

IBM z Systems

Backup Strategies for z/VM and Linux on z Systems or LinuxONE

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Agenda

- Positioning
- Recommended practices and available options
- Live demo
 - Including automation to shut down and restart a Linux guest
 - Configuration and sample code
- Summary
- Additional information in handouts for your reference
 - Starting on slide 28
 - Backing up and restoring data in a z/VM SSI cluster
 - IBM Backup and Restore Manager for z/VM
 - IBM Tape Manager for z/VM
 - Additional demos

IBM z/VM Management Solutions

- Security
 - RACF and zSecure Manager for z/VM
- Performance monitoring
 - OMEGAMON XE on z/VM and Linux
 - Performance Toolkit for z/VM
- **Backup and recovery**
 - Backup and Restore Manager for z/VM
 - Tape Manager for z/VM
 - Spectrum Protect (aka Tivoli Storage Manager)
- Automation and operational monitoring
 - Operations Manager for z/VM
 - Including integration with existing monitoring and alert systems
- Interactive provisioning and system resource management
 - IBM Wave for z/VM

IBM Infrastructure Suite for z/VM and Linux

- IBM bundle/suite
- Tools needed to manage the z/VM and Linux on z Systems infrastructure
 - Wave for z/VM
 - OMEGAMON XE on z/VM and Linux
 - Operations Manager for z/VM
 - Backup and Restore Manager for z/VM
 - Order Tape Manager for z/VM separately if plan to back up to tape
 - Spectrum Protect (aka Tivoli Storage Manager) Extended Edition
- Discounted price as a bundle
- Website:
 - <http://www.ibm.com/software/products/en/ibm-infrastructure-suite-for-zvm-and-linux>
- DeveloperWorks Wiki – **Videos of demos**
 - <http://ibm.biz/Bd4up3>

The background features a dark blue gradient with abstract geometric shapes in shades of purple and orange. A prominent orange and yellow triangle is located in the lower-left quadrant, surrounded by various purple and blue polygons. The overall aesthetic is modern and technical.

Recommended Practices and Available Options

Recommended Practices – Backup and Recovery

Image level backup of z/VM

- Operating system

File level backup of z/VM data

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

Image level backup of (some?) Linux virtual servers

- Operating system
- Applications
- Application data (maybe)

File level backup of Linux virtual servers

- Configuration files
- Log files
- Tools

Recovery of z/VM system, including Linux virtual servers

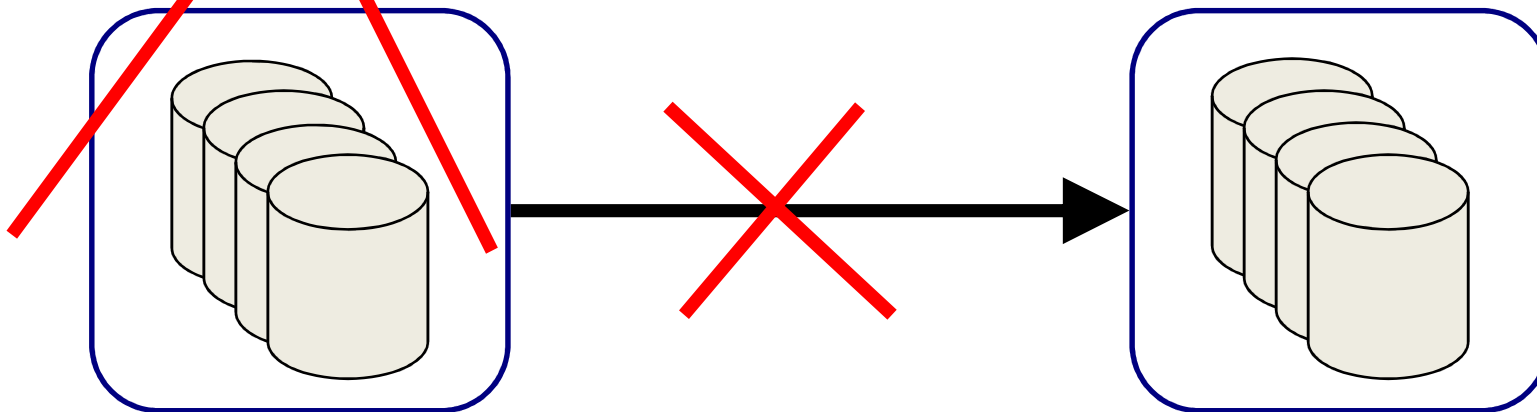
- Dependence on z/OS
- versus
- Independent recovery

Disk or DASD Replication

Location A



Location B



Replication and Backup/Recovery are **NOT** the Same

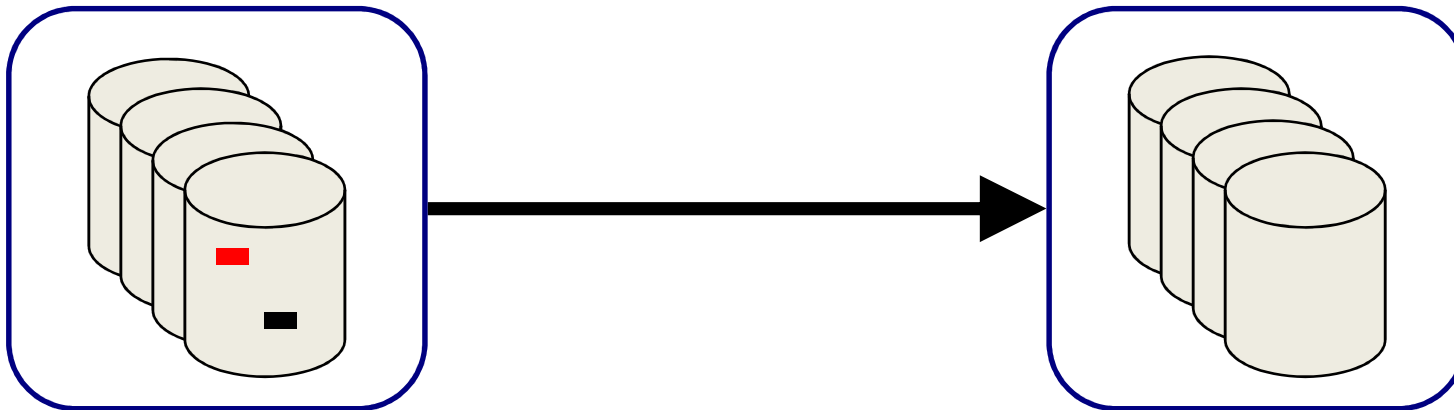
Location A



Location B



Does not address operational recovery needs



Recommended Practices – Backup and Recovery

Image level backup of the z/VM hypervisor

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File level backup of the z/VM hypervisor data

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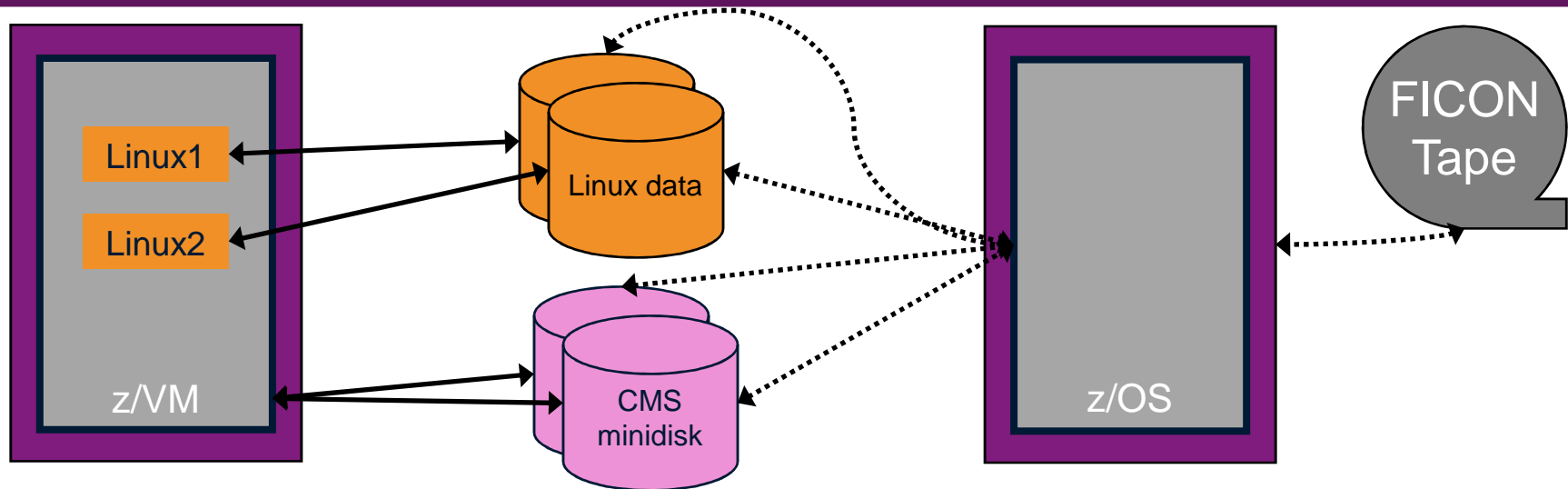
File level backup of Linux virtual servers

- Configuration files
- Log files
- Tools

Recovery of z/VM system, including Linux virtual servers

- Dependence on z/OS
versus
- Independent recovery

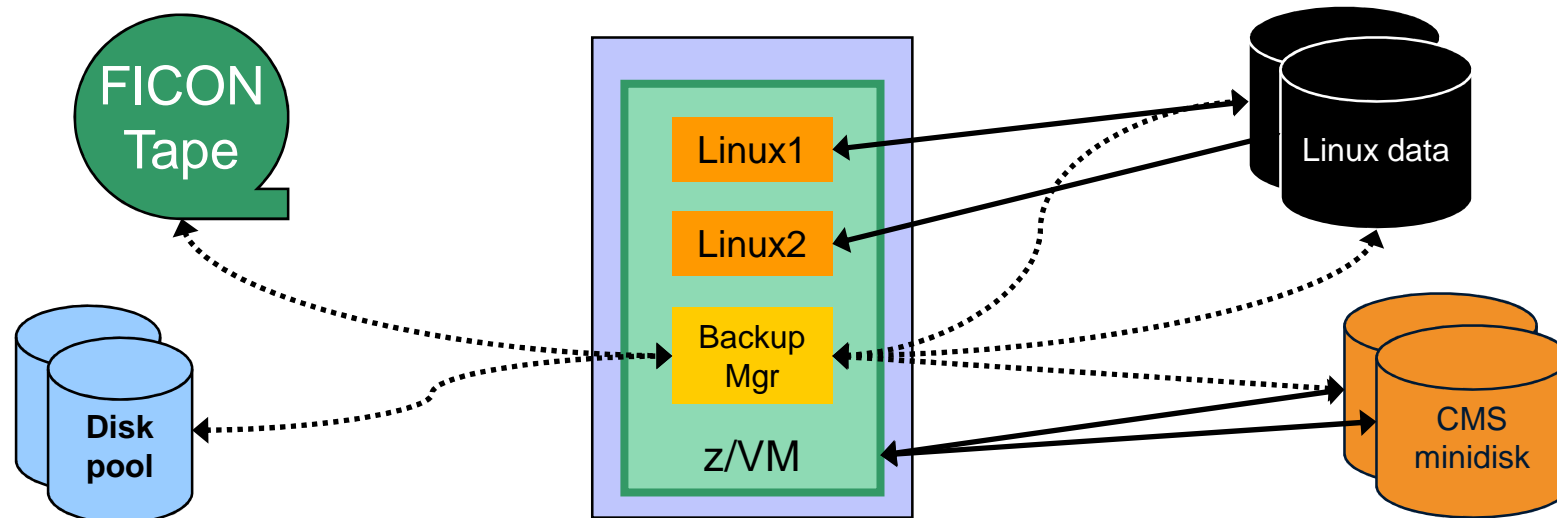
Image Level Backup/Recovery of z/VM and Linux Virtual Servers from z/OS



• **Image level backup and recovery of DASD volumes from z/OS**

- Existing z/OS procedures and tools in place
- Use existing tape infrastructure
- Fast
- Doesn't include FCP-attached DASD
- Linux should be down
 - Flashcopy can minimize downtime
- Dependent on z/OS for recovery and DR
 - Is Linux workload critical – recovery required in parallel with z/OS in event of disaster?
- Using z/OS cycles (on general purpose processors) to back up z/VM and Linux

Image Level Backup/Recovery of z/VM and Linux Virtual Servers from z/VM



- **Image level backup and recovery of DASD volumes from z/VM**
 - Low risk if z/VM is running – but not zero risk
 - Includes FCP-attached DASD (defined to z/VM as EDEVICES)
 - Guest must be logged off if volumes DEDICATED to guest
 - **Linux should be down**
 - Flashcopy can minimize downtime
 - Recovery of z/VM and Linux independent from recovery of z/OS
 - Critical Linux workload recovered in parallel with z/OS in event of disaster
 - Faster recovery of z/VM and Linux overall
 - Backup software required on z/VM
 - Use z/VM cycles on IFL processors to back up z/VM and Linux
 - Requires mainframe attached tape devices
 - Share tape devices with z/OS – does not require both systems to be up

Do I Need to Perform Image Back Ups of **Every** Linux Virtual Server ?

- It depends ...
- Is each guest image unique?
 - Are required logs or other output stored within each guest?
 - Is configuration of each guest automated?
- Can a new guest be recreated from a golden image more easily than restoring it?

Is backing up just the “golden images” sufficient?

Recommended Practices – Backup and Recovery

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File level backup of Linux virtual servers

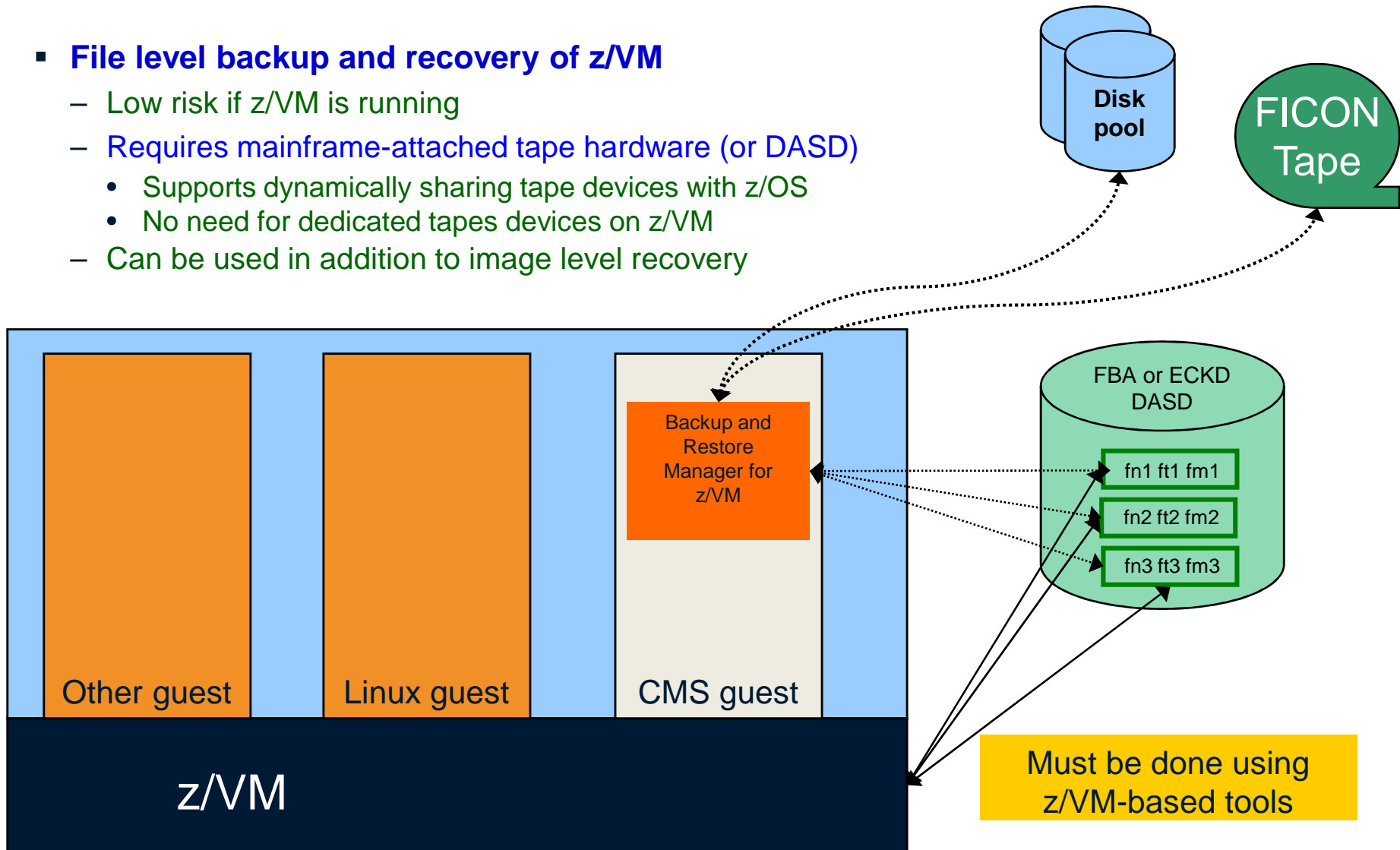
- Configuration files
- Log files
- Tools

Recovery of z/VM system, including Linux virtual servers

- Dependence on z/OS
- versus
- Independent recovery

File Level Backup and Recovery of z/VM

- **File level backup and recovery of z/VM**
 - Low risk if z/VM is running
 - Requires mainframe-attached tape hardware (or DASD)
 - Supports dynamically sharing tape devices with z/OS
 - No need for dedicated tapes devices on z/VM
 - Can be used in addition to image level recovery



Recommended Practices – Backup and Recovery

Image level backup of the z/VM hypervisor

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File level backup of the z/VM hypervisor data

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

Image level backup of (some?) Linux virtual servers

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File level backup of Linux virtual servers

- Configuration files
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- Tools

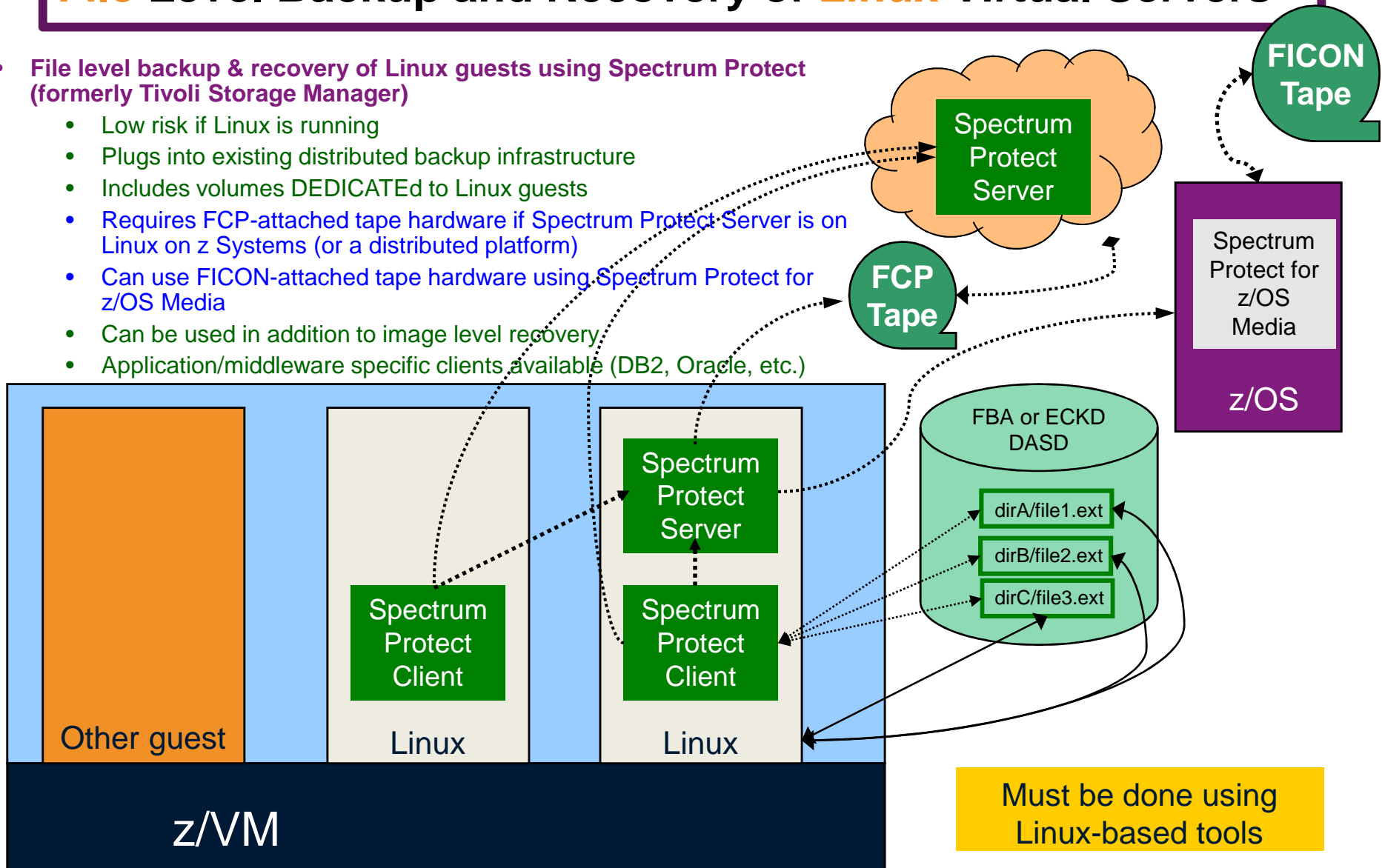
Recovery of z/VM system, including Linux guests

- Dependence on z/OS
- versus
- Independent recovery

File Level Backup and Recovery of Linux Virtual Servers

- File level backup & recovery of Linux guests using Spectrum Protect (formerly Tivoli Storage Manager)

- Low risk if Linux is running
- Plugs into existing distributed backup infrastructure
- Includes volumes DEDICATED to Linux guests
- Requires FCP-attached tape hardware if Spectrum Protect Server is on Linux on z Systems (or a distributed platform)
- Can use FICON-attached tape hardware using Spectrum Protect for z/OS Media
- Can be used in addition to image level recovery
- Application/middleware specific clients available (DB2, Oracle, etc.)



What About **DDR**?

- DDR - DASD Dump Restore utility in z/VM
- Basic ability to copy data from one location to another
 - Command driven
 - Specify a source location
 - Specify a target location (disk or tape)
- Useful when copying/cloning minidisks or volumes
 - No ability to do file level backup/recovery
 - Be aware of “changing data” on active disks or volumes
- Very limited in terms of production level backup and recovery

What About DDR?

- Advantages of Backup and Restore Manager for z/VM over DDR
 - File level backup and recovery
 - Incremental backups of z/VM (CMS and SFS) files
 - Cataloging of what has been backed up
 - Including full screen interfaces for finding backup data and restoring it
 - Automated expiration processing of catalog data and backup data on disk or tape
 - Flexibility to define a job once using wildcarding
 - Future invocations of that job will back up any new data that meets the criteria
 - Invoke multiple service machines to share the backup task
 - Completes the backup sooner
 - Integration with a tape management system
 - No need to manage tapes and tape mounts manually

Where and How to Back Up z/VM and Linux Guests

- Using z/OS to back up and restore z/VM and Linux
 - Useful during Linux on z Systems POC or early stages of Linux roll-out
 - Easy and fast to implement for existing z/OS customers
 - Provides disaster/volume level recovery (not file level recovery)
 - **Concerns or issues long term as Linux workload grows or becomes critical**
 - Doesn't support FCP-attached DASD
 - File level recovery of z/VM or Linux data
 - Time consuming and manual
 - Backups only contain volume images
 - In disaster situation, z/VM and Linux must wait for z/OS recovery before beginning their recovery
 - Increased use of z/OS CPU cycles to support z/VM and Linux

Where and How to Back Up z/VM and Linux Guests

- Using native z/VM and Linux solutions for backup and recovery
 - Supports operational errors and disaster situations
 - File level backup and recovery of both z/VM and Linux
 - Image level backup and recovery of FCP and FICON-attached DASD (z/VM and Linux)
 - Independent of z/OS
 - Backups run on (less expensive) IFLs
 - Recovery in parallel with z/OS
 - Dynamically sharing of tape devices with z/OS is still possible
 - Does not require both systems to be up

Backing Up Linux – Should the Guest Be **Up** or **Down**?

- Linux keeps pending I/O's in memory when possible
 - Designed for distributed platforms where I/O is assumed to be slow

- Backup solutions that read Linux DASD volumes but run outside Linux don't have a view of these pending I/Os
 - Data on DASD may be in inconsistent state due to pending I/Os
 - Restoring data that has been backed up while Linux is running may not yield usable results
 - SYNC command exists to force all I/Os to be processed
 - Linux will immediately start caching new I/Os
 - Dependent on type of application running on Linux
 - Best case is a crash consistent backup
 - Generally worse – backup occurs over a period of time
 - DASD A backed up, then while backing up DASD B, DASD A changes again

Backing Up Linux – Should the Guest Be **Up** or **Down**?

- Reduce risk by
 - “Right-sizing” Linux guests – don’t give more memory than needed
 - Recommended for performance reasons anyway
 - Using Flashcopy to flash the disks and back up the flashed copy
- For **guaranteed recovery**, shut down or suspend the guest before backing it up from z/VM or z/OS
 - Your experience may (will) vary
 - Evaluate the risk based on the application
 - Use Flashcopy to reduce the downtime
- Additional notes
 - For DASD volumes DEDICATED to Linux guests
 - Backups can not be done while guest is running
 - Volume is attached to guest
 - Backups can be done while guest is down
 - Requires some extra steps – see upcoming white paper
 - Steps depend on ECKD vs SCSI

Using **Suspend** Before Backing Up Linux Guests ...

- SUSPEND/RESUME functions in Linux
- Similar to hibernate function in Windows
 - Suspend
 - Completes all pending I/Os
 - Writes memory to disk
 - Resume
 - Detects suspend state
 - Reads memory from disk to restore previous state of the guest
- Requires **setup and planning**
 - Verify the effort is worth it for each type of guest
 - Otherwise, use shutdown instead of suspend

... Using **Suspend** Before Backing Up Linux Guests

➤ Setup

- Specify swap disk in zipl.conf
 - Example: resume=/dev/disk/by-path/ccw-0.0.010f-part1
- In list of swap disks
 - Specify this one with lowest priority
 - Use real disk (not VDISK)
 - Needs to have enough room for all memory of Linux guest + swap space

➤ Issue suspend via one of the following:

- echo disk > /sys/power/state
- CP SIGNAL SHUTDOWN
 - Must update config file on Linux to specify suspend rather than kill in response to signal shutdown

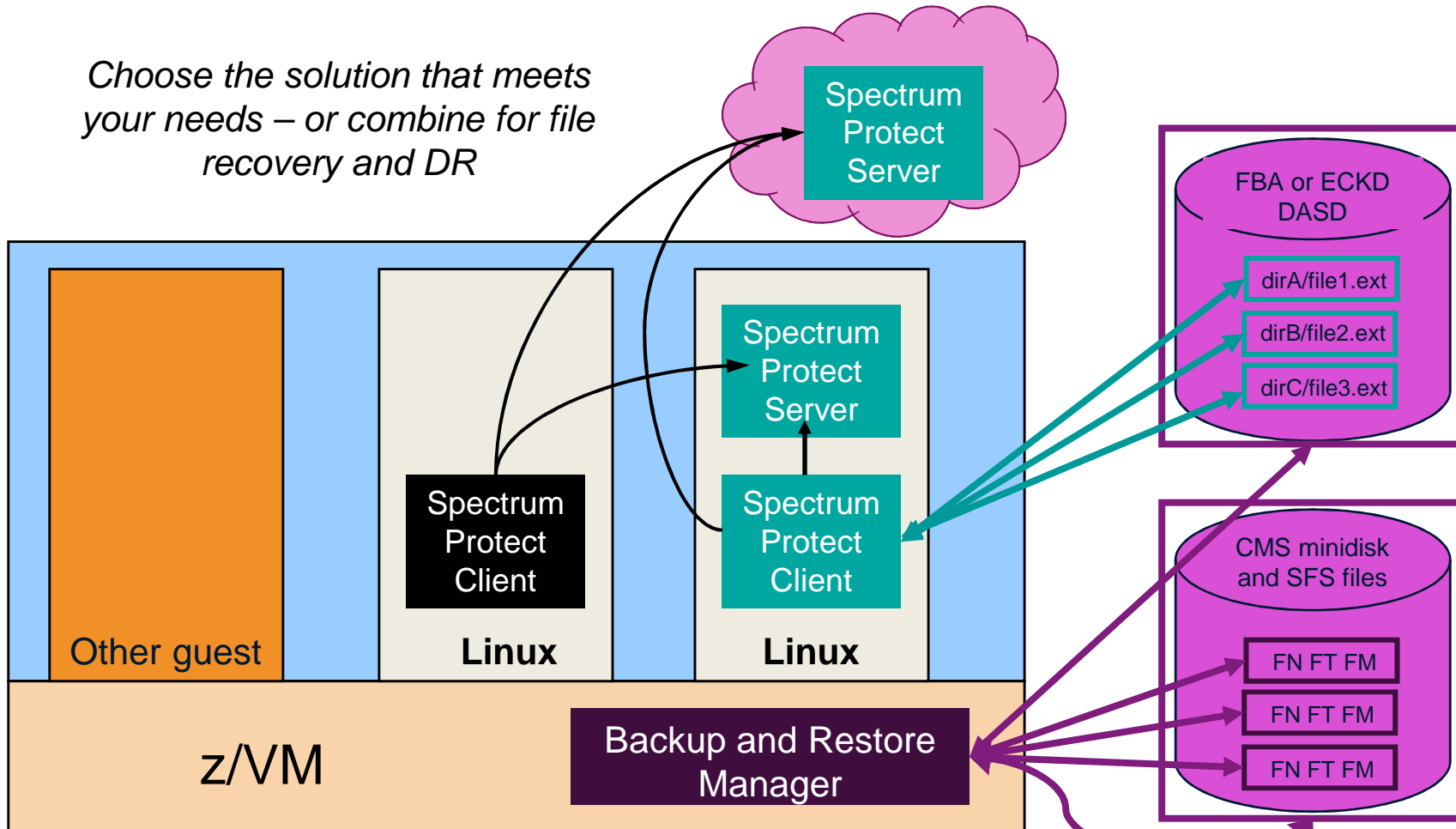
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Summary

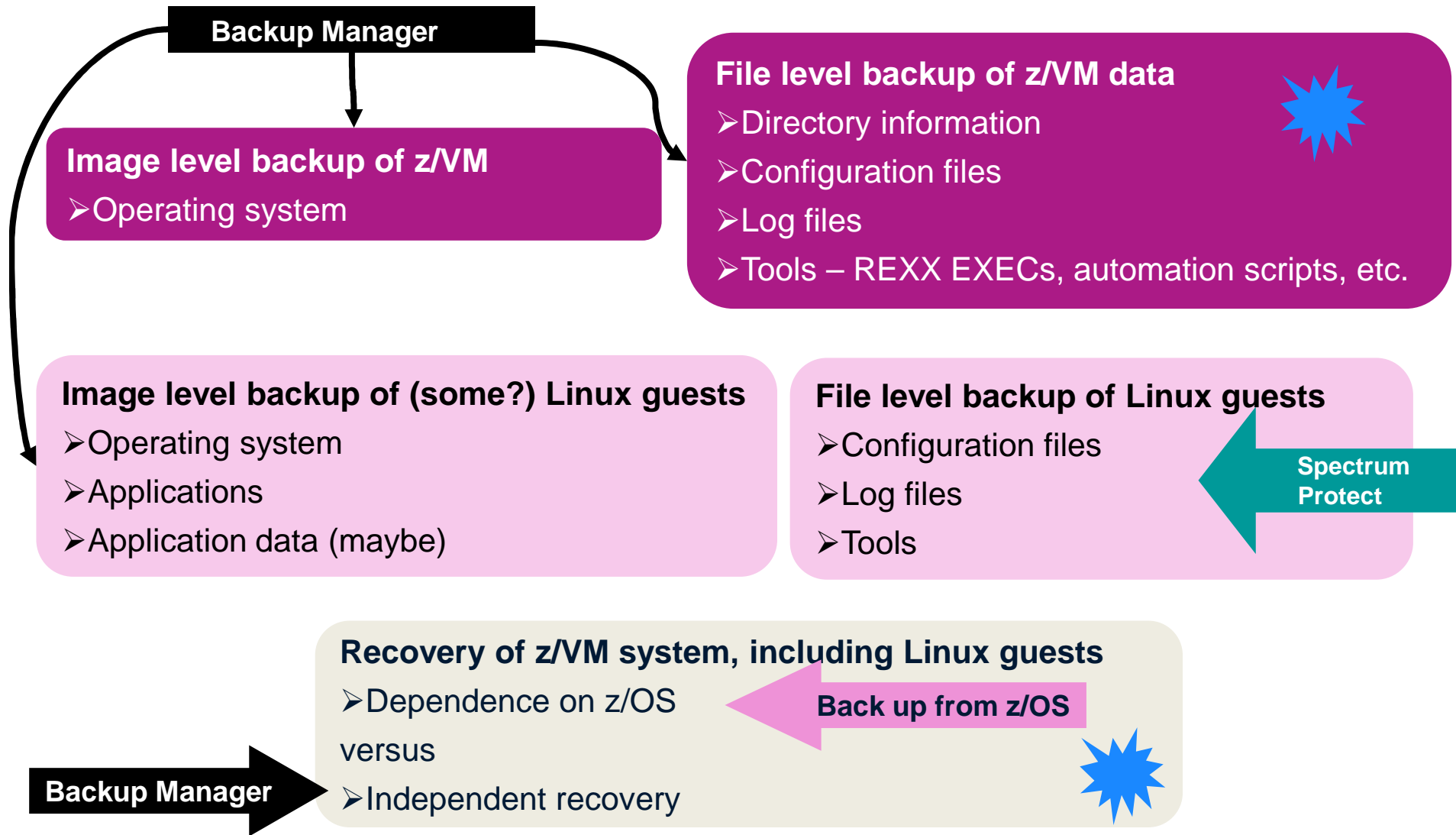
Summary of Backup Solutions

Using Backup and Restore Manager with Spectrum Protect (formerly Tivoli Storage Manager)

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



Recommended Practices – Backup and Recovery





Additional Information

See additional slides in handouts

Backing up and Restoring Data in a z/VM SSI Cluster

IBM Backup and Restore Manager for z/VM

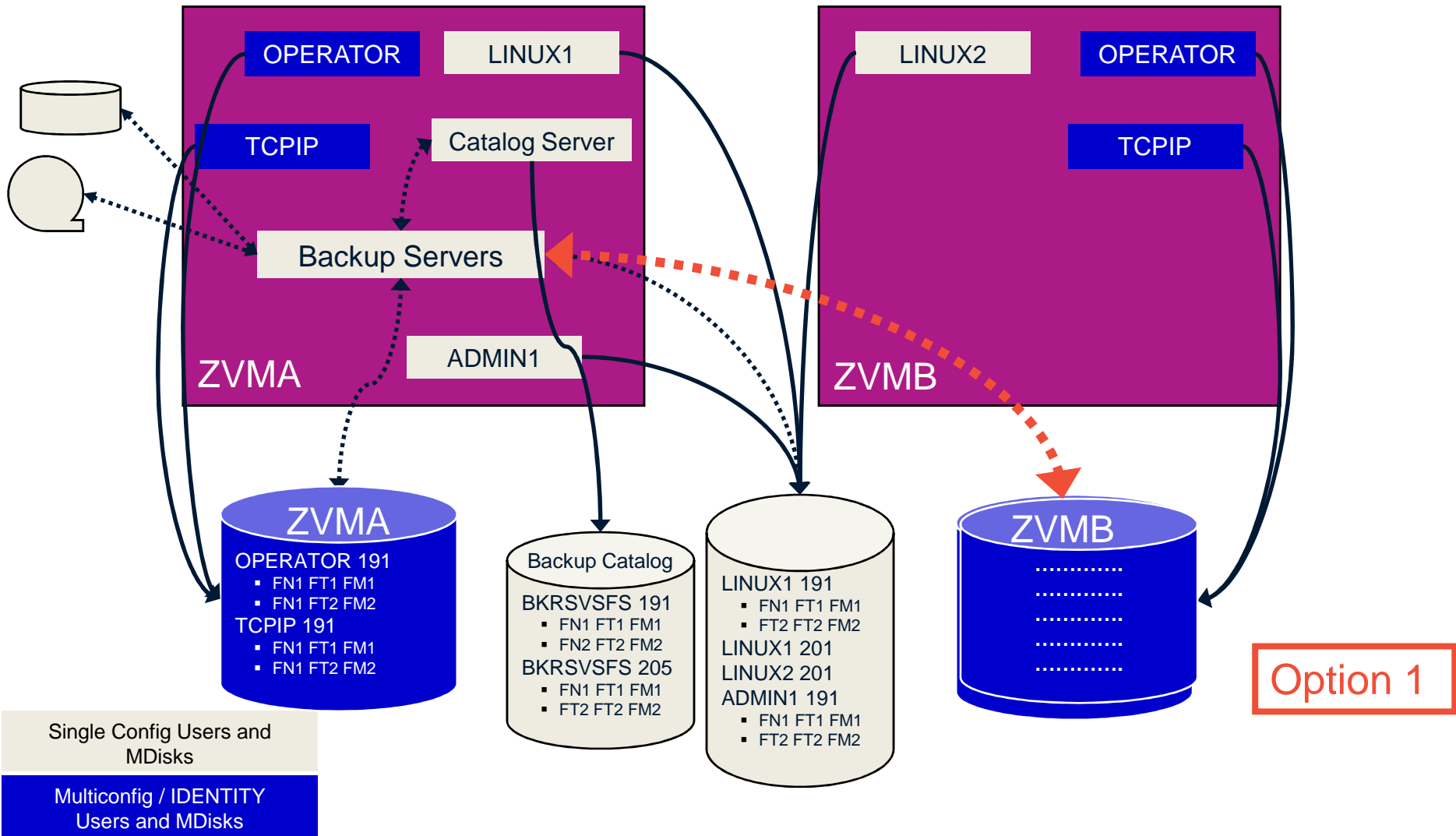
IBM Tape Manager for z/VM

Additional Demos

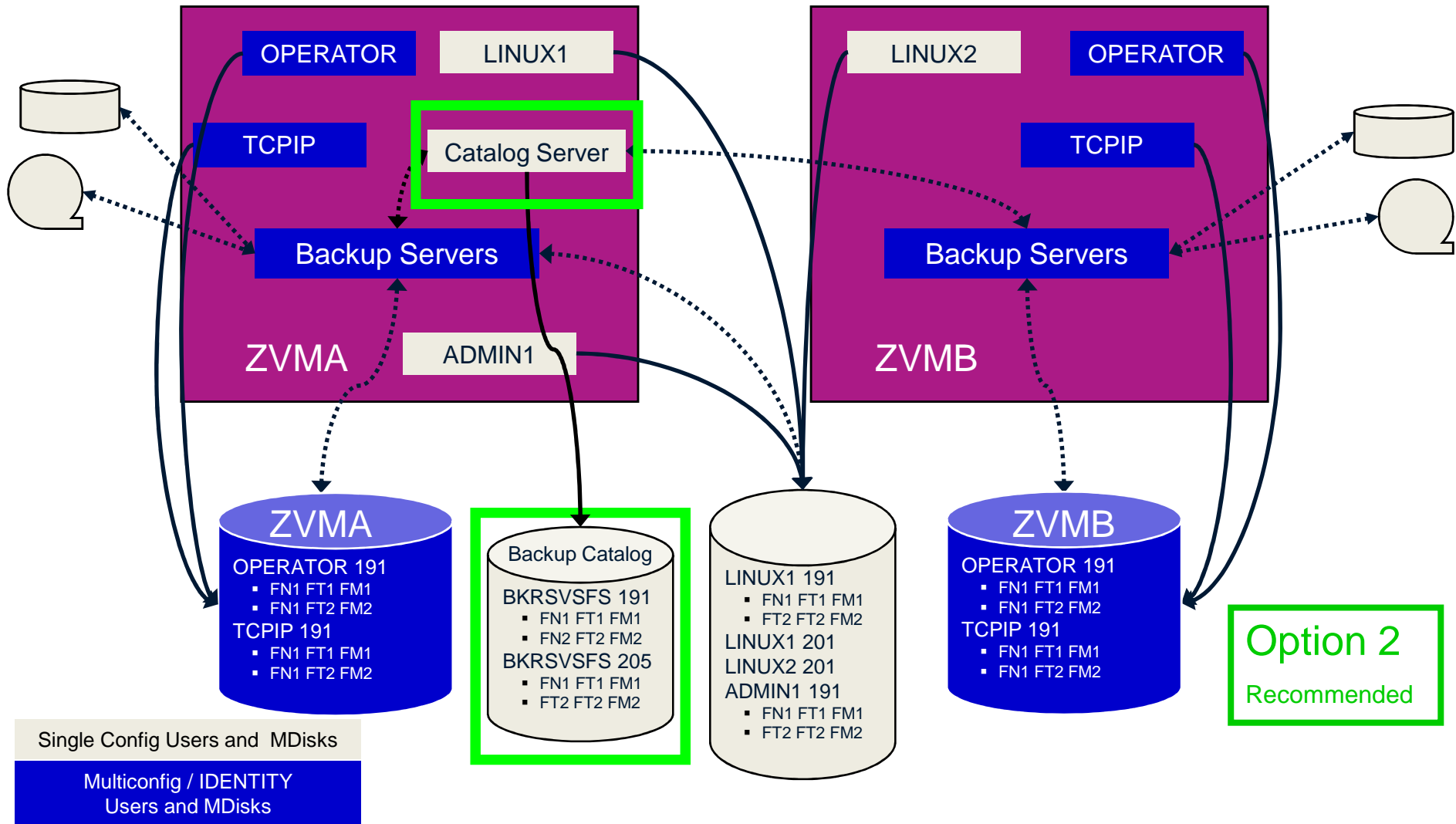


Backing up and Restoring Data in a z/VM SSI Cluster

SSI Considerations for Backup and Restore



SSI Considerations for Backup and Restore



SSI Considerations for Backup and Restore

- Backup service machines on any member can see all minidisks of **single configuration users**
- Backup service machines on any member can see all minidisks of **local multiconfiguration** (IDENTITY) users
 - Can **not** see minidisks of **IDENTITY** users on **other members**
 - Can **only** see DASD volumes (if shared/available) of IDENTITY users on other members

SSI Considerations for Backup and Restore

➤ Recommendation

- Create Backup **service machines** as **IDENTITY** users on each member
 - For IBM Backup and Restore Manager: BKRBKUP, BKRCATLG, BKRWRKnn
- Create **one backup catalog for the entire cluster**
 - Place the backup catalog in SFS
 - One single configuration user for SFS server/filepool (e.g. BKRSVSFS)
 - Configure as SSI (or REMOTE) in DMSPARMS file
 - Allows **admins to see all backup data from all members** of the cluster in one view
 - Allows single configuration users to restore their own data when logged onto any member

SSI Considerations for Backup and Restore

➤ Recommendation

- Create separate backup jobs for single configuration users vs IDENTITY users
 - Backup job(s) for **single configuration users** – only run them from one member
 - Running them on other members will just back up the same data twice
 - For **multiconfiguration (IDENTITY) users**
 - One job per member
 - Use a unique job name on each member
 - Run the member specific job on that member's backup server

Reference Information

- Product Web site
 - Start at <http://www.ibm.com/software/products/en/backup-restore-manager-for-zvm>
 - Start at <http://www.ibm.com/software/products/en/tape-manager-for-zvm>
 - Product pages include
 - Publications
 - Pre-requisites
 - Presentations
 - White papers
 - Support
- e-mail
 - Mike Sine, sine@us.ibm.com, Technical Marketing
 - Tracy Dean, tld1@us.ibm.com, Product Manager
- White papers and presentations on Backup and Restore Manager and Tape Manager websites (Resources tab)
 - Getting Started with Installation, including SFS server creation and installation of Backup Mgr
 - z/VM V6.2 and later
 - z/VM V5.4
 - Backing up z/VM and Linux on System z – Tivoli Storage Manager vs Backup Manager
 - Pausing (including SUSPENDING) a Linux Guest
 - Enabling the FACILITY Class for Use by RACF for z/VM
- **IBMVM mailing list:** <http://listserv.uark.edu/archives/ibmvm.html>



Backup and Recovery
IBM Backup and Restore Manager for z/VM

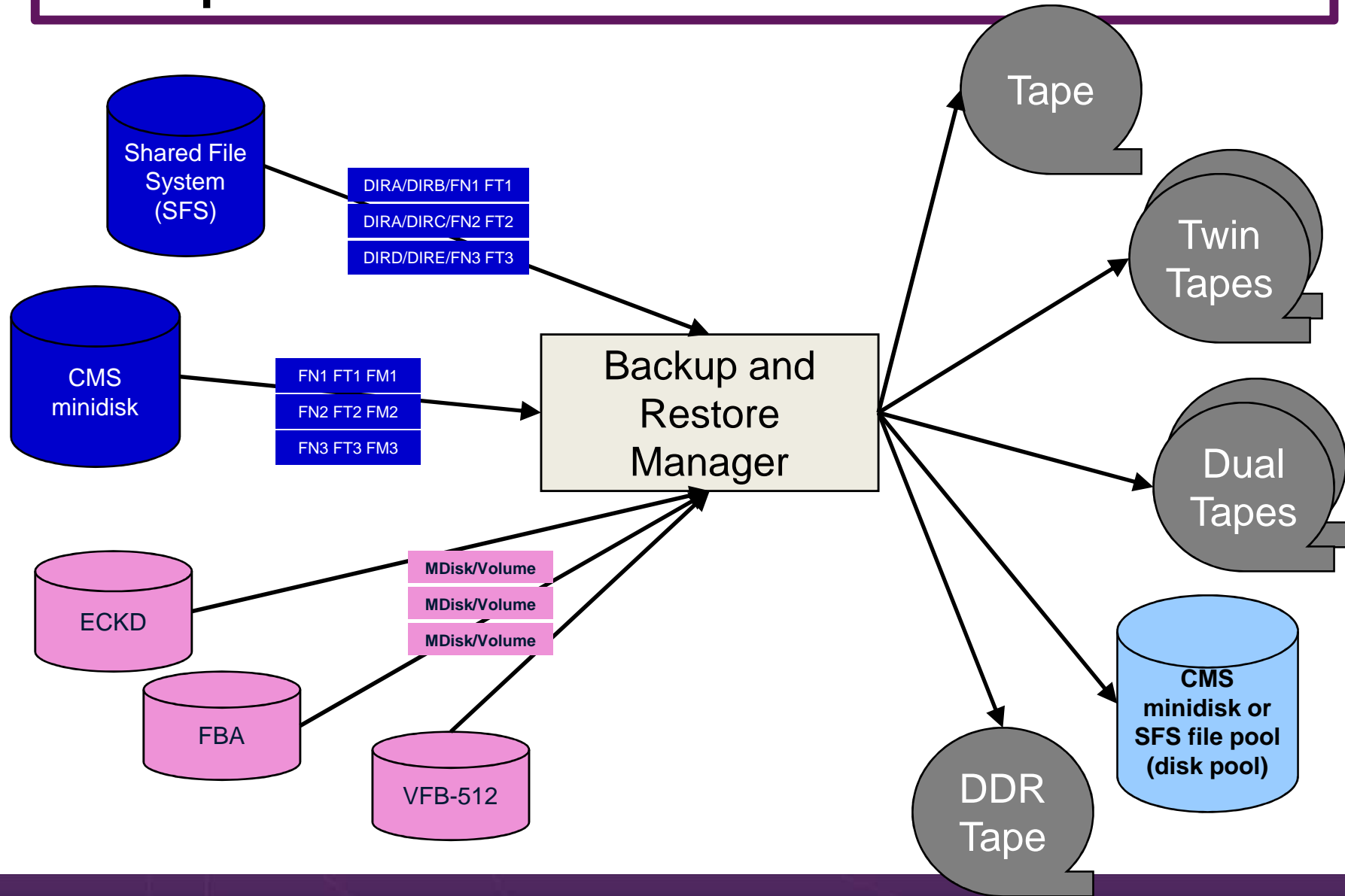
Product Overview

- Backup
 - Requested by administrators
 - Full or incremental
 - Flexible selection of disks and files to back up
 - Review job before submitting for backup
- Restore
 - Restore data via full screen interface or commands
 - Performed by users for their own data
 - Extended to other users available via exit
 - Performed by administrators for any data

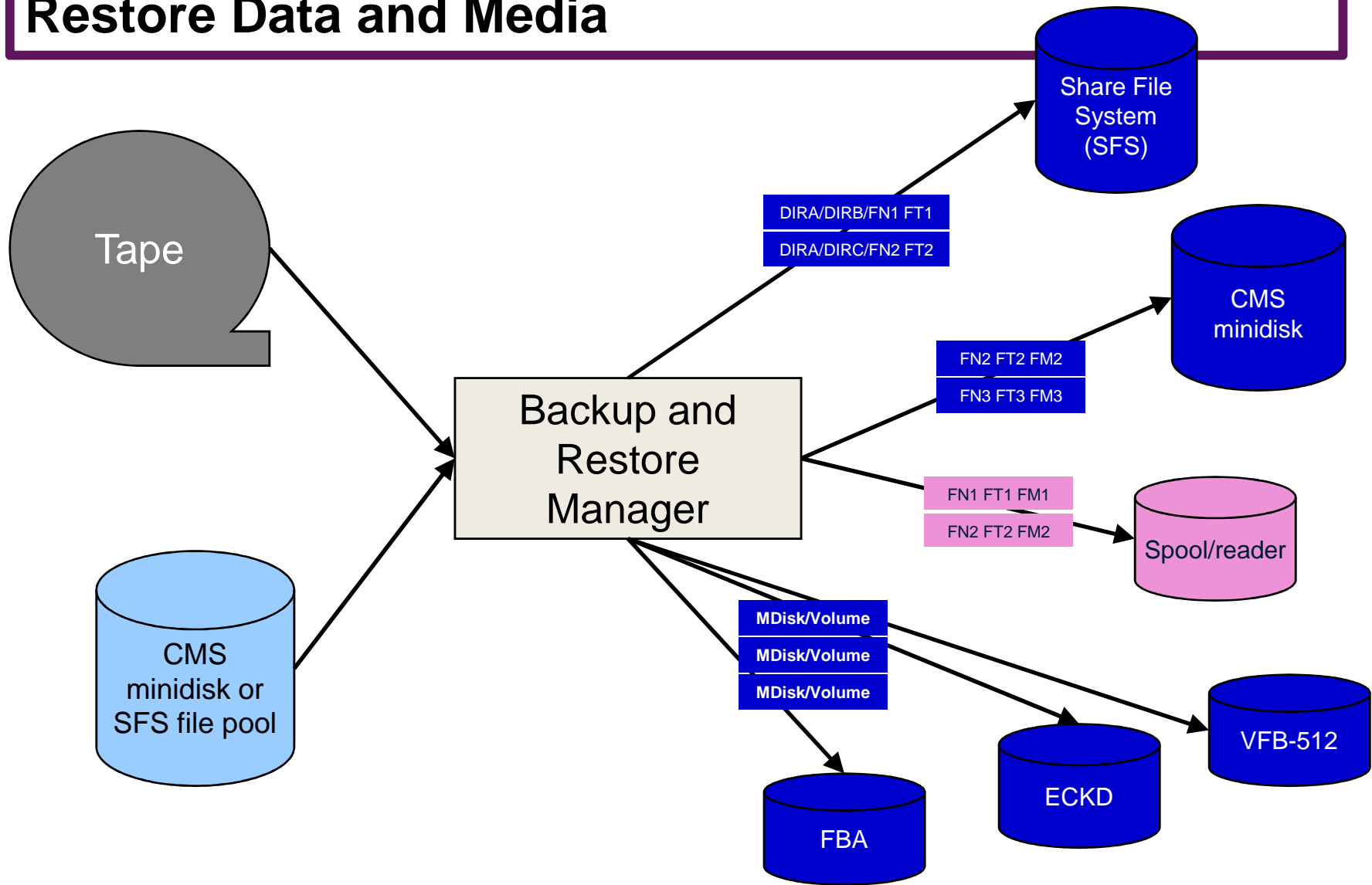
Catalog in Shared File System (SFS) – presentation on web site for installation and setup

- **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 available via exits**
 - Call your own routine
 - Use vendor-written routine, such as V/Soft Software's Encrypt/Backup for z/VM
 - Use encryption capable tape devices

Backup Data and Media



Restore Data and Media



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, SFS 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 (if backed up to disk)
 - 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
 - Or minidisk in disk pool

Defining a Backup Job

```

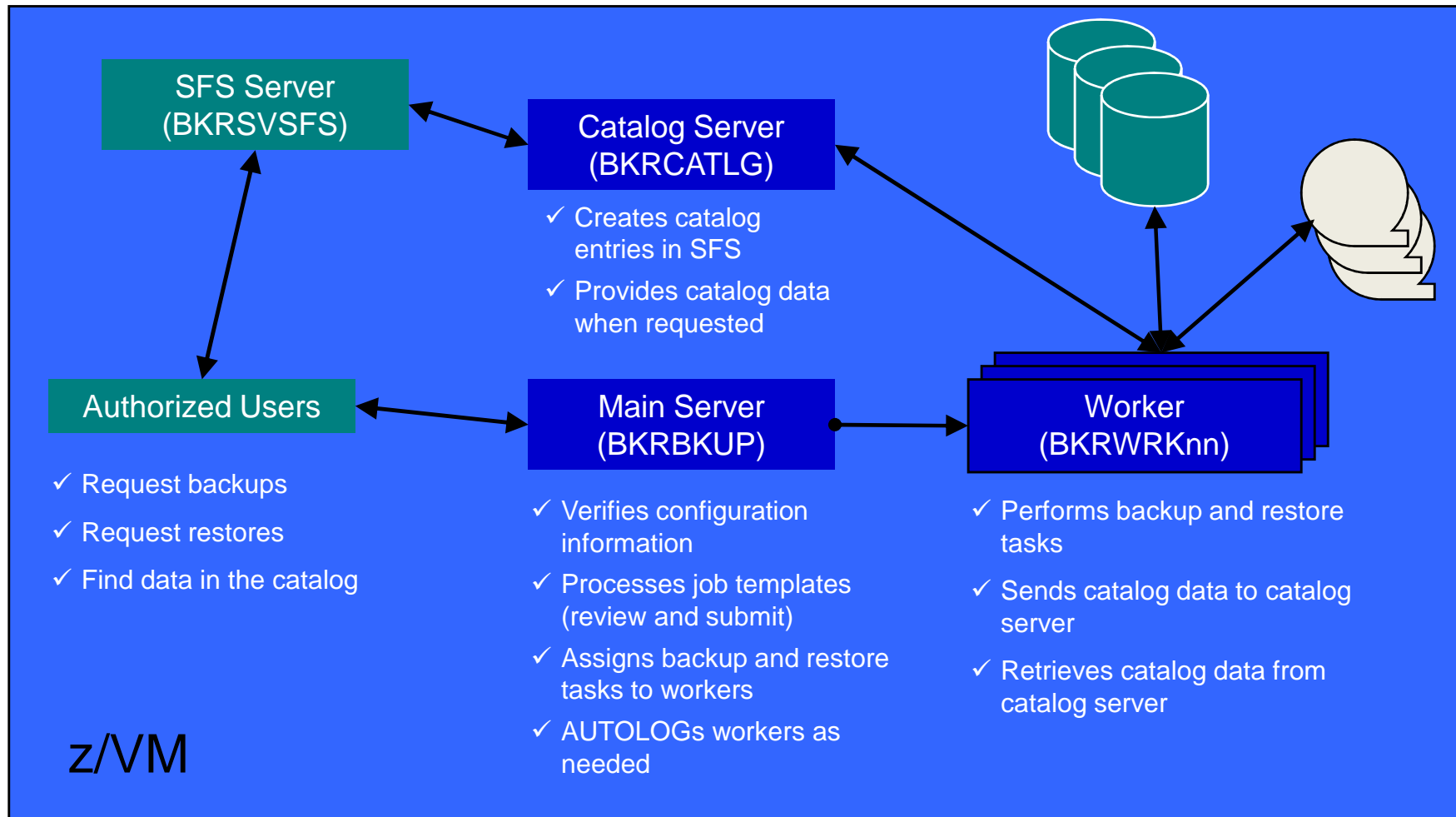
/* Include/Exclude definitions */
/*****/
FUNCTION MEDIATYPE OWNER VDEV VOLUME DEVTYPE START END SIZE
-----|-----|-----|---|-----|-----|---|-----|---|-----|
INCLUDE MINIDISK * = * * * = * = * = *
EXCLUDE MINIDISK *LNX* = * * * = * = * = *
EXCLUDE MINIDISK MAINT = 0123 * * = * = * = *
EXCLUDE MINIDISK MAINT = 0124 * * = * = * = *
EXCLUDE MINIDISK * = * * * = * = END = *
EXCLUDE MINIDISK * = * * * = * = * > 3300
INCLUDE MINIDISK MAINT = 012* * * = * = * = *

FUNCTION MEDIATYPE ADDRESS
-----|-----|-----|
INCLUDE RDEVICE 900-90F
EXCLUDE RDEVICE *B

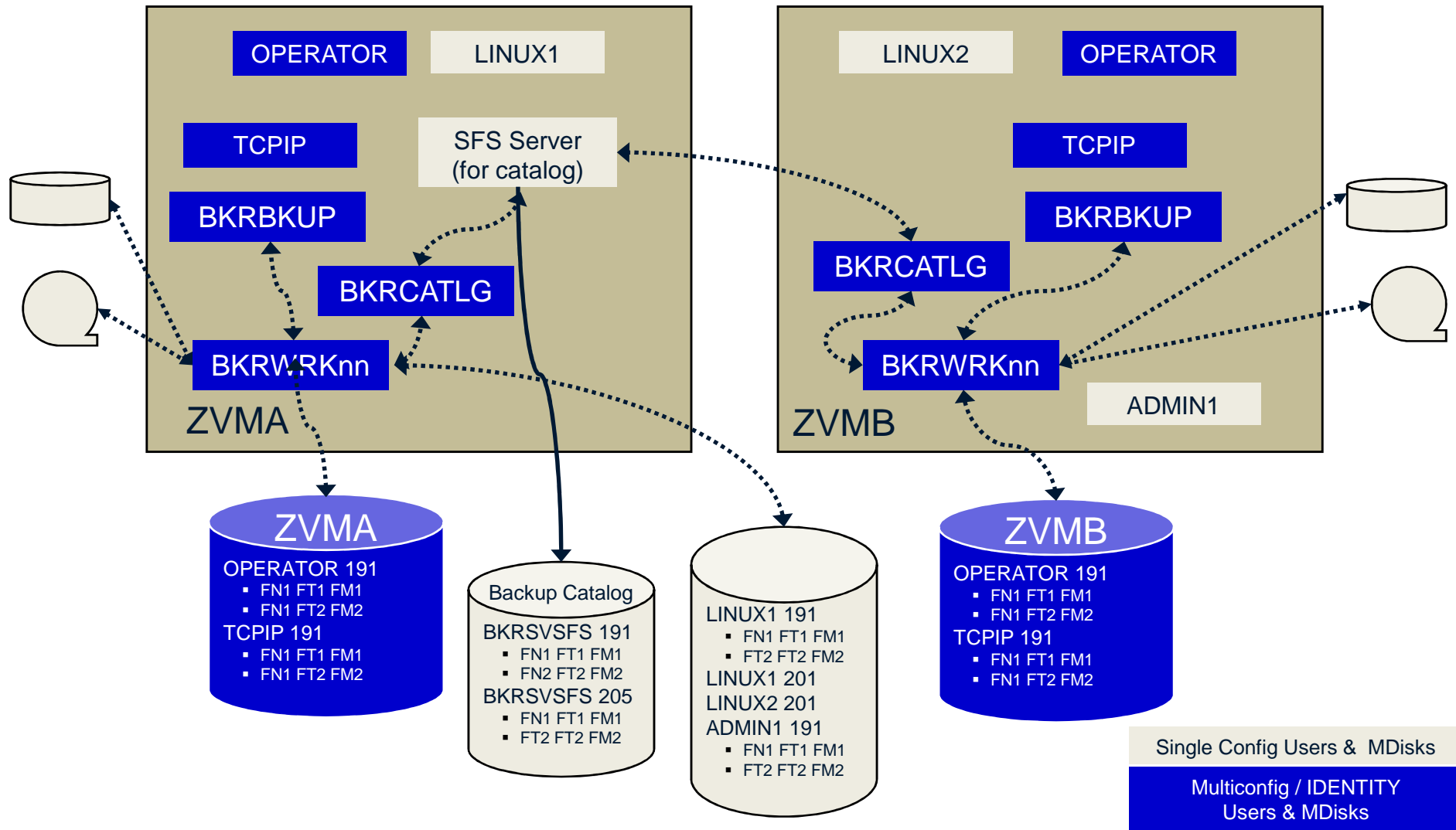
FUNCTION MEDIATYPE VOLSER
-----|-----|-----|
INCLUDE RDEVVOL 630*

FUNCTION MEDIATYPE POOLNAME OWNER FS
-----|-----|-----|-----|---|
INCLUDE SFS VMSYSU: * SFS
EXCLUDE SFS VMSYSU: VMSERVU SFS
    
```

Backup and Restore Manager Architecture – non-SSI




Backup and Restore Manager Architecture – SSI



Summary

- Use Backup and Restore Manager to
 - Perform file-level backups of z/VM data
 - Perform image-level backups of z/VM volumes and disks
 - Perform image level backups of non-z/VM guest data
 - Use Spectrum Protect for file level backups of Linux
 - Perform disaster recovery backups of entire system
 - Easily find and restore data as needed
 - Automatically manage retention of backup data
 - Carefully plan for SSI configurations



Managing Tapes and Tape Devices
IBM Tape Manager for z/VM

Product Overview

- Manage tapes
 - Define tapes in a catalog
 - Free or used
 - Retention/expiration information
 - ATL/VTS or manual mount
 - Data Security Erase
 - Group tapes together into pools
 - Ownership and access control
 - Media type
- Manage devices
 - Define available devices
 - Dedicated or assignable
 - Group devices together into device pools
 - ATL/VTS or manual mount
 - Any other grouping you choose (read only vs. write, location, etc.)
 - Share devices with other systems

- **Manage mount requests**
- **Volume specific and scratch requests**
 - Standard Label
 - Non-Label
 - Bypass Label Processing

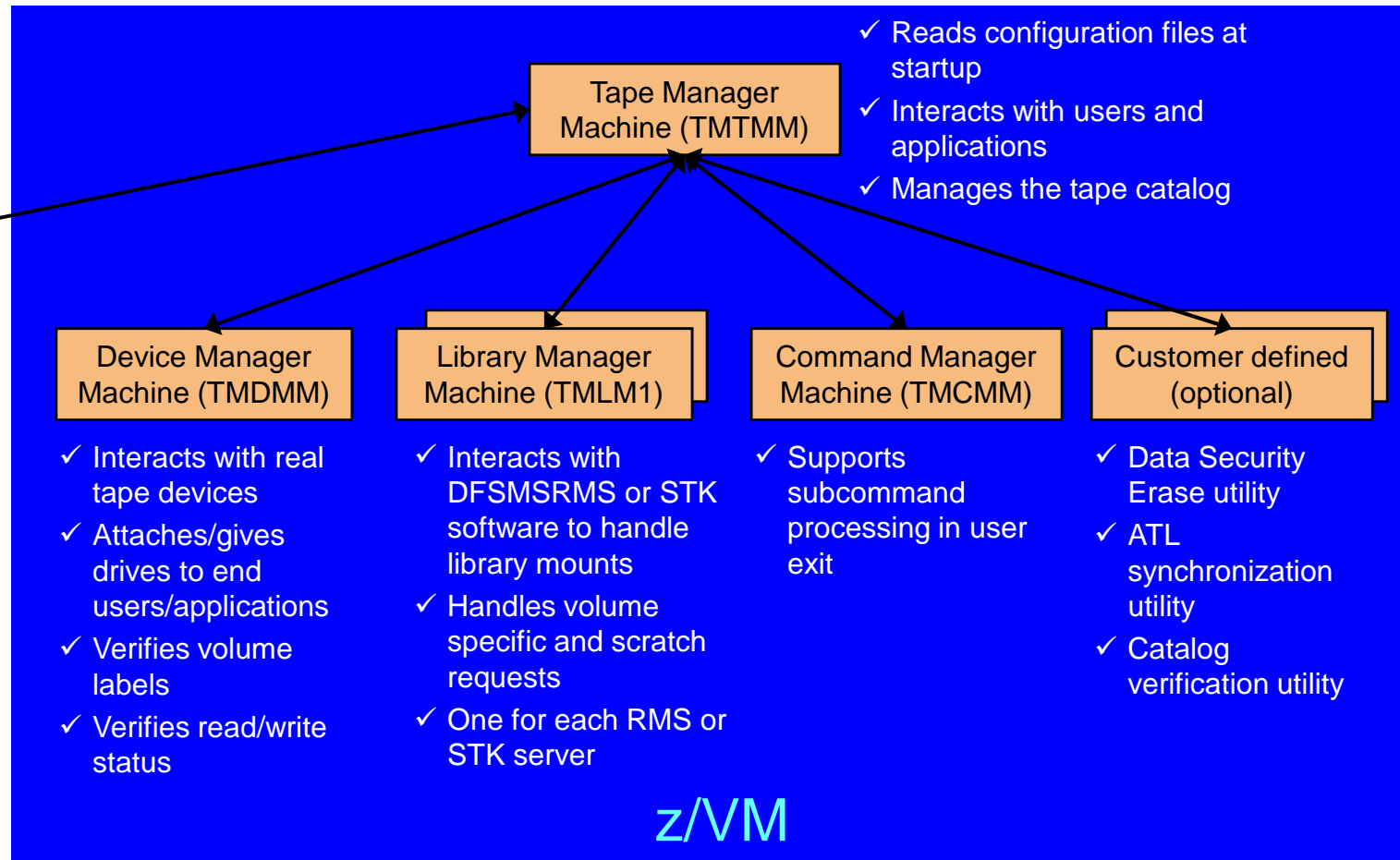
Key Benefits

- Effective management of tapes in ATL or VTS
 - Granular access control
 - Expiration processing
 - Notification for low threshold for tape resources
 - IBM libraries supported through DFSMSRMS on z/VM
 - STK libraries supported through STK Host Software Component for VM, or STK VM Client
 - EMC libraries supported through standard CCW interface
- Improved accuracy of manual tape processing
 - Granular access control
 - Automated interface to Operator for manual mounts
 - Internal label verification at attach/give and detach (SL only)
 - Read/Write verification at attach/give
- Integrated management of z/OS and z/VM tapes using DFSMSrmm on z/OS
 - Optionally use RMM on z/OS as the tape catalog for z/VM and z/OS tapes
 - Tapes, access control, and retention managed by the existing RMM catalog
 - Accessible via Tape Manager on z/VM
 - Tapes managed by RMM
 - Devices managed by Tape Manager – sharing devices with z/OS is discussed later
 - Not available for STK libraries

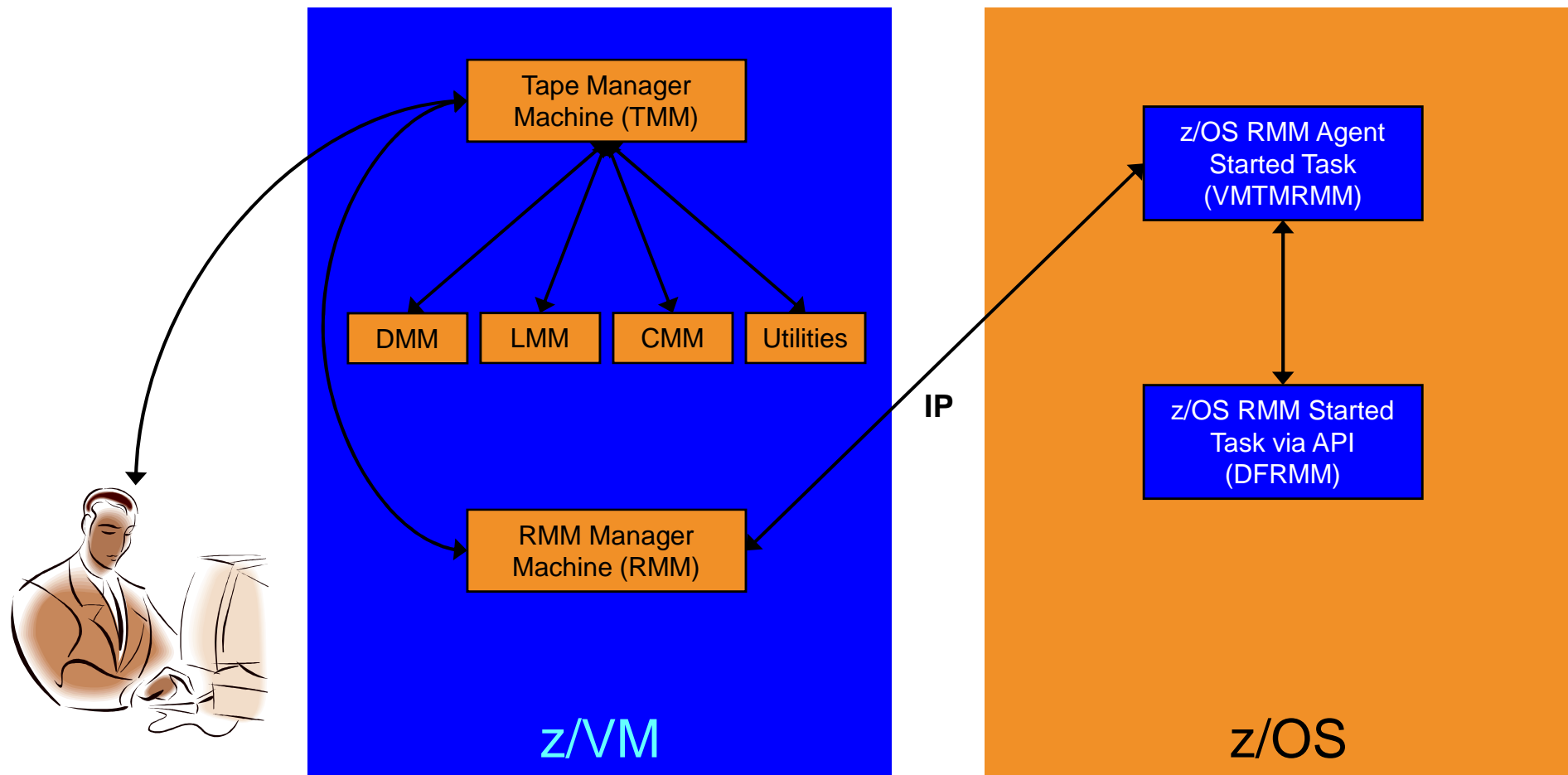
Data Security Erase (DSE)

- Erase (sensitive) data before tape is reused
- Option to enable DSE at tape pool or individual tape level
 - DSE-enabled flag included in each catalog entry
- DSE-enabled tapes marked as DSE-ready when freed
- Tape Manager DSE utility (TMDSE) executed on a separate user ID
 - Started manually or automatically with Operations Manager
 - Queries the catalog to find all tapes with DSE-ready flag on
 - Mounts each tape
 - Verifies volume label if possible
 - Configuration option to perform DSE on NL tapes or not
 - Erases tape
 - Turns off DSE-ready flag in catalog
 - Tape is now available for scratch unless its HOLD flag is on

Tape Manager in Standard Mode



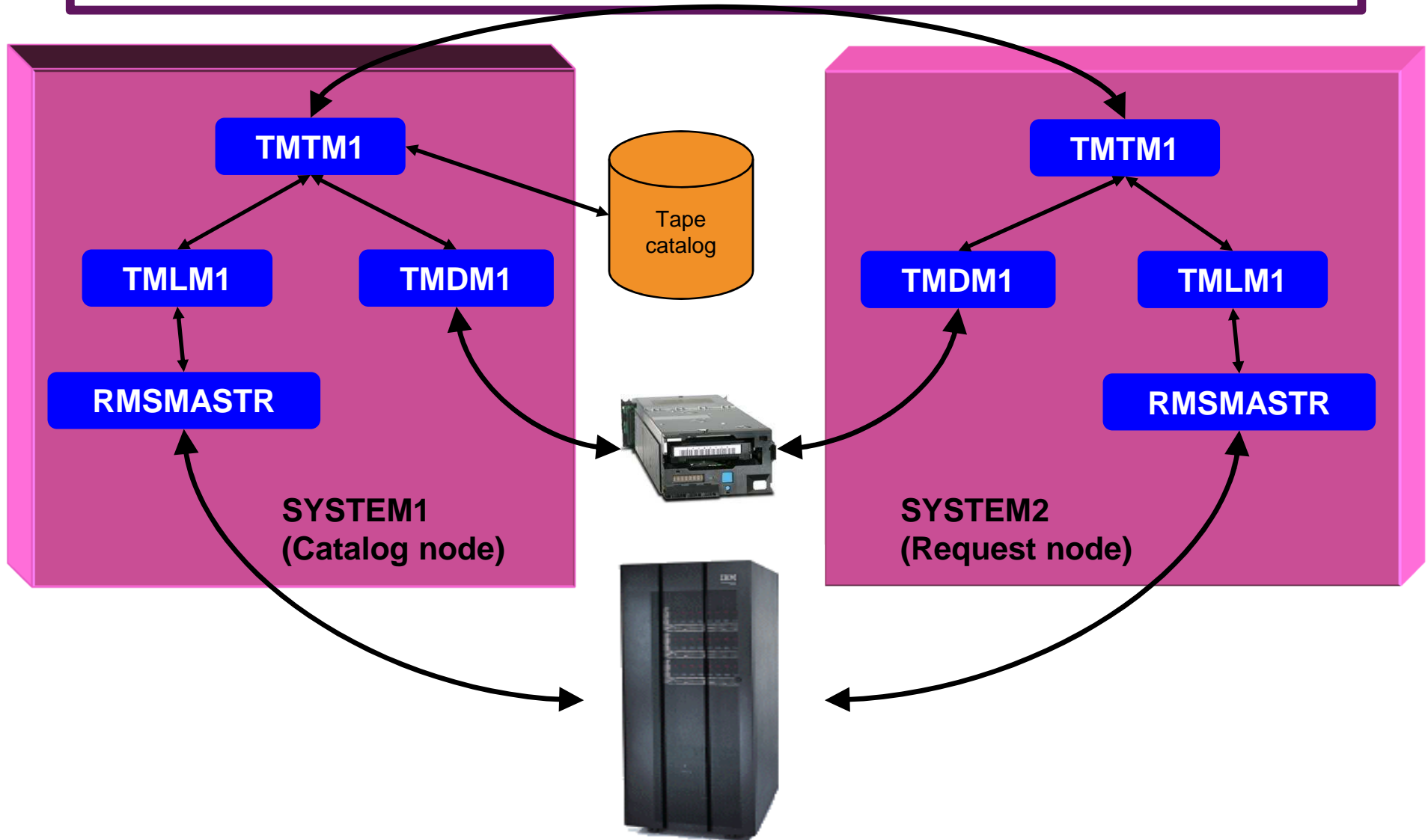
Tape Manager in RMM Mode



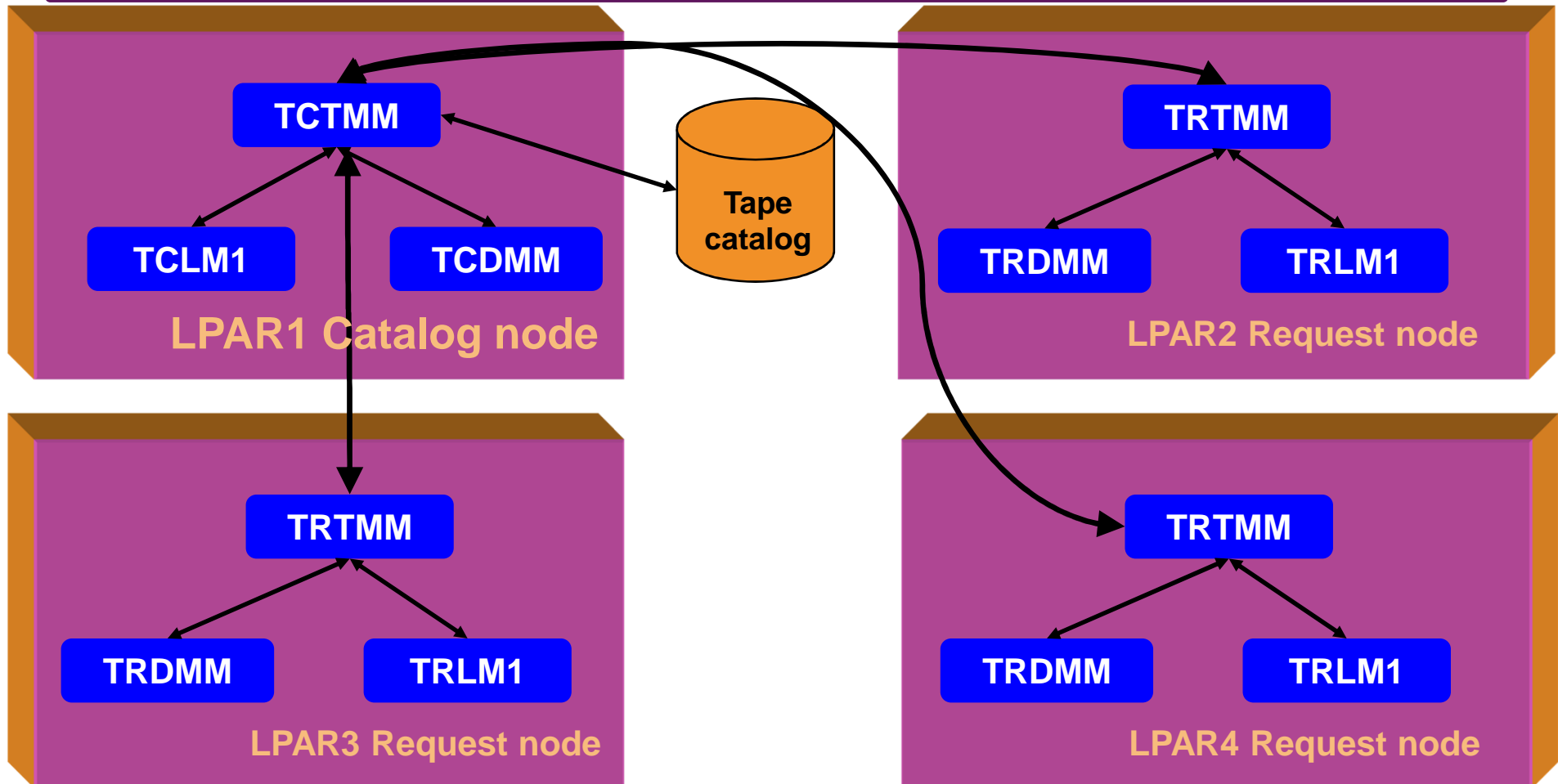
Support for **One Tape Catalog** Across **Multiple z/VM** Systems

- One “catalog node”
 - Responsible for the tape catalog contents
- Multiple “request nodes”
 - Manage requests on the local system
 - Communicate with catalog node to read or update catalog data
- One catalog used by multiple z/VM systems
 - No longer need to create a catalog on each z/VM system, each with its own range of volsers
 - All z/VM systems share one catalog
- IP used for communication between systems

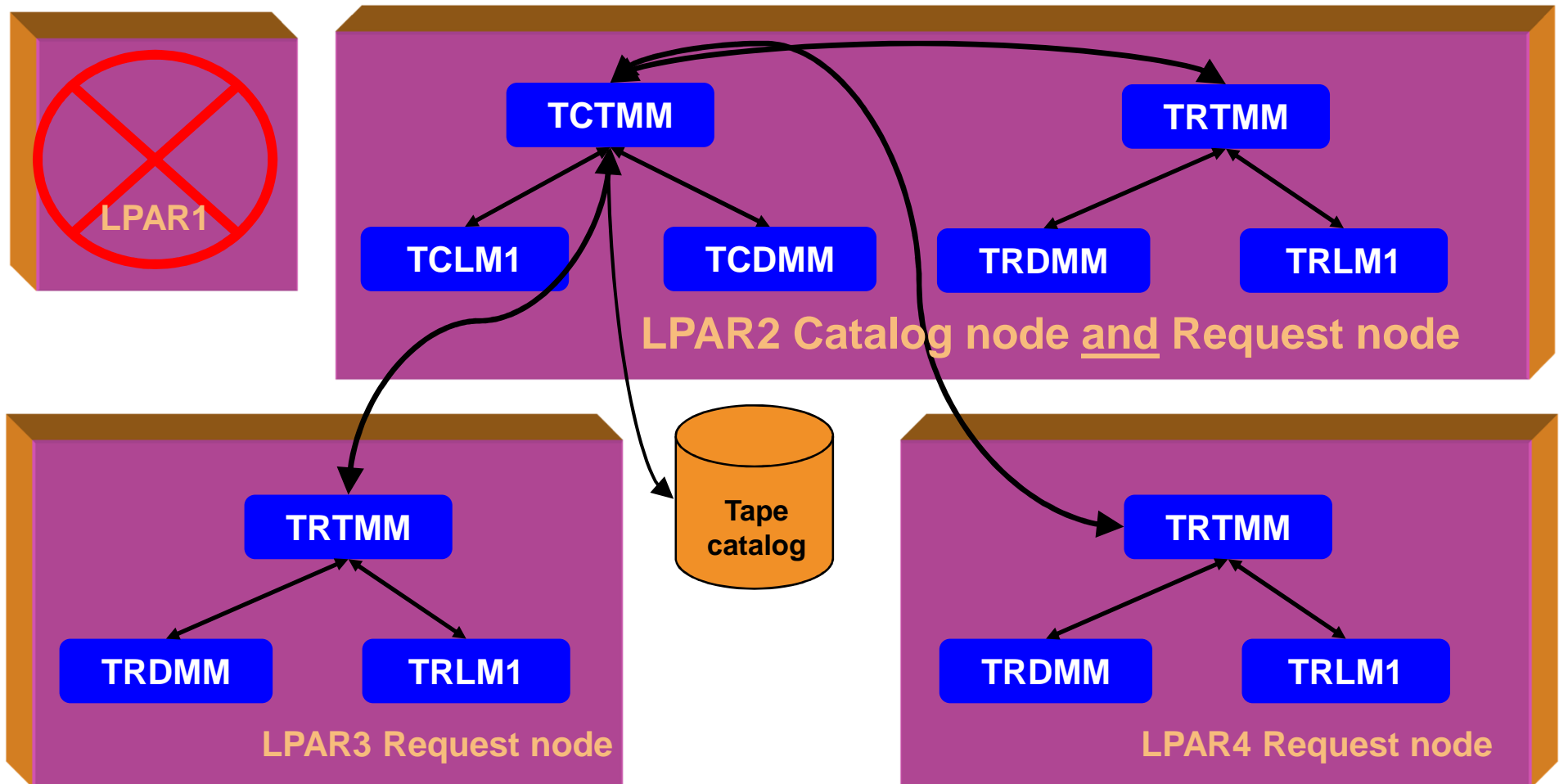
Communication Between Service Machines and Systems



Tape Manager for z/VM – Shared Catalog Environment with 4 LPARs Simplified View



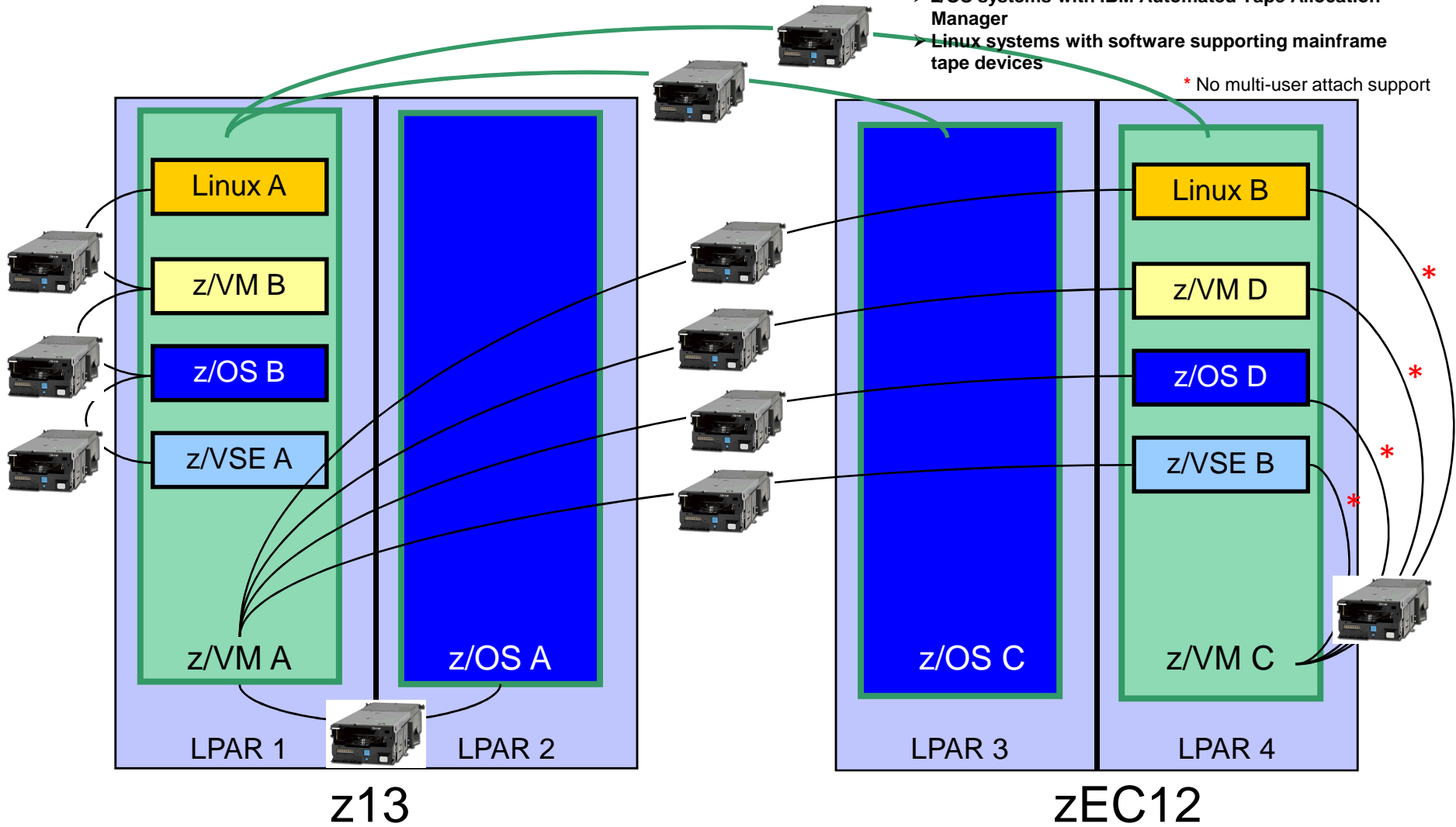
Tape Manager for z/VM – Shared Catalog Environment with 4 LPARs
Catalog Node Down for Maintenance



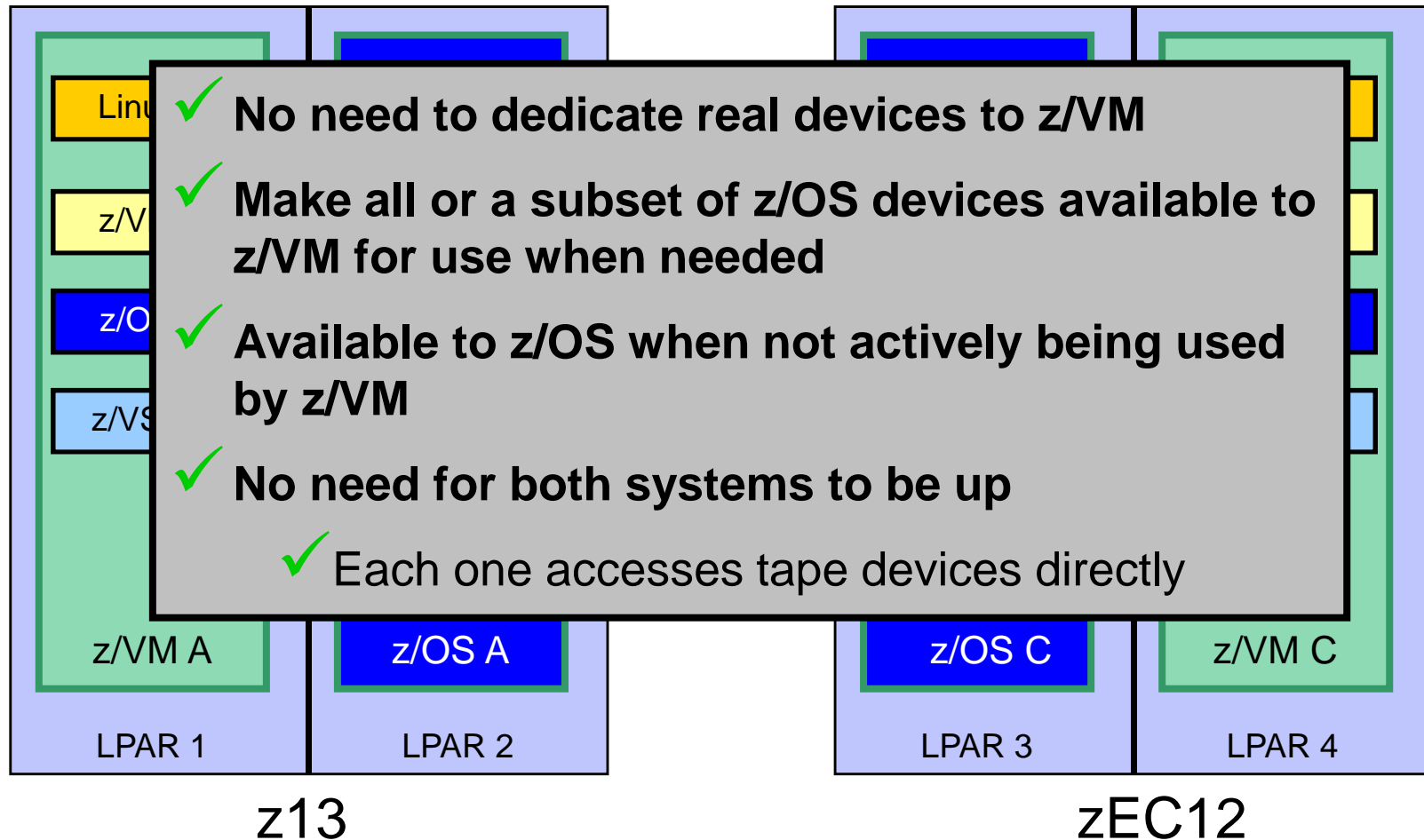
Dynamically Share (Real) Tape Devices

- z/VM systems with IBM Tape Manager
- z/OS systems with IBM Automated Tape Allocation Manager
- Linux systems with software supporting mainframe tape devices

* No multi-user attach support



Dynamically Share (Real) Tape Devices



Tape Manager for z/VM - Summary

- Use Tape Manager to
 - Manage and share devices
 - Manage tape volumes
 - Access control
 - Retention
 - Data Security
 - Improve accuracy of mount requests

The background features a dark blue gradient with abstract geometric shapes in shades of purple and orange. A prominent orange and red triangle is located in the lower-left quadrant. The text "Demonstration Scenarios" is centered in the right half of the image.

Demonstration Scenarios

Backup and Recovery – Demos Available

- A. Performing an incremental backup
- B. Restoring files from backup
- C. Back up and restore single and multiconfiguration users in an SSI environment
- D. Scheduling image backups of Linux guests
- E. Suspend and resume a guest as part of backup
- F. Pause and resume a long-running backup for system IPL
- G. Reviewing a disaster recovery backup
- H. Reviewing data in the backup catalog for recovery

Scenario A: 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 A: 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 opmgrm1 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
msg bkrbkup review increm01
Ready: T=0 01/0 01 14:48:54
BKRBAK8529I Processing REVIEW INCREM01 command for TSTADMN1.
RDR FILE 0050 SENT FROM BKRBAKUP PUN WAS 0007 RECS 0006 CPY 001 A NOHOLD NOKEEP
RDR FILE 0051 SENT FROM BKRBAKUP PUN WAS 0008 RECS 0081 CPY 001 A NOHOLD NOKEEP
RDR FILE 0052 SENT FROM BKRBAKUP 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
BKRMAL9102W 2 minidisks were selected by INCLUDE/EXCLUDE processing but could
not be CP LINKED.
BKRMAL8559I INCLUDE / EXCLUDE processing for job INCREM01 selected 149 objects
BKRMAL8559I for backup processing.
BKRMAL8563I Worker count for job INCREM01 has been set to 2.
BKRMAL8568I CMS files will be filtered against file mask "* * *".
BKRMAL8566I SFS filespace will be filtered with path mask "*".
BKRMAL8583I 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 "0" from command REVIEW INCREM01 at 03/03/09 14:48:58.

RUNNING DEM1ZVM
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
TSTADMN1 RDRLIST A0 V 164 Trunc=164 Size=3 Line=1 Col=1 Alt=6
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 - TSTADMN1 - [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 BKRBKUP 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 ***
```

At the bottom of the window, there is a legend for function keys:

```
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
```

Below the legend, there is a prompt "====> _" and the text "XEDIT 1 File". At the very bottom, there is a status bar showing "MA b" and "31/007".

```

Session B - TSTADMN1 - [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 BKRBKUP 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= Rgtleft 11= Spltjoin 12= Cursor

====> _
XEDIT 1 File
M@ 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 BKRKBKUP 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 = xxxxxxxxxx
* CONFIG BKR_JOB_EUM_POOL_NAME = xxxxxxxxxx

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   = BKRKBKUP
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
MA b 31/007
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
0051      PEEK      A0  V 80  Trunc=80  Size=163  Line=76  Col=1  Alt=0
File INCREM00 JOB from BKRKBUP 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 BKRKBUP 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= 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 - TSTADMN1 - [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 BKRKBUP at DEM1ZVM Format is NETDATA.
DUMPCKD TMTMM 0210 $$$DRIVER$$
DUMPEDF TSTADMN1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTADMN3 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

```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Ready; T=0.02/0.02 15:13:28
msg bkrbkup submit increm01
Ready; T=0.01/0.01 15:13:36
BKRBAK8532I Processing SUBMIT INCREM01 command for TSTADMN1 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 TSTADMN1 at DEM1ZVM on 03/03/09 15:13:37
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.
BKRMAK8570I Instance number 00000055 has been assigned for job INCREM01.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespace will be filtered with path mask "*".
BKRMAK8584I Sending INCREM00 JOB D to worker task BKRWRK01.
File INCREM00 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03/03/09 15:13:37
BKRMAK8584I 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.

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
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 B: 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 B: 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.
BKREST98291 Sending RESTORE request 00000052 to worker task BKRWRK03...
File RESTORE JOB D1 sent to BKRWRK03 at DEM1ZVM on 03/03/09 15:57:55
*** Operator: Request 00000052 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=0.02/0.02 15:57:57

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

TSTUSER1 DDPLIST 00 V 164 Trunc=164 Size=2 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

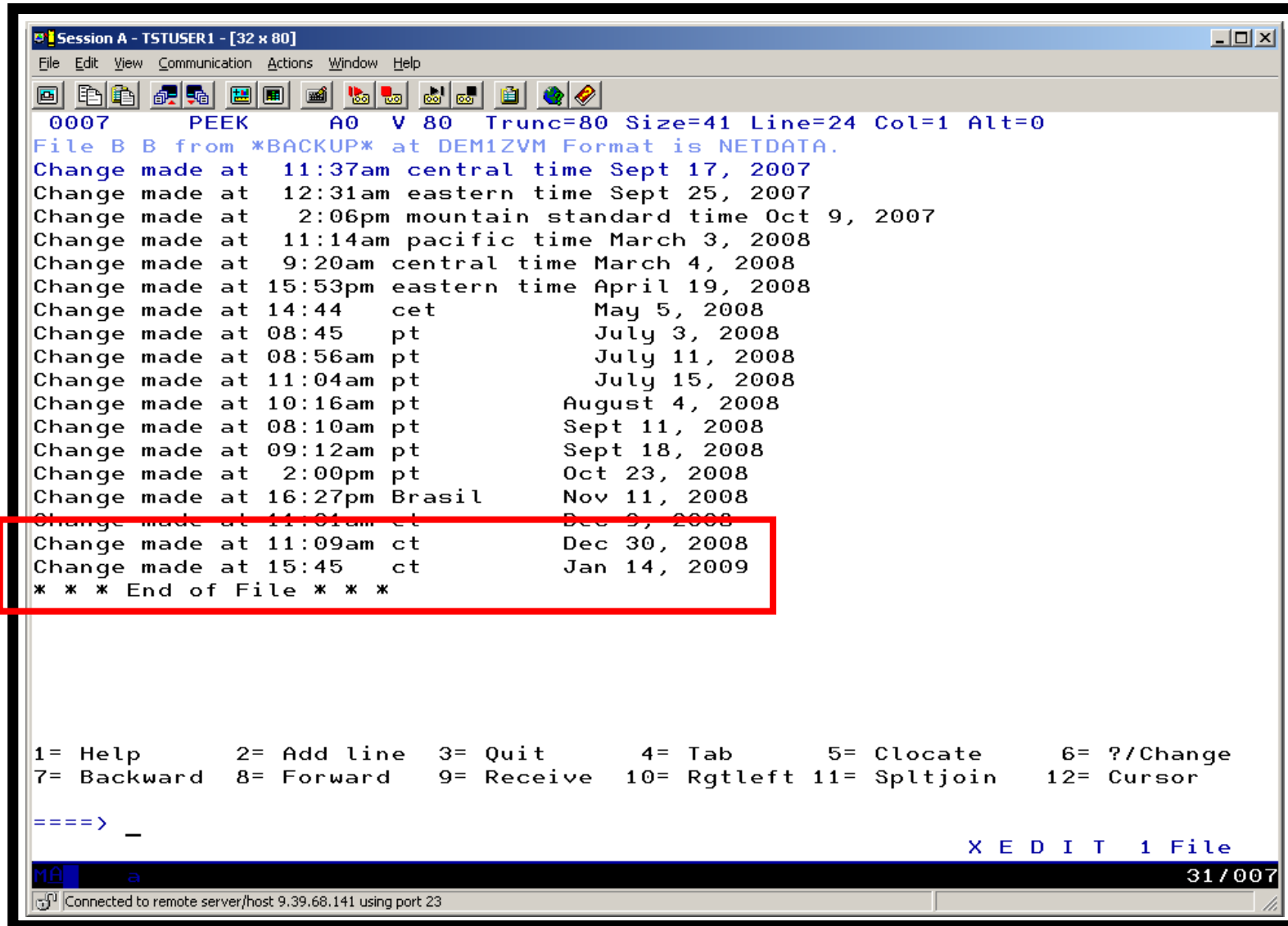
1= Help 2= Refresh 3= Quit 4= Sort(type) 5= Sort(date) 6= Sort(user)
 7= Backward 8= Forward 9= Receive 10= 11= Peek 12= Cursor

====>

X E D I T 1 File

MA a 03/001

Connected to remote server/host 9.39.68.141 using port 23



The screenshot shows a terminal window titled "Session A - TSTUSER1 - [32 x 80]". The window contains the following text:

```
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 * * *
```

Below the file history, there is a legend for keyboard shortcuts:

```
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
```

The prompt "====> _" is visible. At the bottom right, it says "XEDIT 1 File" and "31/007". At the bottom left, it says "MA a" and "Connected to remote server/host 9.39.68.141 using port 23".

Scenario C: Back up and Restore Single and Multiconfiguration Users in SSI

- Two member SSI cluster
 - TIVLP3, TIVLP32
- Three backup jobs for full backups
 - WKLYSSI - all single configuration users across the SSI cluster
 - Run from either member
 - WKLYLP3 - all multiconfiguration (IDENTITY) users on TIVLP3
 - Always run from TIVLP3 (required)
 - WKLYLP32 - all multiconfiguration (IDENTITY) users on TIVLP32
 - Always run from TIVLP32 (required)
- Three similar jobs for incremental
- Restore files in multiple ways
 - Single configuration users
 - Restore to disk or reader from any member of the cluster
 - Multiconfiguration users
 - Restore to disk from the local member
 - Restore CMS files to reader from any member

Scenario C: Detailed Steps

- From a Backup Manager admin ID (DEMOADMN) on TIVLP3, view all catalog data for multiconfiguration user MAINT

```
bkruser
```

- Use the filters to find all files for MAINT's 191 disk
 - Note files exist from both TIVLP3 and TIVLP32
- F4 to return and then find all files for single configuration user DEMOADMN
 - Note files only exist in the WKLYSSI jobs – not member specific
- Update a file on MAINT 191 disk on TIVLP3

```
vmlink maint 191 (w
```

```
x test maint z
```

- Add a new line to the file

```
file
```

```
rel z (det
```

- Similarly update a file on DEMOADMN 191 disk

```
x test demoadmn a
```

Scenario C: Detailed Steps

- Perform a review of the incremental backup for multiconfiguration users on TIVLP3

```
msg bkrbkup review dalylp3
```

- View the file(s) in the reader of the job

```
rdrlist
```

- Submit the incremental backup for multiconfiguration users on TIVLP3

```
msg bkrbkup submit dalylp3
```

- View the console of the worker(s) assigned

```
viewcon bkrwrkxx
```

- Perform a backup for single configuration users in the TIVLP3 and TIVLP32 cluster

```
msg bkrbkup submit dalyssi
```

Scenario C: Detailed Steps

- When jobs are complete find the updated test files for MAINT and DEMOADMN in the catalog

`bkrlist`

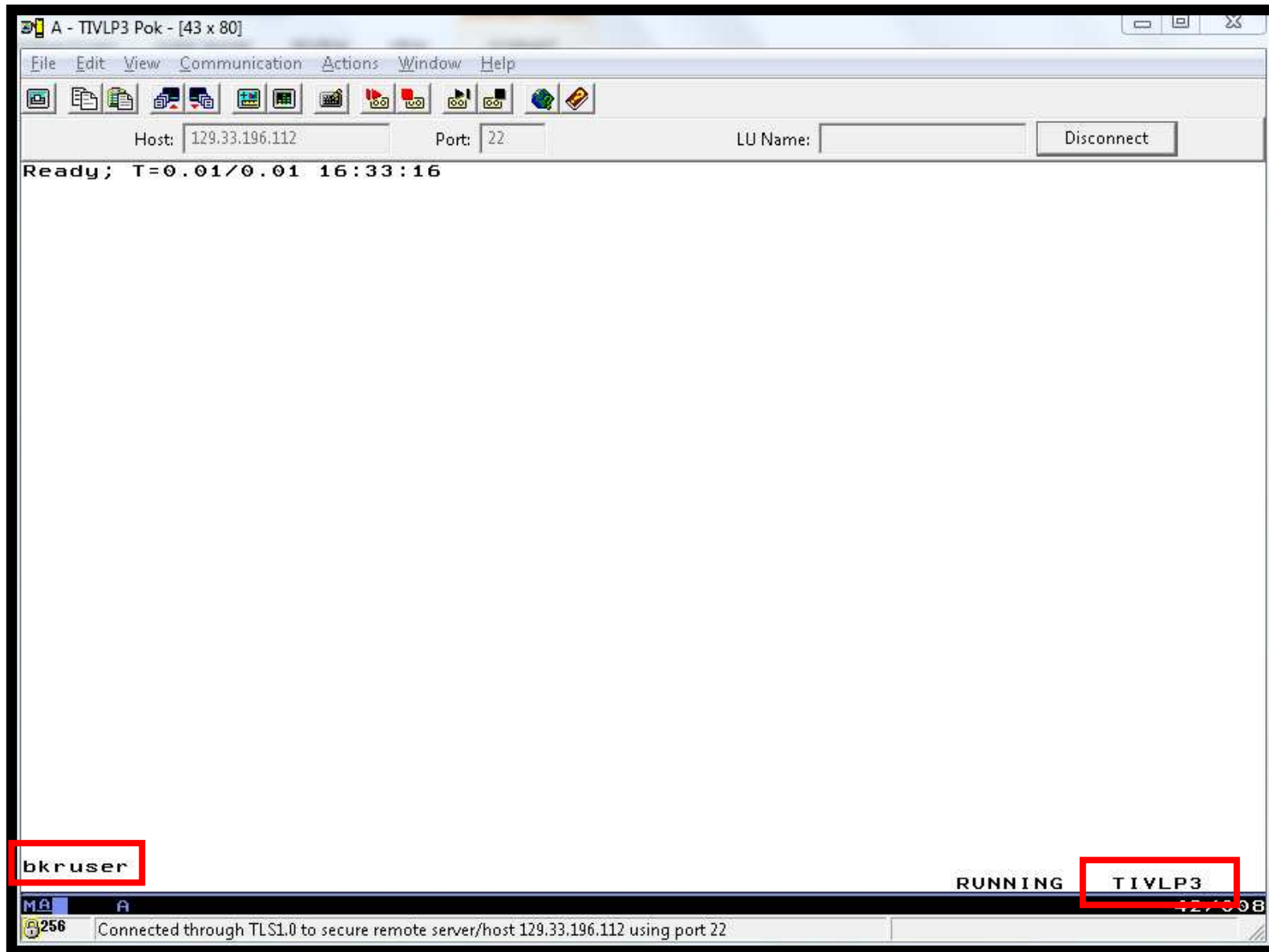
- Logoff DEMOADMN (do not disconnect – must logoff)
- Logon DEMOADMN on the other member of the cluster TIVLP32
- Find the files for MAINT in the catalog

`bkrlist`

- Once a file is chosen, use F10 to restore the file to the reader
- View the files in the reader

`rdrlist`

- Notice you can restore files for MAINT from either member of the cluster
 - Remember the original member on which the file existed is known based on the backup job name



A - TIVLP3 Pok - [43 x 80]

File Edit View Communication Actions Window Help

Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Catalog: BKRSFS:BKRCATLG 32 of 32 ownerids displayed

Ownerid filter: m*

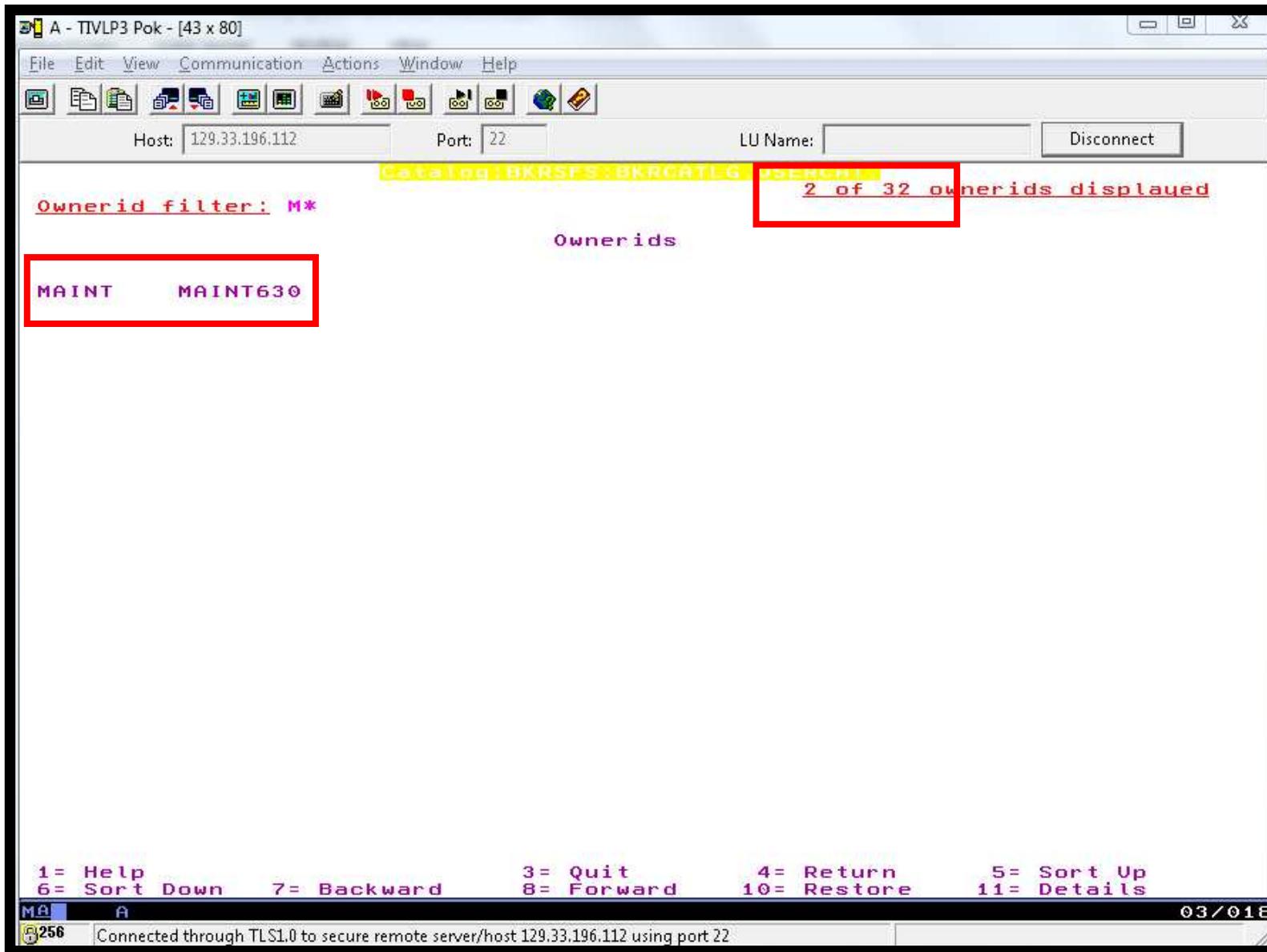
Ownerids

BKRAADMIN	BKRBKUP	BKRCATLG	BKRWRK01	BKRWRK02	BKRWRK03	BKRWRK04
BKUPDISK	DEMOADMN	DIRMDEMO	MAINT	MAINT630	OPERDEMO	OPMGRM1
OPMGRS1	OPMGRS2	OPMGRS3	OPMGRS4	RACFDEMO	TCDMM	TCLM1
TCPDEMO	TCTMM	TRDMM	TRLM1	TRTMM	USER01	USER11
5697J05A	5697J06C	5697J08C	5697J10F			

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

MA A 03/020

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22



```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
lsdev -c ownerid MAINT
Device filter: * Type filter: * 1 of 1 devices displayed
Device Type Instances in catalog
$DEV0191 EDF 30 instances

1= Help 3= Quit 4= Return 5= Sort Up
6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details
MA A 03/017
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```


A - TIVLP3 Pok - [43 x 80]

File Edit View Communication Actions Window Help

Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Catalog: BKRSFS:DKRCATLS USERCAT 30 of 30 instances displayed

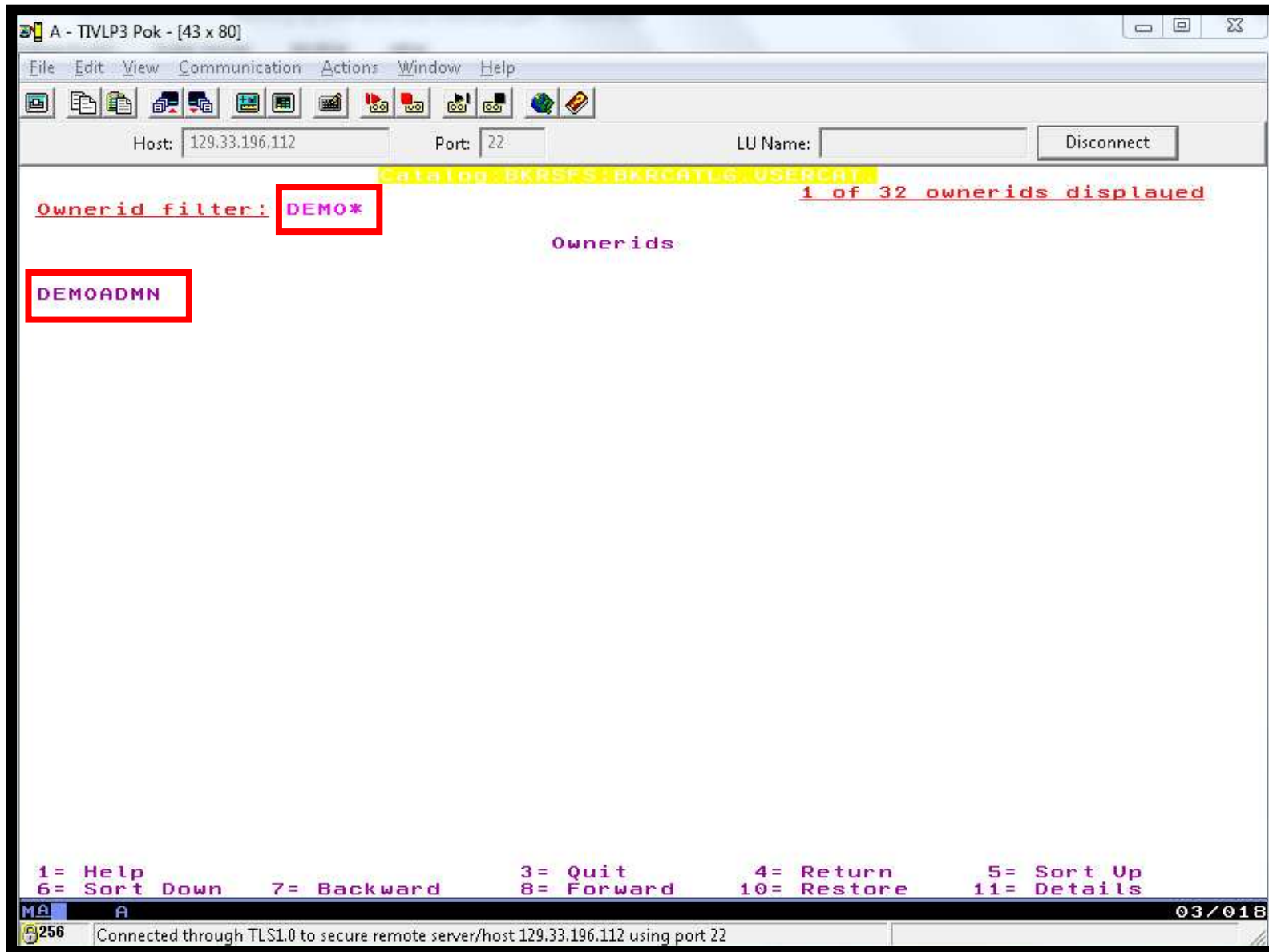
For MAINT \$DEV0191 EDF
 Jobname filter: *

Jobname	Instance	Date/time	completed
DALYLP3	00000001	2016/10/11	03:00:01
DALYLP3	00000002	2016/10/12	03:00:01
DALYLP3	00000003	2016/10/13	03:00:01
DALYLP3	00000004	2016/10/14	03:00:01
DALYLP3	00000005	2016/10/15	03:00:01
DALYLP3	00000006	2016/10/16	03:00:00
DALYLP3	00000007	2016/10/17	03:00:00
DALYLP3	00000008	2016/10/18	03:00:01
DALYLP3	00000009	2016/10/19	03:00:00
DALYLP3	00000010	2016/10/20	03:00:01
DALYLP3	00000012	2016/10/22	03:00:00
DALYLP3	00000013	2016/10/23	03:00:01
DALYLP3	00000014	2016/10/24	03:00:01
DALYLP3	00000015	2016/10/25	03:00:01
DALYLP3	00000016	2016/10/26	03:00:01
DALYLP3	00000017	2016/10/27	03:00:01
DALYLP3	00000018	2016/10/28	03:00:00
DALYLP3	00000019	2016/10/29	03:00:01
DALYLP3	00000020	2016/10/30	03:00:01
DALYLP3	00000021	2016/10/31	03:00:01
DALYLP3	00000022	2016/11/01	03:00:01
WKLYLP3	00000002	2016/10/02	02:00:11
WKLYLP3	00000003	2016/10/09	02:00:51
WKLYLP3	00000004	2016/10/16	02:00:11
WKLYLP3	00000005	2016/10/23	02:00:12
WKLYLP3	00000006	2016/10/30	02:00:12
WKLYLP32	00000002	2016/10/02	02:00:51
WKLYLP32	00000003	2016/10/09	02:00:11
WKLYLP32	00000005	2016/10/23	02:00:51
WKLYLP32	00000006	2016/10/30	02:00:51

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

MA A 03/018

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22



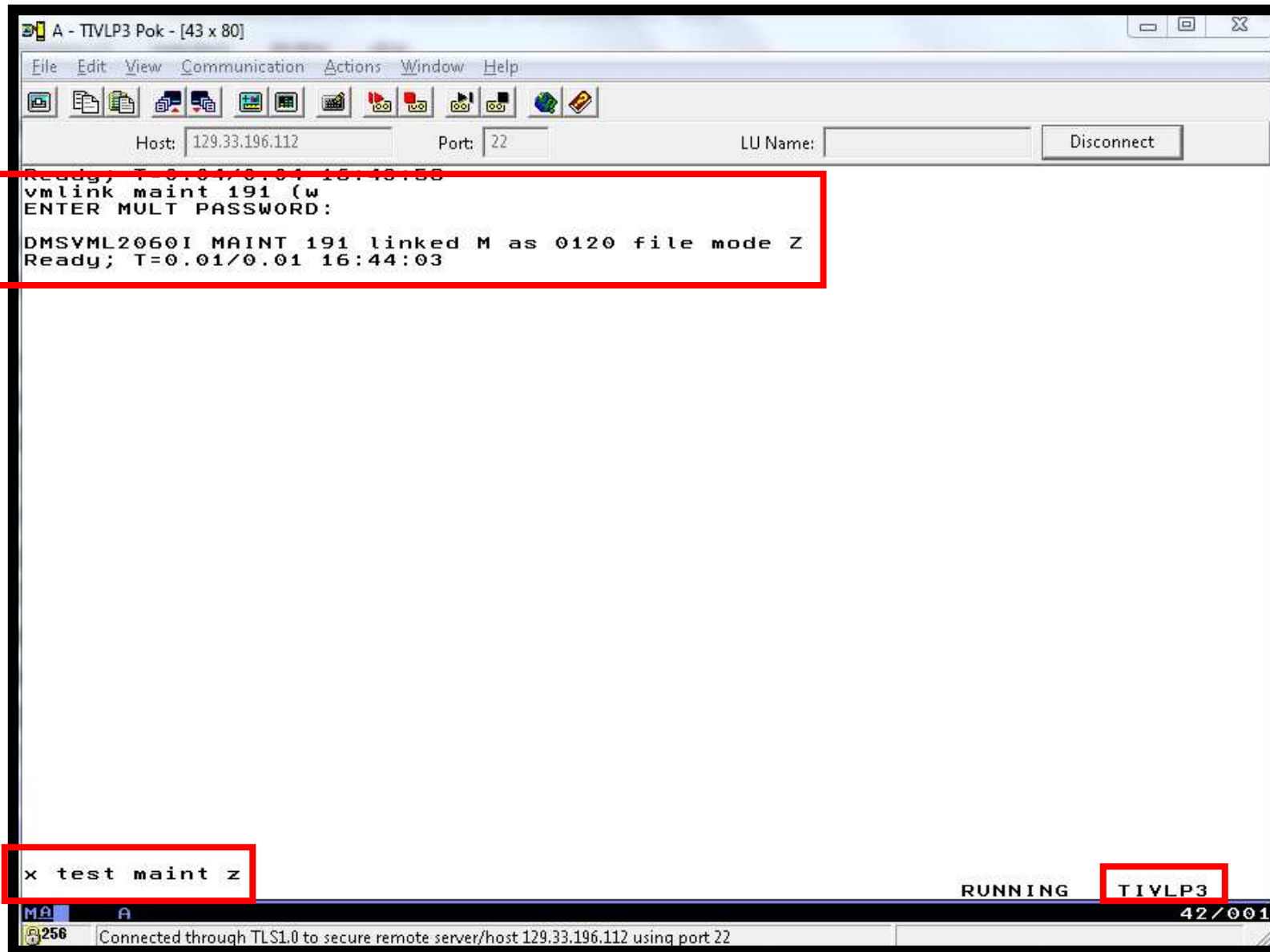
Host: 129.33.196.112 Port: 22 LU Name: Disconnect

For DEMOADMN \$DEV0191 EDF 33 of 33 instances displayed
 Jobname filter: *

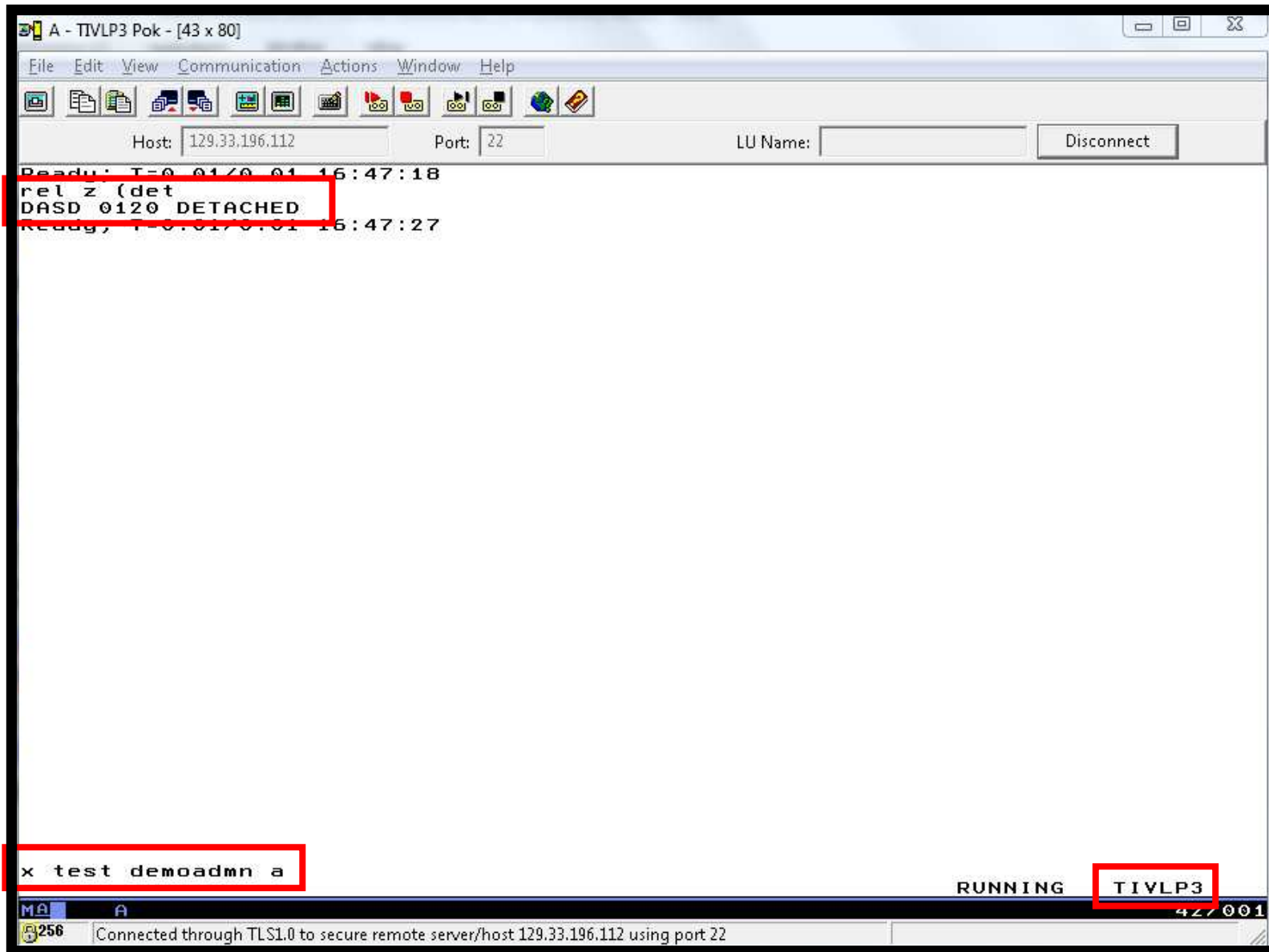
Jobname	Instance	Date/time completed
DALYSSI	00000003	2016/10/02 03:00:10
DALYSSI	00000004	2016/10/03 03:00:10
DALYSSI	00000006	2016/10/05 03:00:11
DALYSSI	00000007	2016/10/06 03:00:11
DALYSSI	00000008	2016/10/07 03:00:12
DALYSSI	00000009	2016/10/08 03:00:10
DALYSSI	00000010	2016/10/09 03:00:10
DALYSSI	00000011	2016/10/10 03:00:16
DALYSSI	00000012	2016/10/11 03:00:11
DALYSSI	00000013	2016/10/12 03:00:12
DALYSSI	00000014	2016/10/13 03:00:13
DALYSSI	00000015	2016/10/14 03:00:14
DALYSSI	00000016	2016/10/15 03:00:15
DALYSSI	00000017	2016/10/16 03:00:10
DALYSSI	00000018	2016/10/17 03:00:10
DALYSSI	00000019	2016/10/18 03:00:10
DALYSSI	00000020	2016/10/19 03:00:10
DALYSSI	00000021	2016/10/20 03:00:10
DALYSSI	00000022	2016/10/21 03:01:38
DALYSSI	00000023	2016/10/22 03:00:10
DALYSSI	00000024	2016/10/23 03:00:10
DALYSSI	00000025	2016/10/24 03:00:10
DALYSSI	00000026	2016/10/25 03:00:10
DALYSSI	00000027	2016/10/26 03:00:13
DALYSSI	00000028	2016/10/27 03:00:14
DALYSSI	00000029	2016/10/28 03:00:15
DALYSSI	00000030	2016/10/29 03:00:17
DALYSSI	00000031	2016/10/30 03:00:43
DALYSSI	00000032	2016/10/31 03:00:10
DALYSSI	00000033	2016/11/01 03:00:10
WKLYSSI	00000001	2016/10/02 02:01:36
WKLYSSI	00000002	2016/10/09 02:01:45
WKLYSSI	00000004	2016/10/23 02:02:17

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

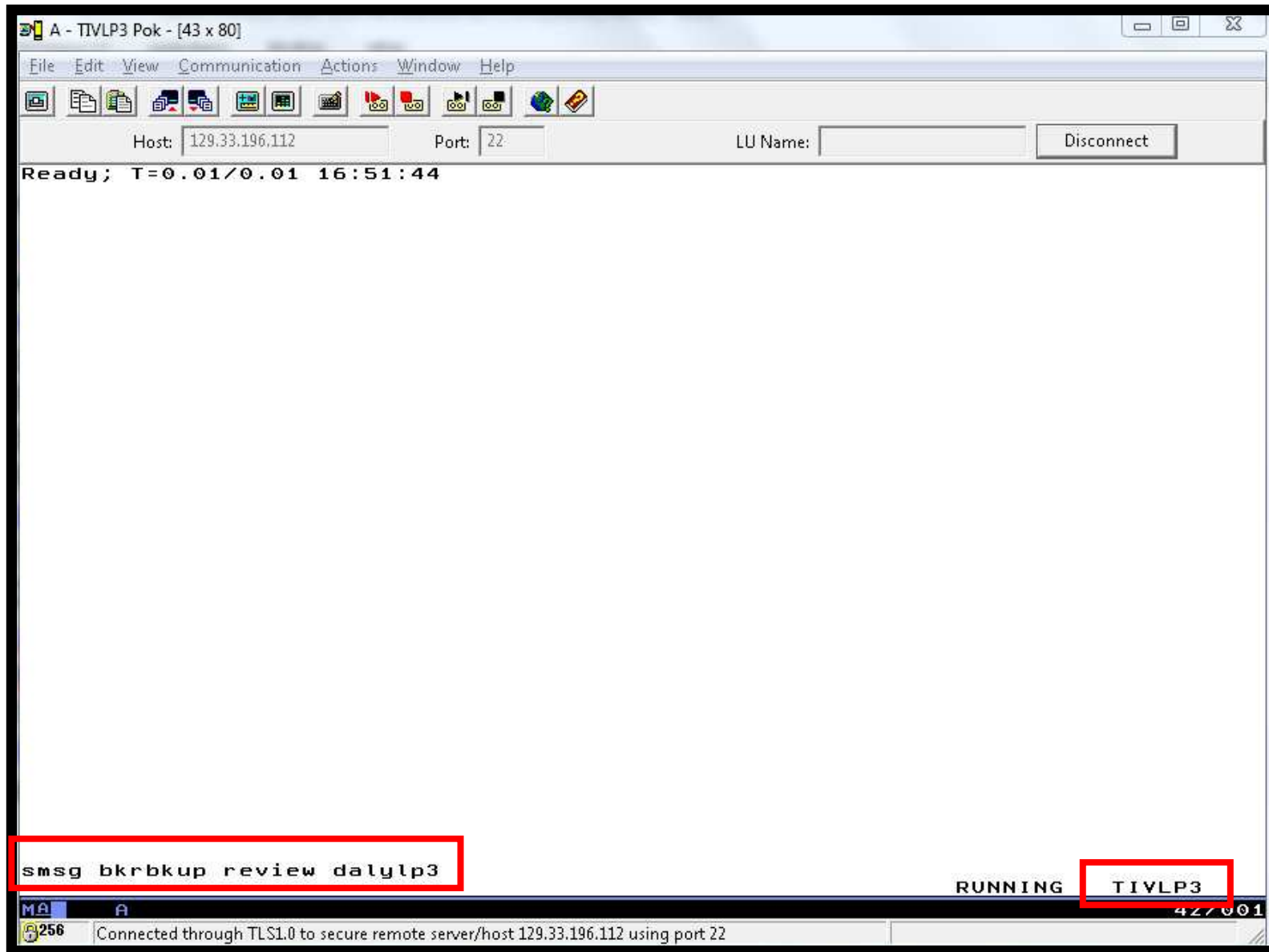
MA A 03/01B
 256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22



```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
TEST MAINT Z1 F 80 Trunc=80 Size=4 Line=0 Col=1 Alt=1
|...+...1...+...2...+...3...+...4...+...5...+...6...+...7...
*** Top of File ***
00001 Test file for back up jobs
00002 Update on Sept 29, 2016
00003 Update for demo on November 1, 2016
00004
00005 *** End of File ***
MA A 09/042
Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```



```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
TEST DEMOADMN A1 F 80 Trunc=80 Size=3 Line=0 Col=1 Alt=2
====> file
|...+...1...+...2...+...3...+...4...+...5...+...6...+...7...
000000 * * * Top of File * * *
000001 Test file for backup demo on DEMOADMN
000002 Update on Sept 29, 2016
000003 Update on November 1, 2016
000004 * * * End of File * * *
MA A 02/011
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```




```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
Ready; T=0.01/0.01 16:51:44
smmsg bkrbkup review dalylp3
Ready; T=0.01/0.01 16:53:17
BKRMAK8559I Processing REVIEW DALYLP3 command for DEMOADMN.
RDR FILE 0125 SENT FROM BKRBKUP PUN WAS 0145 RECS 0047 CPY 001 A NOHOLD NOKEEP
BKRMAK8559I INCLUDE / EXCLUDE processing for job DALYLP3 selected 20 objects
BKRMAK8559I for backup processing
BKRMAK8563I Worker count for job DALYLP3 has been set to 1.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespace will be filtered with path mask "*".
BKRMAK9347I Worker selection will be handled by user exit BKREX103 EXEC.
BKRMAK9345I Job will be processed by:
BKRMAK9346I ... BKRWRK01
BKRMAK8583I Sending results to DEMOADMN for review.
File DALYLP3 JOB D1 sent to DEMOADMN at TIVLP3 on 11/01/16 16:53:17
Return code "0" from command REVIEW DALYLP3 at 11/01/16 16:53:17.

rdr list

RUNNING TIVLP3
42/008
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
DEMOADMN RDRLIST A0 V 164 Trunc=164 Size=1 Line=1 Col=1 Alt=0
Cmd  Filename  Filetype  Class  User  at Node  Hold  Records  Date  Time
peek DALYLP3 JOB      PUN A  BKRBKUP  TIVLP3  NONE  47  11/01  16:53:17

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 03/005
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
0125 PEFK 00 V 80 Trunc=80 Size=87 Line=38 Col=1 Alt=0
File DALYLP3 JOB from BKR BKUP at IYLP3 Format is NETDATA.
JOB_HEADER
DUMPDYN BKRADMIN 0191 $$DRIVER$$
DUMPDYN BKR BKUP 0191 $$DRIVER$$
DUMPDYN BKR BKUP 0198 $$DRIVER$$
DUMPDYN BKR BKUP 0591 $$DRIVER$$
DUMPDYN BKR BKUP 0592 $$DRIVER$$
DUMPDYN BKRCATLG 0191 $$DRIVER$$
DUMPDYN BKRWRK01 0191 $$DRIVER$$
DUMPDYN BKRWRK02 0191 $$DRIVER$$
DUMPDYN BKRWRK03 0191 $$DRIVER$$
DUMPDYN BKRWRK04 0191 $$DRIVER$$
DUMPDYN MAINT 0191 $$DRIVER$$
DUMPDYN OPMGRM1 0191 $$DRIVER$$
DUMPDYN OPMGRM1 0400 $$DRIVER$$
DUMPDYN OPMGRM1 0410 $$DRIVER$$
DUMPDYN OPMGRM1 0194 $$DRIVER$$
DUMPDYN OPMGRM1 0198 $$DRIVER$$
DUMPDYN OPMGRS1 0191 $$DRIVER$$
DUMPDYN OPMGRS2 0191 $$DRIVER$$
DUMPDYN OPMGRS3 0191 $$DRIVER$$
DUMPDYN OPMGRS4 0191 $$DRIVER$$
JOB_TRAILER
* Lett the catalog service virtual machine to retain catalog contents
* and associated backup data on DISKPOOL media for 30 days.
CONFIG BKR_CATALOG_RETENTION = 30
* Display a brief summary of job activity
SUMMARIZE
* The output from CP QUERY TIME and CP IND USER * EXP provides
* a record of elapsed time and system resources consumed in order
* to process this backup.
CP_COMMAND QUERY TIME
CP_COMMAND INDICATE USER * EXP
CONSOLE *
CONSOLE * SAMPLE INCREMENTAL BACKUP TEMPLATE DALYLP3
CONSOLE * UPDATED 07/17/2015.
CONSOLE * JOB IMAGE GENERATED 11/01/16 16:53:17
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 42/007
256 | Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

The screenshot shows a terminal window titled "A - TIVLP3 Pok - [43 x 80]". The window has a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar with various icons. Below the toolbar, there are input fields for "Host: 129.33.196.112", "Port: 22", and "LU Name:", along with a "Disconnect" button. The main area of the terminal displays the following text:

```
Ready; T=0.01/0.01 16:58:45
msg bkrbkup submit dalylp3
Ready; T=0.01/0.01 16:58:45
BKRBK8532I Processing SUBMIT DALYLP3 command for DEMOADMN at 11/01/16 16:58 4
5.
BKRMK8559I INCLUDE / EXCLUDE processing for job DALYLP3 selected 20 objects
BKRMK8559I for backup processing.
BKRMK8563I Worker count for job DALYLP3 has been set to 1.
BKRMK9191I Updating instance for job DALYLP3 from 22 to 23.
BKRMK8570I Instance number 0000023 has been assigned for job DALYLP3.
BKRMK8568I CMS files will be filtered against file mask "* * *".
BKRMK8566I SFS files will be filtered with path mask "*".
BKRMK8547I Worker selection will be handled by user exit BKREXIO3 EXEC.
BKRMK9345I Job will be processed by:
BKRMK9346I ... BKRWRK01
BKRMK8584I Sending DALYLP3 JOB D1 to worker task BKRWRK01.
File DALYLP3 JOB D1 sent to BKRWRK01 at TIVLP3 on 11/01/16 16:58:45.
Return code "0" from command SUBMIT DALYLP3 at 11/01/16 16:58:45.
```

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

```
viewcon bkrwrk01
RUNNING TIVLP3
MA A 42/017
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
16:58:45 with IBM Corp.
-----
16:58:45 BKRJOB9011I Job name: DALYLP3, instance identifier 00000023 starting a
16:58:45 BKRJOB9011I Job owner: BKRADMIN
16:58:45 BKRJOB9011I Master backup server: BKRBKUP; worker virtual machine BKRW
16:58:45 BKRJOB9011I Job token value is 20161101.
16:58:45 BKRJOB8865I Expiration for DALYLP3 00000023 set to 1 Dec 2016.
16:58:45 BKRJOB9012I Catalog content creation is enabled.
16:58:45 BKRJOB9012I Catalog content will be delivered to backup catalog server
16:58:45 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
16:58:45 BKRJOB9428I Reblocking of Tape output is enabled.
16:58:45 BKRJOB9428I Reblocking of EDF output is enabled.
16:58:45 BKRJOB9429I UDPE configuration: Tape UDPE1 is disabled.
16:58:45 BKRJOB9429I UDPE configuration: Tape UDPE2 is disabled.
16:58:45 BKRJOB9429I UDPE configuration: EDF UDPE1 is default; routine name is
16:58:45 BKRJOB9429I UDPE configuration: EDF UDPE2 is disabled.
-----
16:58:45 BKRJOB9161I Scanning DISKPOOL "BACKUP DISKPOOL" for a volume with at l
16:58:45 BKRJOB9162I DISKPOOL volume BKUPDISK 0300 has 17396 4K blocks free.
16:58:45 BKRJOB9163I Continuing backup with output to BKUPDISK 0300.
16:58:45 BKRADMIN 0191 RR EDF 4096 ADM191 00000900 00000009 00000005 00000005
16:58:45 BKRBKUP 0191 RR EDF 4096 BKP191 00000180 00000039 00000001 00000001
16:58:45 BKRBKUP 0198 RR EDF 4096 BKP198 00000900 00000011 00000005 00000005
16:58:45 BKRBKUP 0591 RR EDF 4096 BKP591 00003600 00001011 00000020 00000020
16:58:45 BKRBKUP 0592 RR EDF 4096 BKP592 00000900 00000196 00000005 00000005
16:58:45 BKRCATLG 0191 RR EDF 4096 CAT191 00000180 00000015 00000001 00000001
16:58:45 BKRWRK01 0191 RR EDF 4096 WK1191 00000180 00000015 00000001 00000001
16:58:45 BKRWRK02 0191 RR EDF 4096 WK2191 00000180 00000015 00000001 00000001
16:58:45 BKRWRK03 0191 RR EDF 4096 BK3191 00000180 00000015 00000001 00000001
16:58:45 BKRWRK04 0191 RR EDF 4096 BK4191 00000180 00000015 00000001 00000001
16:58:45 MAINT 0191 RR EDF 4096 REX191 00031500 00001947 00000175 00000175
16:58:45 OPMGRM1 0191 RR EDF 4096 OPM191 00000900 00000010 00000005 00000005
16:58:45 OPMGRM1 0410 RR EDF 4096 OPM400 00000900 00000516 00000005 00000005
16:58:46 OPMGRM1 0410 RR EDF 4096 OPM410 00000900 00000365 00000005 00000005
16:58:46 OPMGRM1 0194 RR EDF 4096 OPM194 00018000 00009534 00000100 00000100
16:58:46 OPMGRM1 0198 RR EDF 4096 OPM198 00000900 00000022 00000005 00000005
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
16:58:46 OPMGRS1 0191 RR EDF 4096 OPS191 00000900 00000040 00000005 00000005
16:58:46 OPMGRS2 0191 RR EDF 4096 OPS191 00000900 00000058 00000005 00000005
16:58:46 OPMGRS3 0191 RR EDF 4096 OPS191 00000900 00000183 00000005 00000005
16:58:46 OPMGRS4 0191 RR EDF 4096 OPS191 00000360 00000108 00000002 00000002
16:58:46 -----
16:58:46 BKRJOB9014 Job completed at 16:58:46 on 11/01/16.
16:58:46 ***
16:58:46 *** Activity Summary:
16:58:46 ***
16:58:46 *** Job name: DALYLP3; instance 00000023
16:58:46 *** Start time: 11/01/16 16:58:45
16:58:46 *** Ended time: 11/01/16 16:58:46
16:58:46 ***
16:58:46 *** Catalog entry insertion elapsed time (ss.uu): 0.037400
16:58:46 ***
16:58:46 *** DUMPCKD tasks, Max RC: 0, 0
16:58:46 *** DUMPFBA tasks, Max RC: 0, 0
16:58:46 *** DUMPEDF tasks, Max RC: 20, 0
16:58:46 *** DUMPSFS tasks, Max RC: 0, 0
16:58:46 *** DUMPBFS tasks, Max RC: 0, 0
16:58:46 *** RESTORE tasks, Max RC: 0, 0
16:58:46 ***
16:58:46 BKRJOB9005I Executing CP command "QUERY TIME"
16:58:46 TIME IS 16:58:46 EDT TUESDAY 11/01/16
16:58:46 CONNECT= 00:00:01 VIRTCPU= 000:00.23 TOTCPU= 000:00.25
16:58:46 BKRJOB9006I CP return code 0
16:58:46 BKRJOB9005I Executing CP command "INDICATE USER * EXP"
16:58:46 Userid=BKRWRK01 Mach=ESA V=V Attached xstore=NONE
16:58:46 Iplsys=CMS Devnum=13
16:58:46 Spool: Reads=5 Writes=51
16:58:46 Owned spaces: Number=1 Owned size=118M
16:58:46 Pages: LockedReal=16 LockedLogical=1
16:58:46 Primary space: ID=BKRWRK01:BASE PRIVATE
16:58:46 Defined size=128M Address limit=128M
16:58:46 Private spaces: Number=1 Owned size=118M
16:58:46 Pages: Main=4202 Xstore=0 Dasd=0
16:58:46 Instan=4202
16:58:46 WS=1589 Reserved=0
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
Ready: T=0.01/0.01 17:05:29
smmsg bkrbkup submit dalyssi
Ready: T=0.01/0.01 17:05:36
BKRBAK8532I Processing SUBMIT DALYSSI command for DEMOADMN at 11/01/16 17:05:36.
BKRMAK8559I INCLUDE / EXCLUDE processing for job DALYSSI selected 62 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job DALYSSI has been set to 1.
BKRMAK9191I Updating instance for job DALYSSI from 33 to 34.
BKRMAK8570I Instance number 00000034 has been assigned for job DALYSSI.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespaces will be filtered with path mask "*".
BKRMAK9347I Worker selection will be handled by user exit BKREXI03 EXEC.
BKRMAK9345I Job will be processed by:
BKRMAK9346I ... BKRWRK01
BKRMAK8584I Sending DALYSSI JOB D to worker task BKRWRK01.
File DALYSSI JOB D1 sent to BKRWRK01 at TIVLP3 on 11/01/16 17:05:46
Return code "0" from command SUBMIT DALYSSI at 11/01/16 17:05:46.

bkrlist
RUNNING TIVLP3
MA A 42/008
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

Files for owner(s): DEMOADMN

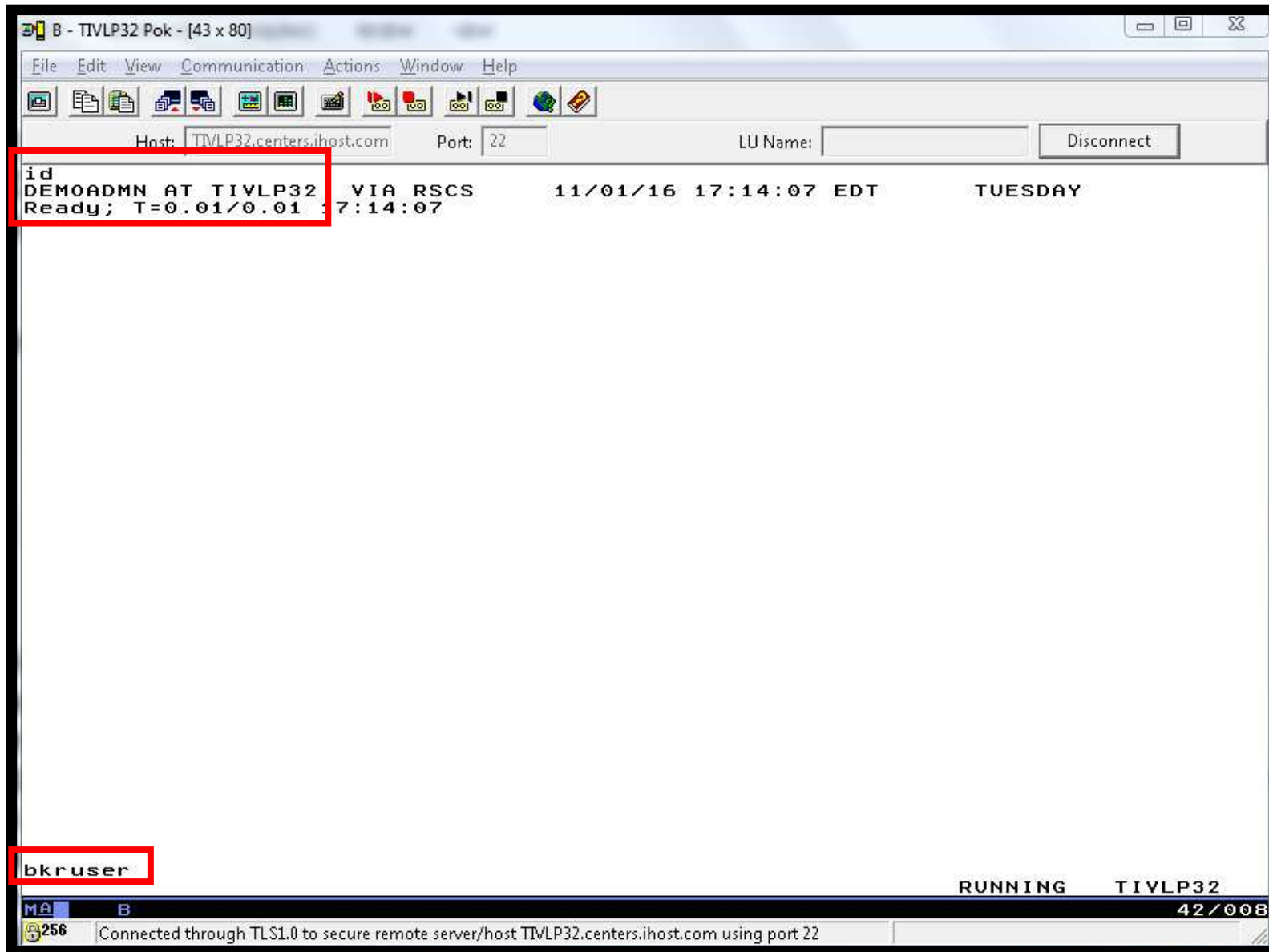
Selection: Name: Type: Mode: 14 of 339 shown
 Current filters: Name: TEST* Type: DEMO* Mode: * Owner: DEMOADMN

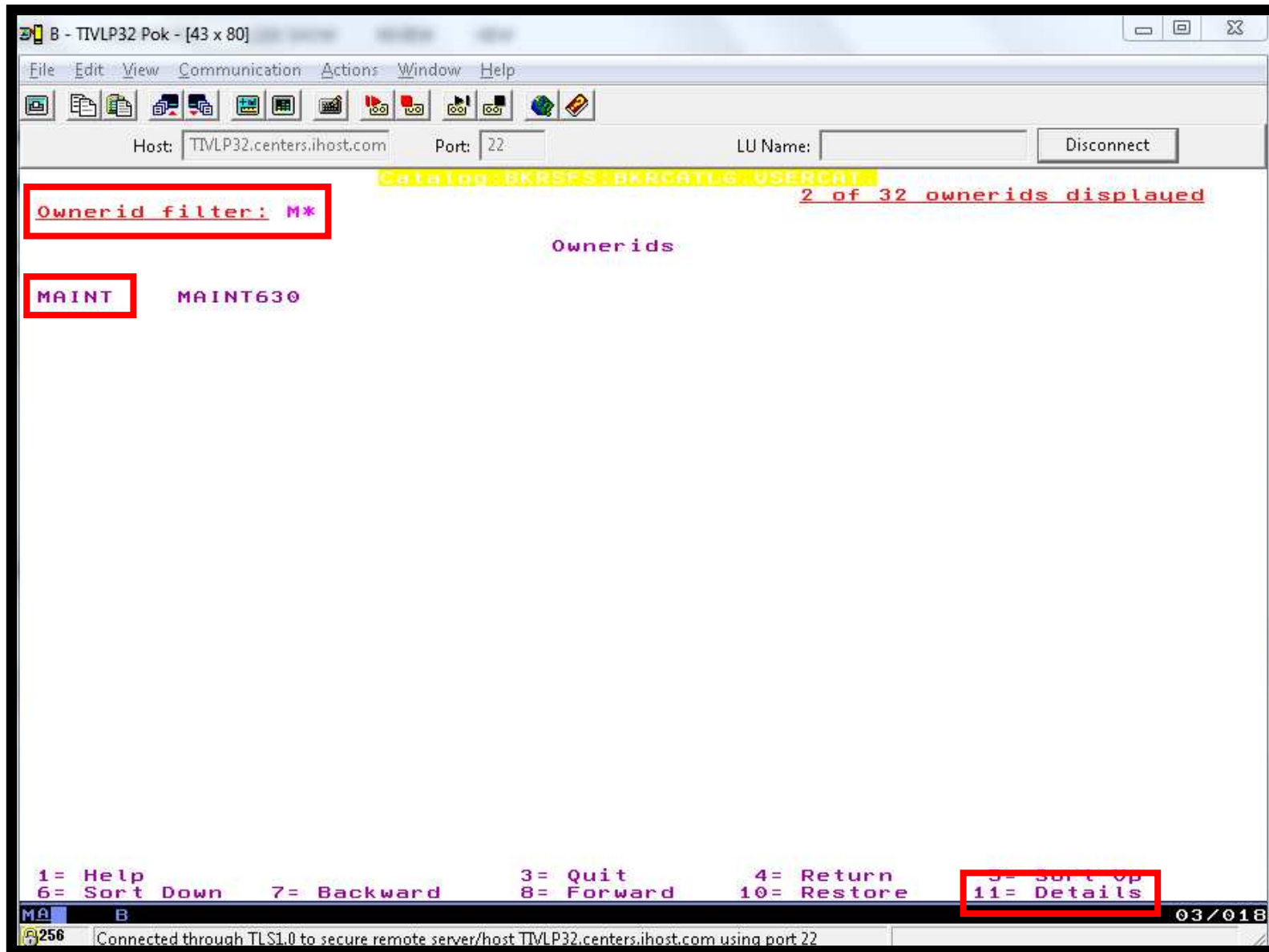
Owner	Filename	Filetype	Fm	Date	Time	Device or Path
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/11/01	16:51:44	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191

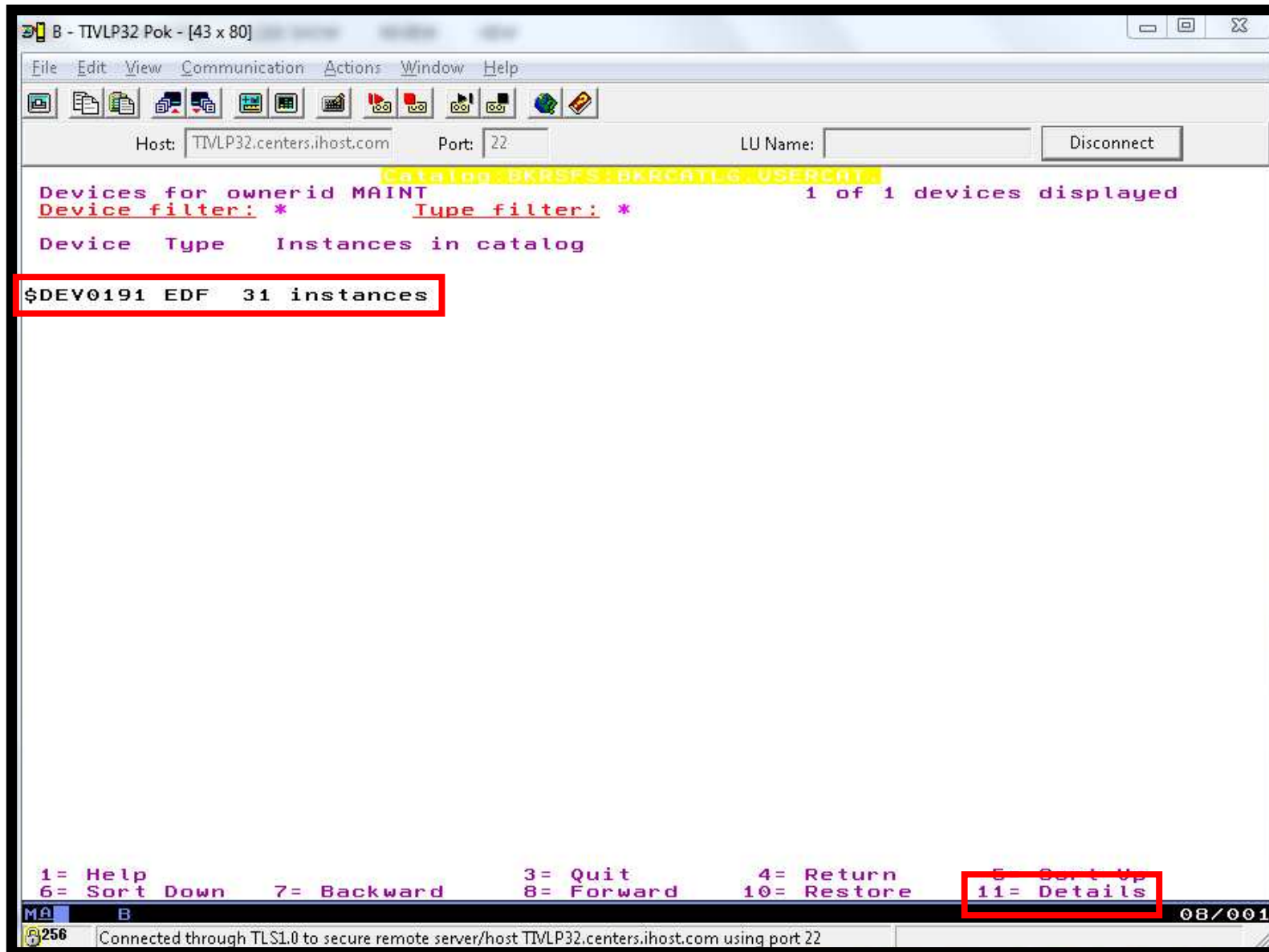
1= Help 2= Mixed case 3= Quit 4= Return 5= Sort Up
 6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details

MA A 03/045

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22







```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Catalog: BKRSFS: BKRCATLG: USERCAT
For MAINT $DEV0191 EDF 31 of 31 instances displayed
Jobname filter: *
Jobname Instance Date/time completed
DALYLP3 00000001 2016/10/11 03:00:01
DALYLP3 00000002 2016/10/12 03:00:01
DALYLP3 00000003 2016/10/13 03:00:01
DALYLP3 00000004 2016/10/14 03:00:01
DALYLP3 00000005 2016/10/15 03:00:01
DALYLP3 00000006 2016/10/16 03:00:00
DALYLP3 00000007 2016/10/17 03:00:00
DALYLP3 00000008 2016/10/18 03:00:01
DALYLP3 00000009 2016/10/19 03:00:00
DALYLP3 00000010 2016/10/20 03:00:01
DALYLP3 00000012 2016/10/22 03:00:00
DALYLP3 00000013 2016/10/23 03:00:01
DALYLP3 00000014 2016/10/24 03:00:01
DALYLP3 00000015 2016/10/25 03:00:01
DALYLP3 00000016 2016/10/26 03:00:01
DALYLP3 00000017 2016/10/27 03:00:01
DALYLP3 00000018 2016/10/28 03:00:00
DALYLP3 00000019 2016/10/29 03:00:01
DALYLP3 00000020 2016/10/30 03:00:01
DALYLP3 00000021 2016/10/31 03:00:01
DALYLP3 00000022 2016/11/01 03:00:01
DALYLP3 00000023 2016/11/01 03:00:01
WKL YLP3 00000002 2016/10/02 02:00:11
WKL YLP3 00000003 2016/10/09 02:00:51
WKL YLP3 00000004 2016/10/16 02:00:11
WKL YLP3 00000005 2016/10/23 02:00:12
WKL YLP3 00000006 2016/10/30 02:00:12
WKL YLP32 00000002 2016/10/02 02:00:51
WKL YLP32 00000003 2016/10/09 02:00:11
WKL YLP32 00000005 2016/10/23 02:00:51
WKL YLP32 00000006 2016/10/30 02:00:51

1= Help 3= Quit 4= Return 5= Sort Up
6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details
MA B 03/018
256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```

Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect

Catalog: BKRSFS: BKRCATLG: USERCAT

For MAINT \$DEV0191 EDF 31 of 31 instances displayed
 Jobname filter: *

Jobname	Instance	Date/time completed
DALYLP3	00000001	2016/10/11 03:00:01
DALYLP3	00000002	2016/10/12 03:00:01
DALYLP3	00000003	2016/10/13 03:00:01
DALYLP3	00000004	2016/10/14 03:00:01
DALYLP3	00000005	2016/10/15 03:00:01
DALYLP3	00000006	2016/10/16 03:00:00
DALYLP3	00000007	2016/10/17 03:00:00
DALYLP3	00000008	2016/10/18 03:00:01
DALYLP3	00000009	2016/10/19 03:00:00
DALYLP3	00000010	2016/10/20 03:00:01
DALYLP3	00000012	2016/10/22 03:00:00
DALYLP3	00000013	2016/10/23 03:00:01
DALYLP3	00000014	2016/10/24 03:00:01
DALYLP3	00000015	2016/10/25 03:00:01
DALYLP3	00000016	2016/10/26 03:00:01
DALYLP3	00000017	2016/10/27 03:00:01
DALYLP3	00000018	2016/10/28 03:00:00
DALYLP3	00000019	2016/10/29 03:00:01
DALYLP3	00000020	2016/10/30 03:00:01
DALYLP3	00000021	2016/10/31 03:00:01
DALYLP3	00000022	2016/11/01 03:00:01
DALYLP3	00000023	2016/11/01 16:58:46
WKL YLP3	00000002	2016/10/02 02:00:11
WKL YLP3	00000003	2016/10/09 02:00:51
WKL YLP3	00000004	2016/10/16 02:00:11
WKL YLP3	00000005	2016/10/23 02:00:51
WKL YLP3	00000006	2016/10/30 02:00:12
WKL YLP32	00000002	2016/10/02 02:00:51
WKL YLP32	00000003	2016/10/09 02:00:11
WKL YLP32	00000005	2016/10/23 02:00:51
WKL YLP32	00000006	2016/10/30 02:00:51

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

MA B 03/018

256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22

```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Object Data:
Object: BKRSFS:BKRCATLG.USERCAT.MAINT.$DEV0191.EDF.WKLYLP3.00000006
BKRCAT9097I Job summary:
BKRCAT9097I *** Job Name / Instance: WKLYLP3 / 00000006
BKRCAT9097I *** Backup Time: 02:00:11.270490 on Sunday, October 30, 2016 (Local
BKRCAT9097I *** Source data: Tape file 11 on volume V00015, Block 15 00000071
BKRCAT9098I Original backup data type was CMS EDF minidisk:
BKRCAT9098I *** Owner, vdev: MAINT 0191
BKRCAT9098I *** EDF blocksize: 4096, 1947 of 31500 blocks in use.
BKRCAT9098I *** Minidisk label: REX191
BKRCAT9098I *** 175 of 175 cylinders formatted.
BKRCAT9099I *** "(RECOMP" is not in effect for this minidisk.

Filename Filetype yy/mm/dd hh:mn:ss Format Records Blocks
$VMFBLD $MSGLOG 14/10/12 12:36:29 V/80 286 4
$VMFINS $MSGLOG 13/08/16 12:08:17 V/80 241 4
$VMFP2P $MSGLOG 14/10/12 12:36:33 V/80 665 9
$VMFSRV $MSGLOG 15/05/07 10:34:44 V/80 221 3
$5684123 $INS1307 95/07/31 15:42:00 V/64 5 1
$5684123 PLANINFO 13/08/16 11:56:03 V/80 43 1
AUTHFOR CONTROL 16/06/28 15:43:29 V/41 48 1
AUTOBLK DATADVH 13/04/25 14:19:23 V/70 106 2
BSMTP REPLY 14/02/23 15:25:35 F/80 27 1
CONFIG DATADVH 14/08/13 12:58:30 V/73 1628 27
CONFIGSS DATADVH 14/08/15 21:30:04 F/80 12 1
CONFIG00 DATADVH 14/08/28 07:12:18 F/80 35 1
DIRLOG LOG 14/03/05 23:02:46 F/132 108 4
DIRMAINT CONS4201 14/02/09 13:07:13 F/132 914 30
DIRMAINT CONS6785 14/03/06 06:14:45 F/132 13254 428
EXTENT CONTROL 16/08/24 15:37:37 V/72 129 2
GSKKYMAN LOG 13/12/04 16:35:05 F/132 314 11
IC01L01 DIRECT 16/08/24 23:47:38 F/80 18 1
INS 1307 13/07/26 15:25:30 V/25 74 1
KEYINDDR SAMP 15/02/03 23:55:08 V/112 167 3
3= quit 4= Return 5= Top 6= Bottom 7= Backward
8= Forward 10= Restore 11= Rgtright
03/010
256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```

```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Object Detail
Object: BKRSFS:BKRCATLG.USERCAT.MAINT.$DEV0191.EDF.WKLYLP3.00000006
KEYVINDDR SAMP 15/02/03 23:55:08 V/112 167 3
LASTING GLOBALV 16/10/14 09:43:28 V/43 5 1
LNXMMAINT DIRECT 16/08/24 12:09:02 F/80 9 1
MAINT CONSCOTT 14/02/09 13:36:34 F/132 1370 45
MAINT NETLOG 16/10/14 09:43:41 V/107 238 7
PATRH PROTODIR 14/10/01 08:07:28 V/50 18 1
PATSL PROTODIR 14/10/01 08:08:17 V/50 18 1
PROFILE EXEC 13/12/04 12:45:46 V/72 32 1
PROFILE XEDIT 13/08/20 14:16:54 V/45 19 1
PUT2PROD $TEMPCON 15/09/10 20:23:04 F/132 6 1
REPOS MDISK 14/10/02 11:33:53 F/80 1 1
SERVICE $CONS 14/02/18 08:51:38 V/132 4 1
SETUP $LINKS 15/09/10 20:23:04 V/26 37 1
SMTPMSG2 EXEC 15/02/17 17:34:30 V/83 84 1
SSLPOOL $MSGLOG 13/11/25 12:13:34 V/86 53 1
TABLES MACLIB 13/08/16 14:50:06 F/80 96 2
TEST MAINT 16/09/29 23:15:48 F/80 3 1
TESTLNW DIRECT 16/09/29 23:15:48 F/80 17 1
TIVLP3 CERT 13/12/04 16:38:23 V/64 23 1
TRDMM DIRECT 16/09/15 09:12:36 V/80 26 1
TRLM1 DIRECT 16/09/15 09:12:39 V/80 27 1
TRTMM DIRECT 16/09/15 09:12:33 V/80 40 1
TSTSMAP EXEC 16/06/14 11:31:34 V/70 177 2
TSTSMPBB EXEC 14/08/14 14:28:17 V/73 169 2
USER DISKMAP 16/09/14 19:44:32 F/100 1185 29
USER NOPASS 16/09/14 19:44:19 F/80 8003 157
USER WITHPASS 16/10/14 09:43:29 F/80 8047 158
USER WITHPAS2 16/07/29 14:25:37 F/80 7887 155
USER WITHSSI1 16/06/28 16:13:15 F/80 7826 153
USER WITH0908 14/09/08 14:07:03 F/80 6312 124
USER WITH099A 14/09/09 15:02:48 F/80 6346 124
USER WITH814A 14/08/14 14:56:54 F/80 6150 121
USER WITH94 14/09/04 08:23:14 F/80 6227 122
USER WITH94A 14/09/04 08:41:26 F/80 6236 122
VMFINS PRODLIST 13/08/15 17:09:35 V/128 98 3
VOLCAT EXEC 14/08/20 11:47:01 V/51 13 1
VSMCYCLE EXEC 14/11/12 15:41:41 V/35 25 1
3= Quit 4= Return 5= Top 6= Bottom 7= Backward
8= Forward 10= Restore 11= Rgleft
MA B 03/010
256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```

```
B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
CMS EDF minidisk Restore Specifications
From MAINT 0191 date 16/09/29 time 23:15:48 (job WKLYLP3 00000006 ).
To EDF minidisk, userid: and virtual address:
FORMAT: OK if needed? YES FORMAT regardless? NO
Or to RDR of userid: demoadmn node: (defaults to this node).
Or to SFS filepool: and filespace:
and path:
File filters: Filename: TEST Filetype: MAINT mode number: *
Master backup userid: BKRKBUP Options:
2= Mixed case 3= Quit 4= Return 10= Restore
MA B 08/038
Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
```



```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Your command "RESTORE WKLYLP3 00000006 MAINT EDF $DEV0191 TO RDR DEMOADMN - TEST MAINT *" is being processed at 11/01/16 17:29:20.
***
*** BKREX101 SOURCEDATA invoked with these arguments:
*** "DEMOADMN 1 MAINT BKRSFS:BKRCATLG.JOBCAT.WKLYLP3.00000006.MAINT.EDF.$DEV0191"
***
*** BKREX101 DESTDATA invoked with these arguments:
*** "DEMOADMN 1 MAINT BKRSFS:BKRCATLG.JOBCAT.WKLYLP3.00000006.MAINT.EDF.$DEV0191 RDR DEMOADMN -"
***
BKREST9347I Worker selection will be handled by user exit BKREX103 EXEC.
BKREST9029I Sending RESTORE request 00000002 to worker task BKRWRK04...
File RESTORE JOB 01 sent to BKRWRK04 at TIVLP32 on 11/01/16 17:29:20
*** Restore: Request 00000002 submitted to worker BKRWRK04 for processing.
Return code "0" from command RESTORE WKLYLP3 00000006 MAINT EDF $DEV0191 TO RDR DEMOADMN - TEST MAINT * at 11/01/16 17:29:20
Ready; T=0.05/0.05 17:29:22
RDR FILE 0030 SENT FROM BKRWRK04 PUN WAS 0013 RECS 0007 CPY 001 R NOHOLD NOKEEP
RDR FILE 0034 SENT FROM BKRWRK04 CON WAS 0012 RECS 0157 CPY 001 R NOHOLD NOKEEP

rl

RUNNING TIVLP32
42/003
Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```

Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect

Cmd	Filename	Filetype	Class	User	at	Node	Hold	Records	Date	Time
peek	RESTORE	00000002	CON R	BKRWRK04		TIVLP32	NONE	157	11/01	17:29:20
	TEST	MAINT	PUN R	BKRWRK04		TIVLP32	NONE	7	11/01	17:29:30

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 04/005

256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22

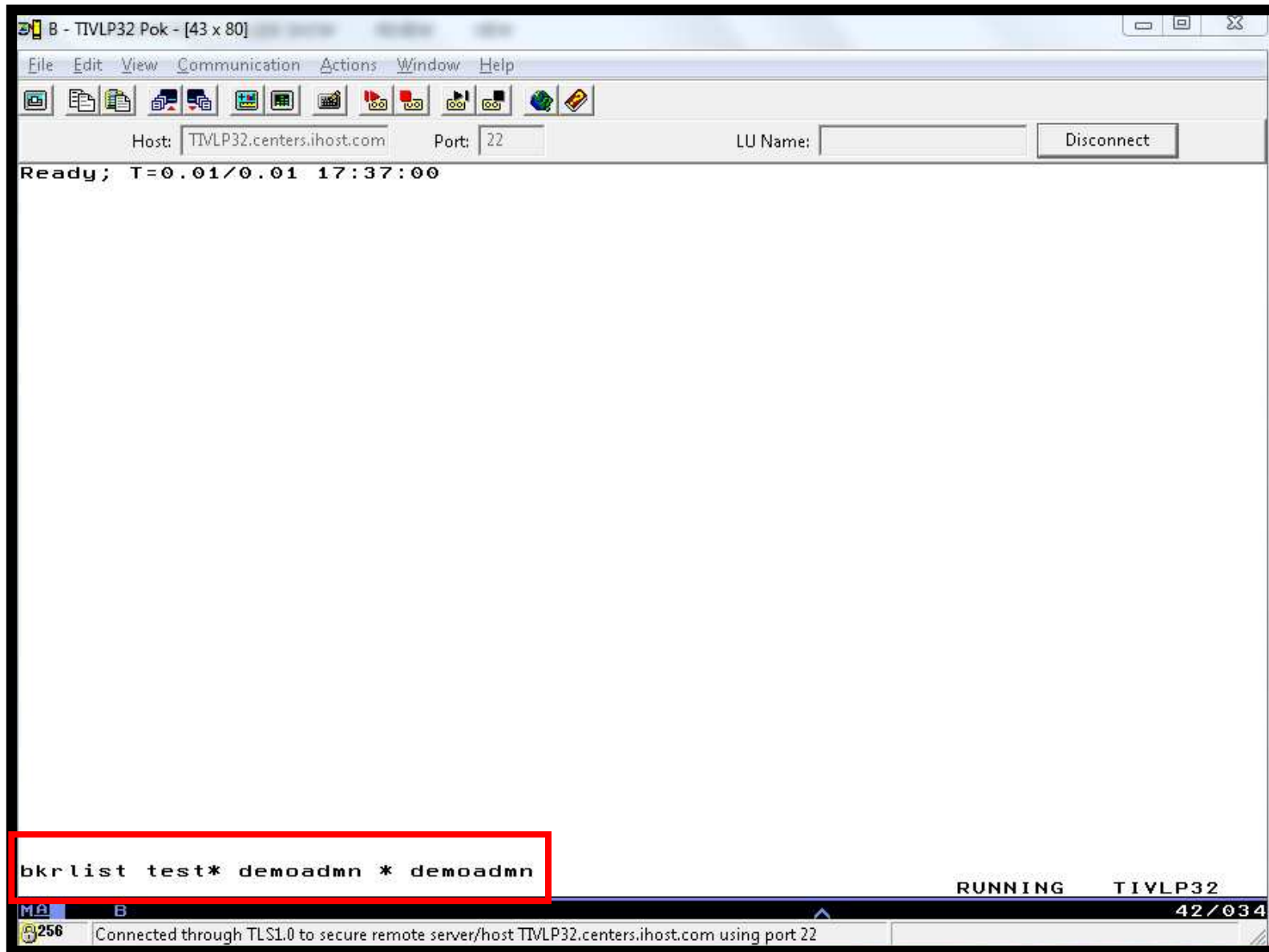
The screenshot shows a terminal window titled "B - TIVLP32 Pok - [43 x 80]". The window has a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. Below the toolbar, there are fields for "Host: TIVLP32.centers.ihost.com", "Port: 22", and "LU Name:". A "Disconnect" button is on the right. The main content area displays the following text:

```
0030 PEEK A0 V 80 Trunc=80 Size=3 Line=0 Col=1 Alt=0
File TEST MAINT from *BACKUP* at TIVLP32 Format is NETDATA.
*** Top of File ***
Test file for back up jobs
Update on Sept 29, 2016
*** End of File ***
```

The text "Test file for back up jobs" and "Update on Sept 29, 2016" is enclosed in a red rectangular box. At the bottom of the terminal, there is a legend for navigation keys:

```
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
```

Below the legend is a status bar with "====>" on the left, "X E D I T 1 File" in the center, and "MA B 42/007" on the right. At the very bottom, a system message reads: "256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22".



Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect

Files for owner(s) DEMOADMN
 Selection: Name: TEST* Type: DEMOADMN Mode: * 14 of 14 shown
 Current filters: Name: * Type: * Mode: * Owner: *

Owner	Filename	Filetype	Fm	Date	Time	Device or Path
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/11/01	16:51:44	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191
DEMOADMN	TEST	DEMOADMN	1	16/09/29	23:16:34	0191

1= Help 2= Mixed case 3= Quit 4= Return 5= Sort Up
 6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details

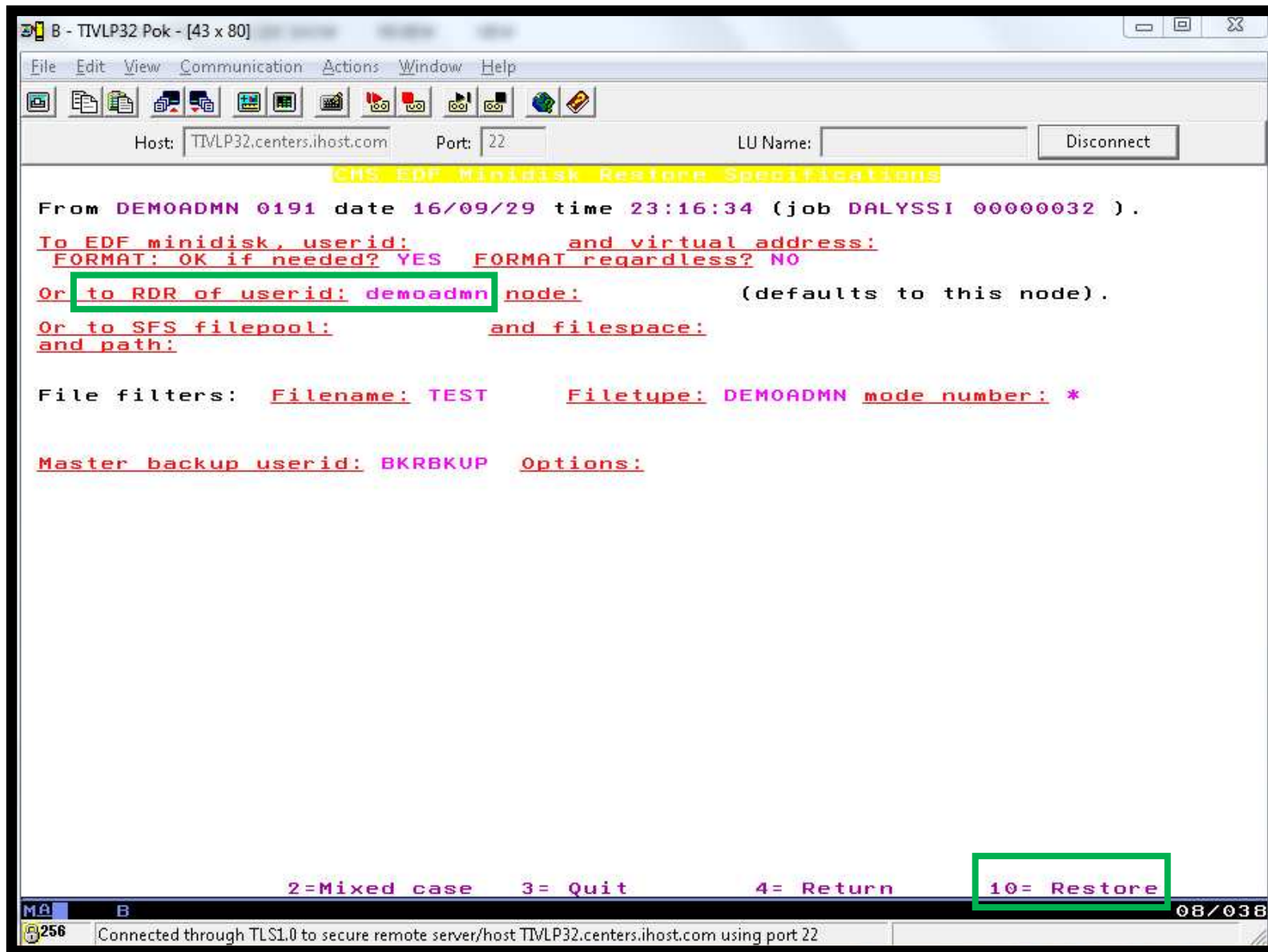
MA B 03/025
 256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22

```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Object Detail
Object: BKRSFS:BKRCATLG.USERCAT.DEMOADMN.$DEV0191.EDF.DALYSSI.00000032
BKRCAT9097I Job summary:
BKRCAT9097I *** Job Name / Instance: DALYSSI / 00000032
BKRCAT9097I *** Backup Time: 03:00:10.402464 on Monday, October 31, 2016 (Local
BKRCAT9097I *** Source data: CMS File 41000000 00000000 on BKURDISK 0200

BKRCAT9098I Original backup data type was CMS EDF minidisk:
BKRCAT9098I *** Owner, vdev: DEMOADMN 0191
BKRCAT9098I *** EDF Blocksize: 4096; 210 of 900 blocks in use.
BKRCAT9098I *** Minidisk label: DEM191
BKRCAT9098I *** 5 of 5 cylinders formatted.
BKRCAT9099I *** "(RECOMP" is not in effect for this minidisk.

Filename Filetype yy/mm/dd hh:mn:ss Format Records Blocks
ABEND NOTE 15/02/18 15:58:35 V/72 8 1
ACTIONQ EXEC 16/06/21 16:06:03 V/112 109 2
ACTIONQ VMARC 16/07/14 08:38:07 F/80 35 1
ALL NOTEBOOK 16/07/07 10:57:14 V/73 5 1
BKRBKUP 20161007 16/10/07 08:43:20 V/221 476 18
BKREX101 EXEC 16/09/16 14:12:52 V/111 117 2
BKRWRK01 20161007 16/10/07 08:39:55 V/224 4974 126
CONFIG BKUPLNX 16/09/30 17:58:08 V/70 134 1
CURRENT JOB 16/10/07 08:40:45 V/77 160 2
DEMOADMN CONSOLE 14/09/16 21:09:10 F/132 36 2
DEMOADMN DIRECT 15/02/04 12:22:52 V/80 16 1
DEMOADMN NETLOG 16/10/18 21:14:46 V/107 93 3
LASTING GLOBALV 16/01/17 12:09:57 V/38 2 1
PROFILE EXEC 16/09/30 18:00:03 V/80 13 1
SAMPLNX CONFIG 15/01/25 12:53:24 V/70 91 1
SAMPLNX VMARC 15/01/25 12:54:44 F/80 21 1
TEST DEMOADMN 16/09/29 23:16:34 F/80 2 1
TEST EXEC 14/02/18 10:00:26 V/41 5 1
TEST3 FILE 16/06/30 20:16:36 F/80 1 1
TEST32 FILE 16/06/30 20:16:48 F/80 1 1
3= Quit 4= Return 5= Top 6= Bottom 7= Backward
8= Forward 10= Restore 11= Rgtright
MA B 03/010
256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```



```

B - TIVLP32 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect
Your command "RESTORE DALYSSI 00000032 DEMOADMN EDF $DEV0191 TO RDR DEMOADMN -
TEST DEMOADMN *" is being processed at 11/01/16 17:44:44.
***
*** BKREXI01 SOURCEDATA invoked with these arguments:
*** "DEMOADMN 1 DEMOADMN BKRSFS:BKRCATLG.JOBCAT.DALYSSI.00000032.DEMOADMN.EDF.
$D
EV0191"
***
*** BKREXI01 DESTDATA invoked with these arguments:
*** "DEMOADMN 1 DEMOADMN BKRSFS:BKRCATLG.JOBCAT.DALYSSI.00000032.DEMOADMN.EDF.
$D
EV0191 RDR DEMOADMN -"
***
BKREST9347I Worker selection will be handled by user exit BKREXI03 EXEC.
BKREST9029I Sending RESTORE request 00000003 to worker task BKRWRK04...
File RESTORE JOB 01 sent to BKRWRK04 at TIVLP32 on 11/01/16 17:44:44
*** Restore: Request 00000003 submitted to worker BKRWRK04 for processing.
Return code "0" from command RESTORE DALYSSI 00000032 DEMOADMN EDF $DEV0191 TO
RDR DEMOADMN TEST DEMOADMN * at 11/01/16 17:44:44
RDR FILE 0038 SENT FROM BKRWRK04 PUN WAS 0017 RECS 0006 CPY 001 R NOHOLD NOKEEP
RDR FILE 0042 SENT FROM BKRWRK04 CON WAS 0016 RECS 0134 CPY 001 R NOHOLD NOKEEP
Ready; T=0.01/0.01 17:44:45

rdr list

RUNNING TIVLP32
MA B 42/005
256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22
    
```


Host: TIVLP32.centers.ihost.com Port: 22 LU Name: Disconnect

Cmd	Filename	Filetype	Class	User	at	Node	Hold	Records	Date	Time
	RESTORE	00000002	CON R	BKRWRK04		TIVLP32	NONE	157	11/01	17:29:20
peek	TEST	DEMOADMN	PUN R	BKRWRK04		TIVLP32	NONE	7	11/01	17:29:30
	TEST	DEMOADMN	PUN R	BKRWRK04		TIVLP32	NONE	6	11/01	17:44:44
	RESTORE	00000002	CON R	BKRWRK04		TIVLP32	NONE	134	11/01	17:44:44

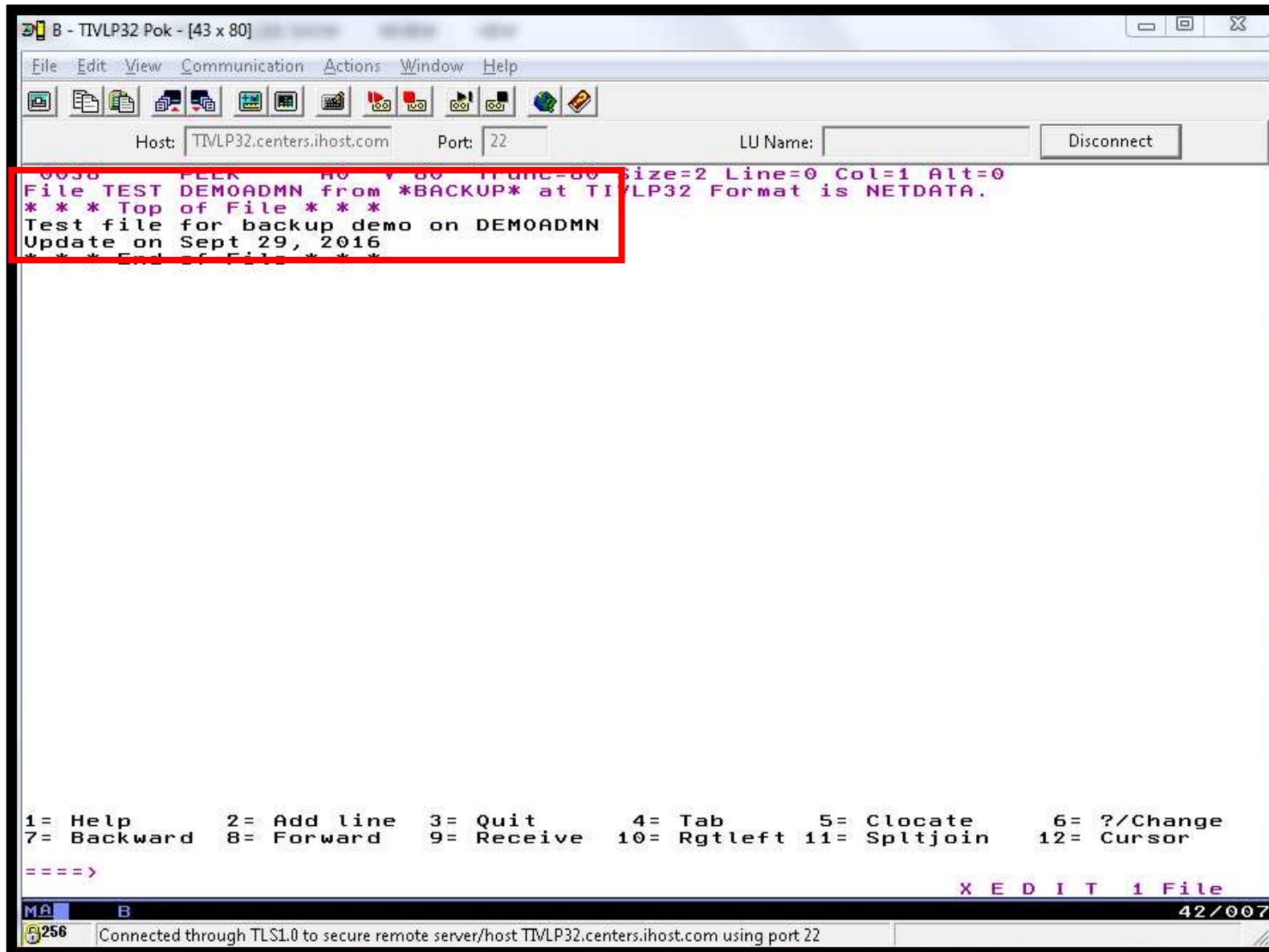
1= Help 2= Refresh 3= Quit 4= Sort(type) 5= Sort(date) 6= Sort(user)
 7= Backward 8= Forward 9= Receive 10= 11= Peek 12= Cursor

====>

X E D I T 1 File

MA B 05/005

256 Connected through TLS1.0 to secure remote server/host TIVLP32.centers.ihost.com using port 22



Scenario D: Scheduling Image Backups of Linux Guests

- Initiated or scheduled by Operations Manager
 - Schedule defined in Operations Manager to trigger action that will initiate backups at specific times/intervals
 - For demo purposes, start the action “manually”
 - 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 D: Detailed Steps

- Start the action normally triggered by a schedule in Operations Manager

```
gomcmd opmgrml run action stoplnx
```

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

```
viewcon tdlinx01
```

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

```
viewcon bkrbkup
```

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

```
viewcon bkrwrkxx
```

- View the console of the backup server to see the backup finish

```
viewcon bkrbkup
```

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

```
viewcon tdlinx01
```

- View the backup catalog to see the completed job

```
bkrjob
```

```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
id
DEMOADMN AT TIVLP3 VIA RSCS 11/01/16 18:09:18 EDT TUESDAY
Ready; T=0.01/0.01 18:09:18
q tdlx01
TDLNX01 - DSC
Ready; T=0.01/0.01 18:09:22
gomcmd opmgrm1 run action stoplnx
Ready; T=0.01/0.01 18:09:24

viewcon tdlx01

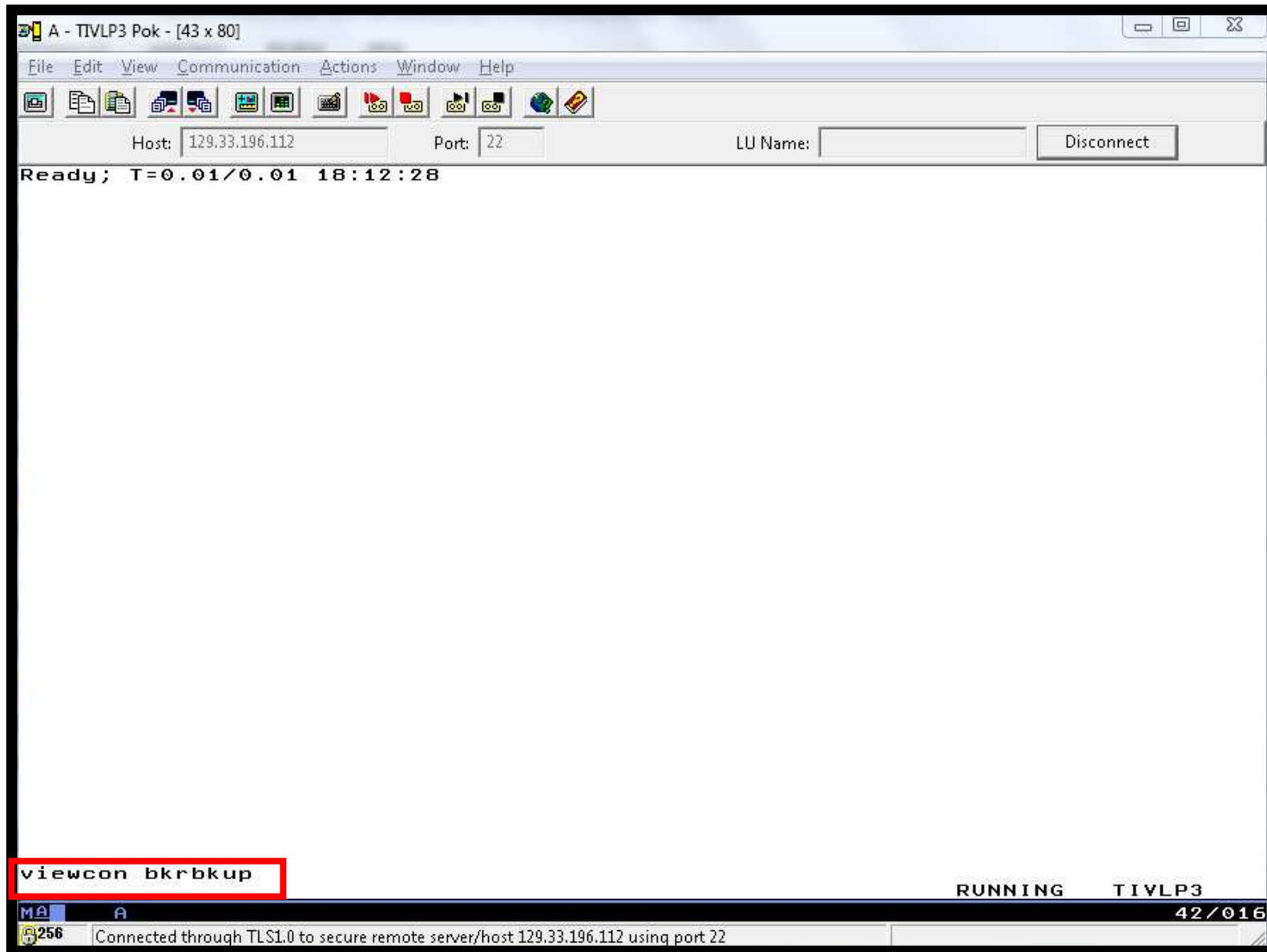
RUNNING TIVLP3
42/016
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
00:00:00 HCPMID6001I TIME IS 00:00:00 EDT TUESDAY 11/01/16
18:09:24 Stopping certmonger:
18:09:24 [ OK ]
18:09:24 Stopping rhsmcertd...
18:09:24 [ OK ]
18:09:24 Stopping atd:
18:09:24 [ OK ]
18:09:24 Stopping cups:
18:09:24 [ OK ]
18:09:24 Stopping abrt daemon:
18:09:24 [ OK ]
18:09:24 Stopping sshd:
18:09:25 [ OK ]
18:09:25 Shutting down postfix: [ OK ]
18:09:25 Stopping crond:
18:09:25 [ OK ]
18:09:25 Stopping automount:
18:09:28 [ OK ]
18:09:28 Stopping HAL daemon: [ OK ]
18:09:28 Stopping block device availability: Deactivating block devices:
18:09:28 [ OK ]
18:09:28 Stopping system message bus: [ OK ]
18:09:28 Stopping rpcbind:
18:09:28 [ OK ]
18:09:28 Stopping auditd: type=1305 audit(1478038168.286:51330): audit_pid=0 ol
18:09:28 [ OK ]
18:09:28 type=1305 audit(1478038168.386:51331): audit_enabled=0 old=1 auid=4294
18:09:28 Shutting down system logger:
18:09:28 [ OK ]
18:09:28 Shutting down interface eth0: [ OK ]
18:09:28 Shutting down loopback interface:
18:09:28 [ OK ]
18:09:28 stop on panic configured.
18:09:28 Sending all processes the TERM signal... [ OK ]
18:09:30 Sending all processes the KILL signal... [ OK ]
18:09:30 Saving random seed: [ OK ]
18:09:30 Turning off quotas: [ OK ]
18:09:30 init: Re-executing /sbin/init
18:09:30 Please stand by while rebooting the system...
PF01= HELP PF02= SCROLL PF03= END PF04= LEFT PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= RIGHT PF11= RIGHT PF12= RECALL
TDLNX01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

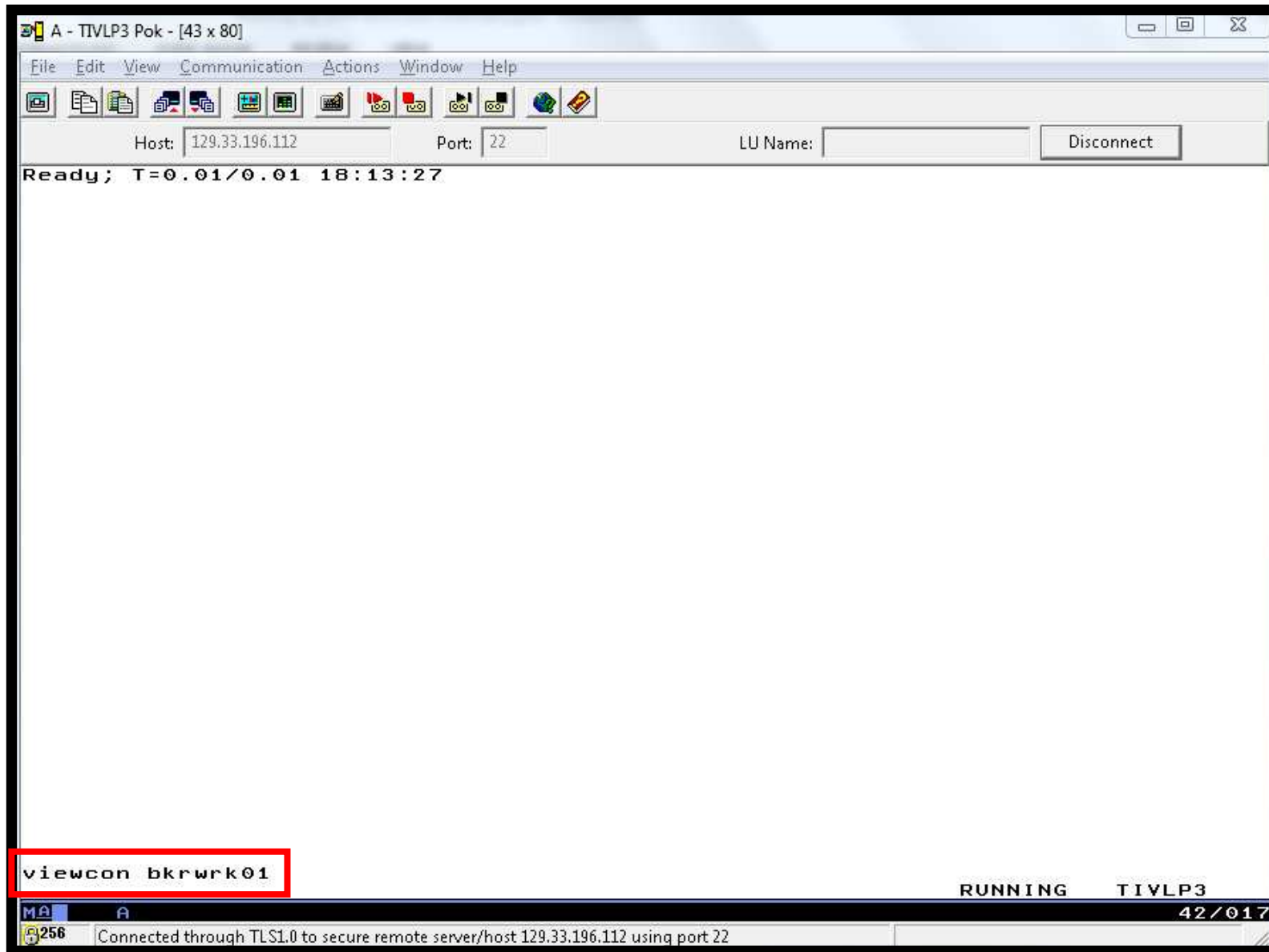
```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:09:30 Sending all processes the KILL signal... [ OK ]
18:09:30 Saving random seed: [ OK ]
18:09:30 Turning off quotas: [ OK ]
18:09:30 init: Re-executing /sbin/init
18:09:30 Please stand by while rebooting the system...
18:09:30 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
18:09:30 CONNECT = 99:59:59 VIRTCPU = 002:55:75 TOTCPU = 002:59:28
18:09:30 LOGOFF AT 18:09:30 EDT TUESDAY 11/01/16 AFTER SIGNAL
18:09:30 * -- Operations Manager Action LNXBKUPB scheduled for execution -- *
18:09:31 CON FILE 0065 SENT TO MAINT630 RDR AS 1433 RECS 0317 CPY 001 T NOH
18:11:12 NIC 0000 is created; device 0000-0000 defined
```




```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
17:37:51 BKRBAK8510I 11/01/16 17:37:51 WAKEUP exited on a timer interrupt.
17:37:51 BKRBAK8512I The stack contains 0 entries. There are 0 lines on the con
17:52:51 BKRBAK8510I 11/01/16 17:52:51 WAKEUP exited on a timer interrupt.
17:52:51 BKRBAK8512I The stack contains 0 entries. There are 0 lines on the con
18:07:51 BKRBAK8510I 11/01/16 18:07:51 WAKEUP exited on a timer interrupt.
18:07:51 BKRBAK8512I The stack contains 0 entries. There are 0 lines on the con
18:09:30 BKRBAK8510I 11/01/16 18:09:30 WAKEUP exited on a VMCF interrupt.
18:09:30 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:09:30 BKRBAK8515I Queued command #1: "*SMMSG OPMGRS3 SUBMIT TDLNX01"
18:09:30 BKRBAK8532I Processing SUBMIT TDLNX01 command for OPMGRS3 at 11/01/16
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8559I INCLUDE / EXCLUDE processing for job TDLNX01 selec
18:09:30 cts
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8559I for backup processing.
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8563I Worker count for job TDLNX01 has been set to 1.
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9191I Updating instance for job TDLNX01 from 4 to 5.
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8570I Instance number 00000005 has been assigned for job
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8568I CMS files will be filtered against file mask "* *
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8566I SFS filespace will be filtered with path mask "*"
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9347I Worker selection will be handled by user exit BKRE
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9345I Job will be processed by:
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9346I ... BKRWRK01
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8584I Sending TDLNX01 JOB D to worker task BKRWRK01.
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: File TDLNX01 JOB D1 sent to BKRWRK01 at TIVLP3 on 11/01/16 18:
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 AUTO LOGON *** BKRWRK01 USERS = 91
18:09:30 HCPCLS6056I XAUTOLOG information for BKRWRK01: The IPL command is veri
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRBAKUP-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```



```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:09:31 BKRWRK8546I Initiating job processing at 11/01/16 18:09:31.
18:09:31 BKRJOB9005I Executing CP command "SPOOL CONSOLE TO BKRADMIN CLASS T TE
18:09:31 BKRJOB9006I CP return code 0
18:09:31 BKRJOB9005I Executing CP command "TERM LINES 255"
18:09:31 BKRJOB9006I CP return code 0
-----
18:09:31
18:09:31
18:09:31
18:09:31 5697-J06 - IBM Backup and Restore Manager for z/VM
18:09:31 Version 1.3.0
18:09:31 Licensed materials - Property of IBM
18:09:31 5697-J06
18:09:31 (c) Copyright IBM Corp. 2003,2015 All Rights Reserved.
18:09:31 (c) Copyright Rocket Software, Inc. 2003-2015 All Rights Reserved.
18:09:31 US Government Users Restricted Rights - Use, duplication
18:09:31 or disclosure restricted by GSA ADP Schedule Contract
18:09:31 with IBM Corp.
-----
18:09:31
18:09:31
18:09:31 BKRJOB9011I Job name: TDLNX01, instance identifier 00000005 starting a
18:09:31 BKRJOB9011I Job owner: BKRADMIN
18:09:31 BKRJOB9011I Master backup server: BKRBACKUP; worker virtual machine BKRW
18:09:31 BKRJOB9011I Job token value is 20161101.
18:09:31 BKRJOB88865I Expiration for TDLNX01 00000005 set to 8 Nov 2016.
18:09:31 BKRJOB9012I Catalog content creation is enabled.
18:09:31 BKRJOB9012I Catalog content will be delivered to backup catalog server
18:09:31 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
18:09:31 BKRJOB9314I Creation of EOF1 / HDR1 tape labels is disabled.
18:09:31 BKRJOB9428I Reblocking of Tape output is enabled.
18:09:31 BKRJOB9428I Reblocking of EDF output is disabled.
18:09:31 BKRJOB9429I UDPE configuration: Tape UDPE1 is disabled.
18:09:31 BKRJOB9429I UDPE configuration: Tape UDPE2 is disabled.
18:09:31 BKRJOB9429I UDPE configuration: EDF UDPE1 is default; routine name is
18:09:31 BKRJOB9429I UDPE configuration: EDF UDPE2 is disabled.
-----
18:09:31
18:09:31 ***
18:09:31 ***----- Handling a new mount request at 11/01/16 18:09:31
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
-----
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect

18:09:31 ***
18:09:31 *** Requesting volume "SCRATCH" at virtual address 0181, Read-Write, v
18:09:31 ***
18:09:31 *** Waiting for device; attempt 1 of 15 at 18:09:31 11/01/16
18:09:31 HCPQVD040E Device 0181 does not exist
18:09:31 EUMTAP0072I Mount request 000368 received from BKRWRK01@TMCAT.
18:09:31 EUMTAP0079I Mount request 000368 pending.
18:09:37 Tape 0181 attached
18:09:37 EUMTAP0109I Device B00F attached to BKRWRK01 as 0181 with volume V0001
18:09:41 *** Waiting for device; attempt 2 of 15 at 18:09:41 11/01/16
18:09:41 TAPE 0181 ON DEV B00F 3490 GIVEN BY TCDMM R/W SUBCHANNEL = 000D
18:09:41 *** Positioning tape to file 1...
18:09:41 *** V0011 tablet for V00018 updated with expiration date of 6313...
18:09:41 *** Successfully cataloged new scratch volume V00013; positioned to fi
18:10:12 *** End-of-volume reached; requesting new output volume...
18:10:12 *** Dismounting volume V00013...
18:10:12 TAPE 0181 DETACHED
18:10:12 ***
18:10:12 ----- Handling a new mount request at 11/01/16 18:10:12
18:10:12 ***
18:10:12 *** Requesting volume "SCRATCH" at virtual address 0181, Read-Write, v
18:10:12 ***
18:10:12 ***
18:10:12 *** Waiting for device; attempt 1 of 15 at 18:10:12 11/01/16
18:10:12 HCPQVD040E Device 0181 does not exist
18:10:12 EUMTAP0072I Mount request 000369 received from BKRWRK01@TMCAT.
18:10:12 EUMTAP0079I Mount request 000369 pending.
18:10:22 *** Waiting for device; attempt 2 of 15 at 18:10:22 11/01/16
18:10:22 HCPQVD040E Device 0181 does not exist
18:10:32 *** Waiting for device; attempt 3 of 15 at 18:10:32 11/01/16
18:10:32 HCPQVD040E Device 0181 does not exist
18:10:42 *** Waiting for device; attempt 4 of 15 at 18:10:42 11/01/16
18:10:42 HCPQVD040E Device 0181 does not exist
18:10:52 *** Waiting for device; attempt 5 of 15 at 18:10:52 11/01/16
18:10:52 HCPQVD040E Device 0181 does not exist
18:10:57 Tape 0181 attached
18:10:57 EUMTAP0109I Device B00F attached to BKRWRK01 as 0181 with volume V0001
18:11:02 *** Waiting for device; attempt 6 of 15 at 18:11:02 11/01/16
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL

BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

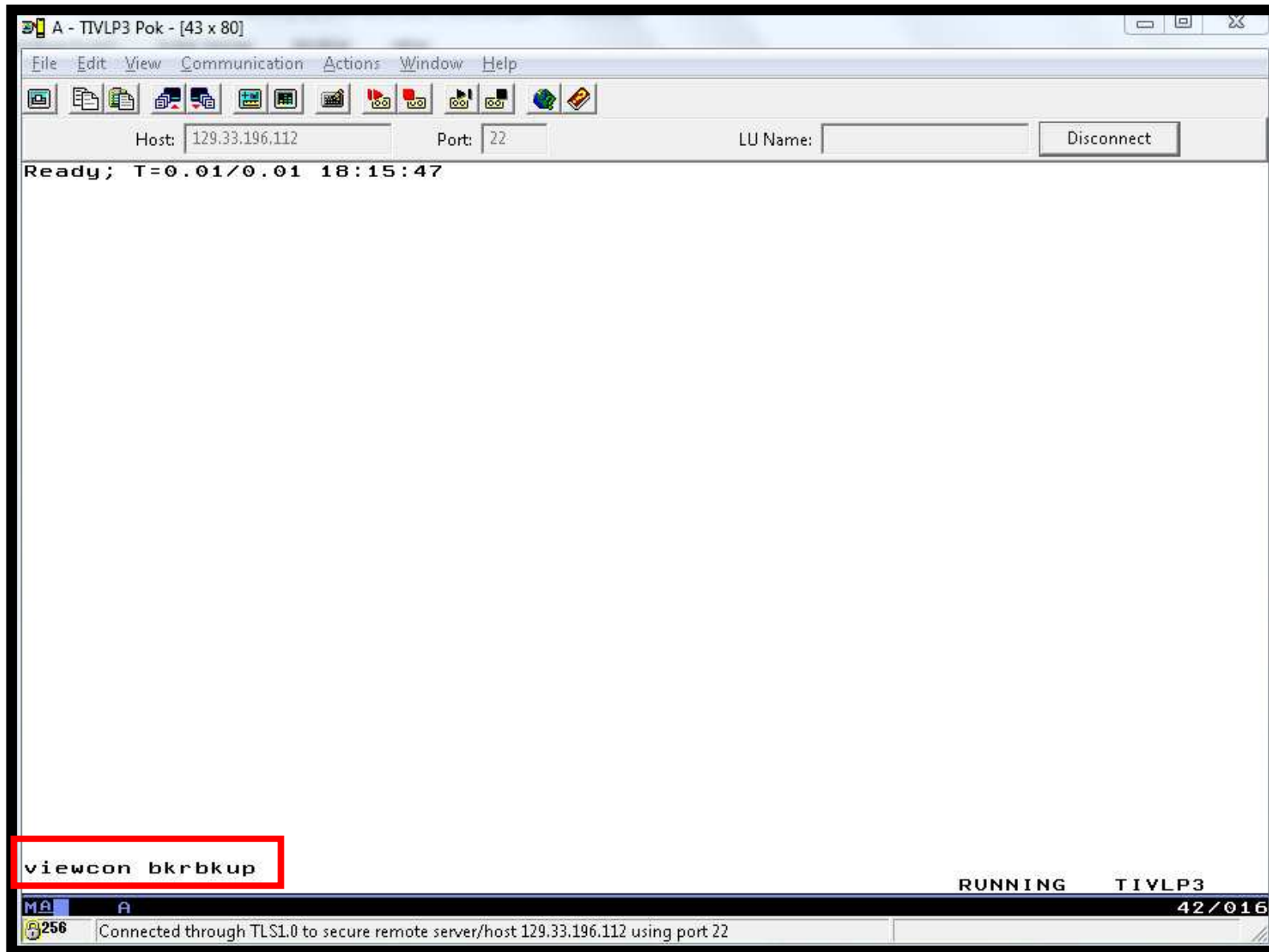
```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:11:02 TAPE 0181 ON DEV B00F 3490 GIVEN BY TCDMM R/W SUBCHANNEL = 000D
18:11:02 *** Positioning tape to file 1...
18:11:03 *** VOL1 label for V00012 updated with expiration date 016313...
18:11:03 *** Successfully cataloged new scratch volume V00012; positioned to fi
18:11:03 *** New output volume is V00012...
18:11:13 TDLNX01 0192 RR CKD 3390 3990 00002884 0015 00058786 00043259
18:11:13 *** Dismounting volume V00012...
18:11:13 TAPE 0181 DETACHED
-----
18:11:13 BKRJOB9014I Job completed at 18:11:13 on 11/01/16.
18:11:13 BKRJOB9005I Executing CP command "QUERY TIME"
18:11:13 TIME IS 18:11:13 EDT TUESDAY 11/01/16
18:11:13 CONNECT= 00:01:42 VIRTCPUR= 000:00.95 TOTCPU= 000:01.58
18:11:13 BKRJOB9006I CP return code 0
18:11:13 BKRJOB9005I Executing CP command "INDICATE USER * EXP"
18:11:13 Userid=BKRWRK01 Mach=ESA V=V Attached xstore=NONE
18:11:13 Iplsys=CMS Devnum=12
18:11:13 Spool: Reads=5 Writes=11
18:11:13 Owned spaces: Number=1 Owned size=118M
18:11:13 Pages: LockedReal=2 LockedLogical=0
18:11:13 Primary space: ID=BKRWRK01:BASE PRIVATE
18:11:13 Defined size=128M Address limit=128M
18:11:13 Private spaces: Number=1 Owned size=118M
18:11:13 Pages: Main=1585 Xstore=0 Dasd=0
18:11:13 Instan=1585
18:11:13 WS=1455 Reserved=0
18:11:13 ResidentLogical=23 LockedLogical=0
18:11:13 Shared spaces: Number=0 Owned size=0
18:11:13 Pages: Main=0 Xstore=0 Dasd=0
18:11:13 Instan=0
18:11:13 ResidentLogical=0 LockedLogical=0
18:11:13 Private paging:
18:11:13 Xstore: Reads=0 Writes=0 Migrates=0
18:11:13 Dasd: Reads=0 Writes=0
18:11:13 Shared paging:
18:11:13 Xstore: Reads=0 Writes=0 Migrates=0
18:11:13 Dasd: Reads=0 Writes=0
18:11:13 Vconfig: Mode=ESA390
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
  
```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:11:13 CPU 00: Ctime=0 00:01:43 Vtime=0 00:00:01 Ttime=0 00:00:02
18:11:13 Rdr=100 Prt=186 Pch=19 IO=87545
18:11:13 Type=CP CPUAffinity=ON
18:11:13 VtimePrimary=0 00:00:01 TtimePrimary=0 00:00:02
18:11:13 VtimeSecondary=0 00:00:00 TtimeSecondary=0 00:00:00
18:11:13 BKRJOB9006I CP return code 0
18:11:13 *
18:11:13 * TDLNX01 BACKUP JOB COMPLETED ON 11/01/16 AT 18:09:30
18:11:13 *
18:11:13 BKRJOB9005I Executing CP command "SPOOL CONSOLE CLOSE NAME TDLNX01 201
18:11:13 BKRJOB9006I CP return code 0
18:11:13 BKRJOB9005I Executing CP command "SPOOL CONSOLE NAME WORKER OUTPUT"
18:11:13 BKRJOB9006I CP return code 0
18:11:13 ***
18:11:13 *** Activity Summary:
18:11:13 ***
18:11:13 *** Job name: TDLNX01; instance 00000005
18:11:13 *** Start time: 11/01/16 18:09:31
18:11:13 *** Ended time: 11/01/16 18:11:13
18:11:13 ***
18:11:13 *** Catalog entry insertion elapsed time (ss.uu): 0.001827
18:11:13 ***
18:11:13 *** DUMPCKD tasks, Max RC: 1, 0
18:11:13 *** DUMPFBA tasks, Max RC: 0, 0
18:11:13 *** DUMPEDF tasks, Max RC: 0, 0
18:11:13 *** DUMPSFS tasks, Max RC: 0, 0
18:11:13 *** DUMPBFS tasks, Max RC: 0, 0
18:11:13 *** RESTORE tasks, Max RC: 0, 0
18:11:13 ***
18:11:13 0000001 FILE PURGED
18:11:13 BKRWRK8512I The stack contains 0 entries. There are 0 lines on the con
18:11:13 * MSG FROM BKRCATLG: BKRCAT8870I Expiration date for TDLNX01 00000005
18:11:13 Return code: 0
18:13:13 BKRWRK8509I Invoking WAKEUP with parameters 11/01/16 18:13:13 ( timer
18:13:13 BKRWRK9081I Idle timeout limit of +00:02:00 reached; logging off...
18:13:13 HCPMSG045E BKRADMIN not logged on
18:13:13 CONNECT= 00:03:42 VIRTCPU= 000:00.95 TOTCPU= 000:01.58
18:13:13 LOGOFF AT 18:13:13 EDT TUESDAY 11/01/16
18:13:13 CON FILE 4718 SENT TO BKRADMIN RDR AS 0809 RECS 0028 CPY 001 T NOH
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

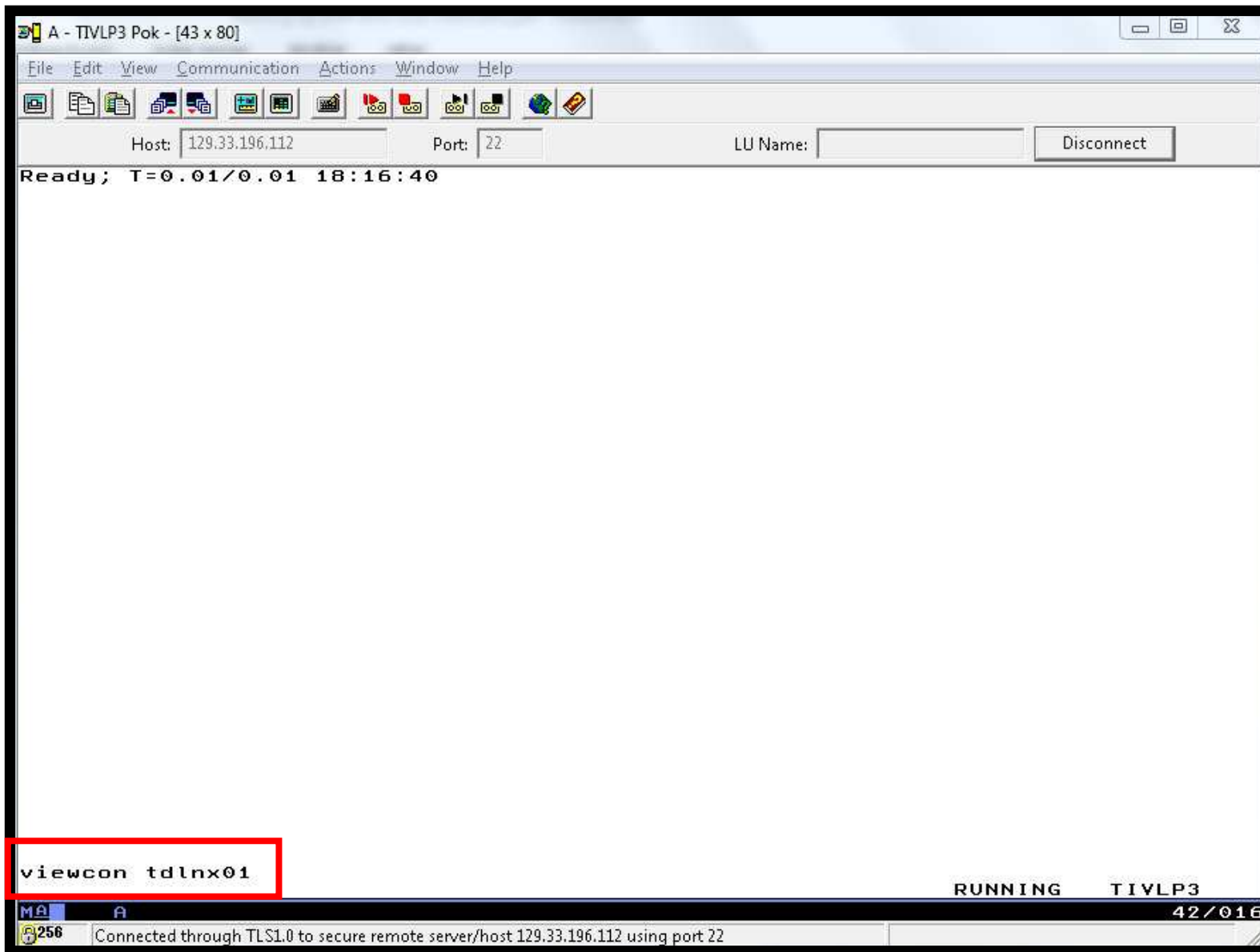
```



```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9347I Worker selection will be handled by user exit BKRE
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9345I Job will be processed by:
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK9346I ... BKRWRK01
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: BKRMAK8584I Sending TDLNX01 JOB D to worker task BKRWRK01.
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 SUBMIT: File TDLNX01 JOB D1 sent to BKRWRK01 at TIVLP3 on 11/01/16 18:
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 HCPMFS057I OPMGRS3 not receiving; disconnected
18:09:30 AUTO LOGON *** BKRWRK01 USERS = 91
18:09:30 HCPCLS6056I XAUTOLOG information for BKRWRK01: The IPL command is veri
18:09:31 BKRBAK8510I 11/01/16 18:09:30 WAKEUP exited on a VMCF interrupt.
18:09:31 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:09:31 BKRBAK8515I Queued command #1: "*SMSG BKRWRK01 WRKRSTAT TURNDON"
18:09:31 BKRBAK8519I Processing WRKRSTAT command TURNDON from *SMSG BKRWRK01.
18:09:31 BKRBAK8510I 11/01/16 18:09:31 WAKEUP exited on a VMCF interrupt.
18:09:31 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:09:31 BKRBAK8515I Queued command #1: "*SMSG BKRWRK01 WRKRSTAT JOBID TDLNX01"
18:09:31 BKRBAK8519I Processing WRKRSTAT command JOBID TDLNX01 from *SMSG BKRWR
18:09:31 BKRBAK8510I 11/01/16 18:09:31 WAKEUP exited on a VMCF interrupt.
18:09:31 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:09:31 BKRBAK8515I Queued command #1: "*SMSG BKRWRK01 WRKRSTAT DUMPTASK TDLNX
18:09:31 BKRBAK8519I Processing WRKRSTAT command DUMPTASK TDLNX01 00000005 1 1
18:11:13 BKRBAK8510I 11/01/16 18:11:13 WAKEUP exited on a VMCF interrupt.
18:11:13 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:11:13 BKRBAK8515I Queued command #1: "*SMSG BKRWRK01 WRKRSTAT EOJIDLE TDLNX0
18:11:13 BKRBAK8519I Processing WRKRSTAT command EOJIDLE TDLNX01 00000005 from
18:11:13 * -- Operations Manager Action STRTLNxB scheduled for execution -- *
18:11:13 * -- Operations Manager Action SUSPBKUP scheduled for execution -- *
18:11:14 * -- Operations Manager Action STRTLNxB scheduled for execution -- *
18:11:14 * -- Operations Manager Action SUSPBKUP scheduled for execution -- *
18:13:13 USER DSC LOGOFF AS BKRWRK01 USERS = 91
18:13:13 BKRBAK8510I 11/01/16 18:13:13 WAKEUP exited on a VMCF interrupt.
18:13:13 BKRBAK8512I The stack contains 1 entries. There are 0 lines on the con
18:13:13 BKRBAK8515I Queued command #1: "*SMSG BKRWRK01 WRKRSTAT TURNDOFF"
18:13:13 BKRBAK8519I Processing WRKRSTAT command TURNDOFF from *SMSG BKRWRK01.
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRBAKUP-TIVLP3 (Scroll)
42/001
Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

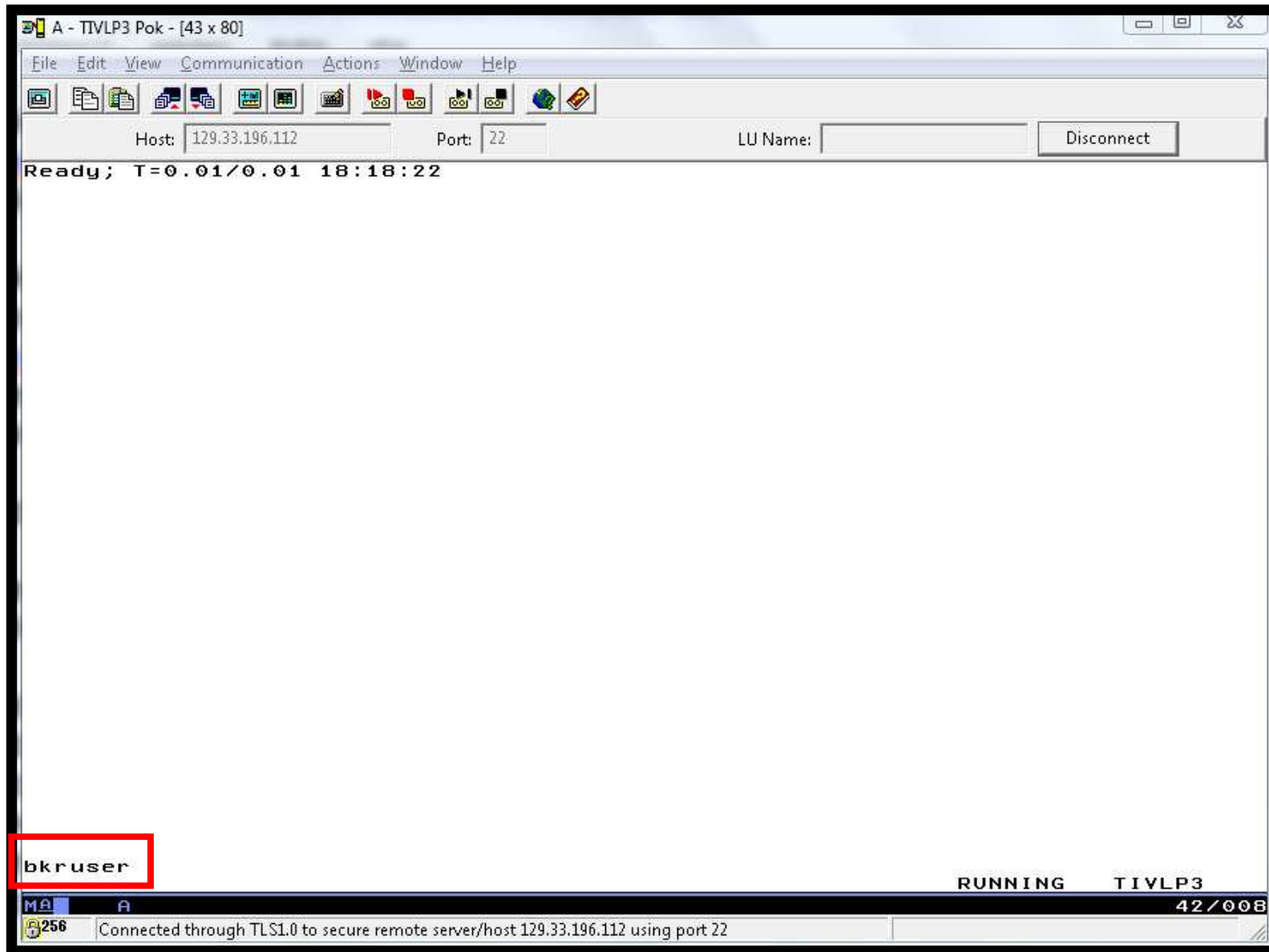
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:09:30 Please stand by while rebooting the system...
18:09:30 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
18:09:30 CONNECT= 99:59:59 VIRTCPU= 002:53.75 TOTCPU= 002:59.28
18:09:30 LOGOFF AT 18:09:30 EDT TUESDAY 11/01/16 AFTER SIGNAL
18:09:30 * -- Operations Manager Action LNXBKUPB scheduled for execution -- *
18:09:31 CON FILE 0065 SENT TO MAINT630 RDR AS 1433 RECS 0317 CPY 001 T NOH
18:11:13 NIC 0AC0 is created; devices 0AC0-0AC2 defined
18:11:14 HCPSWS2858I TDLNX01 connection to SYSTEM SMALLVSW has been updated by
18:11:14 Command complete
18:11:14 HCPREZ700E NIC 0AC0 not connected; already connected to VSWITCH STATE
18:11:14 Booting default (linux-2.6.32-431.el6.s390x)...
18:11:14 Initializing cgroup subsys cpuset
18:11:14 Initializing cgroup subsys cpu
18:11:14 Linux version 2.6.32-431.el6.s390x (mockbuild@s390-012.build.bos.redha
18:11:14 setup: Linux is running as a z/VM guest operating system in 64-bit mod
18:11:14 crashkernel=auto resulted in zero bytes of reserved memory.
18:11:14 Zone PFN ranges:
18:11:14 DMA 0x00000000 -> 0x00008000
18:11:14 Normal 0x00008000 -> 0x00008000
18:11:14 Movable zone start PFN for each node
18:11:14 early_node_map[1] active PFN ranges
18:11:14 0: 0x00000000 -> 0x00004000
18:11:14 PERCPU: Embedded 12 pages/cpu @0000000002515000 s18944 r8192 d22016 u6
18:11:14 pcpu-alloc: s18944 r8192 d22016 u65536 alloc=16*4096
18:11:14 pcpu-alloc: [0] 00 [0] 01 [0] 02 [0] 03 [0] 04 [0] 05 [0] 06 [0] 07
18:11:14 pcpu-alloc: [0] 08 [0] 09 [0] 10 [0] 11 [0] 12 [0] 13 [0] 14 [0] 15
18:11:14 pcpu-alloc: [0] 16 [0] 17 [0] 18 [0] 19 [0] 20 [0] 21 [0] 22 [0] 23
18:11:14 pcpu-alloc: [0] 24 [0] 25 [0] 26 [0] 27 [0] 28 [0] 29 [0] 30 [0] 31
18:11:14 pcpu-alloc: [0] 32 [0] 33 [0] 34 [0] 35 [0] 36 [0] 37 [0] 38 [0] 39
18:11:14 pcpu-alloc: [0] 40 [0] 41 [0] 42 [0] 43 [0] 44 [0] 45 [0] 46 [0] 47
18:11:14 pcpu-alloc: [0] 48 [0] 49 [0] 50 [0] 51 [0] 52 [0] 53 [0] 54 [0] 55
18:11:14 pcpu-alloc: [0] 56 [0] 57 [0] 58 [0] 59 [0] 60 [0] 61 [0] 62 [0] 63
18:11:14 Built 1 zonelists in Zone order, mobility grouping on. Total pages: 2
18:11:14 Kernel command line: root=/dev/disk/by-path/ccw-0.0.0192-part1 rd_NO_L
18:11:14 PID hash table entries: 4096 (order: 3, 32768 bytes)
18:11:14 Dentry cache hash table entries: 131072 (order: 8, 1048576 bytes)
18:11:14 Inode-cache hash table entries: 65536 (order: 7, 524288 bytes)
18:11:14 Memory: 1007204k/1048576k available (5038k kernel code, 0k reserved, 3
18:11:14 Write protected kernel read-only data: 0x100000 - 0x7fffff
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
TDLNX01-TIVLP3
42/001
Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

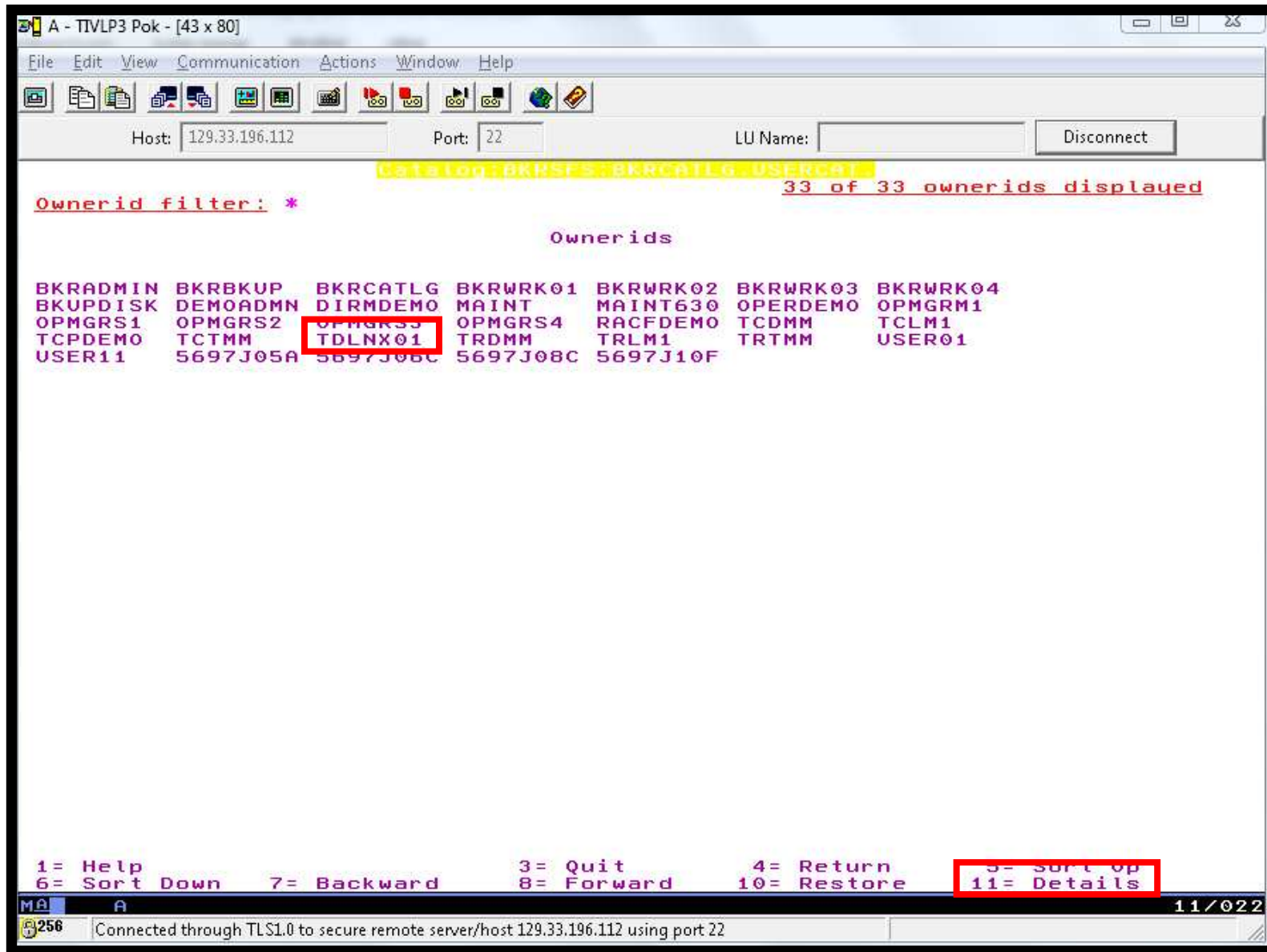
```

```

A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
18:11:15 stop on panic configured.
18:11:15 Calling the system activity data collector (sadc)...
18:11:15 WAVE: -> zVM User Name is: TDLNX01 OS version: RHEL6
18:11:15 WAVE:
18:11:15 WAVE: Same machine (TDLNX01), all OK
18:11:15 WAVE:
18:11:15 Bringing up loopback interface: [ OK ]
18:11:15 Bringing up interface eth0: Determining if ip address 10.20.30.3 is a
18:11:17 [ OK ]
18:11:17 Starting auditd:
18:11:18 [ OK ]
18:11:18 Starting portreserve: [ OK ]
18:11:18 Starting system logger: [ OK ]
18:11:18 Starting rpcbind: [ OK ]
18:11:18 Starting NFS statd: [ OK ]
18:11:18 Starting kdump:[FAILED]
18:11:18 Starting system message bus:
18:11:18 [ OK ]
18:11:18 Starting cups:
18:11:18 [ OK ]
18:11:18 Mounting filesystems: [ OK ]
18:11:18 Starting HAL daemon: [ OK ]
18:11:18 Retrigger failed udev events[ OK ]
18:11:18 Loading autofs4: [ OK ]
18:11:19 Starting automount: [ OK ]
18:11:19 Starting sshd:
18:11:19 [ OK ]
18:11:19 Starting cpi: [ OK ]
18:11:19 Starting postfix:
18:11:19 [ OK ]
18:11:19 Starting abrt daemon: [ OK ]
18:11:19 Starting atd: [ OK ]
18:11:20 Starting rhsmcertd... [ OK ]
18:11:20 Starting certmonger: [ OK ]
18:11:20 c
18:11:20 Red Hat Enterprise Linux Server release 6.5 (Santiago)
18:11:20 Kernel 2.6.32-431.el6.s390x on an s390x
18:11:20 TDLNX01 login:
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
TDLNX01-TIVLP3 (Scroll)
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```





A - TIVLP3 Pok - [43 x 80]

File Edit View Communication Actions Window Help

Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Catalog: BKRSFS:BKRCATLG:USERC01

Devices for ownerid TDLNX01 1 of 1 devices displayed

Device filter: * Type filter: *

Device	Type	Instances in catalog
\$DEV0192	CKD	1 instances

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

MA A 03/017

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

The screenshot shows a terminal window titled "A - TIVLP3 Pok - [43 x 80]". The window has a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. Below the toolbar, there are input fields for "Host: 129.33.196.112", "Port: 22", and "LU Name:", along with a "Disconnect" button. The main content area displays the following text:

```
For TDLNX01 $DEV0192 CKD 1 of 1 instances displayed  
Jobname filter: *  
Jobname Instance Date/time completed  
TDLNX01 00000005 2016/11/01 18:11:13
```

The text "Catalog: BKMSFS: BKPCATLG: USERCAT" is highlighted in yellow. The row "TDLNX01 00000005 2016/11/01 18:11:13" is enclosed in a red box. At the bottom of the terminal, there is a legend for navigation keys:

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

The "11= Details" option is also enclosed in a red box. The bottom status bar shows "MA A" on the left, "03/018" on the right, and a message: "Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22".

```
A - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
Object: BKRSFS:BKRCATLG.USERCAT.TDLNX01.$DEV0192.CKD.TDLNX01.00000005
BKRCAT9097I Job Summary:
BKRCAT9097I *** Job Name / Instance: TDLNX01 / 00000005
BKRCAT9097I *** Backup Time: 18:09:31.133046 on Tuesday, November 01, 2016 (Local Time)
BKRCAT9097I *** Source data: Tape file 1 on volume V00013, Block ID 00000003
BKRCAT9100I Original backup data type was CKD track-image:
BKRCAT9100I *** Owner, vdev: TDLNX01 0192
BKRCAT9100I *** CKD minidisk (3390-0C); 2884 cylinders.
BKRCAT9100I *** 15 tracks per cylinder.
BKRCAT9100I *** 43260 total tracks in backup image.
BKRCAT9100I *** Source CU type is 3990-E9.

3= Quit          4= Return       5= Top          6= Bottom      7= Backward
8= Forward       10= Restore     11= Rgtright

MA A 03/010
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```


Scenario D: How Do You Do That?

Console rule in Operations Manager:

* Watch for shutdown complete message on Linux guest

```
DEFRULE NAME LNXDOWN +  
  MATCH '*HCPGIR450%*' +  
  USER TDLNX01 +  
  ACTION LNXBKUPA
```

*

* Turn off the rule in general

```
SUSPEND RULE LNXDOWN
```

Scenario D: 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
```

*

* Action to shut down Linux guest in prep for backup or restart on
* another system

```
DEFACTN NAME STOPLNXA +
  COMMAND 'CP SIGNAL SHUTDOWN TDLNX01 WITHIN 90' +
  ENV LVM
```

*

* Highlight the shutdown msg and submit backup job for this guest

```
DEFACTN NAME LNXBKUPA +
  INPUT AHI +
  NEXTACTN LNXBKUPB
```

*

```
DEFACTN NAME LNXBKUPB +
  COMMAND 'CP MSG BKRKUP SUBMIT TDLNX01' +
  ENV SVM
```

Scenario D: How Do You Do That?

Chain of actions and rules in Operations Manager:

```

*
* Watch for backup complete message and restart Linux guest
DEFRULE NAME BKUPDONE +
  MATCH '*EOJIDLE TDLNX01*' +
  USER BKRBKUP +
  ACTION STRTLNXA +
  FINAL Y
*
* Highlight message, autolog/restart a Linux guest
DEFACTN NAME STRTLNXA +
  INPUT AHI +
  NEXTACTN STRTLNXB
*
DEFACTN NAME STRTLNXB +
  COMMAND 'CP XAUTOLOG TDLNX01' +
  ENV LVM +
  NEXTACTN SUSPBKUP
*
* Suspend rule for backing up guest so not backed up at every shutdown
DEFACTN NAME SUSPBKUP +
  COMMAND 'SUSPEND RULE LNXDOWN' +
  ENV GOM

```

Scenario E: Suspend and Resume a Linux Guest

- From DEMOADMN, view the console of the Linux guest

```
viewcon tdlnx02
```

- From MAINT6x0, suspend a Linux guest using CP SIGNAL SHUTDOWN

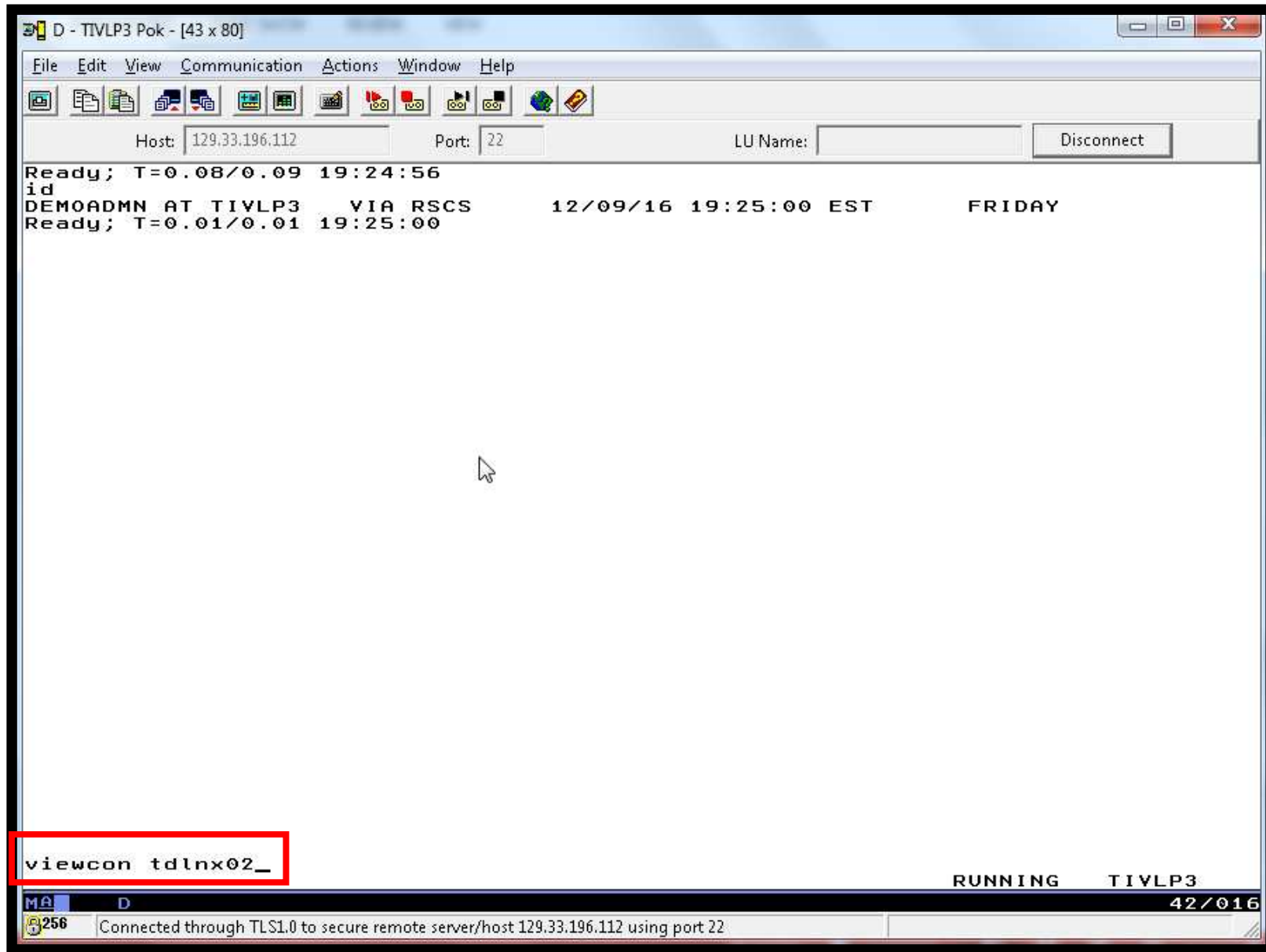
```
cp signal shutdown tdlnx02 within 90
```

- On DEMOADMN, note the guest suspending and logging off

- From MAINT, resume a Linux guest

```
cp xautolog tdlnx02
```

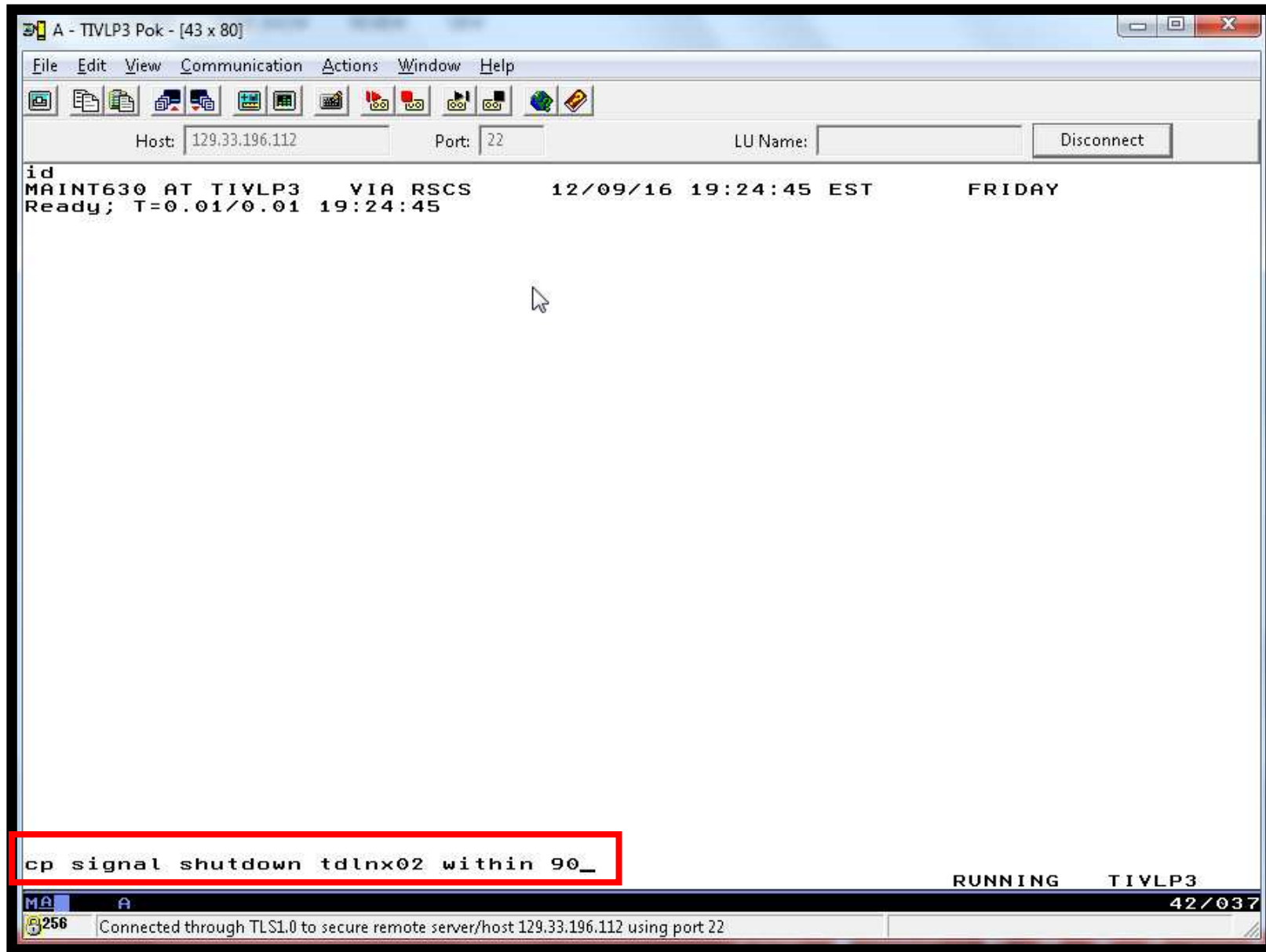
- On DEMOADMN, note the guest resuming



```

D - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
19:24:49 ..done
19:24:49 Setting up (localfs) network interfaces:
19:24:49     lo
19:24:49     lo          IP address: 127.0.0.1/8
19:24:49     lo          IP address: 127.0.0.2/8
19:24:49 ..done
19:24:49     eth0
19:24:49     eth0       IP address: 10.20.30.4/24
19:24:50 Dec 9 19:24:49 TDLNX02 SuSEfirewall2: SuSEfirewall2 not active
19:24:50 [!Awaiting
19:24:50 Waiting for mandatory devices:  eth0
19:24:50 30
19:24:51 29
19:24:52     eth0
19:24:52     eth0       IP address: 10.20.30.4/24
19:24:52     eth0       is up
19:24:52 ..doneSetting up service (localfs) network . . . . .
19:24:52 Starting auditd
19:24:52 ..done
19:24:52 Starting haveged daemon
19:24:52 ..done
19:24:52 Starting rpcbind ..done
19:24:52 Not starting NFS client services - no NFS found in /etc/fstab:..unused
19:24:52 Starting irqbalance ..unused
19:24:52 Setting up (remotefs) network interfaces:
19:24:52 Setting up service (remotefs) network . . . . .
19:24:52 Starting SSH daemon..done
19:24:52 Starting Name Service Cache Daemon..done
19:24:52 Starting mail service (Postfix)
19:24:52 ..done
19:24:53 Starting service xdm
19:24:53 ..done
19:24:53 Starting CRON daemon..done
19:24:53 Starting smartd ..unused
19:24:53 Starting INET services. (xinetd)
19:24:54 ..done
19:24:54 Master Resource Control: runlevel 5 has been reached
19:24:54 Skipped services in runlevel 5: [80C[37Dnfs irq_balancer splash smartd
19:24:54 Welcome to SUSE Linux Enterprise Server 11 SP3 (s390x) - Kernel 3.0.7
19:24:54 TDLNX02 login:
PF01= HELP   PF02= SCROLL PF03= END     PF04=          PF05= HOLD    PF06= FORMAT
PF07= UP     PF08= DOWN   PF09=          PF10= LEFT    PF11= RIGHT   PF12= RECALL
-
TDLNX02-TIVLP3 (Scroll)
MA D 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

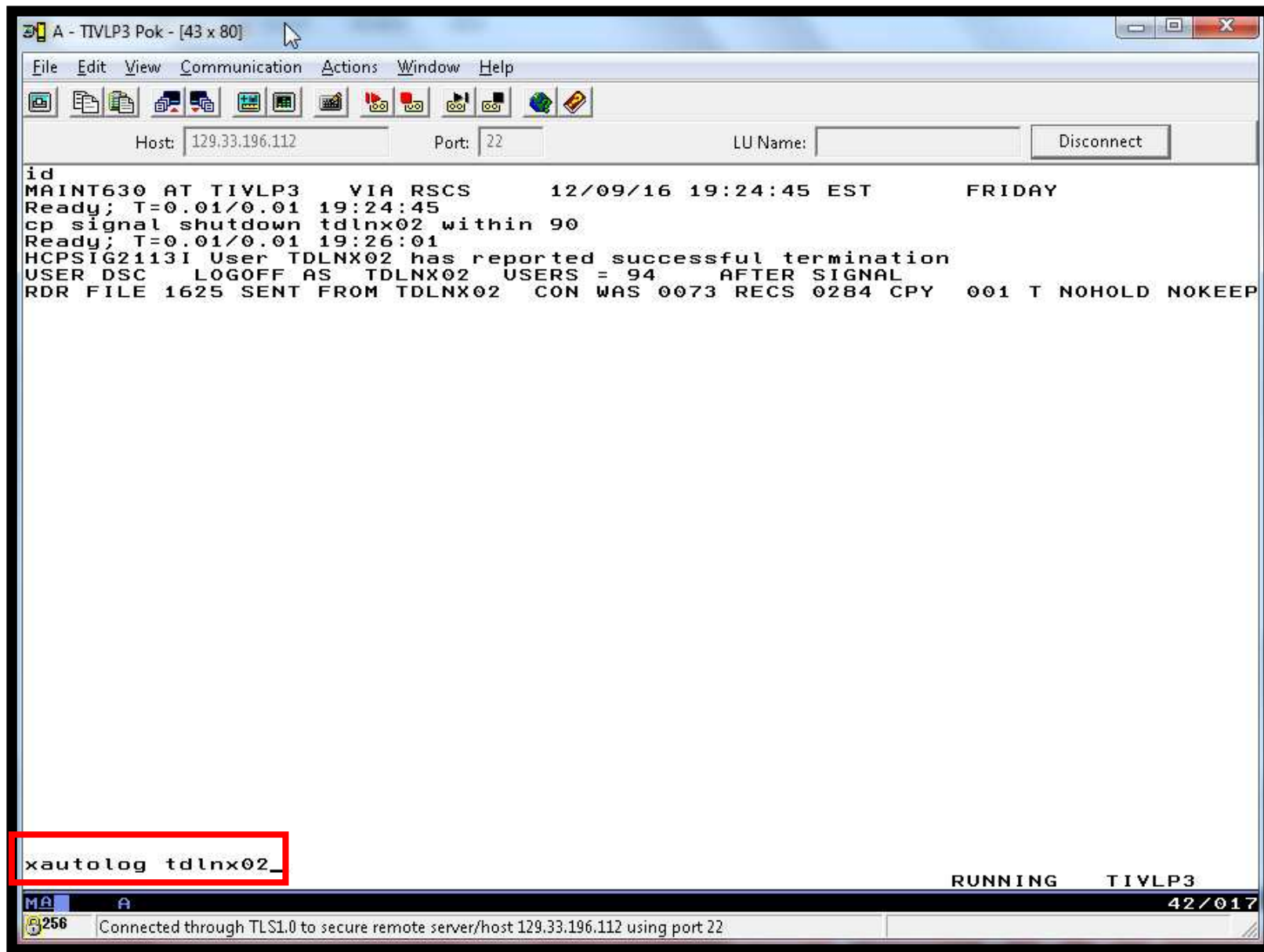
```



```

D - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
19:24:54 Skipped services in runlevel 5: [80C[37Dnfs irq_balancer splash smartd
19:24:54 Welcome to SUSE Linux Enterprise Server 11 SP3 (s390x) - Kernel 3.0.7
19:24:54 TDLNX02 login.
19:26:01 PM: Syncing filesystems ... done.
19:26:01 Freezing user space processes ... (elapsed 0.01 seconds) done.
19:26:01 Freezing remaining freezable tasks ... (elapsed 0.01 seconds) done.
19:26:01 PM: Preallocating image memory... done (allocated 28586 pages)
19:26:01 PM: Allocated 114344 kbytes in 0.02 seconds (5717.20 MB/s)
19:26:01 PM: freeze of devices complete after 0.632 msecs
19:26:01 PM: late freeze of devices complete after 0.004 msecs
19:26:01 Disabling non-boot CPUs ...
19:26:01 PM: Creating hibernation image:
19:26:01 PM: Need to copy 28502 pages
19:26:01 PM: Hibernation image created (28502 pages copied)
19:26:01 PM: early thaw of devices complete after 0.007 msecs
19:26:01 qdio: 0.0.0ac2 OSA on SC 3 using AI:1 QEBSM:0 PCI:1 TDD:1 SIGA:RW A
19:26:01 qeth.736dae: 0.0.0ac0: Device is a Guest LAN QDIO card (level: V631)
19:26:01 with link type GuestLAN QDIO (portname: SMALLYSW)
19:26:01 qeth.47953b: 0.0.0ac0: Hardware IP fragmentation not supported on eth0
19:26:01 qeth.066069: 0.0.0ac0: Inbound source MAC-address not supported on eth
19:26:01 qeth.d7fdb4: 0.0.0ac0: VLAN enabled
19:26:01 qeth.e90c78: 0.0.0ac0: Multicast enabled
19:26:01 qeth.5a9d02: 0.0.0ac0: IPV6 enabled
19:26:01 qeth.184d8a: 0.0.0ac0: Broadcast enabled
19:26:01 qeth.9c4c89: 0.0.0ac0: Outbound TS0 not supported on eth0
19:26:01 PM: thaw of devices complete after 84.523 msecs
19:26:01 PM: Compressing and saving image data (28558 pages) ... 0% 1%
19:26:01 26% 27% 28% 29% 30% 31% 32% 33% 34% 35% 36% 37% 38%
19:26:02 39% 40% 41% 42% 43% 44% 45% 46% 47% 48%
19:26:02 49% 50% 51% 52% 53% 54% 55% 56% 57% 58% 59% 60% 61%
19:26:02 62% 63% 64% 65% 66% 67% 68% 69% 70% 71% 72% 73% 74% 75%
19:26:02 76% 77% 78% 79% 80% 81% 82% 83% 84% 85% 86% 87% 88% 89% 90% 91% 92% 9
19:26:02 96% 97% 98% 99% 100% done
19:26:02 PM: Wrote 114232 kbytes in 0.59 seconds (193.61 MB/s)
19:26:02 PM: S|
19:26:03 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
19:26:03 CONNECT= 00:01:20 VIRTCPU= 000:03.34 TOTCPU= 000:03.59
19:26:03 LOGOFF AT 19:26:03 EST FRIDAY 12/09/16 AFTER SIGNAL
19:26:03 CON FILE 0072 SENT TO MOUNTC20 PDP OS 1695 DECS 0284 CPY 004 T NON
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
TDLNX02-TIVLP3 (Scroll)
MA D 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

D - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
19:26:02 62% 63% 64% 65% 66% 67% 68% 69% 70% 71% 72% 73% 74% 75%
19:26:02 76% 77% 78% 79% 80% 81% 82% 83% 84% 85% 86% 87% 88% 89% 90% 91% 92% 9
19:26:02 96% 97% 98% 99% 100% done
19:26:02 PM: Wrote 114232 kbytes in 0.59 seconds (193.61 MB/s)
19:26:02 PM: S|
19:26:03 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
19:26:03 CONN EST 0000120 VIRT CPU 00000001 TST CPU 00000000
19:26:03 LOGOFF AT 19:26:03 EST FRIDAY 12/09/16 AFTER SIGNAL
19:26:03 CON FILE 0073 SENT TO MAINT630 RDR AS 1625 RECS 0284 CPY 001 T NOH
19:26:51 NIC 0AC0 is created; devices 0AC0-0AC2 defined
19:26:51 HCPSPWS2858I TDLNX02 connection to SYSTEM SMALLVSW has been updated by
19:26:51 Command complete
19:26:51 HCP CPL2788E NIC 0AC0 not connected; already connected to VSWITCH SYSTE
19:26:51 Booting default (SLES11_SP3)...
19:26:51 initializing cgroup subsys cpuset
19:26:51 Initializing cgroup subsys cpu
19:26:51 Linux version 3.0.76-0.11-default (geeko@buildhost) (gcc version 4.3.4
19:26:51 setup.1a06a7: Linux is running as a z/VM guest operating system in 64-
19:26:51 Zone PFN ranges:
19:26:51 DMA 0x00000000 -> 0x000080000
19:26:51 Normal empty
19:26:51 Movable zone start PFN for each node
19:26:51 early_node_map[1] active PFN ranges
19:26:51 0: 0x00000000 -> 0x000040000
19:26:51 PERCPU: Embedded 10 pages/cpu @0000000001ac4000 s11776 r8192 d20992 u4
19:26:51 Built 1 zonelists in Zone order, mobility grouping on. Total pages: 2
19:26:51 Kernel command line: root=/dev/disk/by-path/ccw-0.0.0192-part1 hvc_iuc
19:26:51 PID hash table entries: 4096 (order: 3, 32768 bytes)
19:26:51 Dentry cache hash table entries: 131072 (order: 8, 1048576 bytes)
19:26:51 Inode-cache hash table entries: 65536 (order: 7, 524288 bytes)
19:26:51 Memory: 1011884k/1048576k available (5219k kernel code, 0k reserved, 3
19:26:51 Write protected kernel read-only data: 0x100000 - 0x7fffff
19:26:51 Hierarchical RCU implementation.
19:26:51 CONFIG_RCU_FANOUT set to non-default value of 32
19:26:51 RCU dyntick-idle grace-period acceleration is enabled.
19:26:51 console [ttyS0] enabled
19:26:51 allocated 8388608 bytes of page_cgroup
19:26:51 please try 'cgroup_disable=memory' option if you don't want memory cgr
19:26:51 pid_max: default: 65536 minimum: 512
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
TDLNX02-TIVLP3
MA D 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

D - TIVLP3 Pok - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
19:26:52 dasd.781738: High Performance FICON support has been deactivated
19:26:52 dasd-eckd.2aa01a: 0.0.010f: New DASD 3390/0C (CU 3990/01) with 1600 cy
19:26:52 dasd-eckd.412b53: 0.0.010f: DASD with 4 KB/block, 1152000 KB total siz
19:26:52 dasda:VOL1/ 0X010F: dasda1
19:26:52 dasd-eckd.2aa01a: 0.0.0192: New DASD 3390/0C (CU 3990/01) with 2884 cy
19:26:52 dasd-eckd.412b53: 0.0.0192: DASD with 4 KB/block, 2076480 KB total siz
19:26:52 dasdb:VOL1/ 0X0192: dasdb1
19:26:52 mount: devpts already mounted or /dev/pts busy
19:26:52 mount: according to mtab, devpts is already mounted on /dev/pts
19:26:52 boot logging started on /dev/ttyso (/dev/console) at Fri Dec 9 19:26:5
19:26:52 PM: Starting manual resume from disk
19:26:52 Freezing user space processes ... (elapsed 0.01 seconds) done.
19:26:52 Freezing remaining freezable tasks ...
19:26:52 (elapsed 0.02 seconds) done.
19:26:52 PM: Loading and decompressing image data (28558 pages) ... 0% 1
19:26:52 12% 13% 14% 15% 16% 17% 18% 19% 20% 21% 22% 23% 24% 25% 26% 27% 28%
19:26:52 29% 30% 31% 32% 33% 34% 35% 36% 37% 38%
19:26:52 39% 40% 41% 42% 43% 44% 45%
19:26:52 46% 47% 48% 49% 50% 51% 52% 53% 54% 55% 56%
19:26:52 57% 58% 59% 60% 61% 62% 63% 64% 65% 66%
19:26:52 67% 68% 69% 70% 71% 72% 73% 74% 75%
19:26:53 76% 77% 78% 79% 80% 81% 82% 83% 84% 85% 86% 87%
19:26:53 88% 89% 90% 91% 92% 93% 94% 95% 96% 97% 98% 99%100%done
19:26:53 PM: Read 114232 kbytes in 0.88 seconds (129.80 MB/s)
19:26:53 PM: freeze of devices complete after 0.632 msec
19:26:53 PM: late freeze of devices complete after 0.004 msec
19:26:53 Disabling non-boot CPUs ...
19:26:53 PM: Creating hibernation image:
19:26:53 PM: Need to copy 28502 pages
19:26:53 PM: early restore of devices complete after 0.025 msec
19:26:53 dasd-eckd.c533c6: 0.0.0192: No operational channel path is left for th
19:26:53 dasd-eckd.c533c6: 0.0.010f: No operational channel path is left for th
19:26:53 qdio: 0.0.0ac2 OSA on SC 3 using AI:1 QEBSM:0 PCI:1 TDD:1 SIGA:RW A
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
19:26:53 dasd-eckd.52d5fe: 0.0.0192: cqr 0000000002297eb0 transport error
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
TDLNX02-TIVLP3
MA D 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

Scenario E: How Do You Do That?

- Define swap space in /etc/fstab

```
/dev/disk/by-path/ccw-0.0.010f-part1 swap
```

- Enable suspend/resume and define swap space for it in zipl.conf

```
resume=/dev/disk/by-path/ccw-0.0.010f-part1
```

- Define suspend as response to signal shutdown
 - Via control-alt-delete.conf
 - Or CTRL-ALT-DEL section of inittab

```
script  
/bin/echo disk > /sys/power/state || /sbin/shutdown -h -t 4 now  
end script
```

Scenario F: Pause and Resume a Backup Job

- Long running backup job is in process
- Need to re-IPL the z/VM system
- Want to
 - Pause the backup job
 - Shutdown and IPL the z/VM system
 - Resume the backup job
- No data loss in backup job

Scenario F: Detailed Steps

- From DEMOADMN, submit a long running backup job

```
smsg bkrbkup submit tdlnxtp
```

- View the console of the worker assigned to the job

```
viewcon bkrwrk01
```

- On MAINT630, start the demo that will pause the job and shutdown all Backup Mgr servers

```
gomcmd opmgrm1 run action bkupdemo
```

- From DEMOADMN watch the worker console

- When the job pauses and the worker logs off, exit VIEWCON and confirm all Backup Mgr servers are logged

```
q bkrbkup
```

```
q bkrcatlg
```

```
q bkrwrk01
```

Scenario F: Detailed Steps

- Shut down and re-IPL z/VM (we don't actually do this in the demo)
- From DEMOADMN, view the console of the worker that was paused

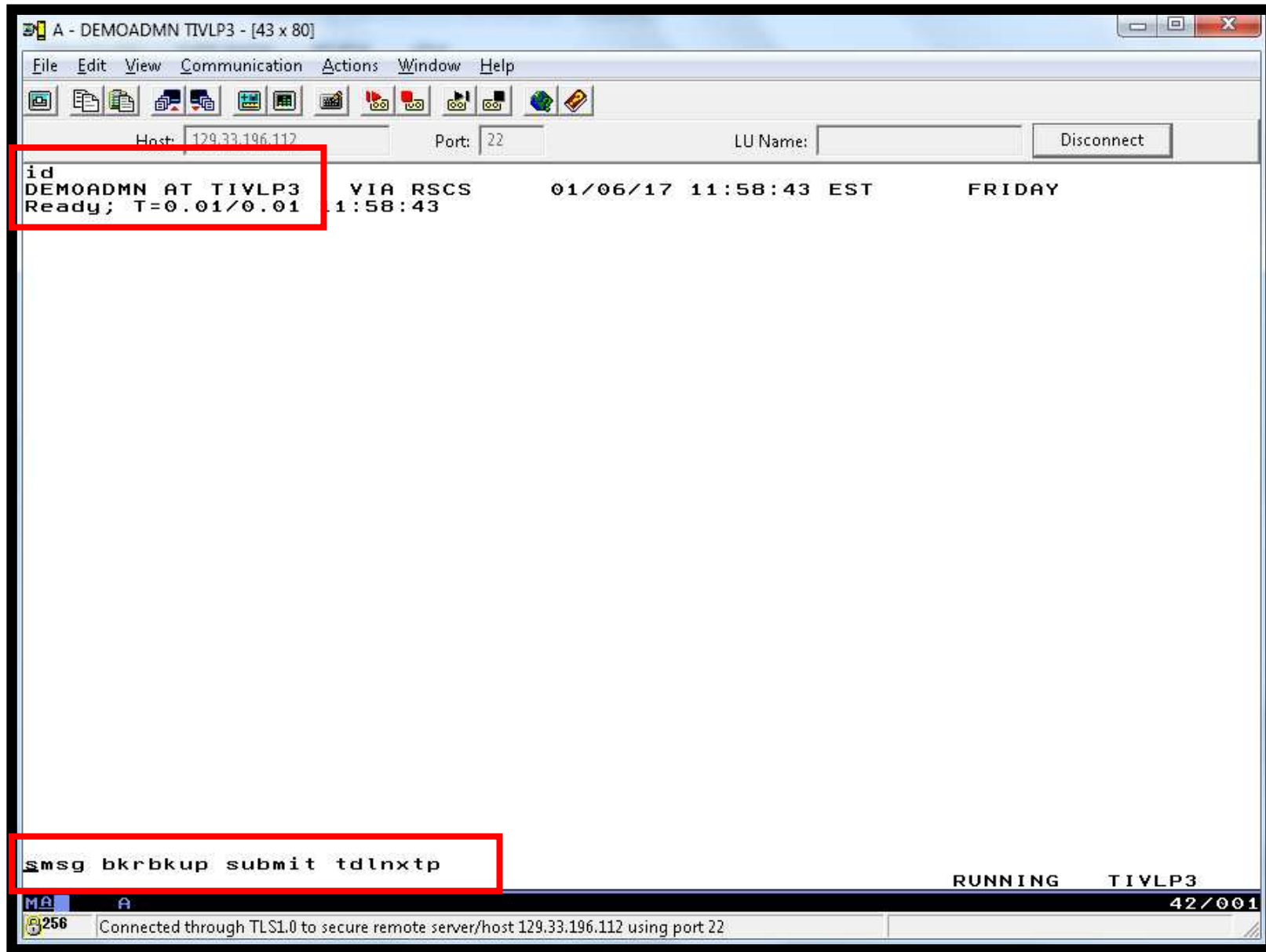
```
viewcon bkrwrk01
```

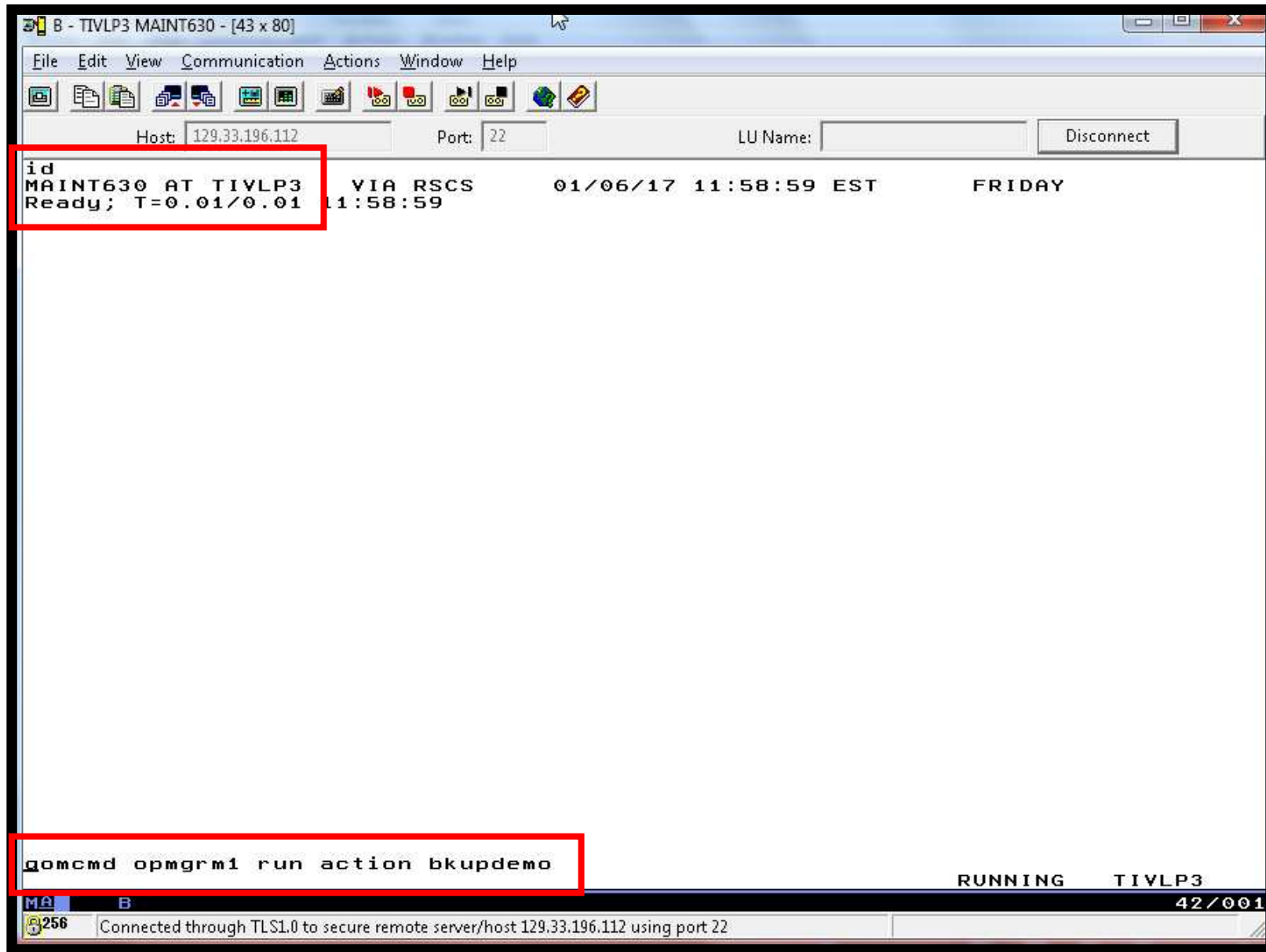
- On MAINT630, run the process that starts all Backup Mgr servers and resumes the job

```
gomcmd opmgrml run action strtcat
```

- From DEMOADMN watch the worker console – the worker will start and within 30 seconds it will resume and complete the job
- View the job in the catalog

```
bkrjob
```





```
A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
id
DEMOADMN AT TIVLP3 VIA RSCS 01/06/17 11:58:43 EST FRIDAY
Ready; 1=0.0170.01 11:58:43
msg bkrbkup submit tdlnxtp
Ready; 1=0.0170.01 12:00:48
BKRBAK8532I Processing SUBMIT TDLNXTP command for DEMOADMN at 01/06/17 12:00:48.
BKRMAK8559I INCLUDE / EXCLUDE processing for job TDLNXTP selected 2 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job TDLNXTP has been set to 1.
BKRMAK9191I Updating instance for job TDLNXTP from 6 to 7.
BKRMAK8570I Instance number 00000007 has been assigned for job TDLNXTP.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespace will be filtered with path mask "*".
BKRMAK9347I Worker selection will be handled by user exit BKREXI03 EXEC.
BKRMAK9345I Job will be processed by:
BKRMAK9346I ... BKRWRK01
BKRMAK8584I Sending TDLNXTP JOB D1 to worker task BKRWRK01.
File TDLNXTP JOB D1 sent to BKRWRK01 at TIVLP3 on 01/06/17 12:00:48
Return code "0" from command SUBMIT TDLNXTP at 01/06/17 12:00:48.

viewcon bkrwrk01_

RUNNING TIVLP3
42/017
MA A
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
```

```

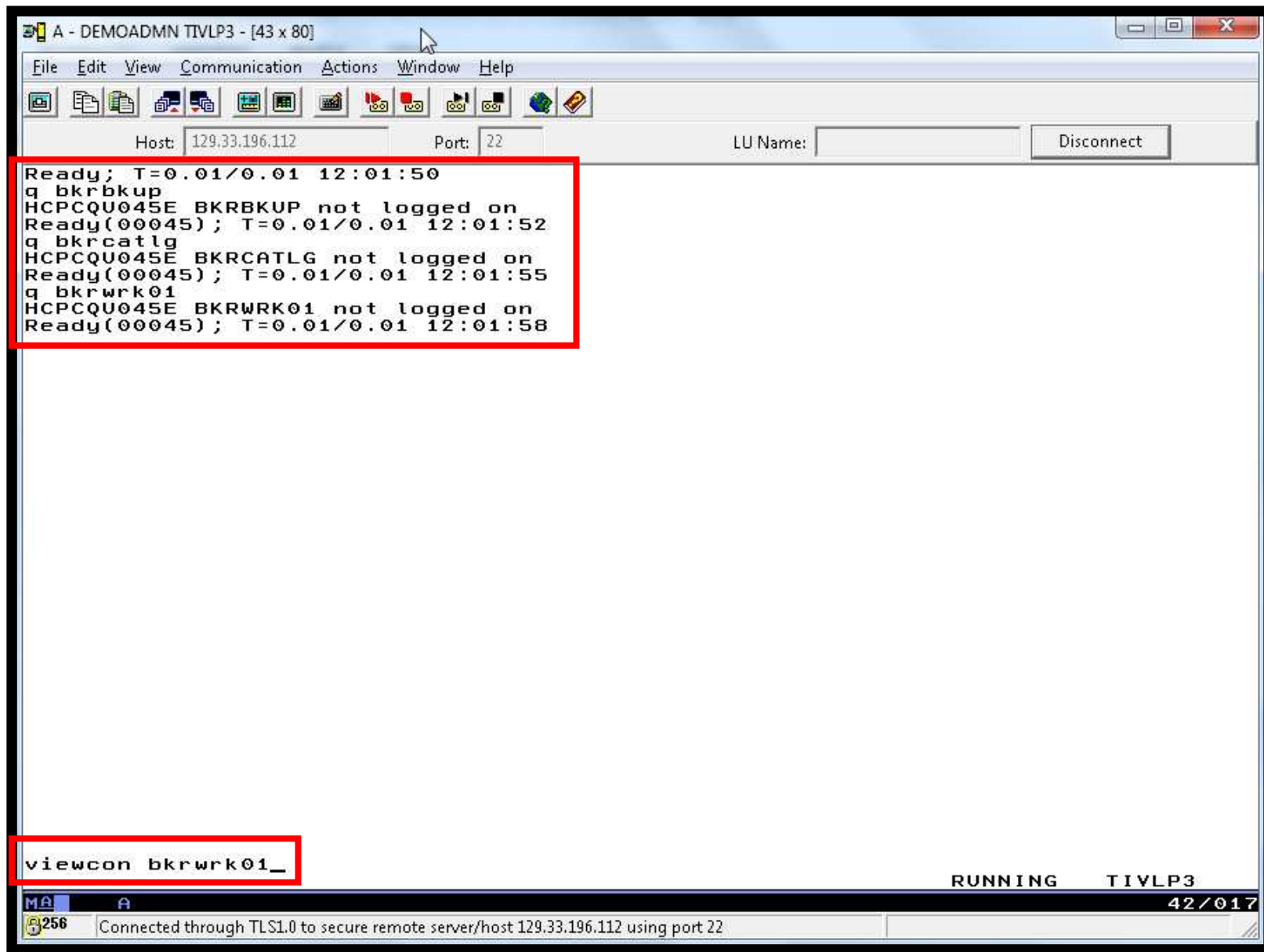
A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:00:49 with IBM Corp.
12:00:49 -----
12:00:49 BKRJOB9011I Job name: TDLNXTP, instance identifier 00000007 starting a
12:00:49 BKRJOB9011I Job owner: BKRADMIN
12:00:49 BKRJOB9011I Master backup server: BKRBKUP; worker virtual machine BKRW
12:00:49 BKRJOB9011I Job token value is 20170106.
12:00:49 BKRJOB8865I Expiration for TDLNXTP 00000007 set to 5 Feb 2017.
12:00:49 BKRJOB9012I Catalog content creation is enabled.
12:00:49 BKRJOB9012I Catalog content will be delivered to backup catalog server
12:00:49 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
12:00:49 BKRJOB9314I Creation of EOF1 / HDR1 tape labels is disabled.
12:00:49 BKRJOB9428I Reblocking of Tape output is enabled.
12:00:49 BKRJOB9428I Reblocking of EDF output is disabled.
12:00:49 BKRJOB9429I UDPE configuration: Tape UDPE1 is disabled.
12:00:49 BKRJOB9429I UDPE configuration: Tape UDPE2 is disabled.
12:00:49 BKRJOB9429I UDPE configuration: EDF UDPE1 is default; routine name is
12:00:49 BKRJOB9429I UDPE configuration: EDF UDPE2 is disabled.
12:00:49 -----
12:00:49 ***
12:00:49 ***----- Handling a new mount request at 01/06/17 12:00:49
12:00:49 ***
12:00:49 *** Requesting volume "SCRATCH" at virtual address 0181, Read-Write, v
12:00:49 e Manager.
12:00:49 ***
12:00:49 *** Waiting for device; attempt 1 of 15 at 12:00:49 01/06/17
12:00:49 HCPQVD040E Device 0181 does not exist
12:00:49 EUMTAP0072I Mount request 000526 received from BKRWRK01@TMCAT.
12:00:49 EUMTAP0079I Mount request 000526 pending.
12:00:54 Tape 0181 attached
12:00:54 EUMTAP0109I Device B00F attached to BKRWRK01 as 0181 with volume V0001
12:00:59 *** Waiting for device; attempt 2 of 15 at 12:00:59 01/06/17
12:00:59 TAPE 0181 ON DEV B00F 2400 GIVEN BY TCDMM P/N SUBCHANNEL = 000D
12:00:59 *** Positioning tape to file 1...
12:00:59 *** VOL1 label for V00017 updated with expiration date 017036...
12:00:59 *** Successfully cataloged new scratch volume V00017; positioned to fi
12:01:02 *** FILE 0229 SENT FROM BKRBKUP RUN NOS 0252 DECS 0004 CRV 001 P NOH
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
-----
BKRWRK01-TIVLP3 (Scroll)
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

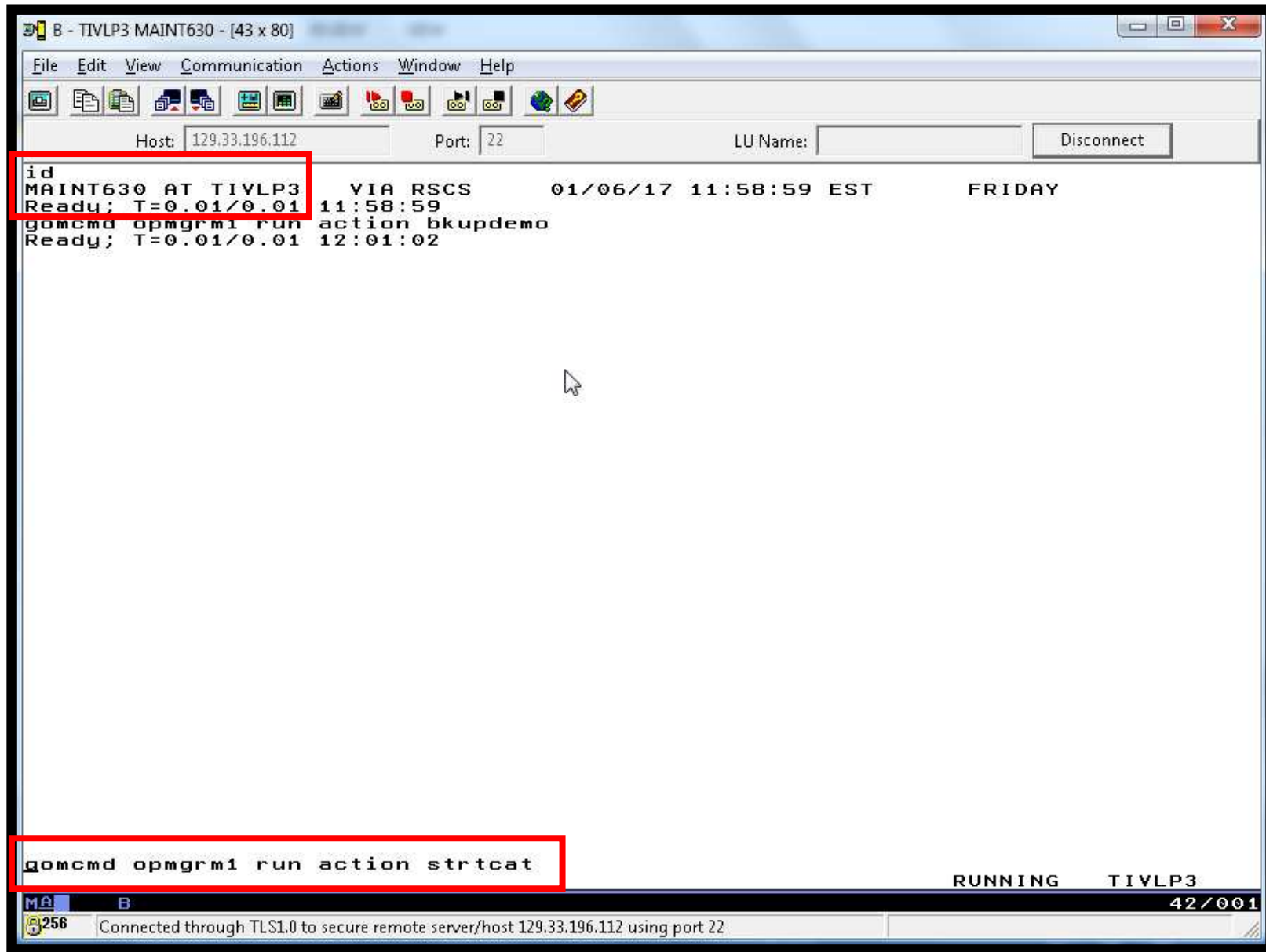
```

```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:00:49 BKRJOB9012I Catalog content creation is enabled.
12:00:49 BKRJOB9012I Catalog content will be delivered to backup catalog server
12:00:49 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
12:00:49 BKRJOB9314I Creation of EOF1 / HDR1 tape labels is disabled.
12:00:49 BKRJOB9428I Reblocking of Tape output is enabled.
12:00:49 BKRJOB9428I Reblocking of EDF output is disabled.
12:00:49 BKRJOB9429I UDPE configuration: Tape UDPE1 is disabled.
12:00:49 BKRJOB9429I UDPE configuration: Tape UDPE2 is disabled.
12:00:49 BKRJOB9429I UDPE configuration: EDF UDPE1 is default; routine name is
12:00:49 BKRJOB9429I UDPE configuration: EDF UDPE2 is disabled.
-----
12:00:49 ***
12:00:49 ***----- Handling a new mount request at 01/06/17 12:00:49
12:00:49 ***
12:00:49 *** Requesting volume "SCRATCH" at virtual address 0181, Read-Write, v
12:00:49 e Manager .
12:00:49 ***
12:00:49 *** Waiting for device; attempt 1 of 15 at 12:00:49 01/06/17
12:00:49 HCPQVD040E Device 0181 does not exist
12:00:49 EUMTAP0072I Mount request 000526 received from BKRWRK01@TMCAT.
12:00:49 EUMTAP0079I Mount request 000526 pending.
12:00:54 Tape 0181 attached
12:00:54 EUMTAP0109I Device B00F attached to BKRWRK01 as 0181 with volume V0001
12:00:59 *** Waiting for device; attempt 2 of 15 at 12:00:59 01/06/17
12:00:59 TAPE 0181 ON DEV B00F 3490 GIVEN BY TCDMM R/W SUBCHANNEL = 000D
12:00:59 *** Positioning tape to file 1...
12:00:59 *** VOL1 label for V00017 updated with expiration date 017036...
12:00:59 *** Successfully cataloged new scratch volume V00017; positioned to fi
12:01:02 RDR FILE 0838 SENT FROM BKRBRKOP PON WBS 0353 RECS 0004 CPY 001 P NOH
12:01:26 TDLNX02 010F RR CKD 3390 3990 00001600 0015 00058786 00023999
12:01:26 HCPAS043E BKRBRKOP not logged on
12:01:26 BKRJOB9480I Paused by backup administrator OPMGRS4 since 01/06 12:01:0
12:01:26 * -- Operations Manager Action HOLTSTAT scheduled for execution -- *
12:01:26 * -- Operations Manager Action FORCEWRK scheduled for execution -- *
12:01:26 CONNECT= 00.00.37 VIRTCP0= 000.00.37 TOTCP0= 000.00.90
12:01:26 LOGOFF AT 12:01:26 EST FRIDAY 01/06/17 BY OPMGRS4
12:01:26 * -- Operations Manager Action SUSPPAUS scheduled for execution -- *
12:01:26 CON FILE 0837 SENT TO BKRADMIN RDR AS 1925 RECS 0150 CPY 001 T NOH
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
-----
BKRWRK01-TIVLP3 (Scroll)
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```





```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:00:59 TAPE 0181 ON DEV B00F 3490 GIVEN BY TCDMM R/W SUBCHANNEL = 000D
12:00:59 *** Positioning tape to file 1...
12:00:59 *** VOL1 label for V00017 updated with expiration date 017036...
12:00:59 *** Successfully cataloged new scratch volume V00017; positioned to fi
12:01:02 RDR FILE 0838 SENT FROM BKRKBKUP PUN WAS 0353 RECS 0004 CPY 001 P NOH
12:01:26 TDLNX02 010F RR CKD 3390 3990 00001600 0015 00058786 00023999
12:01:26 HCPMSG045E BKRKBKUP not logged on
12:01:26 BKRJOB9480I Paused by backup administrator OPMGRS4 since 01/06 12:01:0
12:01:26 * -- Operations Manager Action HALTCAT scheduled for execution -- *
12:01:26 * -- Operations Manager Action FORCEWRK scheduled for execution -- *
12:01:26 CONNECT=00.00.37 VIRTCP0=000.00.37 TOTCP0=000.00.30
12:01:26 LOGOFF AT 12:01:26 EST FRIDAY 01/06/17 BY OPMGRS4
12:01:26 * -- Operations Manager Action SUSPPAUS scheduled for execution -- *
12:01:26 CON FILE 0837 SENT TO BKRADMIN RDR AS 1925 RECS 0150 CPY 001 T NOH
12:03:27 z/VM V6.3.0 2015-04-23 16:14
12:03:27 DASD 0993 LINKED R/O; R/W BY MAINT at TIVLP3 ; R/O BY 36 US
12:03:27 DMSACP723I U (993) R/O
12:03:27 DMSACP723I X (19D) R/O
12:03:27 DMSACC724I 19E replaces Y (19E)
12:03:27 DMSACP723I Y (19E) R/O
12:03:27 DMSACP723I B (198) R/O
12:03:27 DMSACP723I C (591) R/O
12:03:27 DMSACR723I E (BKRSFS:BKRADMIN.JOBDEFS) R/O
-----
12:03:28 5697-J06 - IBM Backup and Restore Manager for z/VM
12:03:28 Version 1.3.0
12:03:28 Licensed materials - Property of IBM
12:03:28 5697-J06
12:03:28 (c) Copyright IBM Corp. 2003,2015 All Rights Reserved.
12:03:28 (c) Copyright Rocket Software, Inc. 2003-2015 All Rights Reserved.
12:03:28 US Government Users Restricted Rights - Use, duplication
12:03:28 or disclosure restricted by GSA ADP Schedule Contract
12:03:28 with IBM Corp.
-----
12:03:28 z/VM Version 6 Release 3.0, service level 1501 (64-bit)
12:03:28 Generated at 01/20/15 15:10:15 EST
12:03:28 IPL at 07/04/16 11:32:07 EST
12:03:28 CMS Level 27, Service Level 1501
12:03:28 *** Preparing to launch Worker Task functions...
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
-----
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:03:28 BKRWRK9222I Service virtual machine configuration derived from BKRSYST
12:03:28 BKRWRK9222I located on minidisk BKRWRK01 198
12:03:28 BKRWRK9222I accessed as file mode B.
12:03:28 BKRWRK9366I SSI Configuration is active.
12:03:28 BKRWRK9366I Cluster name: SSICL01
12:03:28 BKRWRK9366I Member name: TIVLP3
12:03:28 BKRWRK9366I Slot number: 1
12:03:28 BKRWRK9366I Bitmap Info: 8000 0000
12:03:28 BKRWRK9240W 2 copies of required component BKRUME TEXT were found.
12:03:28 BKRWRK9240W The expected filemode for this component is C.
12:03:28 BKRUME TEXT C2 F 80 1348 27 9/26/16 13:21
12:03:28 BKRUME TEXT Y2 F 80 1340 27 5/10/16 7:32
12:03:28 BKRWRK9244I Privileged virtual machine settings are based on
12:03:28 BKRWRK9244I BKRUSERS NAMES located on minidisk BKRWRK01 198
12:03:28 BKRWRK9244I accessed as file mode B.
12:03:28 BKRWRK9246I 4 virtual machine(s) are granted worker authority.
12:03:28 BKRWRK01 BKRWRK02 BKRWRK03 BKRWRK04
12:03:28 BKRWRK9246I 30 virtual machine(s) are granted backup administrator aut
12:03:28 BKRADMIN MAINT MAINT630 OPMGRM1 OPMGRS1 OPMGRS2 OPMGRS3 OP
12:03:28 ADMN CLASSADM USER01 USER02 USER03 USER04 USER05 USER06 USER07 USER08
12:03:28 R10 USER11 USER12 USER13 USER14 USER15 USER16 USER17 USER18 USER19 USE
12:03:28 BKRWRK9246I 1 virtual machine(s) are granted master backup server auth
12:03:28 BKRWBKUP
12:03:28 BKRWRK9248I Temporary work area at file mode D is an SFS directory:
12:03:28 BKRWRK9248I BKRSFS:BKRWRK01.TIVLP3WORKAREA
12:03:28 BKRWRK9248I This file space is limited to 20000 4K blocks.
12:03:28 BKRWRK9248I 10 blocks are in use; 0.0500% of capacity is utilized.
12:03:28 BKRWRK9404I BFS operations will use the default root file space, "/.../
12:03:28 BKRWRK9382I There are 1398 data blocks in use by the BFS root file spa
12:03:28 BKRWRK9282I Removing 1 old files from temporary work area...
12:03:28 BKRWRK9283I Deleted: CURRENT JOB D
12:03:28 BKRWRK9080I Worker Task: Entering processing loop at 12:03:27. Idle ti
12:03:28 et to +00:02:00.
12:03:28 HCPMSG045E BKRADMIN not logged on
12:03:28 BKRWRK8509I Invoking WAKEUP with parameters +00:02:00 ( VMCF SMSG CONS
12:03:28 BKRWRK8509I Invoking WAKEUP with parameters 01/06/17 12:03:27 ( BKR
12:03:28 File CURRENT JOB D1 created from TDLNXTIP JOB D1 received from BKRWBKUP
12:03:28 BKRWRK8546I Initiating job processing at 01/06/17 12:03:27.
12:03:28 BKRJOB9480I Paused by backup administrator OPMGRS4 since 01/06 12:01:0
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3 (Scroll)
42/001
Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22
  
```



```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:03:28 BKRWRK9282I Removing 1 old files from temporary work area...
12:03:28 BKRWRK9283I Deleted: CURRENT JOB D
12:03:28 BKRWRK9080I Worker Task: Entering processing loop at 12:03:27. Idle ti
12:03:28 et to +00:02:00.
12:03:28 HCPMSG045E BKRADMIN not logged on
12:03:28 BKRWRK8509I Invoking WAKEUP with parameters +00:02:00 ( VMCF SMSG CONS
12:03:28 BKRWRK8509I Invoking WAKEUP with parameters 01/06/17 12:03:27 ( RBR
12:03:28 File CURRENT JOB D1 created from TDLNXTP JOB D1 received from BKRBKUP
12:03:28 BKRWRK8546I Initiating job processing at 01/06/17 12:03:27.
12:03:28 BKRJOB9480I Paused by backup administrator OPMGRS4 since 01/06 12:01:0
12:04:27 BKRJOB8962I Resuming after PAUSE at 01/06/17 12:04:27.
12:04:27 BKRJOB9005I Executing CP command "SPOOL CONSOLE TO BKRADMIN CLASS 1 TL
12:04:27 BKRJOB9006I CP return code 0
12:04:27 BKRJOB9005I Executing CP command "TERM LINES 255"
12:04:27 BKRJOB9006I CP return code 0
12:04:27 -----
12:04:27 5697-J06 - IBM Backup and Restore Manager for z/VM
12:04:27 Version 1.3.0
12:04:27 Licensed materials - Property of IBM
12:04:27 5697-J06
12:04:27 (c) Copyright IBM Corp. 2003,2015 All Rights Reserved.
12:04:27 (c) Copyright Rocket Software, Inc. 2003-2015 All Rights Reserved.
12:04:27 US Government Users Restricted Rights - Use, duplication
12:04:27 or disclosure restricted by GSA ADP Schedule Contract
12:04:27 with IBM Corp.
12:04:27 -----
12:04:27 -----
12:04:27 BKRJOB9011I Job name: TDLNXTP, instance identifier 00000007 starting a
12:04:27 BKRJOB9011I Job owner: BKRADMIN
12:04:27 BKRJOB9011I Master backup server: BKRBKUP; worker virtual machine BKRW
12:04:27 BKRJOB9011I Job token value is 20170106.
12:04:27 BKRJOB8865I Expiration for TDLNXTP 00000007 set to 5 Feb 2017.
12:04:27 BKRJOB9012I Catalog content creation is enabled.
12:04:27 BKRJOB9012I Catalog content will be delivered to backup catalog server
12:04:27 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
12:04:27 BKRJOB9314I Creation of EOF1 / HDR1 tape labels is disabled.
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:04:27 BKRJOB9011I Master backup server: BKRBKUP; worker virtual machine BKRW
12:04:27 BKRJOB9011I Job token value is 20170106.
12:04:27 BKRJOB8865I Expiration for TDLNXTP 00000007 set to 5 Feb 2017.
12:04:27 BKRJOB9012I Catalog content creation is enabled.
12:04:27 BKRJOB9012I Catalog content will be delivered to backup catalog server
12:04:27 BKRJOB9012I Temporary catalog granule data will be generated in CMS fi
12:04:27 BKRJOB9314I Creation of EOF1 / HDR1 tape labels is disabled.
12:04:27 BKRJOB9428I Reblocking of Tape output is enabled.
12:04:27 BKRJOB9428I Reblocking of EDF output is disabled.
12:04:27 BKRJOB9429I UDPE configuration: Tape UDPE1 is disabled.
12:04:27 BKRJOB9429I UDPE configuration: Tape UDPE2 is disabled.
12:04:27 BKRJOB9429I UDPE configuration: EDF UDPE1 is default; routine name is
12:04:27 BKRJOB9429I UDPE configuration: EDF UDPE2 is disabled.
-----
12:04:27 TDLNX02 010F -- CKD was previously backed up by TDLNXTP 00000007
12:04:27 ***
12:04:27 ***----- Handling a new mount request at 01/06/17 12:04:27
12:04:27 ***
12:04:27 *** Requesting volume "SCRATCH" at virtual address 0181, Read-Write,
12:04:28 e Manager.
12:04:28 ***
12:04:28 *** Waiting for device; attempt 1 of 15 at 12:04:27 01/06/17
12:04:28 HCPQVD040E Device 0181 does not exist
12:04:28 EUMTAP0072I Mount request 000527 received from BKRWRK01@TMCAT.
12:04:28 EUMTAP0079I Mount request 000527 pending.
12:04:34 Tape 0181 attached
12:04:34 EUMTAP0109I Device B00F attached to BKRWRK01 as 0181 with volume V0001
12:04:37 *** Waiting for device; attempt 2 of 15 at 12:04:37 01/06/17
12:04:37 TAPE 0181 ON DEV B00F 3490 GIVEN BY TCDMM R/W SUBCHANNEL = 000D
12:04:37 *** Positioning tape to file 1...
12:04:38 *** VOL1 label for V00016 updated with expiration date 01/05/17...
12:04:38 *** Successfully cataloged new scratch volume V00016; positioned to fi
12:04:38 TDLNX02 0191 RR EDF 4096 TD2191 00000900 00000007 00000005 00000005
12:04:38 *** Dismounting volume V00016...
12:04:38 TAPE 0181 DETACHED
-----
12:04:38 BKRJOB9014I Job completed at 12:04:38 on 01/06/17.
PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL
-----
BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```

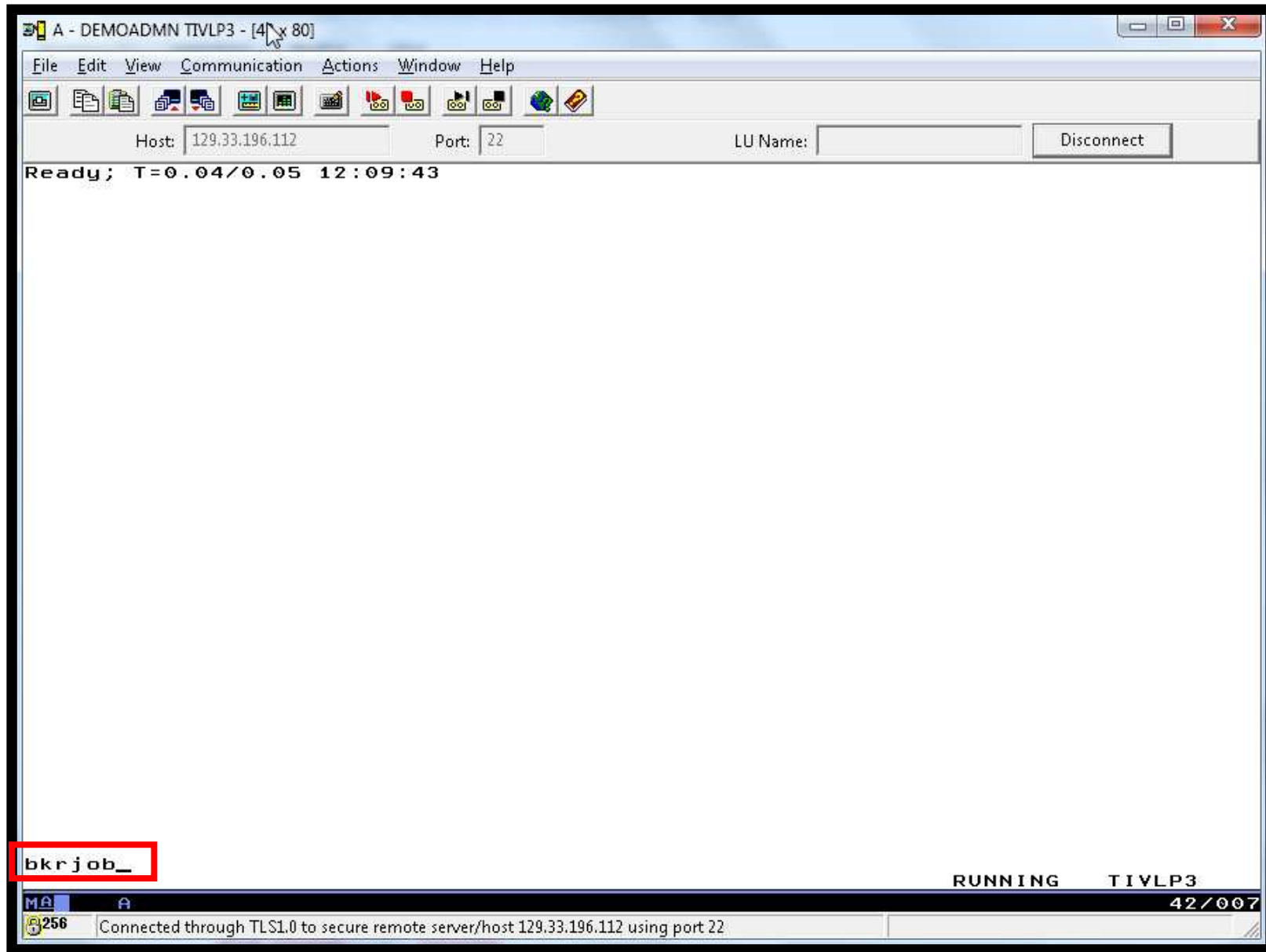
```

A - DEMOADMN TIVLP3 - [43 x 80]
File Edit View Communication Actions Window Help
Host: 129.33.196.112 Port: 22 LU Name: Disconnect
12:04:38 BKRJOB9006I CP return code 0
12:04:38 *
12:04:38 * SAMPLE FULL BACKUP TEMPLATE TDLNXTTP UPDATED 07/17/2015.
12:04:38 * JOB IMAGE GENERATED 01/06/17 12:00:48
12:04:38 *
12:04:38 BKRJOB9005I Executing CP command "SPOOL CONSOLE CLOSE NAME TDLNXTTP 201
12:04:38 BKRJOB9006I CP return code 0
12:04:38 BKRJOB9005I Executing CP command "SPOOL CONSOLE NAME WORKER OUTPUT"
12:04:38 BKRJOB9006I CP return code 0
12:04:38 ***
12:04:38 *** Activity Summary:
12:04:38 ***
12:04:38 *** Job name: TDLNXTTP; instance 00000007
12:04:38 *** Start time: 01/06/17 12:03:27
12:04:38 *** Ended time: 01/06/17 12:04:38
12:04:38 ***
12:04:38 *** Catalog entry insertion elapsed time (ss.uu): 0.007459
12:04:38 ***
12:04:38 *** DUMPCKD tasks, Max RC: 0, 0
12:04:38 *** DUMPFBA tasks, Max RC: 0, 0
12:04:38 *** DUMPEDF tasks, Max RC: 1, 0
12:04:38 *** DUMPSFS tasks, Max RC: 0, 0
12:04:38 *** DUMPBFS tasks, Max RC: 0, 0
12:04:38 *** RESTORE tasks, Max RC: 0, 0
12:04:38 ***
12:04:38 0000001 FILE PURGED
12:04:38 BKRWRK8512I The stack contains 0 entries. There are 0 lines on the con
12:04:38 * MSG FROM BKRCATLG: BKRCAT8870I Expiration date for TDLNXTTP 00000007
12:04:38 Return code: 0

PF01= HELP PF02= SCROLL PF03= END PF04= PF05= HOLD PF06= FORMAT
PF07= UP PF08= DOWN PF09= PF10= LEFT PF11= RIGHT PF12= RECALL

BKRWRK01-TIVLP3
MA A 42/001
256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

```



Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Filters: Job: tdlnx* Instance: * Owner: * Type: * Object: * 3002 of 3002 selected

Command	Job	Instance	Owner	Type	Object	Date	Time
CLASSUSR		00000005	CLASSADM	EDF	\$DEV0191		
CLASSUSR		00000005	USER01	EDF	\$DEV0191		
CLASSUSR		00000005	USER02	EDF	\$DEV0191		
CLASSUSR		00000005	USER03	EDF	\$DEV0191		
CLASSUSR		00000005	USER04	EDF	\$DEV0191		
CLASSUSR		00000005	USER05	EDF	\$DEV0191		
CLASSUSR		00000005	USER06	EDF	\$DEV0191		
CLASSUSR		00000005	USER07	EDF	\$DEV0191		
CLASSUSR		00000005	USER08	EDF	\$DEV0191		
CLASSUSR		00000005	USER09	EDF	\$DEV0191		
CLASSUSR		00000005	USER10	EDF	\$DEV0191		
CLASSUSR		00000005	USER11	EDF	\$DEV0191		
CLASSUSR		00000005	USER12	EDF	\$DEV0191		
CLASSUSR		00000005	USER13	EDF	\$DEV0191		
CLASSUSR		00000005	USER14	EDF	\$DEV0191		
CLASSUSR		00000005	USER15	EDF	\$DEV0191		
CLASSUSR		00000005	USER16	EDF	\$DEV0191		
CLASSUSR		00000005	USER17	EDF	\$DEV0191		
CLASSUSR		00000005	USER18	EDF	\$DEV0191		
CLASSUSR		00000005	USER19	EDF	\$DEV0191		
CLASSUSR		00000005	USER20	EDF	\$DEV0191		
DALYLP3		00000058	BKRADMIN	EDF	\$DEV0191		
DALYLP3		00000058	BKRBACKUP	EDF	\$DEV0191		
DALYLP3		00000058	BKRBACKUP	EDF	\$DEV0198		
DALYLP3		00000058	BKRBACKUP	EDF	\$DEV0591		
DALYLP3		00000058	BKRBACKUP	EDF	\$DEV0592		
DALYLP3		00000058	BKRCATLG	EDF	\$DEV0191		
DALYLP3		00000058	BKRWRK01	EDF	\$DEV0191		
DALYLP3		00000058	BKRWRK02	EDF	\$DEV0191		
DALYLP3		00000058	BKRWRK03	EDF	\$DEV0191		
DALYLP3		00000058	BKRWRK04	EDF	\$DEV0191		
DALYLP3		00000058	MAINT	EDF	\$DEV0191		
DALYLP3		00000058	OPMGRM1	EDF	\$DEV0191		
DALYLP3		00000058	OPMGRM1	EDF	\$DEV0194		

1= Help 2= Create exec 3= Quit 5= Sort up 6= Sort down
 7= Backward 8= Forward 9= Show times 10= Restore 11= Details

MA A 03/013
 256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

A - DEMOADMN TIVLP3 - [43 x 80]

File Edit View Communication Actions Window Help

Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Catalog: BKRSFS.BKRCATLG.JOBCAT

Filters:
 Job: TDLNX*_ Instance: * Owner: * Type: * Object: * 5 of 3002 selected

Command	Job	Instance	Owner	Type	Object	Date	Time
TDLNXTP	00000006	TDLNX02	CKD	\$DEV010F	2017/01/04	17:15:37	
TDLNXTP	00000006	TDLNX02	EDF	\$DEV0191	2017/01/04	17:17:23	
TDLNXTP	00000007	TDLNX02	CKD	\$DEV010F	2017/01/06	12:01:26	
TDLNXTP	00000007	TDLNX02	EDF	\$DEV0191	2017/01/06	12:04:38	
TDLNX01	00000006	TDLNX01	CKD	\$DEV0192	2017/01/04	16:51:21	

1= Help 2= Create exec 3= Quit 4= Sort up 5= Sort down
 6= Backward 7= Forward 8= Show times 9= Restore 10= Details 11= Details

MA A 03/013

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

Host: 129.33.196 Port: 22 LU Name: Disconnect

Filters: Catalog: BKRSFS.BKRCATLG.JOBCH1 5 of 3002 selected

Job	Instance	Owner	Type	Object	Date	Time
TDLNXT	00000006	TDLNX02	CKD	\$DEV010F	2017/01/04	17:15:37
TDLNXT	00000006	TDLNX02	EDF	\$DEV0191	2017/01/04	17:17:23
TDLNXT	00000007	TDLNX02	CKD	\$DEV010F	2017/01/06	12:01:26
TDLNXT	00000007	TDLNX02	EDF	\$DEV0191	2017/01/06	12:04:38
TDLNXT	00000006	TDLNX01	CKD	\$DEV0192	2017/01/04	16:51:21

1= Help 2= Create exec 3= Quit 5= Sort up
 7= Backward 8= Forward 9= Show times 10= Restore 11= Details

MA A 11/001

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

Host: 129.33.196.112 Port: 22 LU Name: Disconnect

Object Details

Object: BKRSFS:BKRCATLG.JOBCAT.TDLNXTTP.00000007.TDLNX02.EDF.\$DEV0191

BKRCAT9097I *** Job Name / Instance: TDLNXTTP / 00000007
 BKRCAT9097I *** Backup Time: 12:04:27.802837 on Friday, January 06, 2017 (Local
 BKRCAT9097I *** Source data: Tape file 1 on volume V00016, Block ID 00000003

BKRCAT9098I Original backup data type was CMS EDF minidisk:
 BKRCAT9098I *** Owner, vdev: TDLNX02 0191
 BKRCAT9098I *** EDF Blocksize: 4096; 7 of 900 blocks in use.
 BKRCAT9098I *** Minidisk label: TD2191
 BKRCAT9098I *** 5 of 5 cylinders formatted.
 BKRCAT9099I *** "(RECOMP" is not in effect for this minidisk.

Filename	Filetype	yy/mm/dd hh:mm:ss	Format	Records	Blocks
TEST	FILE	17/01/06 11:55:56	F/80	1	1

3= Quit 4= Return 5= Top 6= Bottom 7= Backward
 8= Forward 10= Restore 11= Rgleft

MA A 03/010

256 Connected through TLS1.0 to secure remote server/host 129.33.196.112 using port 22

Scenario G: 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 G: Detailed Steps

- From an authorized z/VM user ID, edit the DDR job template

```
xedit ddrdemo template c
```

- 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>
```

The image shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window contains a table of disk usage information and a command prompt. A red box highlights the row for disk 06B199. Another red box highlights the command prompt "x ddrdemo template c_".

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
ADM193	193	B	R/W	50	3390	4096	3	7927-88	1073	9000
06B199	199	C	R/W	5	3390	4096	9	31-03	869	900
06B202	202	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
----->
T.....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 - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
|...+.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

```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
MSG BKRBAKUP REVIEW ddrdemo
Ready; T=0.01/0.01 19:46:06
BKRBAK8529I Processing REVIEW DDRDEMO command for TSTADMN1.
RDR FILE 0093 SENT FROM BKRBAKUP PUN WAS 0044 RECS 0062 CPT 001 H NOHOLD NOKEEP
BKRMAK8559I INCLUDE / EXCLUDE processing for job DDRDEMO selected 6 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job DDRDEMO has been set to 1.
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 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.

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
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=0 Col=1 Alt=0
File DDRSAMP JOB from BKRKBUP 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= 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
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=78 Col=1 Alt=0
File DDRSAMP JOB from BKRBACKUP 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 H: 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 H: 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

Ndzi khense ngopfu

Tsonga

Gracias

Spanish

شكراً

Arabic

Thank

English

You

Obrigado

Brazilian Portuguese

Grazie

Italian

多谢

Simplified Chinese

Danke

German

Ke a leboha

Tswana

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai