINK DATAMOVE 05F0 during INCLUDE/EXCLUDE; skipped.
JOB_TRAILER

* Retain catalog content for 30 days from date of job completion...
CONFIG BKR_CATALOG_RETENTION = 30
CP_COMMAND QUERY TIME
CONSOLE *
CONSOLE * INCREM01 INCREMENTAL BACKUP GENERATED 06/18/2007
CONSOLE * JOB IMAGE GENERATED 03/03/09 14:48:58
CONSOLE *

CP_QUIET SPOOL CONSOLE CLOSE NAME INCREM01 20090303
CP_QUIET SPOOL CONSOLE NAME WORKER OUTPUT
EOJ
1= Help      2= Add line  3= Quit    4= Tab      5= Locate   6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23

```

The screenshot shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window contains the following text:

```
Ready; T=0.02/0.02 15:13:28
smsg bkrbkup submit increm01
Ready; T=0.01/0.01 15:13:36
BKRBAK8532I Processing SUBMIT INCREM01 command for TSTADMIN1 at 03/03/09 15:13:
36.
RDR FILE 0053 SENT FROM BKRBKUP PUN WAS 0011 RECS 0006 CPY 001 A NOHOLD NOKEEP
File INCREM01 LINKFAIL D1 sent to BKRADMIN at DEM1ZVM on 03/03/09 15:13:36
File INCREM01 LINKFAIL D1 sent to TSTADMIN1 at DEM1ZVM on 03/03/09 15:13:37
BKRMMAK9102W 2 minidisks were selected by INCLUDE/EXCLUDE processing but could
not be CP LINKed.
BKRMMAK8559I INCLUDE / EXCLUDE processing for job INCREM01 selected 149 objects
BKRMMAK8559I for backup processing.
BKRMMAK8563I Worker count for job INCREM01 has been set to 2.
BKRMMAK8570I Instance number 00000055 has been assigned for job INCREM01.
BKRMMAK8568I CMS files will be filtered against file mask "* * *".
BKRMMAK8566I SFS filespace will be filtered with path mask "*".
BKRMMAK8584I Sending INCREM00 JOB D to worker task BKRWRK01.
File INCREM00 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03/03/09 15:13:37
BKRMMAK8584I Sending INCREM01 JOB D to worker task BKRWRK02.
File INCREM01 JOB D1 sent to BKRWRK02 at DEM1ZVM on 03/03/09 15:13:37
Return code "0" from command SUBMIT INCREM01 at 03/03/09 15:13:37.
```

At the bottom of the terminal, the status "RUNNING DEM1ZVM" is displayed, along with a cursor and the text "31/001". The status bar at the very bottom indicates "Connected to remote server/host 9.39.68.141 using port 23".

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 BKRRVB9014I Job completed at 15:13:55 on 03/03/09.
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "QUERY TIME"
15:13:54 BKRWRK02 TIME IS 15:13:55 CST TUESDAY 03/03/09
15:13:54 BKRWRK02 CONNECT= 00:00:17 VIRTCPU= 000:00.42 TOTCPU= 000:00.56
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 *
15:13:54 BKRWRK02 * INCREM01 INCREMENTAL BACKUP GENERATED 06/18/2007
15:13:54 BKRWRK02 * JOB IMAGE GENERATED 03/03/09 15:13:37
15:13:54 BKRCATLG RDR FILE 0134 SENT FROM BKRWRK01 PUN WAS 0066 RECS 0013 CPY
15:13:54 BKRWRK02 *
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "SPOOL CONSOLE CLOSE NAME IN
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "SPOOL CONSOLE NAME WORKER 0
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 *****
15:13:54 BKRWRK02 *** End-of-Job Summary:
15:13:54 BKRWRK02 ***
15:13:54 BKRWRK02 *** Start time: 03/03/09 15:13:41
15:13:54 BKRWRK02 *** Ended time: 03/03/09 15:13:55
15:13:54 BKRWRK02 ***
15:13:54 BKRWRK02 *** DUMPCKD tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** DUMPFBA tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** DUMPEDF tasks, Max RC: 67, 4
15:13:54 BKRWRK02 *** DUMPSFS tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** RESTORE tasks, Max RC: 0, 0
15:13:54 BKRWRK02 ***
15:13:54 BKRCATLG 0000001 FILE PURGED
-
BACKUP
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

## Scenario 14: Restoring Files from Backup

- **Full and incremental backups performed previously**
- **User accidentally erases or corrupts a file**
- **User restores the file from backup**
  - Full screen interface to see all files available in backup
    - Including multiple “versions” of the same file
  - Filters and sorting available to easily find the needed file
