IBM Software

What's New from IBM for Automated Operations on z/VM and Linux on System z

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Agenda

- **Product overview – Operations Manager for z/VM**
- **What's new in V1.4**
  - Scheduling
  - Security
  - Networking
  - Action processing
  - Usability enhancements
- **Demos**

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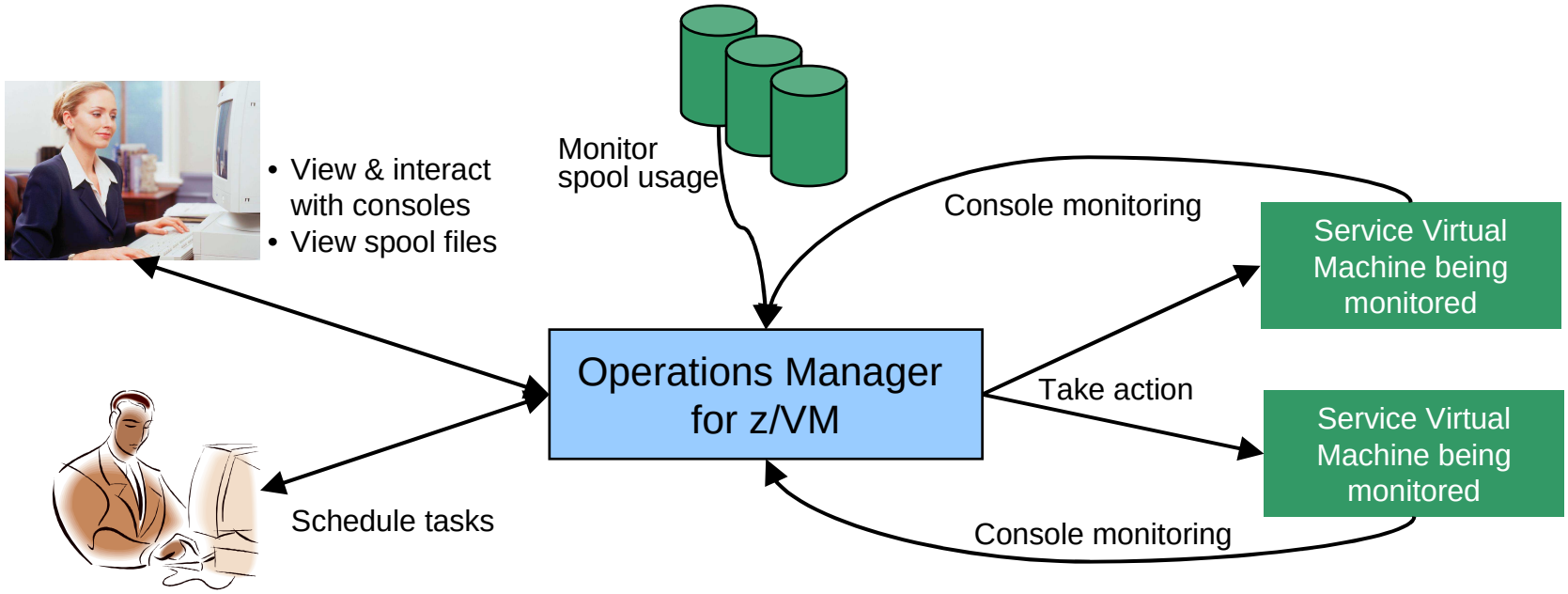
Operations Manager for z/VM

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
- Send alerts to Netcool/OMNIbus

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Monitor Service Machine Consoles

Operations Manager

Test Data
TEST Message 1
TEST Message 2
TEST Message 3
…

OPERATOR
OPER Message 1
OPER Message 2
OPER Message 3
…

LINUX
LNX Message 1
LNX Message 2
LNX Message 3
…

TCPIP
TCP Message 1
TCP Message 2
TCP Message 3
…

syslog data
slog Message 1
slog Message 2
slog Message 3
…

Filtered

Data space 1
TEST Message 1
TEST Message 2
…

Data space 2
OPER Message 1
OPER Message 2
…

Data space 3
LNX Message 1
LNX Message 3
…

Data space 4
TCP Message 1
TCP Message 2
…

Data space 5
slog Message 1
slog Message 2
slog Message 3
…

Unfiltered

Data space 6
OPER Message 1
LNX Message 1
LNX Message 2
TCP Message 1
slog Message 1
slog Message 2
TEST Message 1
OPER Message 2
…

Daily log
DIRM Message 1
LNX Message 1
LNX Message 2
TCP Message 1
DIRM Message 2
TCP Message 2

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Monitor Service Machines

- **Define rules to**
  - Scan console messages for text matching
    - Includes column, wildcard, and exclusion support
    - Optionally restrict to or exclude from specific user ID(s)
  - Take actions based on matches
    - Predefined actions include highlight, suppress, change color
    - User defined actions can call CP/CMS commands or REXX EXECs
- **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

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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

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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

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Schedule Events and Actions

- **Define schedules**
  - Hourly, daily, weekly, monthly, or yearly
  - 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

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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

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Dynamic Configuration

- **Initial configuration file loaded at startup**
  - May imbed other configuration files
- **Most configuration options can be updated while Operations Manager is running**
  - Add, delete, or change:
    - Rules, actions, monitors, schedules, holidays, groups, user authorization
  - Suspend or resume rules, monitors, schedules
- **Multiple methods**
  - GOMCMD command interface
  - Load a new or updated configuration file
  - Commands in DEFACTN statements

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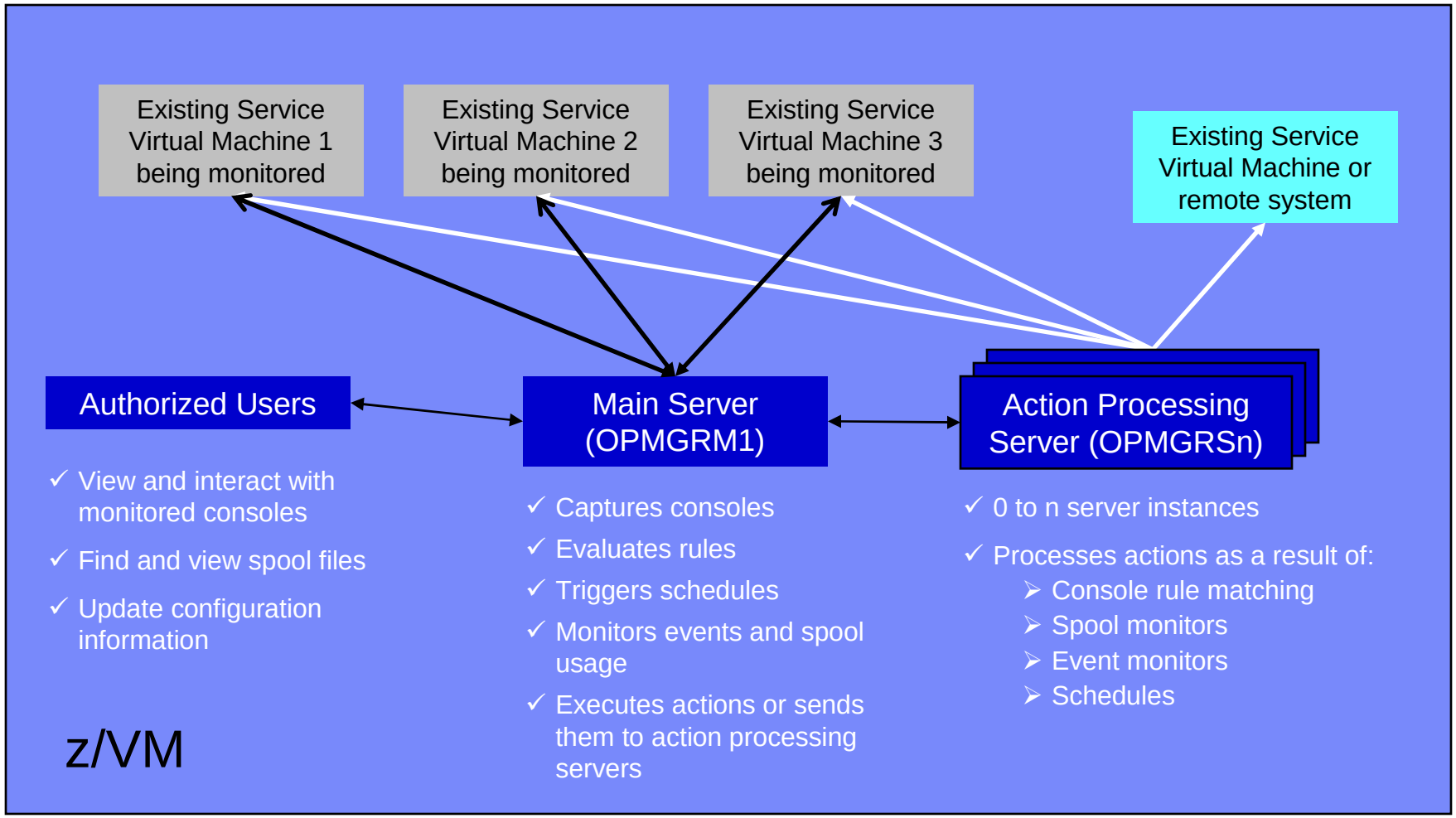
Operations Manager



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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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New in Operations Manager V1.4

Announced: September 7, 2010
Available: September 10, 2010

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Scheduling

- **Scheduling support for nth weekday of the month**
  - Example: Every 3rd Monday

```
DEFSCHD NAME(3RDMON),+
  WHEN(3RDMON–2:30),+
  ACTION(RUNREPT),+
  ENV(SVM)
```

  - nth day of month can be 1ST, 2ND, 3RD, 4TH, 5TH, or LST
- **In addition to schedules already supported:**
  - Hourly, daily, yearly
  - At regular intervals
  - Weekly on a specified day of the week
  - Monthly on the nth or last day of the month
  - Specified number of hours and minutes from now
  - Once on specified date and time

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Security

- **Operations Manager already supports RACF for access control**
  - Includes support for other ESMs
- **New in V1.4: Customizable profile prefix**
  - Prefix specified in Operations Manager configuration file
    - Will have GOM “pre-pended” to it
  - Example:
    - Customer specifies prefix of ACME in Operations Manager configuration file
    - Operations Manager will look for RACF FACILITY class profiles starting with GOM.ACME

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Action Processing

- **Share state information or data between action processing servers**
  - "GLOBALV across user IDs"
  - No need to write data to disk
  - No need to restrict all related actions to the same action processing server (to use GLOBALV)
  - Data stored in a DCSS
  - Commands provided to store or retrieve the data

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Shared Data in Action Processing - Examples

- **From a REXX EXEC, save the value of the variable *total* into a shared variable named *totalservers*:**

  GOMGLBL FROM total NAME totalservers

- **From a REXX EXEC, retrieve the value of the shared variable named *totalservers* into the variable *total***

  GOMGLBL INTO total NAME totalservers

- **From a REXX EXEC, save the value 10 into a shared variable named *totalservers* :**

  GOMGLBL VALUE 10 NAME totalservers

- **From a REXX EXEC, save the value of the variable *total* into a shared variable named by the variable *varname*:**

  GOMGLBL FROM total VAR varname

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Networking

- **Support for IPv6**
  - Receiving Linux syslog data
    - Or any UDP data sent on the specified port
  - Receiving test data
  - Examples

IPv4

```
DEFTCPA NAME(SYSLOG1),+
 TCPUSER(TCPIP),+
 TCPAPPL(GOMRSYL),+
 TCPADDR(000.000.000.000),+
 TCPPORT(514),+
 PARM(SYSLOG1 03330417UTF8)
```

IPv6

```
DEFTCPA NAME(SYSLOG1),+
 TCPUSER(TCPIP),+
 TCPAPPL(GOMRSYL),+
 TCPADDR(::),+
 TCPPORT(514),+
 PARM(SYSLOG1 03330417UTF8)
```


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Usability Enhancements

- **Create a file using VIEWSPL, VIEWCON, and VIEWLOG commands**
  - Sends a file to your reader instead of opening a full screen view
  - Allows you to use more powerful tools to view or process the file
    - PEEK, XEDIT, BROWSE, CMS Pipelines
  - New option on VIEWCON and VIEWLOG commands:
    `VIEWCON USER(OPERATOR),MODE(RDR)`
  - New options on VIEWSPL command:
    `VIEWSPL SFID(userid,nnnn),MODE(RDR)`
- **Option to display function key assignments in VIEWSPL, VIEWCON, and VIEWLOG**
  - New option in PROFILE VIEWCON, PROFILE VIEWLOG, and PROFILE VIEWSPL
    `SHOWPF=Y`
- **Option to disable autoscroll on initial display of VIEWCON or VIEWLOG**
  - New option on VIEWCON and VIEWLOG commands:
    `VIEWCON USER(OPERATOR),MODE(NOSCROLL)`

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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
- **V1.4 provides improvements in**
  - Scheduling
  - Security
  - Networking
  - Action processing
  - Usability

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Reference Information

- **Product Web site**
  - Start at http://www.ibm.com/software/sysmgmt/zvm/operations/
  - Product pages include
    - Publications
    - Pre-requisites
    - Announcements
    - Presentations
    - Support
- **e-mail**
  - Tracy Dean, tld1@us.ibm.com, Product Manager

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Demonstration Scenarios

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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**

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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**
  - User ID that received the error message
  - Text of the abend message

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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 opmgrm1 viewcon user(opmgrc1)
```

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

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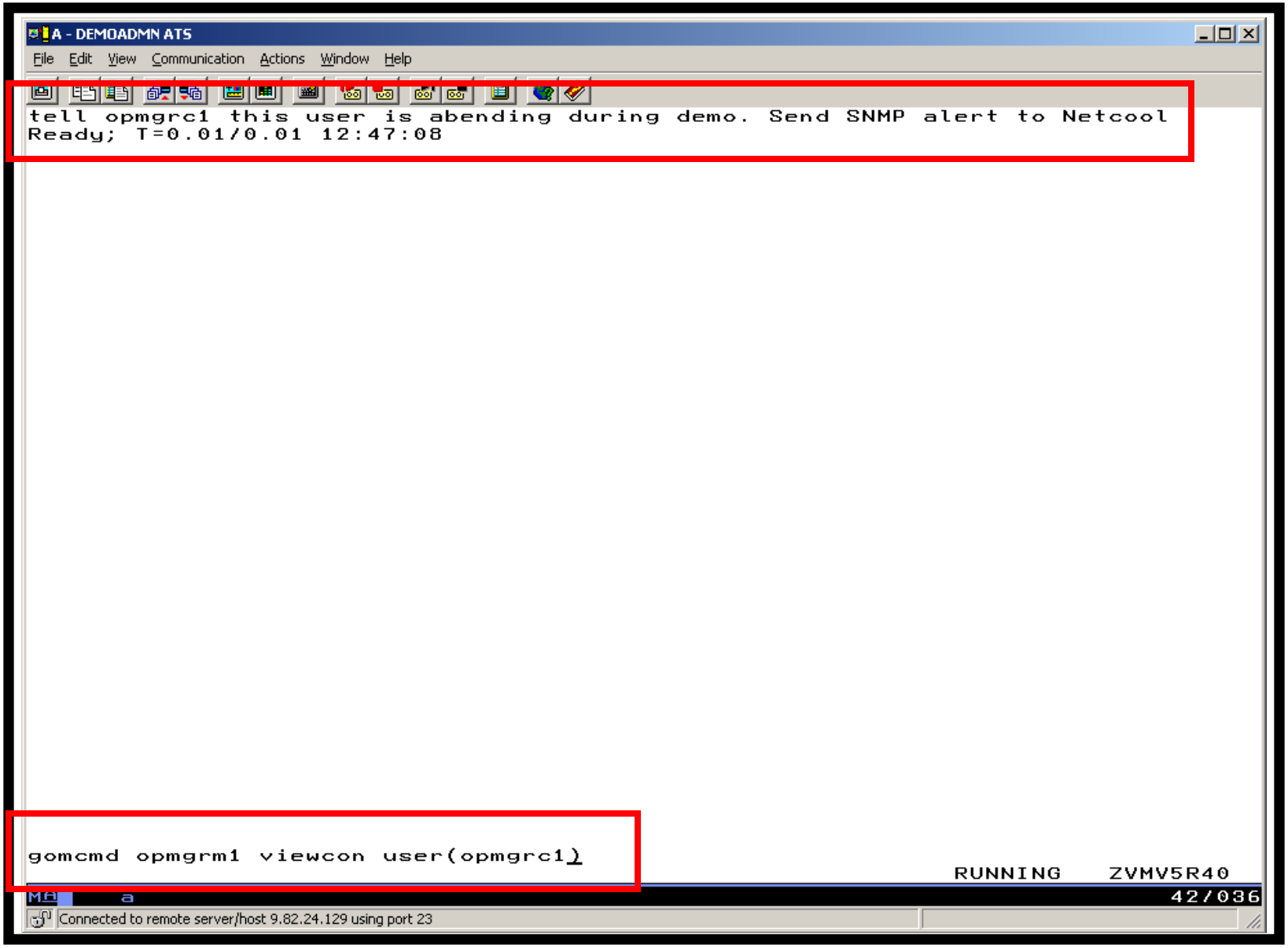

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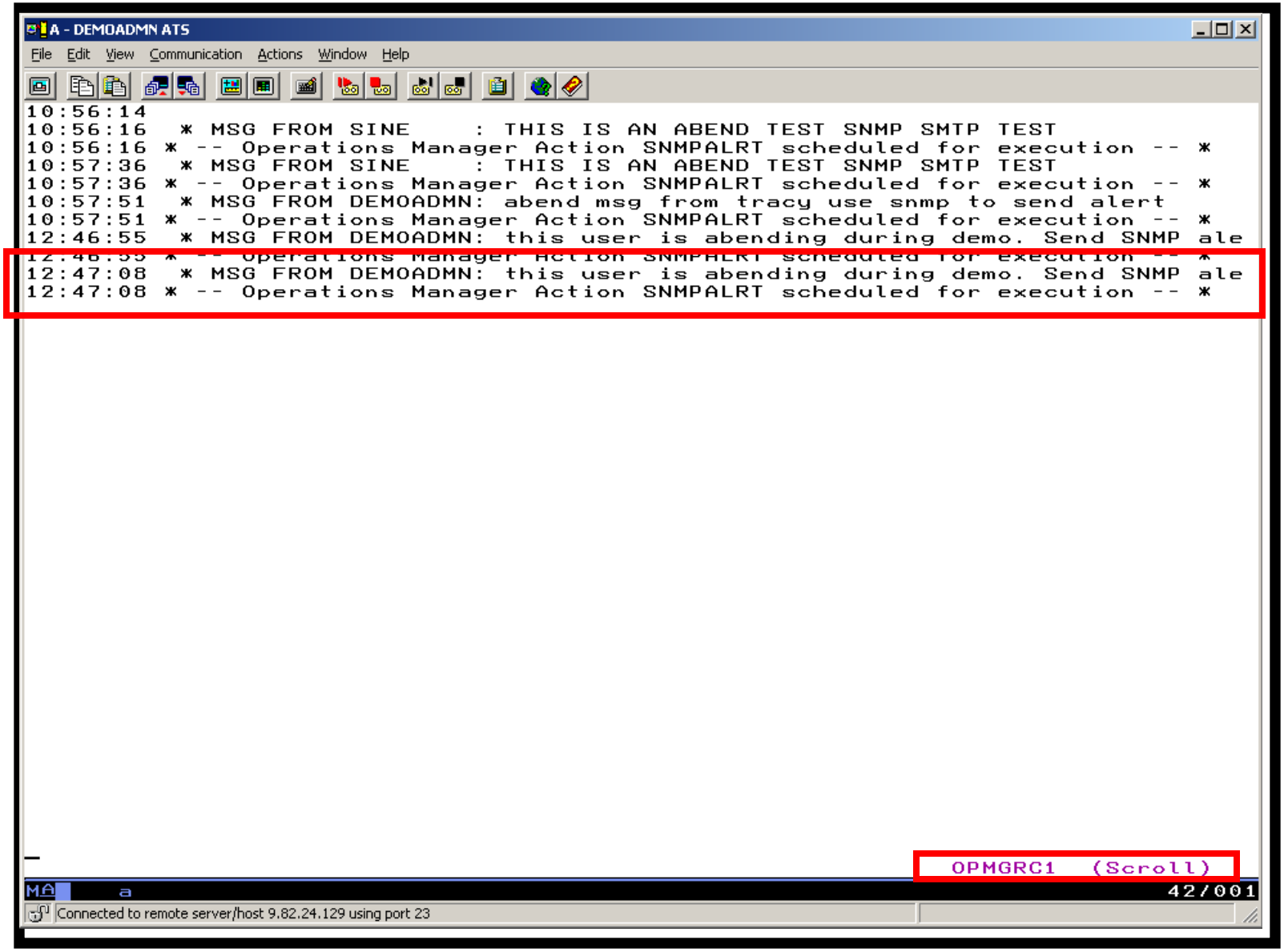

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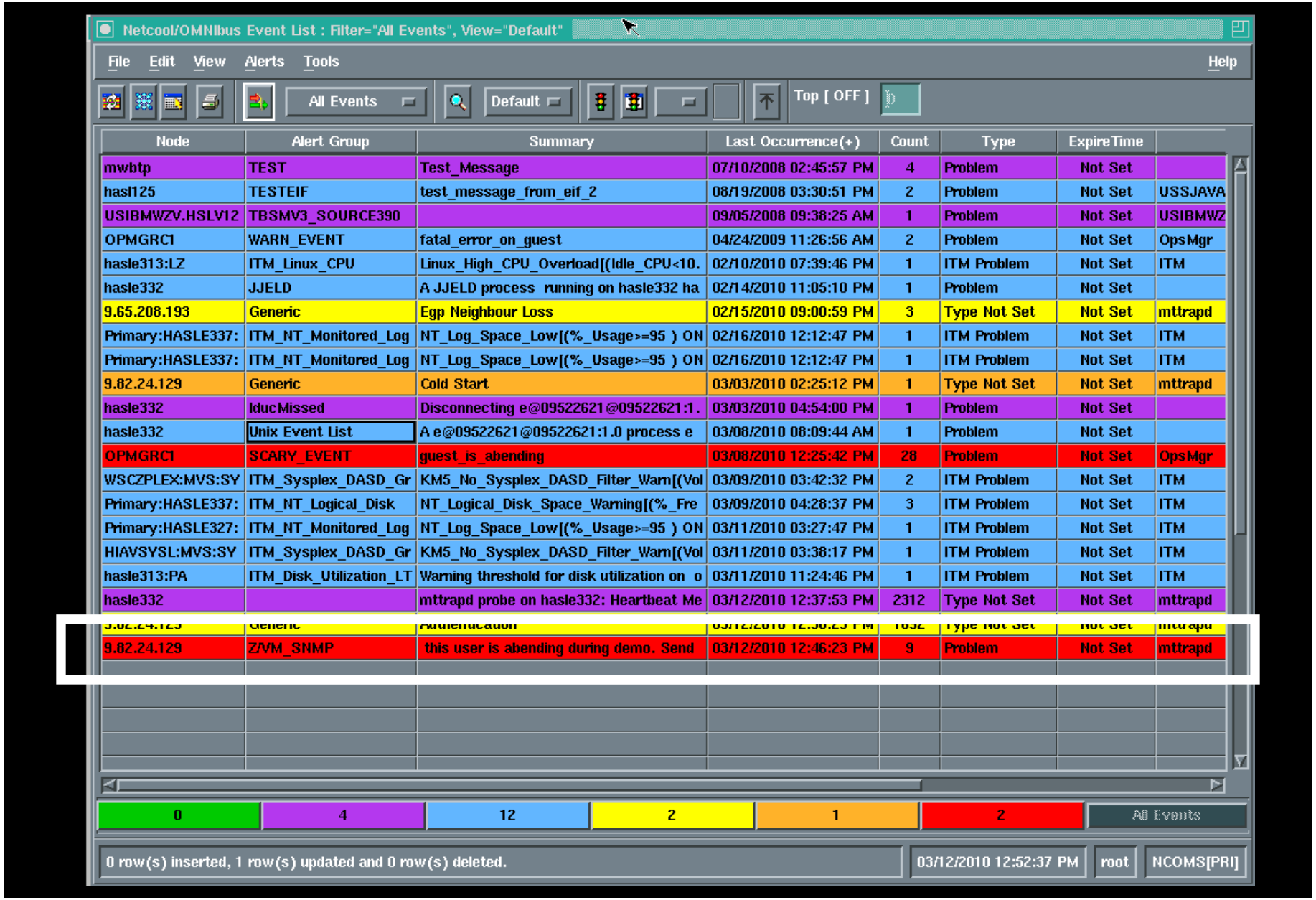

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Scenario 2b: How Do You Do That?

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)
```


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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
```


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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

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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)

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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**

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Scenario 3: Detailed Steps

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

```
gomcmd opmgrm1 viewspl
```

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

```
gomcmd opmgrm1 resume spool(splfull2)
```

- **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 privilieges:**

```
gomcmd opmgrm1 suspend spool(splfull2)
```


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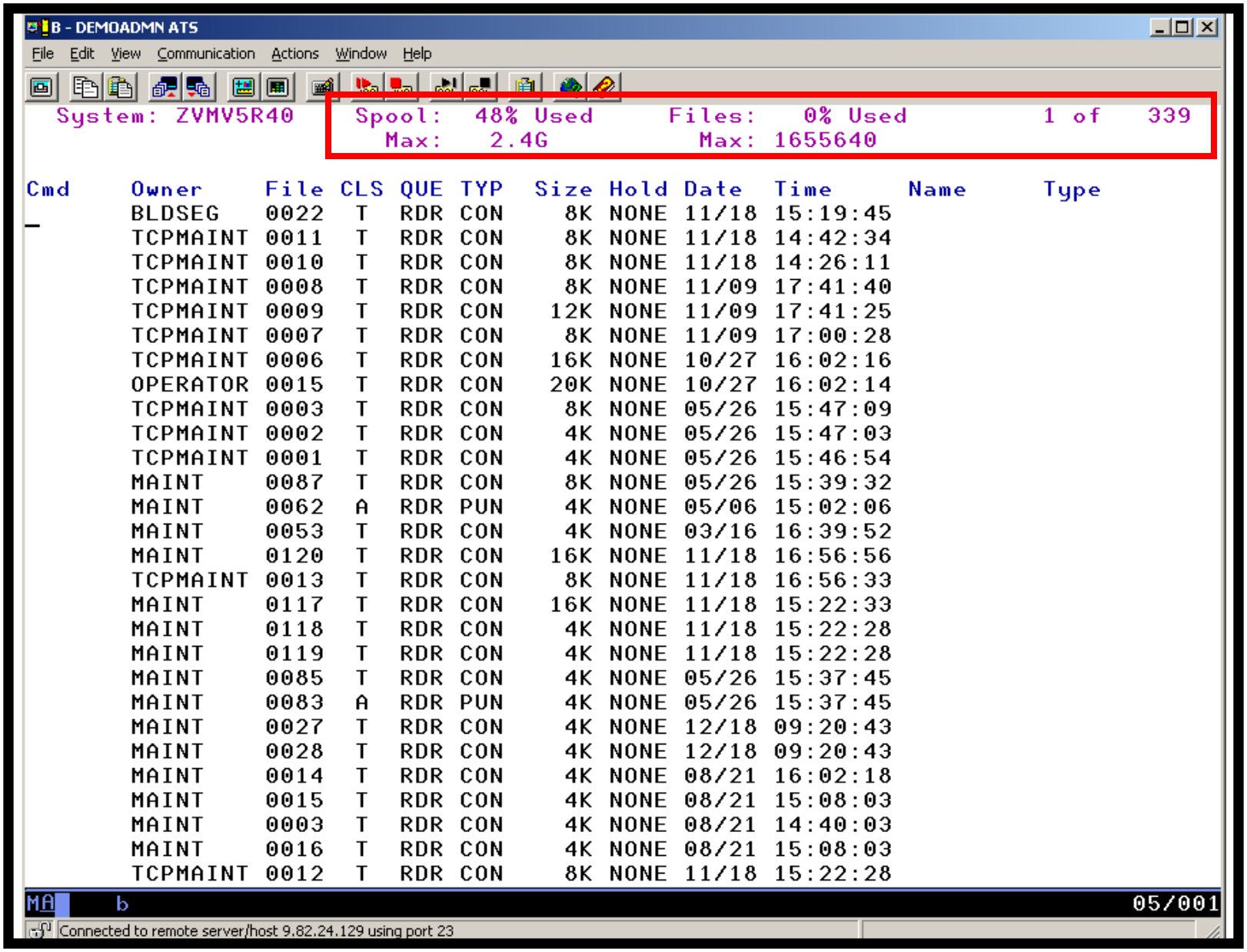

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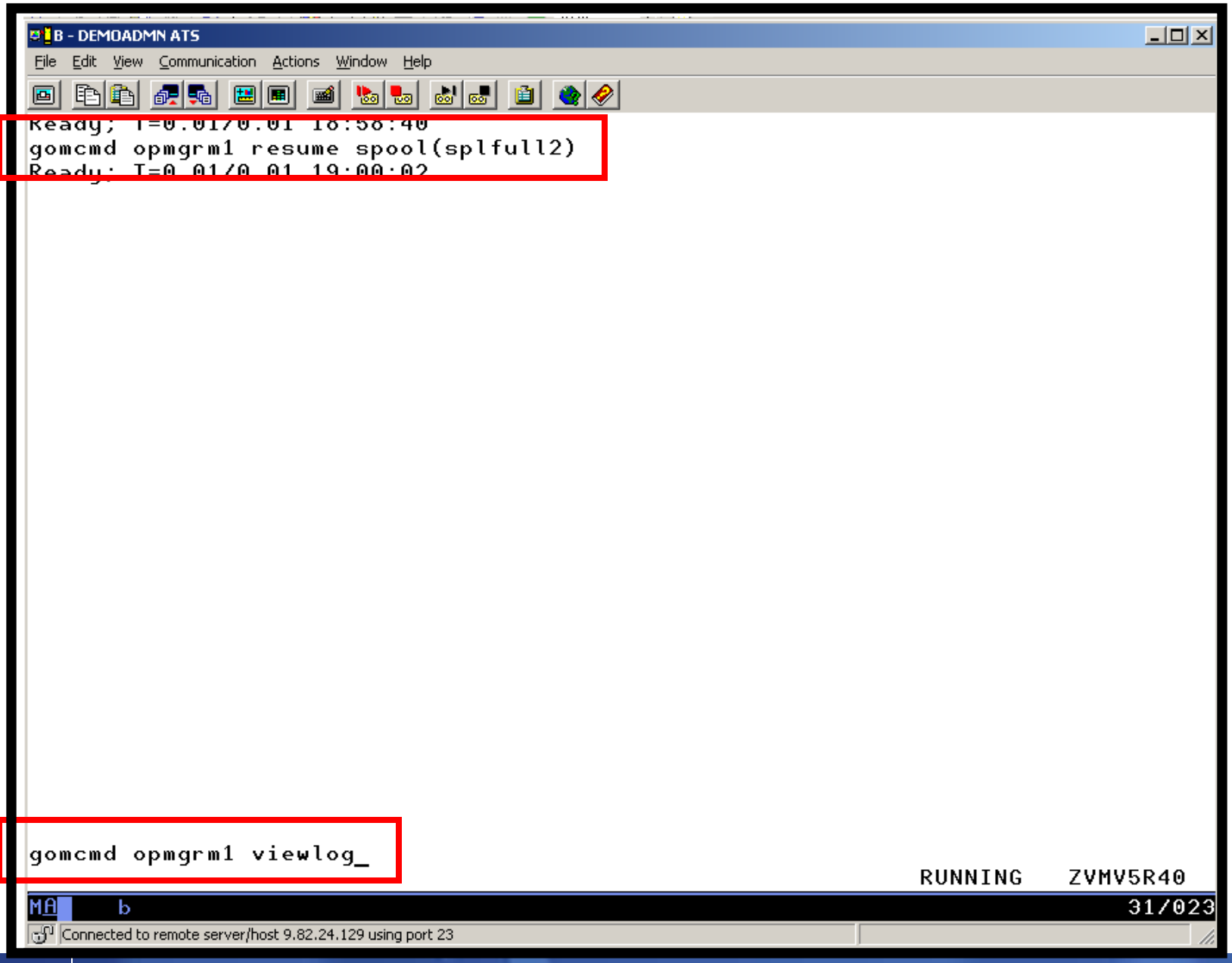

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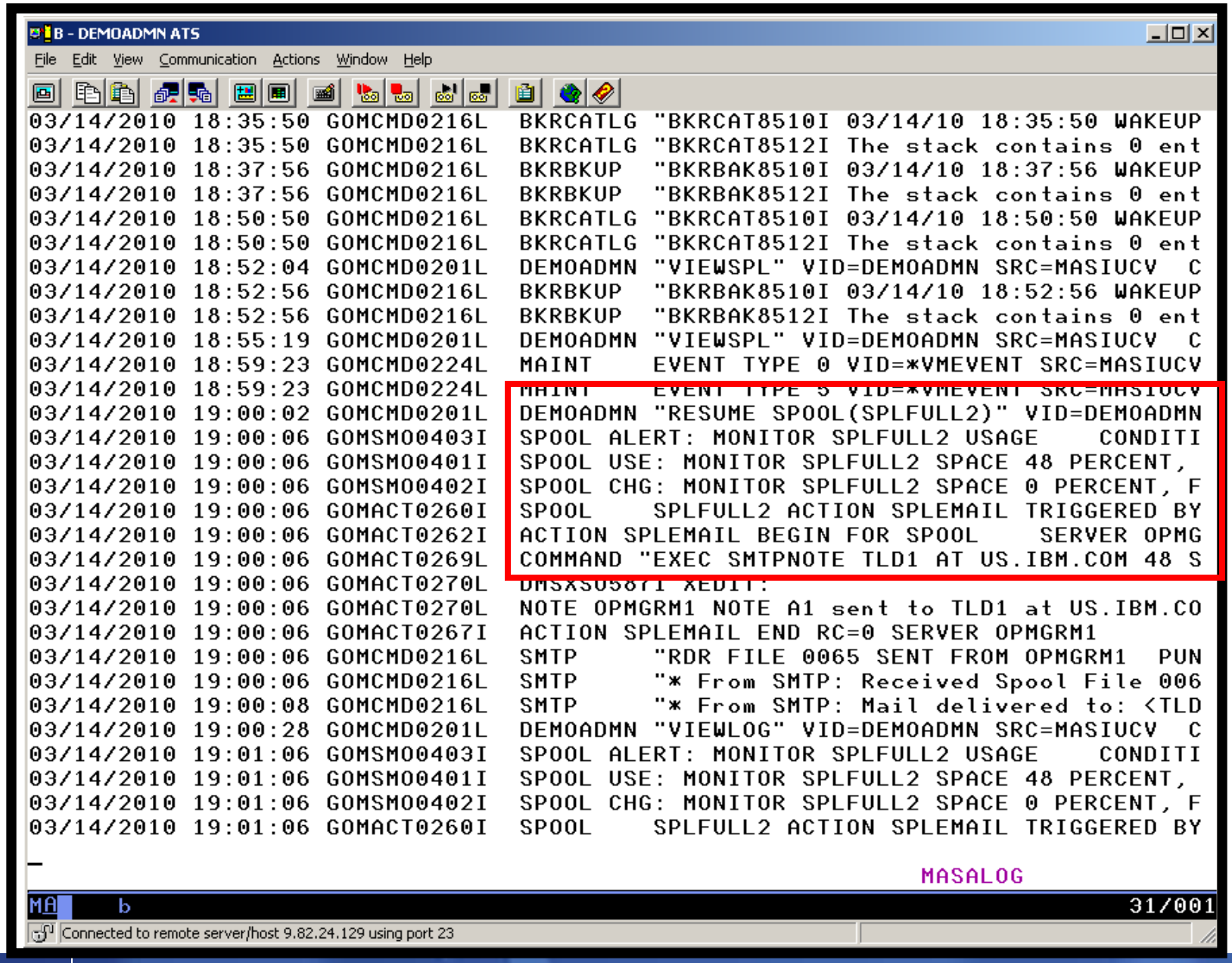

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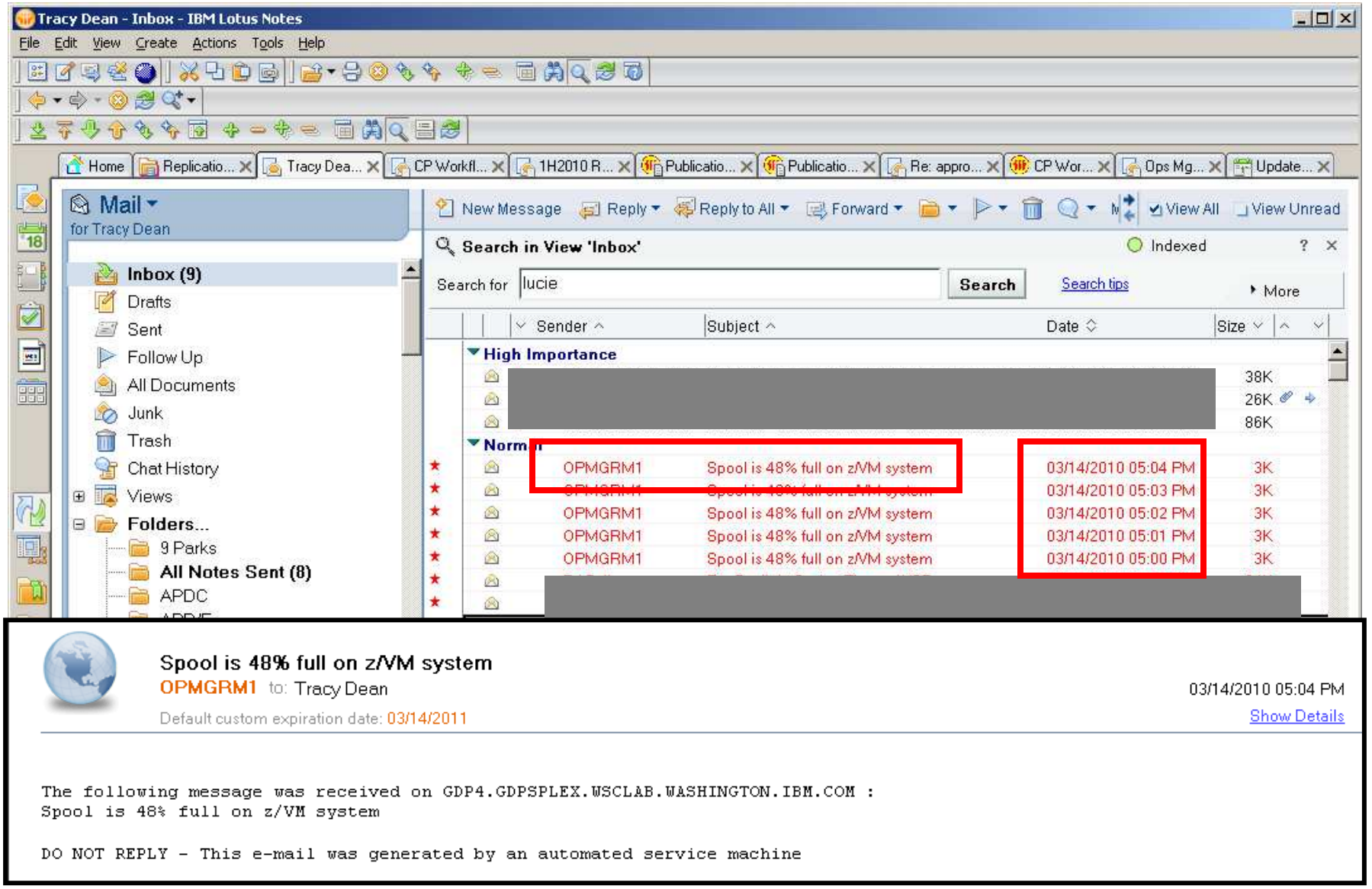

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Scenario 3: How Do You Do That?

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)
```


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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'
```


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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**

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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**

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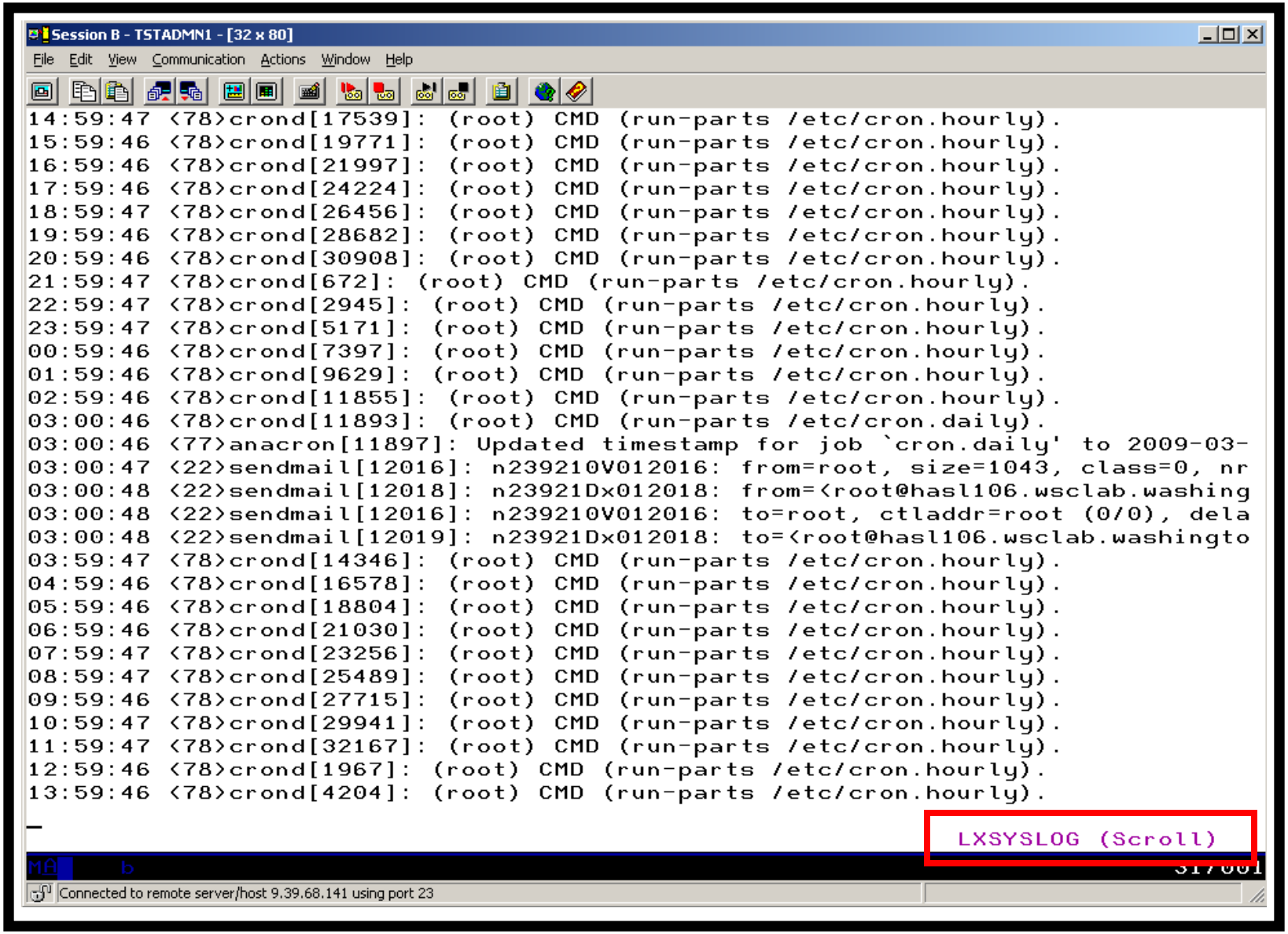

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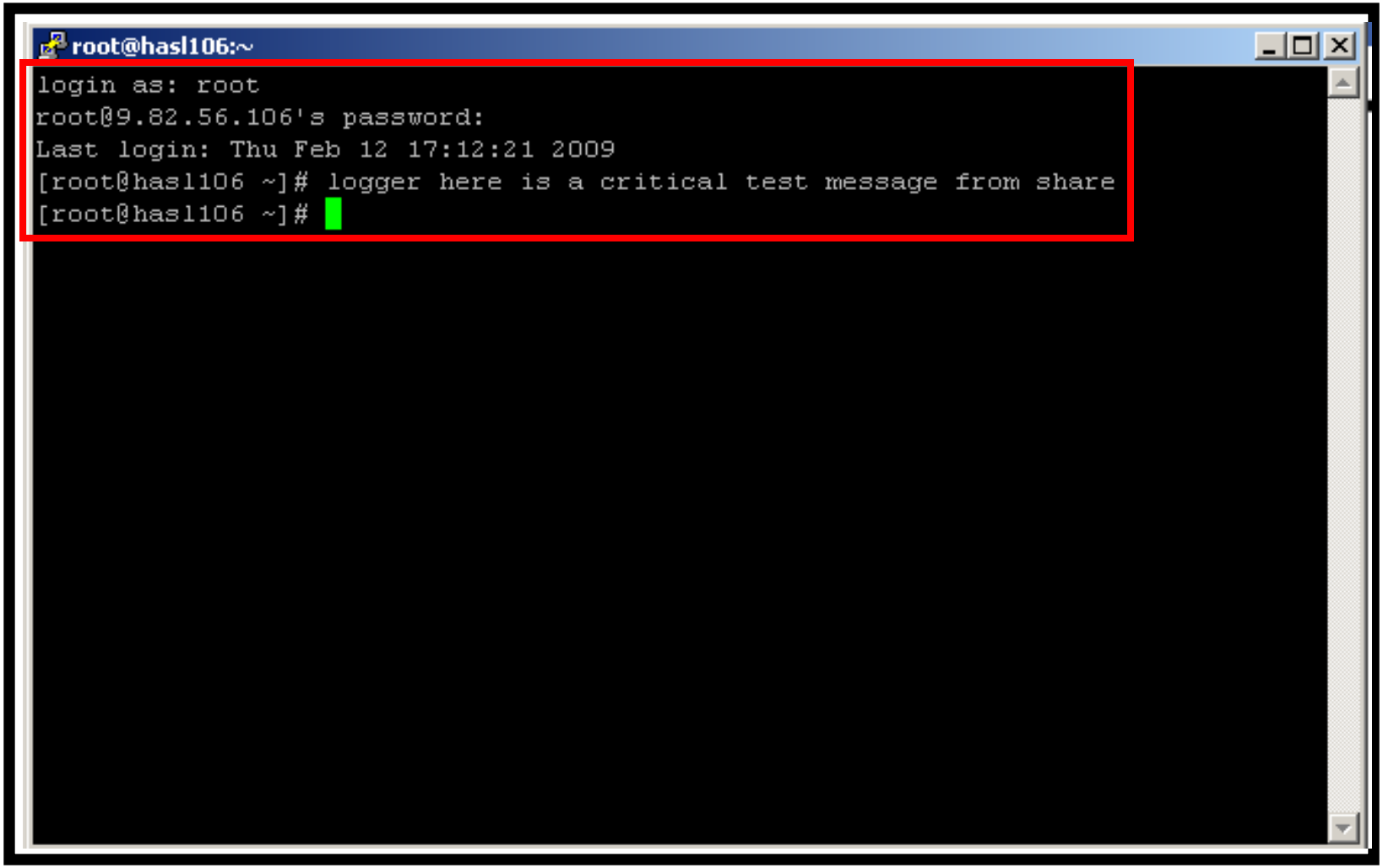

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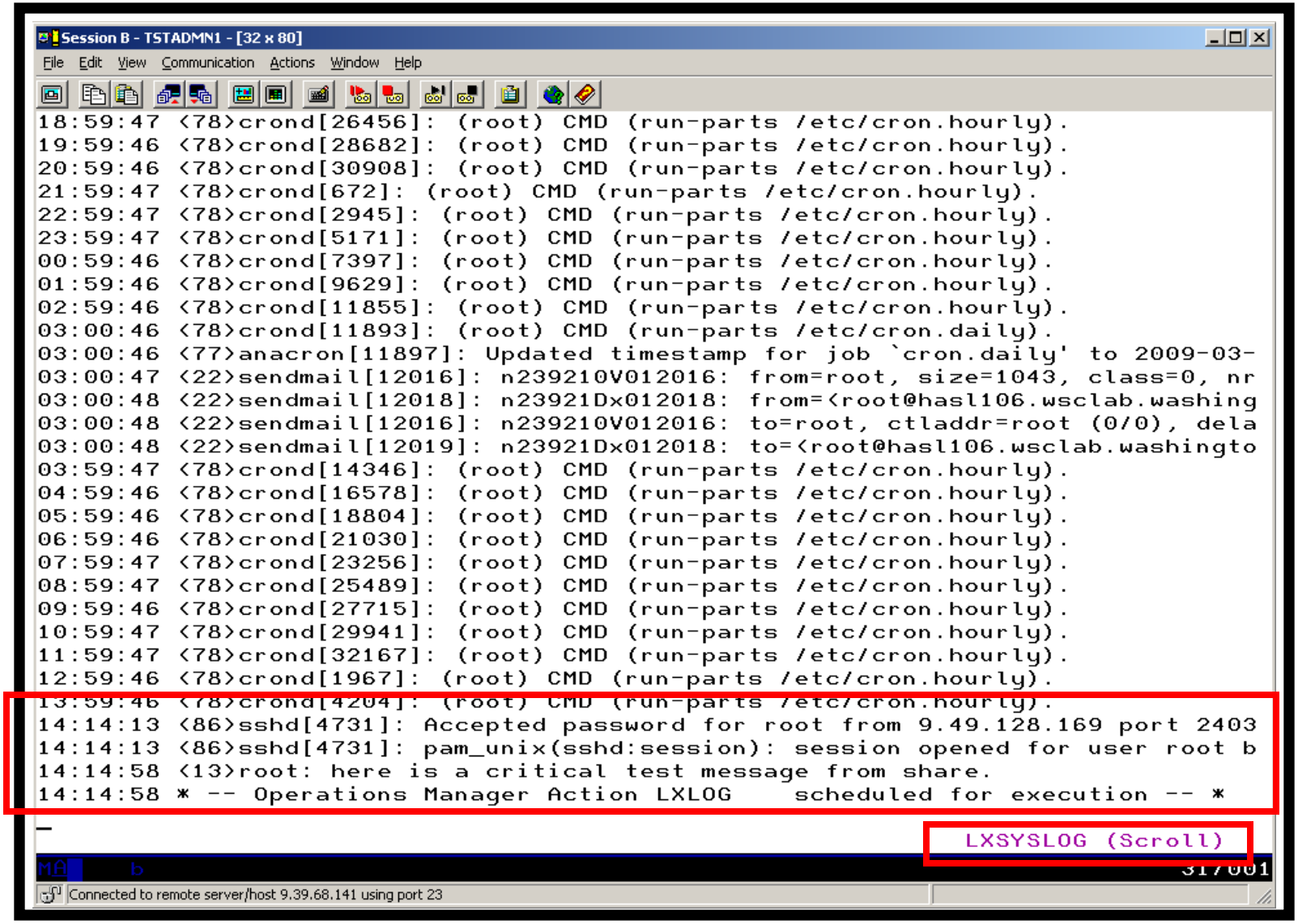

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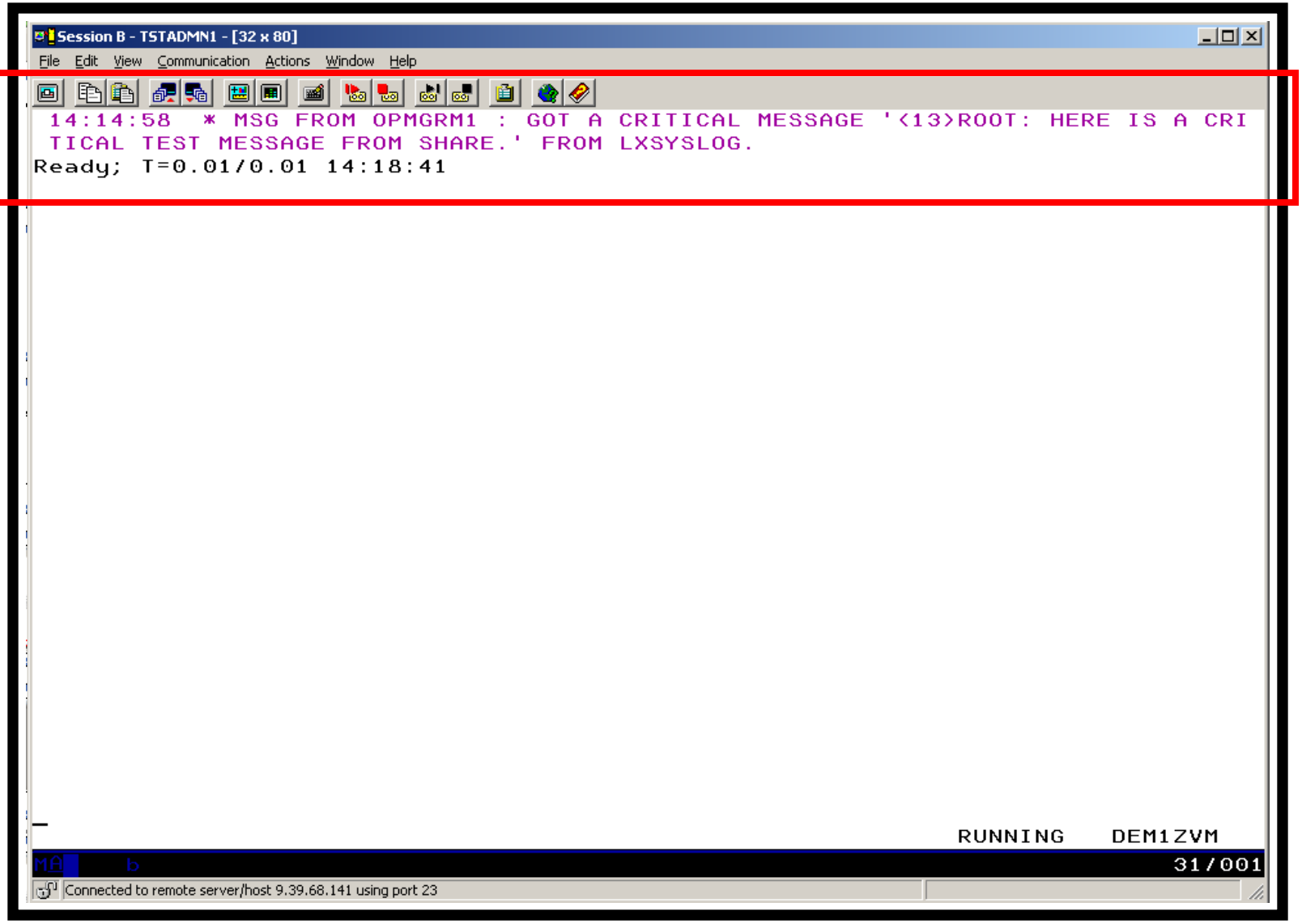

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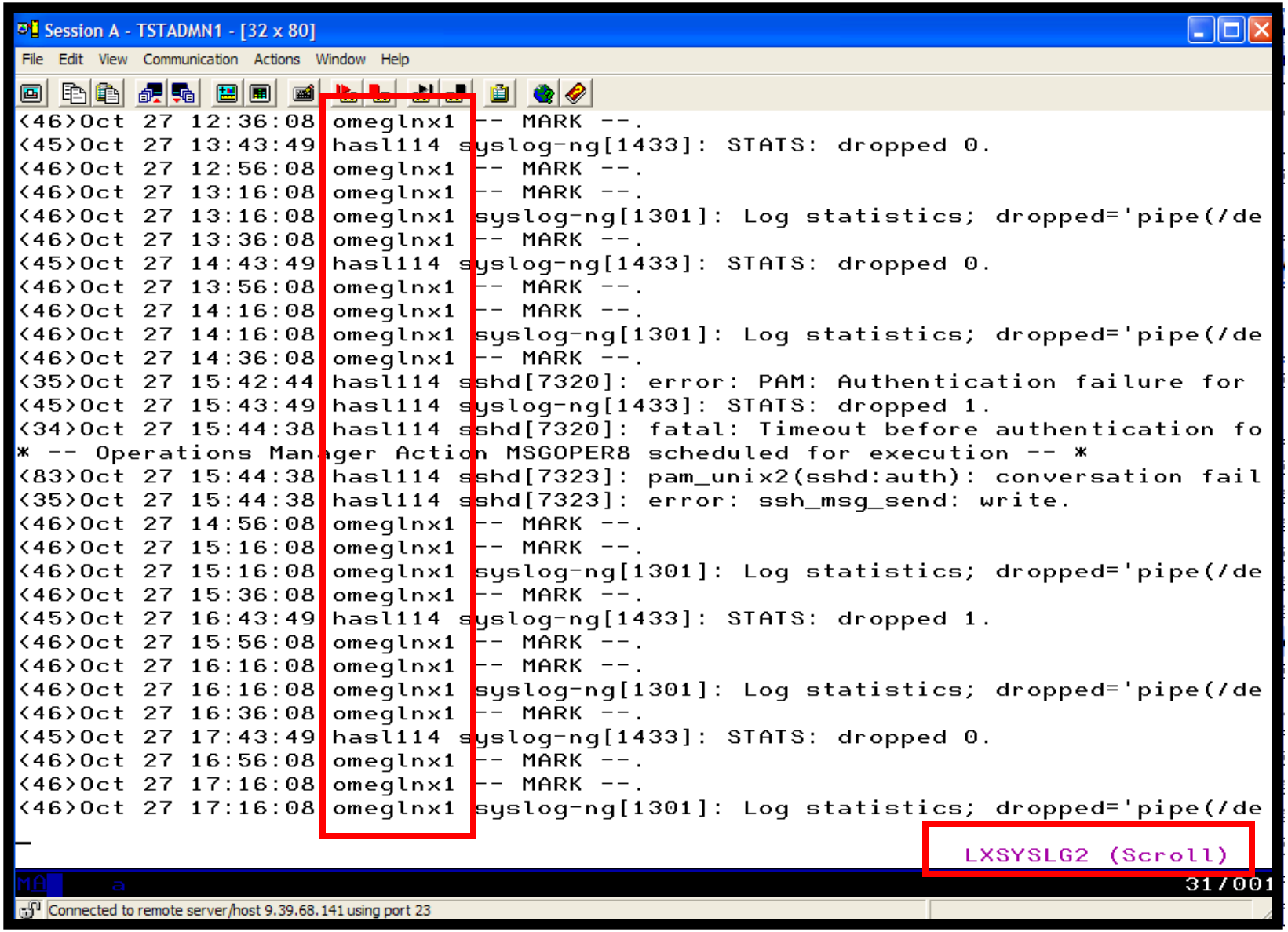

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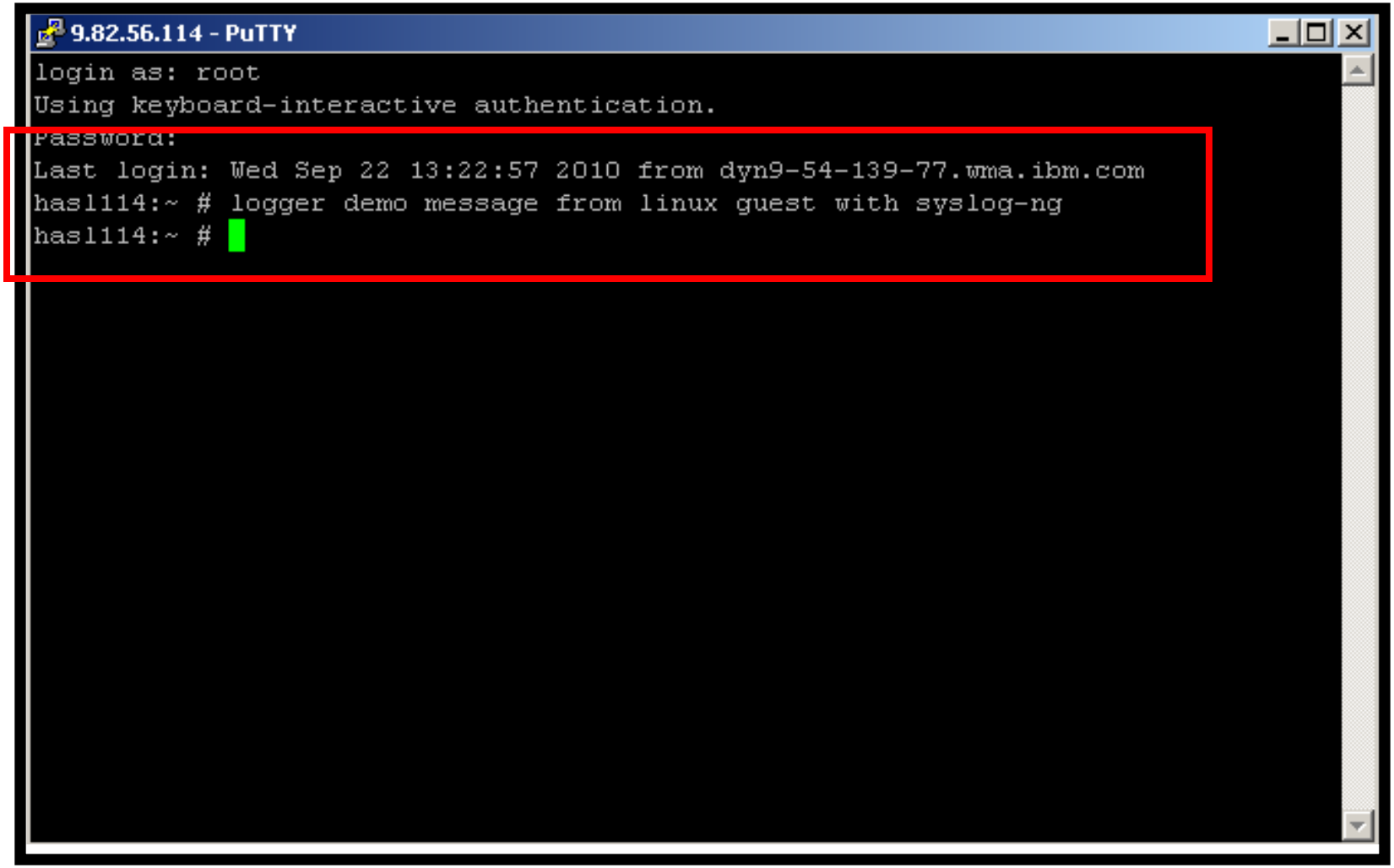

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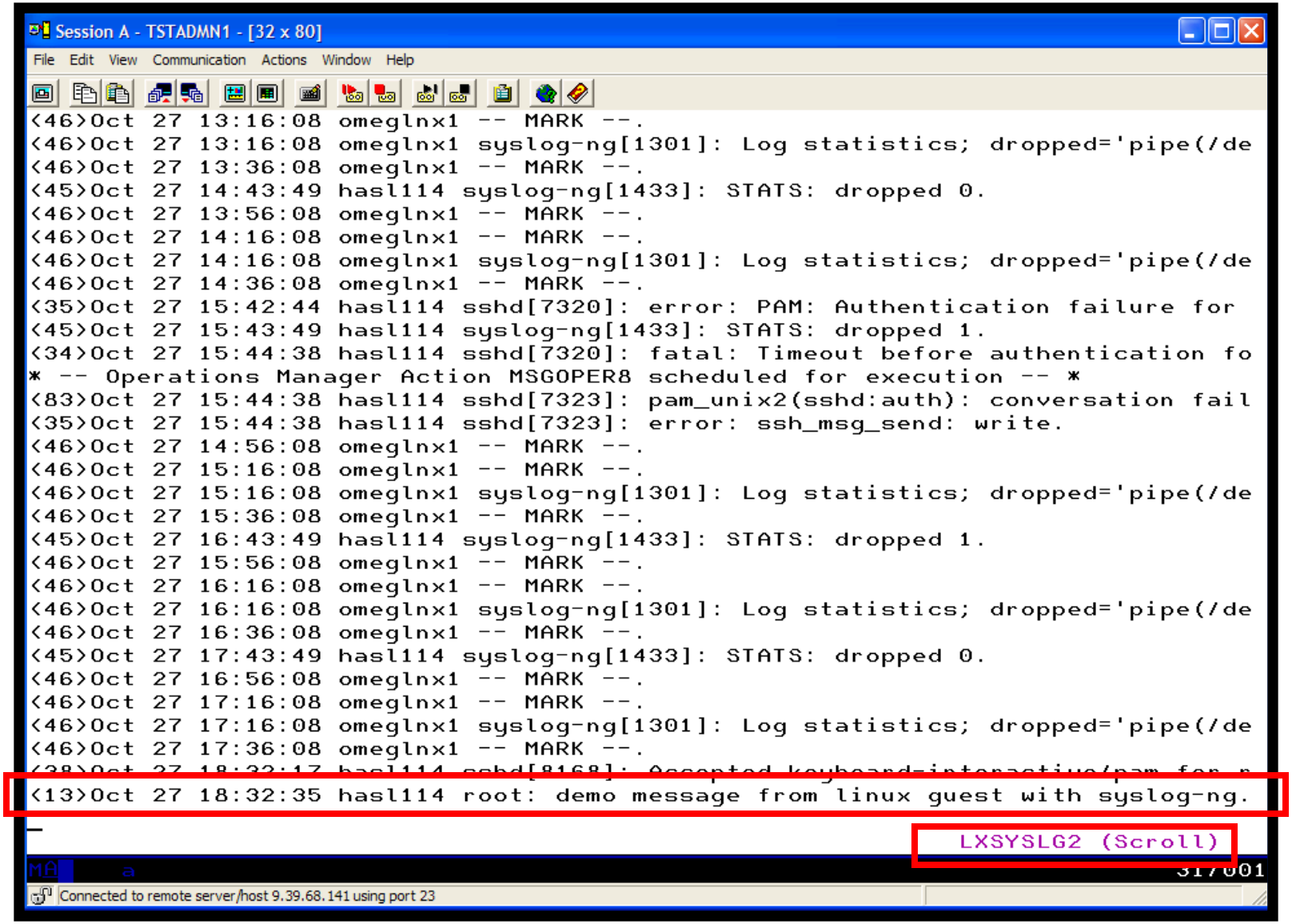

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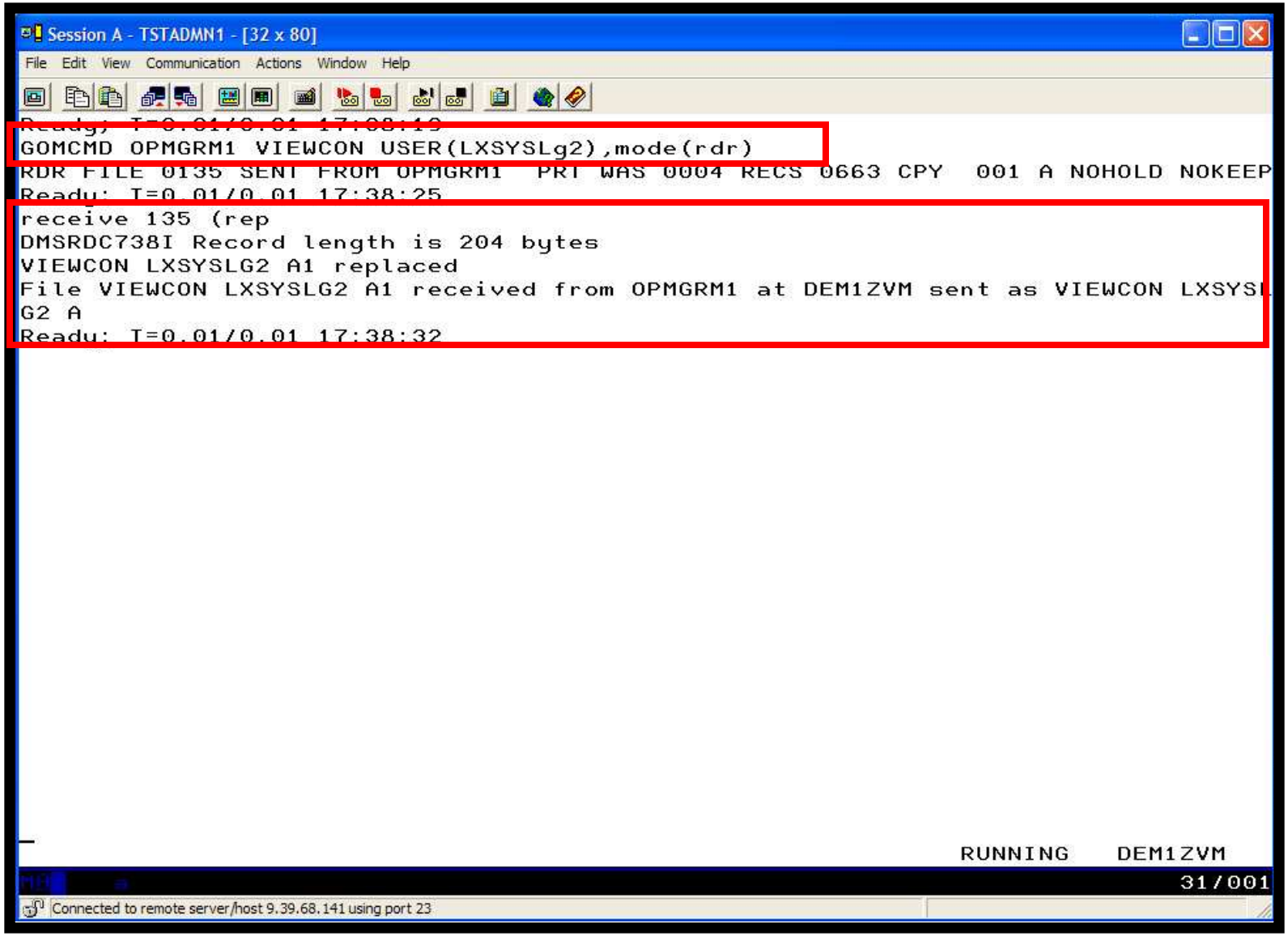

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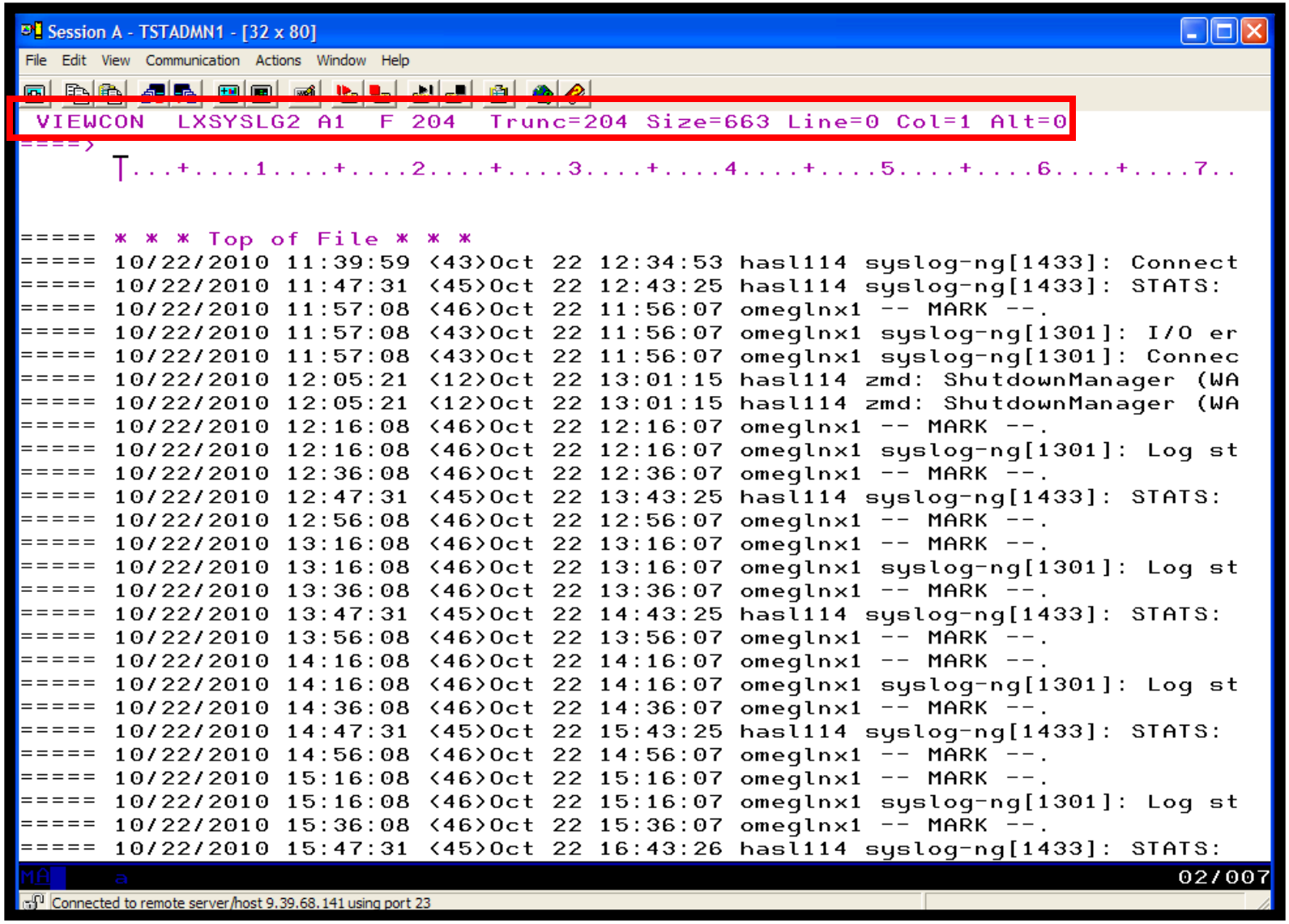

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Scenario 8: How Do You Do That?

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)
```


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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**

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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)
```


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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**

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

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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” on System B (ZVMV5R40) to see the message**

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

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

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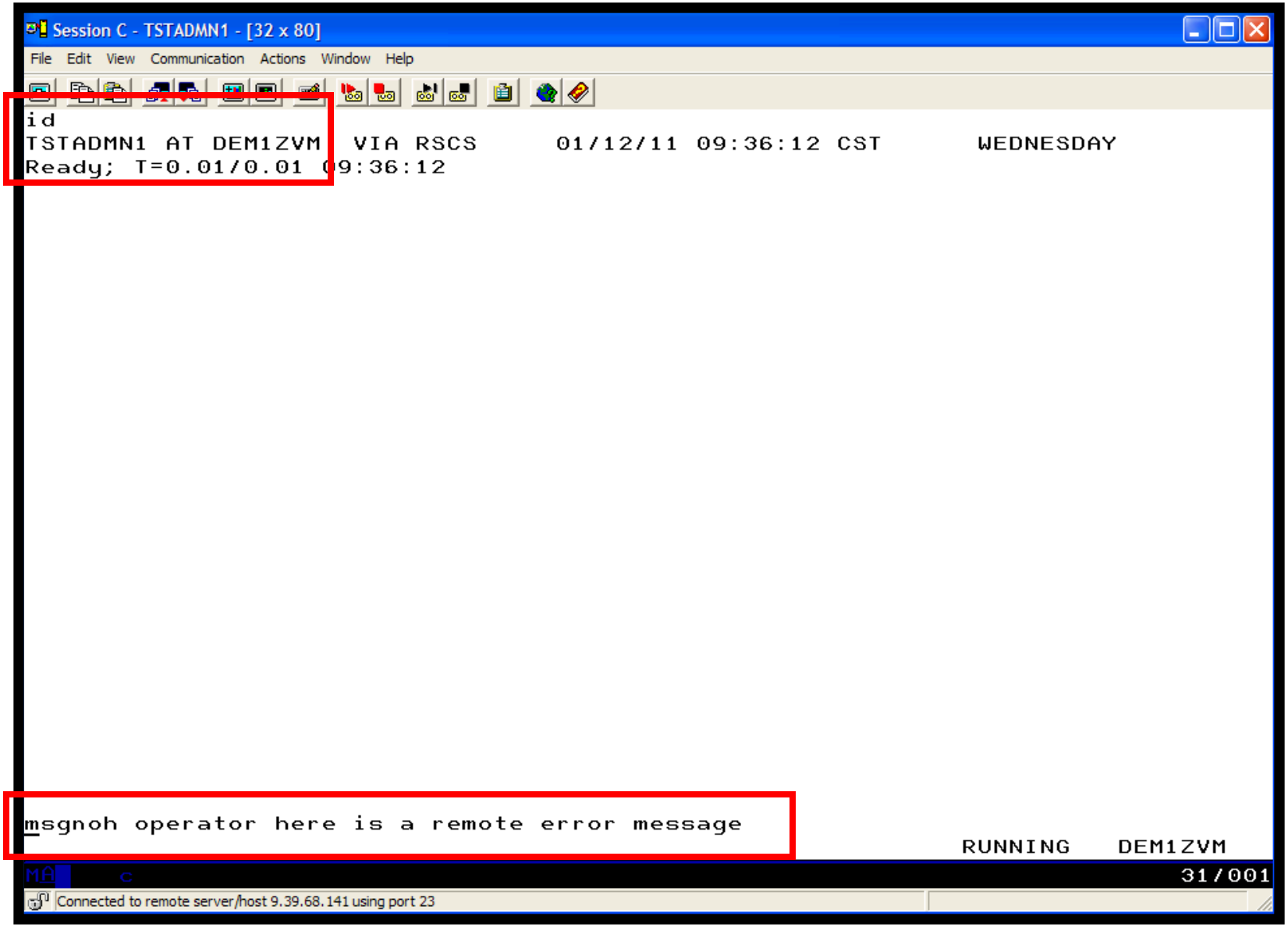

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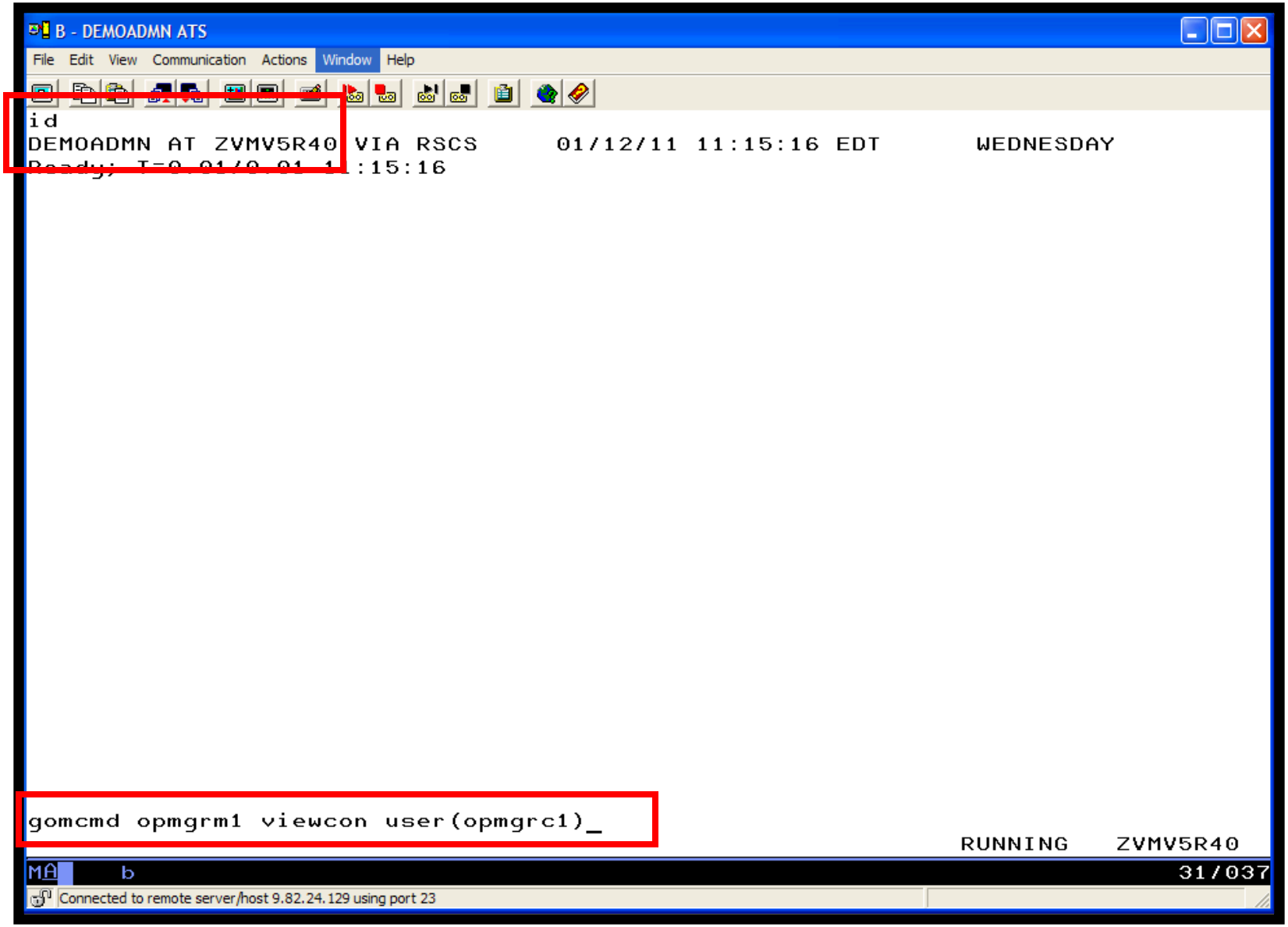

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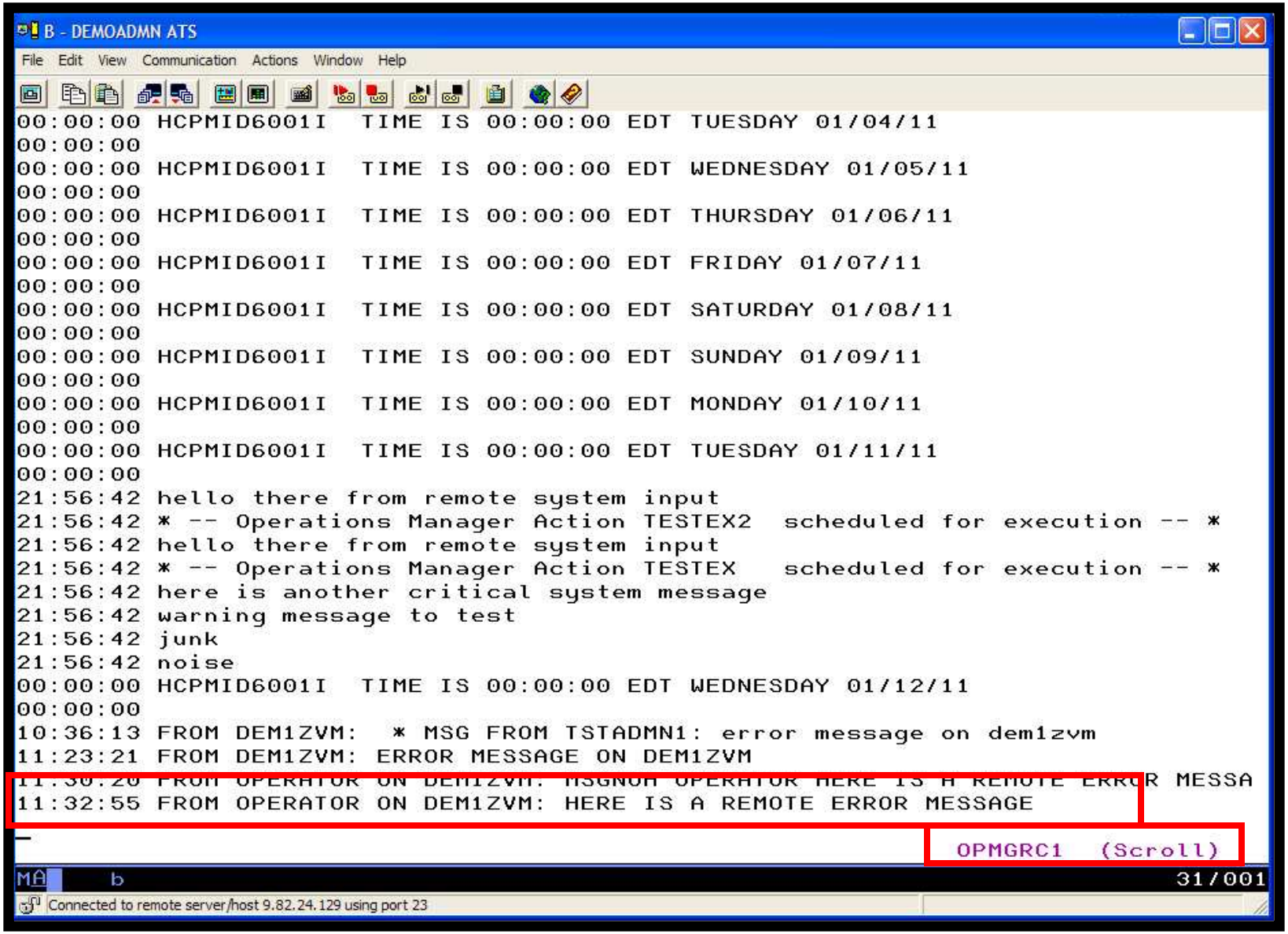

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Scenario 10: How Do You Do That?

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)
```


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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
```


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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 TCPIP 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**

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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

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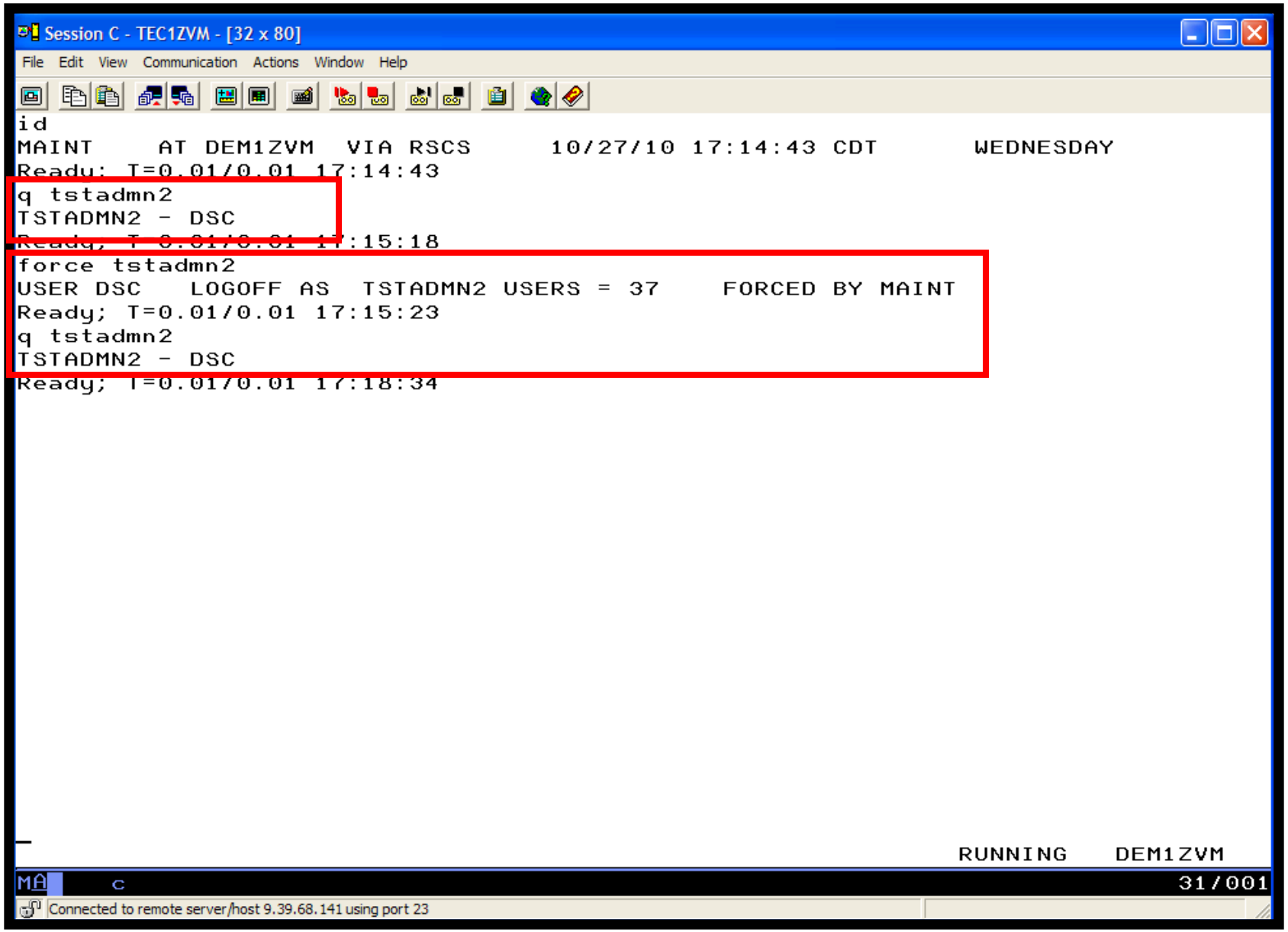

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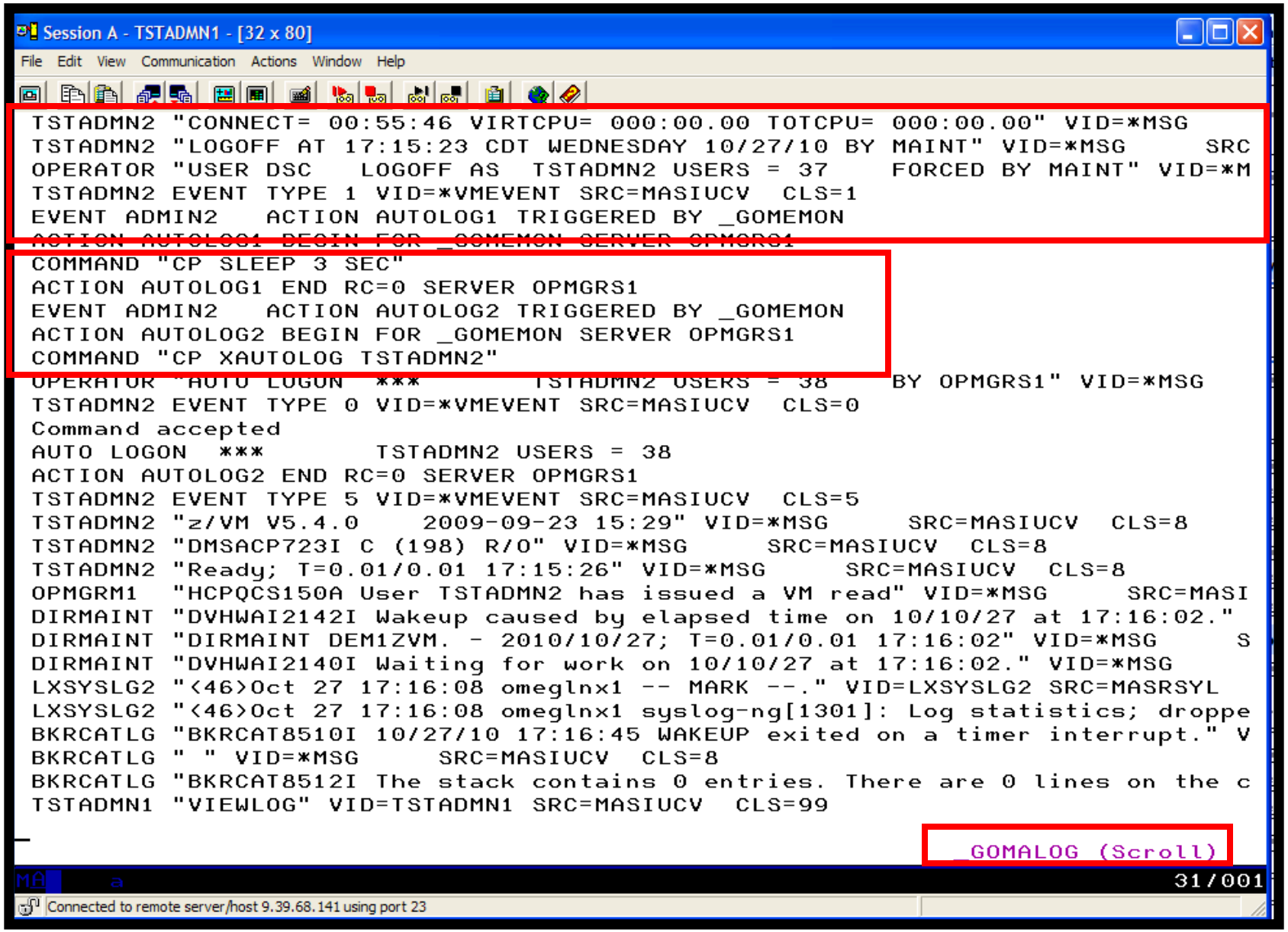

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Scenario 12: How Do You Do That?

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)
```


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धन्यवाद

Hindi

多謝

Traditional Chinese

감사합니다

Korean

Спасибо

Russian

Gracias

Spanish

Thank You

English

شكرا

Arabic

Obrigado

Brazilian Portuguese

Danke

German

Grazie

Italian

多谢

Simplified Chinese

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai

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