  - Request restore directly to disk or to reader
- **No administrator intervention required**



## Scenario 14: Detailed Steps

- **From a z/VM user ID, view all catalog data you own**  
`bkrlist`
- **Use the filters to find the file you want to restore**
- **Put the cursor on the file and hit F10**
- **Specify the user ID to whom the file should be sent and hit F10**
- **Look at the reader of that user ID to see the restored file and a copy of the console during the restore processing**

`rdrlist`

- **View the contents of the file to verify it's the correct version**

`peek`

Session A - TSTUSER1 - [32 x 80]

File Edit View Communication Actions Window Help

Files for owner(s): \*

Selection: Name: \* Type: \* Mode: \* 48 of 48 shown  
 Current filters: Name: \* Type: \* Mode: \* Owner: \*

Owner	Filename	Filetype	Fm	Date	Time	Device or Path
TSTUSER1	A	A	1	08/11/07	12:18:04	0191
TSTUSER1	A	AX	1	06/09/20	18:21:58	0191
TSTUSER1	ABC	XEDIT	1	06/09/19	02:24:28	0191
TSTUSER1	AMV1004	VMARC	1	06/09/16	03:29:28	0191
TSTUSER1	B	B	1	08/11/07	18:52:40	0191
TSTUSER1	BAAAAA	XEDIT	1	06/09/16	03:40:47	0191
TSTUSER1	BBBBBB	XEDIT	1	06/09/16	03:40:37	0191
TSTUSER1	BCCCCC	XEDIT	1	06/09/16	03:41:01	0191
TSTUSER1	BDDDDD	XEDIT	1	06/09/16	03:41:34	0191
TSTUSER1	BEEEEEE	XEDIT	1	06/09/16	03:41:38	0191
TSTUSER1	BFFFFFF	XEDIT	1	06/09/16	03:41:43	0191
TSTUSER1	BGGGGG	XEDIT	1	06/09/16	03:41:49	0191
TSTUSER1	BHHHHH	XEDIT	1	06/09/16	03:41:59	0191
TSTUSER1	BIIIII	XEDIT	1	06/09/16	03:42:03	0191
TSTUSER1	BJJJJJ	XEDIT	1	06/09/16	03:42:10	0191
TSTUSER1	BKKKKK	XEDIT	1	06/09/16	03:42:25	0191
TSTUSER1	BLLLLL	XEDIT	1	06/09/16	03:42:30	0191
TSTUSER1	C	C	1	08/04/19	17:24:35	0191
TSTUSER1	CLAUDE	CLAUDE	1	08/11/07	18:26:04	0191
TSTUSER1	CLAUDE1	CLAUDE1	1	07/01/04	14:55:00	0191
TSTUSER1	D	D	1	06/09/16	03:50:32	0191
TSTUSER1	DCREQS	HTML	1	06/09/16	03:39:26	0191
TSTUSER1	DEF	XEDIT	1	06/09/19	02:24:28	0191

1= Help                    3= Quit                    4= Return                5= Sort Up  
 6= Sort Down        7= Backward              8= Forward              10= Restore             11= Details

MA a 03/025

Connected to remote server/host 9.39.68.141 using port 23

Session A - TSTUSER1 - [32 x 80]

File Edit View Communication Actions Window Help

Selection: Name: \* Type: \* Mode: \* 18 of 48 shown  
 Current filters: Name: B\* Type: \* Mode: \* Owner: \*

Owner	Filename	Filetype	Fm	Date	Time	Device or Path
TSTUSER1	B	B	1	09/03/03	14:47:52	0191
TSTUSER1	BJJJJJ	XEDIT	1	09/02/18	10:40:42	0191
TSTUSER1	B	B	1	09/01/14	15:45:10	0191
TSTUSER1	B	B	1	08/12/30	11:08:27	0191
TSTUSER1	B	B	1	08/12/09	10:30:25	0191
TSTUSER1	B	B	1	08/11/07	18:52:40	0191
TSTUSER1	BLLLLL	XEDIT	1	06/09/16	03:42:30	0191
TSTUSER1	BKKKKK	XEDIT	1	06/09/16	03:42:25	0191
TSTUSER1	BJJJJJ	XEDIT	1	06/09/16	03:42:10	0191
TSTUSER1	BIIIII	XEDIT	1	06/09/16	03:42:03	0191
TSTUSER1	BHHHHH	XEDIT	1	06/09/16	03:41:59	0191
TSTUSER1	BGGGGG	XEDIT	1	06/09/16	03:41:49	0191
TSTUSER1	BFFFFFF	XEDIT	1	06/09/16	03:41:43	0191
TSTUSER1	BEEEEEE	XEDIT	1	06/09/16	03:41:38	0191
TSTUSER1	BDDDDD	XEDIT	1	06/09/16	03:41:34	0191
TSTUSER1	BCCCCC	XEDIT	1	06/09/16	03:41:01	0191
TSTUSER1	BAAAAA	XEDIT	1	06/09/16	03:40:47	0191
TSTUSER1	BBBBBB	XEDIT	1	06/09/16	03:40:37	0191

1= Help                      3= Quit                      4= Return                  5= Sort Up  
 6= Sort Down              7= Backward              8= Forward              10= Restore              11= Details

MA a 08/032

Connected to remote server/host 9.39.68.141 using port 23

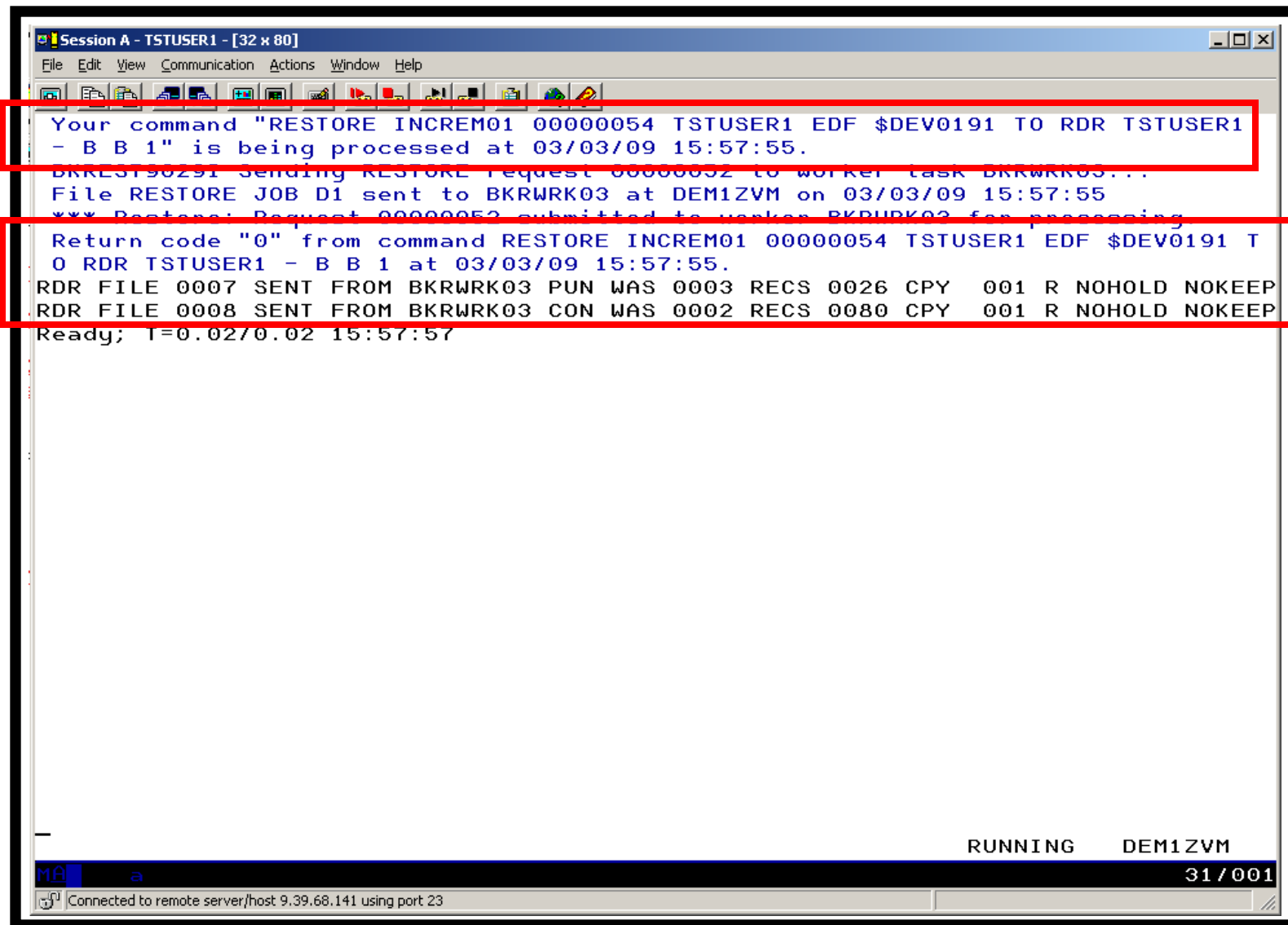
```
Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
CMS EDF Minidisk Restore Specifications
From TSTUSER1 0191 date 09/01/14 time 15:45:10 (job INCREM01 00000054 ).
To EDF minidisk, userid:          and virtual address:
Or to RDR of userid: tstuser1_node:          (defaults to this node).
Or to SFS filepool:          and filespace:
and path:

File filters:  Filename: B          Filetype: B          mode number: 1

Master backup userid: BKRKBUP

3= Quit          4= Return          10= Restore

MA a 07/030
Connected to remote server/host 9.39.68.141 using port 23
```



```
Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help

Your command "RESTORE INCREM01 00000054 TSTUSER1 EDF $DEV0191 TO RDR TSTUSER1
- B B 1" is being processed at 03/03/09 15:57:55.
BKRWRK03 Sending RESTORE request 00000054 to worker task BKRWRK03...
File RESTORE JOB D1 sent to BKRWRK03 at DEM1ZVM on 03/03/09 15:57:55
*** Request: Request 00000054 submitted to worker BKRWRK03 for processing

Return code "0" from command RESTORE INCREM01 00000054 TSTUSER1 EDF $DEV0191 T
O RDR TSTUSER1 - B B 1 at 03/03/09 15:57:55.
RDR FILE 0007 SENT FROM BKRWRK03 PUN WAS 0003 RECS 0026 CPY 001 R NOHOLD NOKEEP
RDR FILE 0008 SENT FROM BKRWRK03 CON WAS 0002 RECS 0080 CPY 001 R NOHOLD NOKEEP
Ready; T=0.0270.02 15:57:57

RUNNING DEM1ZVM
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

Session A - TSTUSER1 - [32 x 80]

File Edit View Communication Actions Window Help

TSTUSER1: DDPLIST - 00 - V 164 - Trans=164 - Size=0 - Line=1 - Col=1 - Alt=28

Cmd	Filename	Filetype	Class	User	at Node	Hold	Records	Date	Time
-	RESTORE	00000052	CON R	BKRWRK03	DEM1ZVM	NONE	80	3/03	15:57:55
	B	B	PUN R	BKRWRK03	DEM1ZVM	NONE	26	3/03	15:57:56

1= Help      2= Refresh      3= Quit      4= Sort(type)    5= Sort(date)    6= Sort(user)  
 7= Backward    8= Forward      9= Receive    10=              11= Peek        12= Cursor

====>

X E D I T   1 File

MA a 03/001

Connected to remote server/host 9.39.68.141 using port 23

```

Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
0007 PEEK A0 V 80 Trunc=80 Size=41 Line=24 Col=1 Alt=0
File B B from *BACKUP* at DEM1ZVM Format is NETDATA.
Change made at 11:37am central time Sept 17, 2007
Change made at 12:31am eastern time Sept 25, 2007
Change made at 2:06pm mountain standard time Oct 9, 2007
Change made at 11:14am pacific time March 3, 2008
Change made at 9:20am central time March 4, 2008
Change made at 15:53pm eastern time April 19, 2008
Change made at 14:44 cet May 5, 2008
Change made at 08:45 pt July 3, 2008
Change made at 08:56am pt July 11, 2008
Change made at 11:04am pt July 15, 2008
Change made at 10:16am pt August 4, 2008
Change made at 08:10am pt Sept 11, 2008
Change made at 09:12am pt Sept 18, 2008
Change made at 2:00pm pt Oct 23, 2008
Change made at 16:27pm Brasil Nov 11, 2008
Change made at 11:01am ct Dec 9, 2008
Change made at 11:09am ct Dec 30, 2008
Change made at 15:45 ct Jan 14, 2009
*** End of File ***

1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA a 31/007
Connected to remote server/host 9.39.68.141 using port 23
    
```

## Scenario 15: Scheduling Image Backups of Linux Guests

- **Initiated or scheduled by Operations Manager**
  - Schedule defined in Operations Manager to initiate backups at specific times/intervals
  - Action associated with each schedule
    - Linux guest is shut down
    - Operations Manager watches for shutdown complete
    - Sends request to Backup and Restore Manager to back up the specific DASD/minidisks associated with the guest
      - Alternatively use FLASHCOPY to copy DASD, restart guest, then perform backup of copy of DASD.
    - Operations Manager watches for backup complete message
    - Restarts Linux guest
  - Guest is down for minimum time required for backup



## Scenario 15: Detailed Steps

- **Define a schedule to start the automated backup process**

```
gomcmd opmgrm1 defschd name(demo),action(stoplxx),when(now)
```

- **View the Operations Manager log to see the schedule trigger**

```
gomcmd opmgrm1 viewlog
```

- **View the console of the Linux guest to see it shut down**

```
gomcmd opmgrm1 viewcon user(omeglxx1)
```

- **View the console of the backup server to see the backup start**

```
gomcmd opmgrm1 viewcon user(bkrbkup)
```

- **Find the worker that has been assigned and view its console**

```
gomcmd opmgrm1 viewcon user(bkrwrkxx)
```

- **View the console of the Linux guest to see it restart**

```
gomcmd opmgrm1 viewcon user(omeglxx1)
```

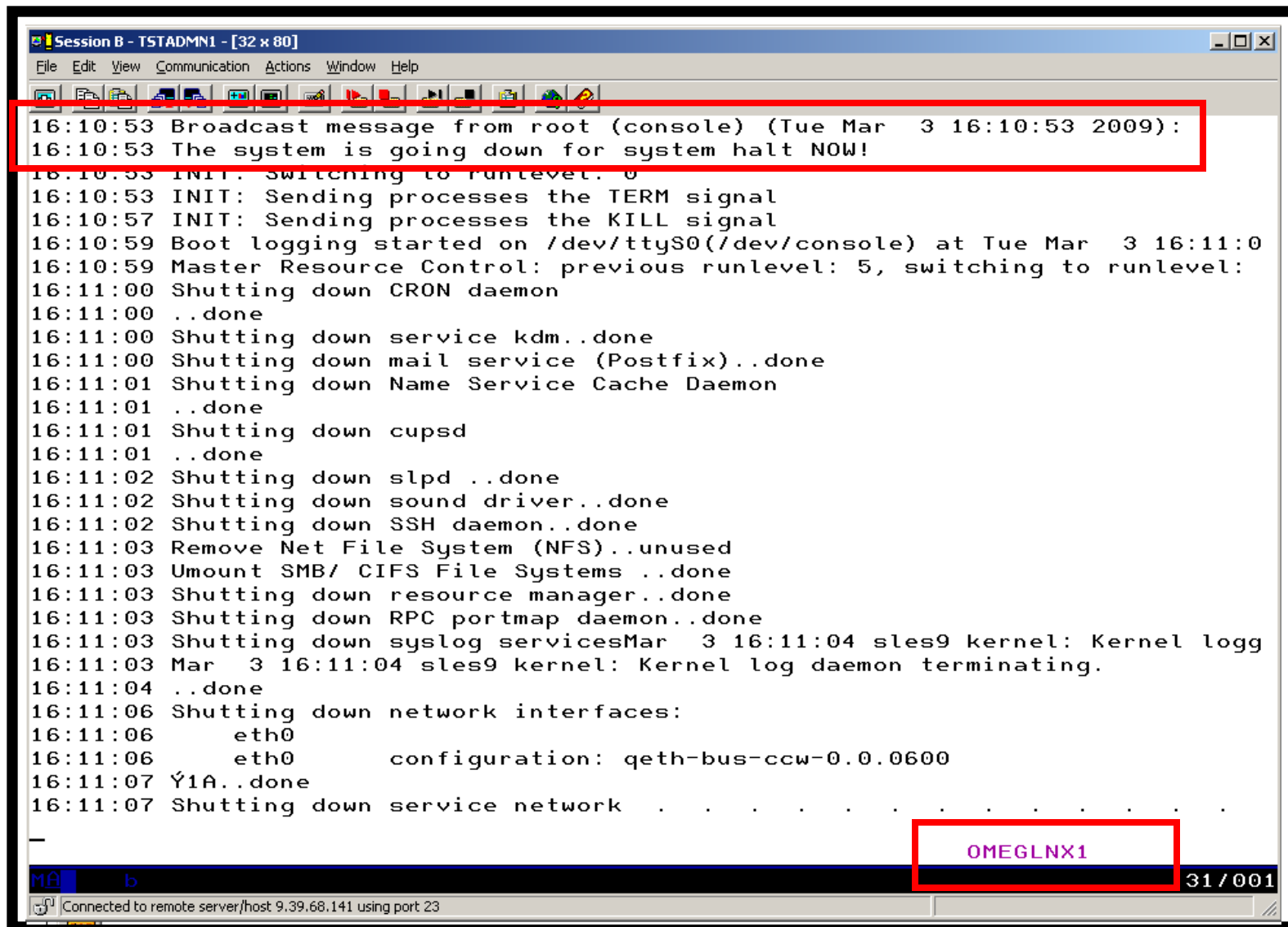
- **View the backup catalog to see the completed job**

```
bkrjob
```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
03/03/2009 16:10:31 GOMCMD0201L "TSTADMN1 DEFSCHD NAME(DEMO),ACTION(STOPLNX),W
03/03/2009 16:10:44 GOMCMD0201L "TSTADMN1 VIEWLOG" VID=TSTADMN1 SRC=MASIUCV C
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNX TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNX BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "RESUME RULE(LNXDOWN)"
03/03/2009 16:10:53 GOMCMD0201L "OPMGRM1 RESUME RULE(LNXDOWN)" VID=OPMGRM1 S
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNX END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNXA TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNXA BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "CP SET SECUSER OMEGLNX1 OPMGRM1"
03/03/2009 16:10:53 GOMACT0270L HCPCFX6768I SECUSER of OMEGLNX1 initiated.
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNXA END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNXB TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNXB BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "CP SIGNAL SHUTDOWN OMEGLNX1 WITHIN 90
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNXB END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMCMD0216L "OMEGLNX1 Broadcast message from root (console
03/03/2009 16:10:53 GOMCMD0216L "OMEGLNX1 The system is going down for system
03/03/2009 16:10:54 GOMCMD0216L "OMEGLNX1 INIT: Switching to runlevel: 0" VID=
03/03/2009 16:10:54 GOMCMD0216L "OMEGLNX1 INIT: Sending processes the TERM sig
03/03/2009 16:10:58 GOMCMD0216L "OMEGLNX1 INIT: Sending processes the KILL sig
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Boot logging started on /dev/ttyS0(/
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Master Resource Control: previous ru
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Shutting down CRON daemon" VID=*MSG
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 ..done" VID=*MSG SRC=MASIUCV CL
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down service kdm..done" VID
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down mail service (Postfix)
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down Name Service Cache Dae
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 ..done" VID=*MSG SRC=MASIUCV CL
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down cupsd" VID=*MSG SR
MASALOG
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23

```



```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:10:53 Broadcast message from root (console) (Tue Mar 3 16:10:53 2009):
16:10:53 The system is going down for system halt NOW!
16:10:53 INIT: Switching to runlevel: 0
16:10:53 INIT: Sending processes the TERM signal
16:10:57 INIT: Sending processes the KILL signal
16:10:59 Boot logging started on /dev/ttyS0(/dev/console) at Tue Mar 3 16:11:0
16:10:59 Master Resource Control: previous runlevel: 5, switching to runlevel:
16:11:00 Shutting down CRON daemon
16:11:00 ..done
16:11:00 Shutting down service kdm..done
16:11:00 Shutting down mail service (Postfix)..done
16:11:01 Shutting down Name Service Cache Daemon
16:11:01 ..done
16:11:01 Shutting down cupsd
16:11:01 ..done
16:11:02 Shutting down slpd ..done
16:11:02 Shutting down sound driver..done
16:11:02 Shutting down SSH daemon..done
16:11:03 Remove Net File System (NFS)..unused
16:11:03 Umount SMB/ CIFS File Systems ..done
16:11:03 Shutting down resource manager..done
16:11:03 Shutting down RPC portmap daemon..done
16:11:03 Shutting down syslog servicesMar 3 16:11:04 sles9 kernel: Kernel logg
16:11:03 Mar 3 16:11:04 sles9 kernel: Kernel log daemon terminating.
16:11:04 ..done
16:11:06 Shutting down network interfaces:
16:11:06 eth0
16:11:06 eth0 configuration: qeth-bus-ccw-0.0.0600
16:11:07 Y1A..done
16:11:07 Shutting down service network . . . . .
-
MA b
OMEGLNX1
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session A - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
17:51:18 type=1505 audit(1282776678.910:456): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.910:457): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.910:458): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.910:459): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.910:460): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.940:461): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.940:462): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.940:463): operation="profile_remove" name=""
17:51:18 type=1505 audit(1282776678.940:464): operation="profile_remove" name=""
17:51:19 type=1505 audit(1282776678.950:465): operation="profile_remove" name=""
17:51:19 Unloading AppArmor profiles ..done
17:51:19 Turning off quota
17:51:19 ..done
17:51:19 Turning off swap files
17:51:19 Unmounting file systems
17:51:19 ..done..done
17:51:19 Stopping udevd: ..done
17:51:19 ..done
17:51:19 Sending all processes the TERM signal...
17:51:19 ..done
17:51:19 Sending all processes the KILL signal...
17:51:19 ..done
17:51:19 Please stand by while rebooting the system...
17:51:19 md: stopping all md devices.
17:51:29 Restarting system.
17:51:29 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
17:51:29 * -- Operations Manager Action LNXBKUP1 scheduled for execution -- *
17:51:29 CONNECT 20:52:00 VIRT0PU 001:00:00 TST0PU 001:10:29
17:51:29 LOGOFF AT 17:51:29 CDT WEDNESDAY 08/25/10 AFTER SIGNAL
17:51:30 z/VM V5.4.0 2009-09-23 15:29
-
OMEGLNX1
31/001
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:22 ***
16:11:22 *MSG OPMGRM1 SUBMIT BKUPLNX1
16:11:22 BKRBAK8515I Queued command #1: "*MSG OPMGRM1 SUBMIT BKUPLNX1"
16:11:22 BKRBAK8532I Processing SUBMIT BKUPLNX1 command for OPMGRM1 at 03/03/09
16:11:22 BKRBAK8532I Processing SUBMIT BKUPLNX1 command for OPMGRM1 at 03/03/09
16:11:22 AUTO LOGON *** BKRWRK01 USERS = 18
16:11:22 HCPCLS6056I XAUTOLOG information for BKRWRK01: The IPL command is veri
16:11:22 Output line 1 : BKRMAK8559I INCLUDE / EXCLUDE processing for job BKUPL
16:11:22 ed 1 objects
16:11:22 BKRMAK8559I INCLUDE / EXCLUDE processing for job BKUPLNX1 selected 1 o
16:11:22 Output line 2 : BKRMAK8559I for backup processing.
16:11:22 BKRMAK8559I for backup processing.
16:11:22 Output line 3 : BKRMAK8563I Worker count for job BKUPLNX1 has been set
16:11:22 BKRMAK8563I Worker count for job BKUPLNX1 has been set to 1.
16:11:22 Output line 4 : BKRMAK8570I Instance number 00000073 has been assigned
16:11:22 KUPLNX1.
16:11:22 BKRMAK8570I Instance number 00000073 has been assigned for job BKUPLNX
16:11:22 Output line 5 : BKRMAK8568I CMS files will be filtered against file ma
16:11:22 .
16:11:22 BKRMAK8568I CMS files will be filtered against file mask "* * *".
16:11:22 Output line 6 : BKRMAK8566I SFS filespaces will be filtered with path
16:11:22 BKRMAK8566I SFS filespaces will be filtered with path mask "*".
16:11:22 Output line 7 : BKRMAK8584I Sending BKUPLNX1 JOB D to worker task BKR
16:11:22 BKRMAK8584I Sending BKUPLNX1 JOB D to worker task BKRWRK01.
16:11:22 Output line 8 : File BKUPLNX1 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03
16:11:22 11:23
16:11:22 File BKUPLNX1 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03/03/09 16:11:23
16:11:22 Return code "0" from command SUBMIT BKUPLNX1 at 03/03/09 16:11:23.
16:11:23 BKRBAK8510I 03/03/09 16:11:23 WAKEUP exited on a VMCF interrupt.
-
BKRBAKUP
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
-----
16:11:23
16:11:23 BKRRVB9011I Job name: BKUPLNX1, instance identifier 00000073 starting
16:11:23 BKRRVB9011I Job owner: BKRADMIN
16:11:23 BKRRVB9011I Master backup server: BKBBKUP; worker virtual machine BKBU
16:11:23 BKRRVB9011I Job token value is 20090303.
16:11:23 BKRRVB9012I Catalog content creation is ENABLED.
16:11:23 BKRRVB9012I Catalog content will be delivered to backup catalog server
16:11:23 BKRRVB9012I Temporary catalog granule data will be generated in CMS fi
16:11:23
16:11:23 -----
16:11:23 -----
16:11:23
16:11:23 BKRRVB9161I Scanning DISKPOOL "LNXBKUP DISKPOOL" for a volume with at
16:11:23 BKRRVB9162I DISKPOOL volume AMVCATLG 333 has 23968 4K blocks free.
16:11:23 BKRRVB9163I Continuing backup with output to AMVCATLG 333
16:11:31 OMEGLNX1 0191 RR EDF 4096 0X1191 00009000 00003977 00000050 00000050
16:11:31
16:11:31 -----
16:11:31
16:11:31 BKRRVB9014I Job completed at 16:11:31 on 03/03/09.
16:11:31 BKRRVB9005I Executing CP command "QUERY TIME"
16:11:31 TIME IS 16:11:31 CST TUESDAY 03/03/09
16:11:31 CONNECT= 00:00:08 VIRTCPU= 000:00.05 TOTCPU= 000:00.10
16:11:31 BKRRVB9006I CP return code 0
16:11:31 *
16:11:31 * BACKUP COMPLETE - OMEGLNX1 LINUX GUEST
16:11:31 * -- Operations Manager Action STRTLNXB scheduled for execution -- *
16:11:31 * -- Operations Manager Action STRTLNXC scheduled for execution -- *
-----
BKRWRK01
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session A - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
17:51:29 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
17:51:29 * -- Operations Manager Action LNXBKUP1 scheduled for execution -- *
17:51:29 CONNECT= 26:52:36 VIRTCPU= 001:06.93 TOTCPU= 001:13.29
17:51:29 LOGOFF AT 17:51:29 CDT WEDNESDAY 08/25/10 AFTER SIGNAL
17:51:30 z/VM V5.4.0 2009 09 23 15:29
17:51:30 DMS00T002E File SYN SYNONYM * not found
17:51:30 STORAGE = 508M
17:51:30 Storage Configuration:
17:51:30 0.96M 100M.412M
17:51:30 Extent Specification Address Range
17:51:30 -----
17:51:30 0.96M 000000000000000000 - 0000000005FFFFFF
17:51:30 100M.412M 00000000006400000 - 0000000001FFFFFF
17:51:30 Storage cleared - system reset.
17:51:30 zIPL v1.8.0 interactive boot menu
17:51:30 0. default (LinuxV2)
17:51:30 1. LinuxV2
17:51:30 2. ipl
17:51:30 Note: VM users please use '#cp vi vmsg <number> <kernel-parameters>'
17:51:30 Please choose (default will boot in 10 seconds):
17:51:40 Booting default (LinuxV2)...
17:51:41 Initializing cgroup subsys cpuset
17:51:41 Initializing cgroup subsys cpu
17:51:41 Linux version 2.6.27.42-0.1-default (geeko@buildhost) (gcc version 4.3
17:51:41 setup.1a06a7: Linux is running as a z/VM quest operating system in 64-
17:51:41 Zone PFN ranges:
-
-
OMEGLN1
MA a 31/001
Connected to remote server/host 9.39.68.141 using port 23

```

```

Session A - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
17:51:50 Aug 25 17:51:50 omeglrx1 SuSEfirewall2: SuSEfirewall2 not active
17:51:50 eth0
17:51:50 ..doneSetting up service (localfs) network . . . . .
17:51:50 Starting rpcbind
17:51:51 ..done
17:51:51 Not starting NFS client services - no NFS found in /etc/fstab:..unused
17:51:51 Mount CIFS File Systems ..unused
17:51:51 Starting service gdm
17:51:51 ..done
17:51:51 Starting auditd
17:51:51 ..done
17:51:51 Starting cupsd
17:51:51 ..done
17:51:52 Starting irqbalance ..unused
17:51:52 Setting up (remotefs) network interfaces:
17:51:52 Setting up service (remotefs) network . . . . .
17:51:52 ..done
17:51:52 Starting Name Service Cache Daemon
17:51:52 ..done
17:51:52 Starting mail service (Postfix)
17:51:53 Starting smartd ..unused
17:51:53 Starting SSH daemon..done
17:51:53 ..done
17:51:54 Starting CRON daemon..done
17:51:54 Starting INET services. (xinetd)
17:51:55 ..done
17:51:55 Master Resource Control: runlevel 5 has been reached
17:51:55 Skipped services in runlevel 5: Ý80CÝ43Dnfs smbfs irq_balancer smartd
17:51:55 Welcome to SUSE Linux Enterprise Server 11 (s390x) - Kernel 2.6.27.42-
17:51:55 omeglrx1 login:
-
OMEGLN1 (Scroll)
31/001
Connected to remote server/host: 9.39.68.141 using port 23
    
```



## Scenario 15: How Do You Do That?

### Console rule in Operations Manager:

\*

\* Watch for shutdown complete message on Linux guest

```
DEFRULE NAME(LNXDOWN),+
```

```
  MATCH(*HCPGIR450%*),+
```

```
  USER(OMEGLNX1),+
```

```
  ACTION(LNXBKUP)
```

\* Turn off the rule in general

```
SUSPEND RULE(LNXDOWN)
```

## Scenario 15: How Do You Do That?

### Chain of actions in Operations Manager, triggered by schedule

\*

\* Start of guest backup scenario, resume rule for guest shutdown msg

```
DEFACTN NAME(STOPLNX),+  
  COMMAND('RESUME RULE(LNXDOWN)'),+  
  ENV(GOM),+  
  NEXTACTN(STOPLNXA)
```

\*

\* Change SECUSER to Operations Manager before shutting it down

```
DEFACTN NAME(STOPLNXA),+  
  COMMAND(CP SET SECUSER OMEGLNX1 OPMGRM1),+  
  ENV(LVM),+  
  NEXTACTN(STOPLNXB)
```

\*

\* Action to shut down Linux guest in prep for backup

```
DEFACTN NAME(STOPLNXB),+  
  COMMAND(CP SIGNAL SHUTDOWN OMEGLNX1 WITHIN 90),+  
  ENV(LVM)
```

## Scenario 15: How Do You Do That?

### Chain of actions and rules in Operations Manager:

\* Highlight message and submit backup job for a specific Linux guest

```
DEFACTN NAME(LNXBKUP),+  
  INPUT(AHI),+  
  NEXTACTN(LNXBKUPB)
```

\*

```
DEFACTN NAME(LNXBKUPB),+  
  COMMAND(CP SMSG BKRBKUP SUBMIT BKUPLNX1),+  
  ENV(LVM)
```

\*

\* Define all Backup Manager workers as a group

```
DEFGROUP NAME(BKRWRKRS),+  
  USER(BKRWRK0*)
```

\*

\* Restart Linux guest when Backup is complete

```
DEFRULE NAME(BKUPDONE),+  
  MATCH(*BACKUP COMPLETE - OMEGLNX1*),+  
  GROUP(BKRWRKRS),+  
  ACTION(STRTLNX)
```

## Scenario 15: How Do You Do That?

### **Suspend rule in Operations Manager (don't back up the guest every time it is shut down)**

\* Suspend rule for backing up Linux guest

```
DEFACTN NAME(DELBKUP),+  
    COMMAND(SUSPEND RULE(LNXDOWN)),+  
    ENV(GOM)
```

## Scenario 16: Reviewing a Disaster Recovery Backup

- **Create a backup job based on sample provided**
- **Perform image backup of DASD volumes for Disaster Recovery (DR) purposes**
  - Can include z/VM and Linux guests
- **Output of backup is a DDR tape**
  - Compatible with DDR for restore at recovery site
- **Submit DR job for review**
- **Review output of review processing**

## Scenario 16: Detailed Steps

- **From an authorized z/VM user ID, copy the sample DDR template from the sample disk to a new backup job**
- **Edit the new job and make necessary changes**

```
xedit ddrdemo template c
```

- **If not using SFS for templates disk, tell Backup Manager to reaccess the disk**

```
smsg bkrbkup cms acc 199 e/e
```

- **From an authorized z/VM user ID, submit the backup job for review processing**

```
smsg bkrbkup review ddrdemo
```

- **View the file(s) returned to you by Backup Manager**

```
peek <rdrfile>
```

Session B - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

```

q disk
LABEL  VDEV M  STAT  CYL TYPE BLKSZ  FILES  BLKS USED-(%)  BLKS LEFT  BLK TOTAL
ADM191 191  A   R/W   10 3390 4096    53    245-14    1555    1800
ADM192 192  B   R/W   50 3390 4096     3    7927-88    1073    9000
06B199 199  C   R/W    5 3390 4096     9     31-03     869     900
06B2C2 2C2  D   R/O    2 3390 4096    37    113-31     247     360
06B592 592  G   R/O    5 3390 4096    24    145-16     755     900
J05592 593  H   R/O    5 3390 4096    15     82-09     818     900
06B198 198  I   R/O    2 3390 4096     5     14-04     346     360
10C400 400  J   R/W    5 3390 4096    20    124-14     776     900
J05198 197  K   R/W    2 3390 4096     6     16-04     344     360
J10401 401  L   R/W    3 3390 4096     7     18-03     522     540
TCM592 692  M   R/O   67 3390 4096   885    8526-71   3534   12060
MNT190 190  S   R/O  100 3390 4096   687   14513-81  3487   18000
MNT19E 19E  Y/S R/O  250 3390 4096  1102  28088-62 16912  45000
MNT19D 19D  Z/Z R/O  146 3390 1024 14855  53765-74 18505  72270
Ready; T=0.01/0.01 19:36:52

x ddrdemo template c_

```

RUNNING DEM1ZVM

MA b 31 / 021

Connected to remote server/host 9.39.68.141 using port 23

```

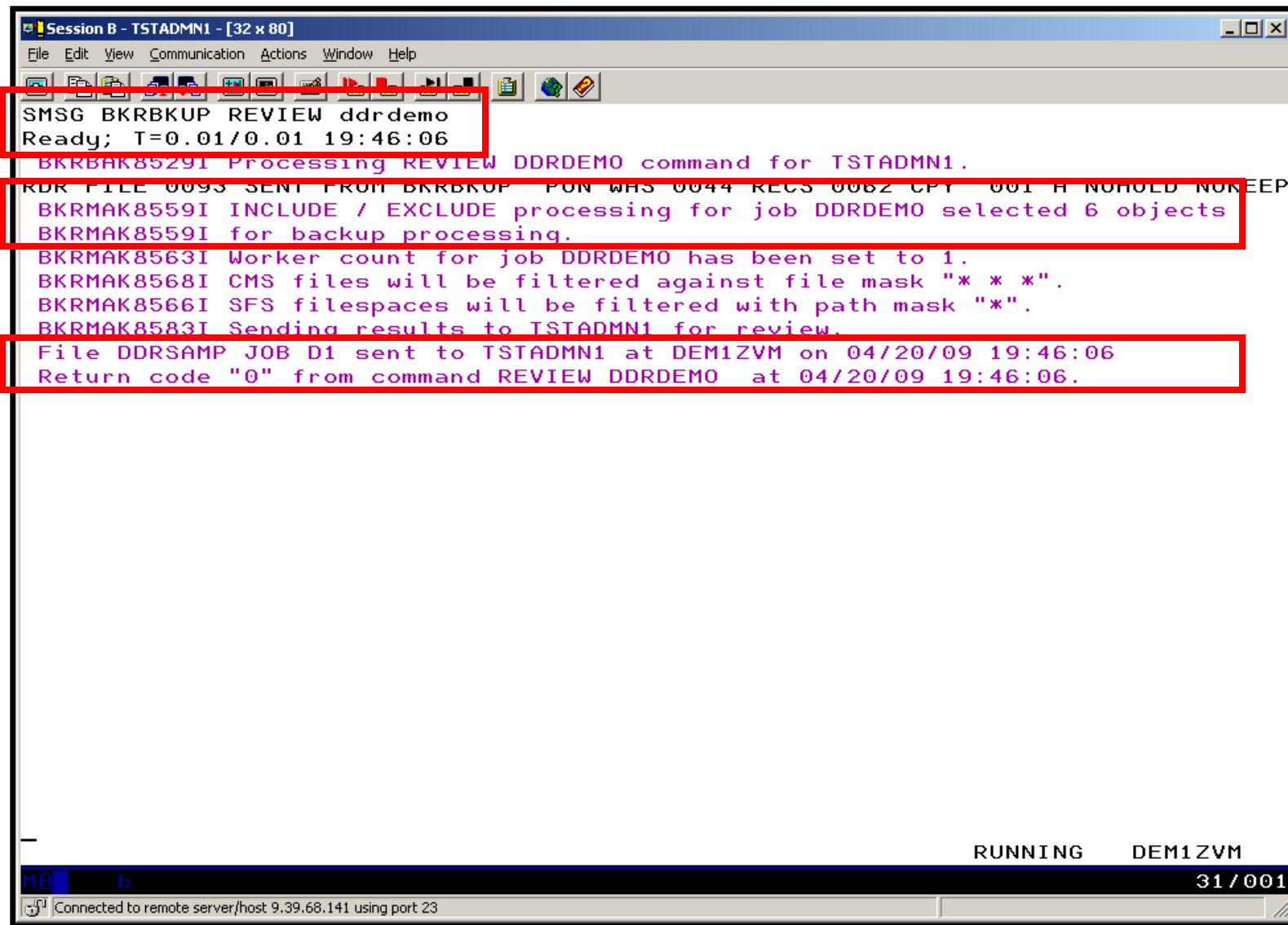
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
----->
DDRDEMO TEMPLATE C2 V 112 Trunc=112 Size=156 Line=0 Col=1 Alt=0
----->
|.....1.....2.....3.....4.....5.....6.....7...
00000 * * * Top of File * * *
00001 * IBM Backup and Restore Manager for z/VM - 5697-J06 - 1.2.0
00002 *
00003 * Sample backup job template - DDRSAMP
00004 *
00005 * This file includes records longer than 80 characters. A screen width o
00006 * (327x model 5 or equivalent) is recommended when viewing or customizing
00007 * sample file for local use.
00008 *
00009 * SAMPDDR is an example of a full backup job definition. Output is direc
00010 * to single-copy tape via the IBMTAPE output handler.
00011 *
00012 * Backup type : Full backup; no incremental backup processing will
00013 * (See SAMPINCR TEMPLATE for an incremental backup j
00014 *
00015 * Output destination: Single-copy tape, DASD Dump Restore (DDR) format,
00016 * (BKR_Output_Spec)
00017 *
00018 * Number of workers : 1; to increase bandwidth on larger systems, add ad
00019 * (BKR_Job_Workers)
00020 *
00021 * Instance tracking : Automatic; this is the recommended setting.
00022 * (BKR_Job_Instance = $$INST$$)
00023 *
00024 * Catalog content : Enabled; results of this job will be transmitted t
00025 * (BKR_Job_Catalog)
00026 *
00027 * CMS file filtering: None; all files and SFS directories will be includ
00028 * (BKR_Job_CMS_FileMask, BKR_Job_SFS_PathMask)
MA b 02/007
Connected to remote server/host: 9.39.68.141 using port 23

```



```

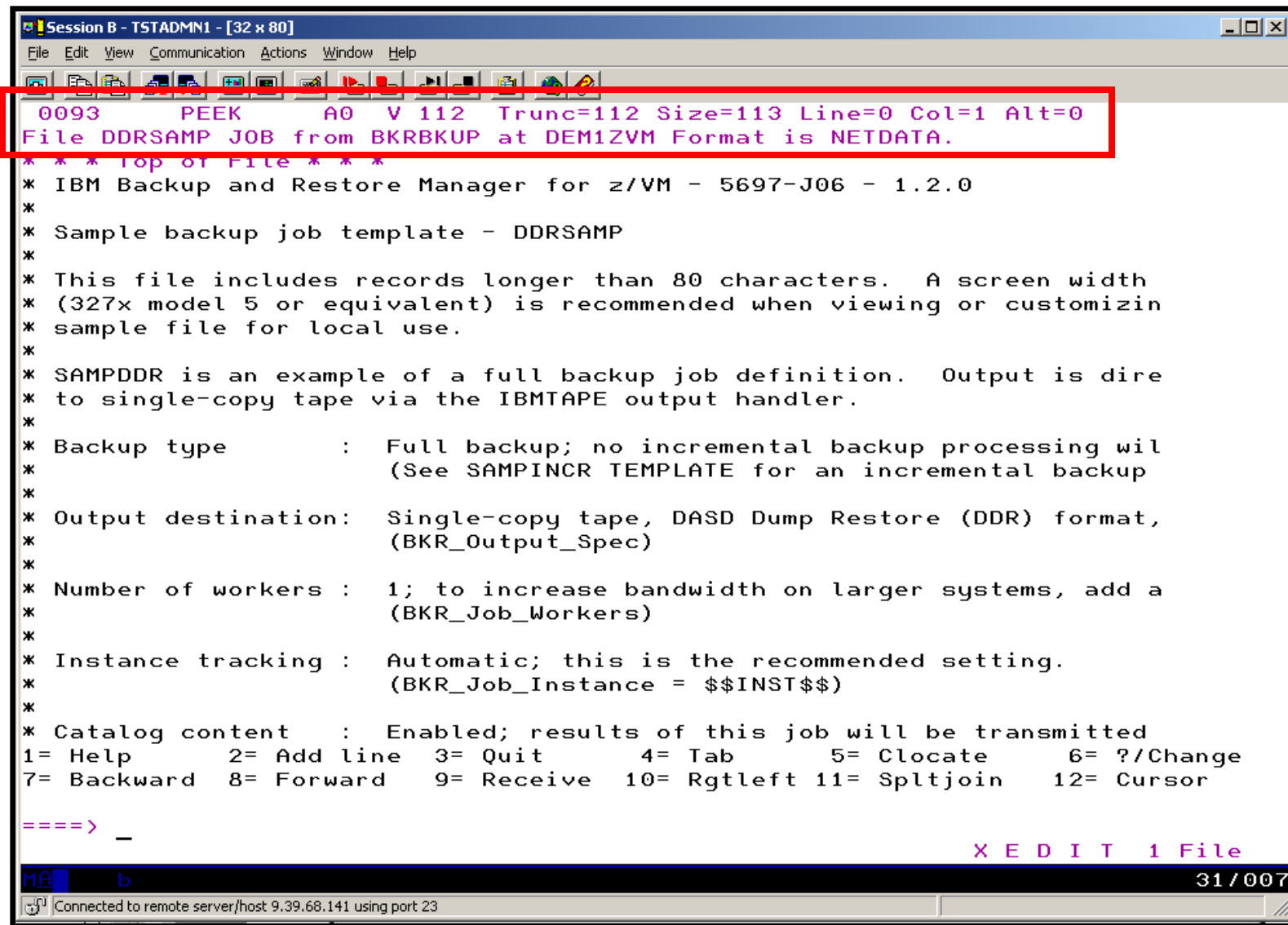
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
DDRDEMO TEMPLATE C2 V 112 Trunc=112 Size=156 Line=117 Col=1 Alt=1
====> file_
|...+.1...+.2...+.3...+.4...+.5...+.6...+.7...
00117 /*****
00118
00119
00120 |-----|-----|-----|---|-----|-----|-----|---|-----|---|
00121 |EXCLUDE  |MINIDISK  |*         |  =  *   |*       |*       |*       |  =  *   |  =  |
00122 |INCLUDE  |RDEVVOL  |520*     |       |       |       |       |       |       |
00123 |INCLUDE  |RDEVICE  |0128     |       |       |       |       |       |       |
00124
00125
00126 * Job_Trailer terminates the INCLUDE / EXCLUDE / SELECT definition sectio
00127 * post-backup processing specifications.
00128
00129 Job_Trailer
00130
00131 * Tell the catalog service virtual machine to retain catalog contents and
00132 * for a period of 30 days. The output from CP QUERY TIME provides a reco
00133 * to process this backup. Output from INDICATE USER provides additional
00134 * worker virtual machine resource consumption.
00135
00136 Config BKR_Catalog_Retention = 30
00137 CP_Command QUERY TIME
00138 CP_Command INDICATE USER
00139
00140 Console *
00141 Console * Sample DDRTAPE backup template created 5/10/2007.
00142 Console * Job image generated $$UPDATE$$ $$TIME$$
00143 Console *
00144
00145 * Close the console log; this will deliver the job history to the backup
MA b
02/011
Connected to remote server/host 9.39.68.141 using port 23
    
```



The screenshot shows a terminal window titled "Session B - TSTADMN1 - [32 x 80]". The window contains several lines of text, with four lines highlighted by red boxes:

```
SMMSG BKRBKUP REVIEW ddrdemo  
Ready; T=0.01/0.01 19:46:06  
BKRBK8529I Processing REVIEW DDRDEMO command for TSTADMN1.  
RDR FILE 0093 SENT FROM BKRBKUP PGN WAS 0044 RECS 0062 CPT 001 H NOHOLD NOKEEP  
BKRMK8559I INCLUDE / EXCLUDE processing for job DDRDEMO selected 6 objects  
BKRMK8559I for backup processing.  
BKRMK8563I Worker count for job DDRDEMO has been set to 1.  
BKRMK8568I CMS files will be filtered against file mask "* * *".  
BKRMK8566I SFS filespace will be filtered with path mask "*".  
BKRMK8583I Sending results to TSTADMN1 for review.  
File DDRSAMP JOB D1 sent to TSTADMN1 at DEM1ZVM on 04/20/09 19:46:06  
Return code "0" from command REVIEW DDRDEMO at 04/20/09 19:46:06.
```

At the bottom of the terminal, the status "RUNNING DEM1ZVM" is displayed, along with a cursor and the text "31/001". The status bar at the very bottom indicates "Connected to remote server/host: 9.39.68.141 using port 23".



```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=0 Col=1 Alt=0
File DDRSAMP JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
* IBM Backup and Restore Manager for z/VM - 5697-J06 - 1.2.0
*
* Sample backup job template - DDRSAMP
*
* This file includes records longer than 80 characters. A screen width
* (327x model 5 or equivalent) is recommended when viewing or customizin
* sample file for local use.
*
* SAMPDDR is an example of a full backup job definition. Output is dire
* to single-copy tape via the IBMTAPE output handler.
*
* Backup type : Full backup; no incremental backup processing wil
* (See SAMPINCR TEMPLATE for an incremental backup
*
* Output destination: Single-copy tape, DASD Dump Restore (DDR) format,
* (BKR_Output_Spec)
*
* Number of workers : 1; to increase bandwidth on larger systems, add a
* (BKR_Job_Workers)
*
* Instance tracking : Automatic; this is the recommended setting.
* (BKR_Job_Instance = $$INST$$)
*
* Catalog content : Enabled; results of this job will be transmitted
1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtleft 11= Spltjoin 12= Cursor
====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=78 Col=1 Alt=0
File DDRSAMP JOB from BKRKBKUP at DEM1ZVM Format is NETDATA.
JOB_HEADER
DUMPRDV 520RES 0123 $$$DRIVER$$
DUMPRDV 520SPL 0124 $$$DRIVER$$
DUMPRDV 520PAG 0125 $$$DRIVER$$
DUMPRDV 520W01 0126 $$$DRIVER$$
DUMPRDV 520W02 0127 $$$DRIVER$$
DUMPRDV DMZU00 0128 $$$DRIVER$$
JOB_TRAILER

* Tell the catalog service virtual machine to retain catalog contents an
* for a period of 30 days. The output from CP QUERY TIME provides a rec
* to process this backup. Output from INDICATE USER provides additional
* worker virtual machine resource consumption.

CONFIG BKR_CATALOG_RETENTION = 30
CP_COMMAND QUERY TIME
CP_COMMAND INDICATE USER

CONSOLE *
CONSOLE * SAMPLE DDRTAPE BACKUP TEMPLATE CREATED 5/10/2007.
CONSOLE * JOB IMAGE GENERATED 04/20/09 19:46:06
CONSOLE *

* Close the console log; this will deliver the job history to the backup
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate   6= ?/Change
7= Backward  8= Forward   9= Receive  10= Rgtright 11= Spltjoin 12= Cursor

====> _

X E D I T 1 File
MA b 31/007
Connected to remote server/host: 9.39.68.141 using port 23
```

## Scenario 17: Reviewing data in the Backup catalog for recovery

- **Various backup jobs have previously been submitted and completed**
- **Full screen interfaces available for searching the backup catalog and finding data available for recovery**
  - BKRLIST
    - Useful when looking for a specific file or set of files owned by a specific user ID
    - Users with ADMIN authority beware of size
      - Use parameters to narrow the search
  - BKRUSER
    - Useful when looking for backup jobs associated with a specific user ID
  - BKRJOB
    - Useful when looking for backup jobs by job name
  - BKRVOL
    - Useful when looking for backup jobs associated with a specific DASD volume

## Scenario 17: Detailed Steps

- **From an authorized z/VM user ID, issue one of the following commands to browse the catalog**

`bkrlist`

`bkruser`

`bkrjob`

`bkrvol`

- **Use F11 to drill down through details**
- **Use F10 to restore data**

धन्यवाद

Hindi

多謝

Traditional Chinese

감사합니다

Korean

Спасибо

Russian

Gracias

Spanish

شكراً

Arabic

Thank You

English

Obrigado

Brazilian Portuguese

Grazie

Italian

Danke

German

多谢

Simplified Chinese

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai