Installing RACF for the First Time

For z/VM 5.4 and 6.1

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Introduction

The RACF Security Server for z/VM

- A priced, optional, pre-installed feature of z/VM
  - For all current releases - 5.4 and 6.1
- Licensed under International Program License Agreement (IPLA) terms and conditions
- Pricing is based on engine-based Value Units and is available for both IFL and standard processor configurations.
- RACF releases are specific to the release of z/VM
  - The level of RACF and CP must be the same

Configuration guidelines

- What RACF settings and options do you enable?
- What needs to be controlled and audited in z/VM?
- Who decides this? Do you?
  - Answer: Probably not you.

- Use your company security policy
  - It is the overall guideline for IT security in your company
  - You decide how RACF is configured based on its requirements
  - In other words – you are not the policy maker
    - You implement the policy

Installation

- No need – it is pre-installed!
- But, it is disabled by default
  - You enable it if you have a license
- The program directory is the main guide
  - Please read it!
  - This presentation does not cover all topics
  - More background about configuration in the RACF documentation
    - See *z/VM: RACF Security Server Security Administrator's Guide*
- This presentation is mainly to prepare first time installers
  - But – if you have it already installed, don't leave!
  - I make some choices that you may want to do on your system

User ids defined for RACF/VM

These are predefined on a new z/VM system installation

- **RACFVM**
  - The main production security server
- **RACMAINT**
  - Test the installation of RACF
  - Test applied service
- **5VMRAC40** or **6VMRAC10**
  - Name is derived from the z/VM version and release
  - Owns all the minidisks that hold RACF code
  - In this presentation, any reference to 6VMRAC10 can be replaced with 5VMRAC40 for z/VM 5.4 systems

User ids defined for RACF/VM

- **RACFSMF**
  - Management of RACF audit log files
- **IBMUSER**
  - Used for the initial setup of RACF
- **SYSADMIN**
  - Sample security administration user
- **MAINT**
  - Maintenance of all z/VM components
- **BLDRACF**
  - Used to rebuild CST, the special version of CMS used by RACF

Overview

- If you will also activate DIRMAINT:
  - I perfer to activate and configure RACF first
- Prepare your system for RACF
  - Use RACF utilities to migrate definitions from the CP directory
- Enable RACF
  - This will create a new CP Nucleus with RACF enabled
- Shutdown and IPL z/VM from parm disk 2
- Start RACF in maintenance mode and initialize
- Configure RACF
- Start RACF in production mode

Prepare your VM directory

- Check your VM directory. Look for:
  - Duplicate user ids, if you have more than one VM system
    - In case you share the RACF database
    - The same user id must be owned by the same person
  - Unacceptable characters in user ids
    - No dash (-), plus (+), colon (:), or underscore (_).
  - Group names on POSIXGROUP statements
    - RACF does not support mixed case group names
    - The RACF utility automatically handles the VM default names
  - ACIGROUP statements
    - If you have these, read the RACF program directory
  - NICDEF statements
    - You must define and give permission manually

Prepare your VM directory, continued

- My suggestion: Update user 6VMRAC10
  - Add OPTION LNKNOPAS
  - This will make it easier to activate RACF
- If DIRMAINT will be activated later
  - Change password of NOLOG to a real password
    - Userids: DIRMAINT, DATAMOVE, DIRMSAT
- Consider adding user ids for security roles
  - For example, SYSAUDIT for the system auditor
    - Sample id SYSADMIN already exists for the security administrator
- Run DIRECTXA to put these changes online

Migrate CP directory data to RACF

- Logon to the 6VMRAC10 user id
  - Access your source CP directory:
    - VMLINK MAINT 2CC
  - Access the RACF utilities
    - ACC 505 E
- Run RPIDIRCT EXEC to scan the source directory
    - RPIDIRCT USER DIRECT
  - Accept the default group ID of “SYS1”
  - Reads the CP directory source file, creates RACF commands
- Output file is RPIDIRCT SYSUT1
  - No database changes are made by RPIDIRCT
  - We will examine and edit this file

Editing RPIDIRCT SYSUT1

- You can make alterations to this file
  - Add definitions and permissions that are missing
  - Remove definitions and permissions that you don't want
  - Alter initial passwords
- RACF commands found in this file
  - ADDUSER - Defines a user to RACF
  - RDEFINE - Defines a resource
  - PERMIT - Allows a user access to a resource
- Resources defined by this file
  - VMMDISK - VM Minidisks
  - VMBATCH - Alternate userid
  - VMRDR - Ability to SPOOL TO the user

Handling of passwords from your directory

RPIDIRCT SYSUT1 defines your users to RACF

- User's initial password is the one in their directory entry
  - The password is temporary and must be changed at the first logon
  - No special password handling
    - *NOLOG users have an initial password of ”NOLOG”!*
    - *However – z/VM prevents logon and spooling to NOLOG users*
- Special password processing for directory password of “UNLOG”
  - Defined with password of “UNLOG” and the user is REVOKED
  - A revoked user cannot logon to the system
- Potential problem: What if “NOLOG” is removed from a user's CP directory entry?
  - Someone could log in using password of NOLOG!
  - We will fix this on a later step... after a small detour

Introduction to Generic resources

- Resources defined by the RPIDIRCT file are specific
    - Owned by a single userid
    - For minidisks – a specific virtual address
  - In RACF terms – a “discrete profile”
- RACF also supports generic resources
  - A lot like wildcard matching of file names
  - Permissions to discrete profiles have priority, however
  - Example
    - Define a generic resource which is “all of MAINT's minidisks”
      - RAC RDEFINE VMMDISK MAINT.* OWNER(MAINT) UACC(NONE)
    - Give a user read/write access to all of MAINT's disks
      - RAC PERMIT MAINT.* CLASS(VMMDISK) ID(MAINT2) ACCESS(CONTROL)

Generic resources

- Enabled via RACF options (SETROPTS command)
  - GENCMD(*classes*)
    - Allows generic profiles to be specified in commands
    - You can create generic profiles before making them active
  - GENERIC(*classes*)
    - Activates generic profile checking for specified classes
    - Also allows generic profiles in commands
- Not enabled on any classes by default
  - Due to extra searching, and not part of old RACF systems
- This can make managing your system easier!
  - Fewer resources to define and manage
  - Some resources only need controls for the exceptions

Candidates for Generic Resources

VMRDR (spooling)

- To send a file to another user, you must be permitted in RACF to “update” their reader
  - i.e. SPOOL PUN TO user, SPOOL PRT TO user, TRANSFER TO user, CLOSE TO user
- Without permission, the command fails
- A security policy may not require this control for most users
- Use a single generic resource instead of a definition per user
- If there are exceptions -- create specific resources for control
- Example: Service machine that accepts commands via reader files
  - Deny access to everyone by default with a generic permission
  - Create specific permissions allowing access as needed

Generic Resources, continued

VMBATCH (set alternate user)

- These days, mostly used by FTPSERVE, the VM ftp server
- Allows FTPSERVE to access your resources on your behalf – e.g. when you “log in” via FTP
  - Instead of giving FTPSERVE explicit permission to your resources
- FTPSERVE uses Diag D4 to ask CP to set its alternate user to your user id
  - If FTPSERVE has permission from RACF to your VMBATCH resource, CP allows it to be set
  - Now FTPSERVE can access any resource you have permission for
- Maybe a single generic resource is a good idea here?
  - ...instead of a permit needed for each user on the system
- Exceptions for critical users such as MAINT can be defined

Now back to RPIDIRCT SYSUT1 !!

- References to VMBATCH and VMRDR in file
  - Use a generic resource for each one instead
    The actual resources will be defined later
  - Remove the file lines that reference VMBATCH and VMRDR
- References to users with a password of NOLOG
  - The utility sets the RACF password to “NOLOG”
    - It is better to not set a password at all
  - Change references of PASSWORD(NOLOG) to NOPASSWORD
- Edit the file and make these changes
  - Now is the best time to do it!
  - If you have AUTOONLY or LBYONLY users – consider making the same change to NOPASSWORD

Edit RPIDIRCT SYSUT1

Use XEDIT to make these changes

- `Xedit RPIDIRCT SYSUT1`
- `case upper ignore`
- `change /password(nolog)/nopassword/* *`
- Remove references to vmbatch
  - *`top`*
  - *`all /rdefine vmbatch/`*
  - *`delete *`*
  - *`top`*
  - *`all /class(vmbatch)/`*
  - *`delete *`*
- Repeat these commands for `vmrdr` instead of `vmbatch`
- `file`

Enable processing of SMF records

- This is the next step in the program directory
  - SMF processing is not discussed in today's presentation!
  - It is not necessary to set it up to get RACF working
    - It can be done later
  - However, it is important to set up this processing for your production system
- Come to my Thursday presentation!
  - Session 8481, Thursday, March 3: 4:30 PM-5:30 PM
  - *Advanced Configuration and Auditing with RACF on z/VM*
- We are done with 6VMRAC10
  - You may now log off

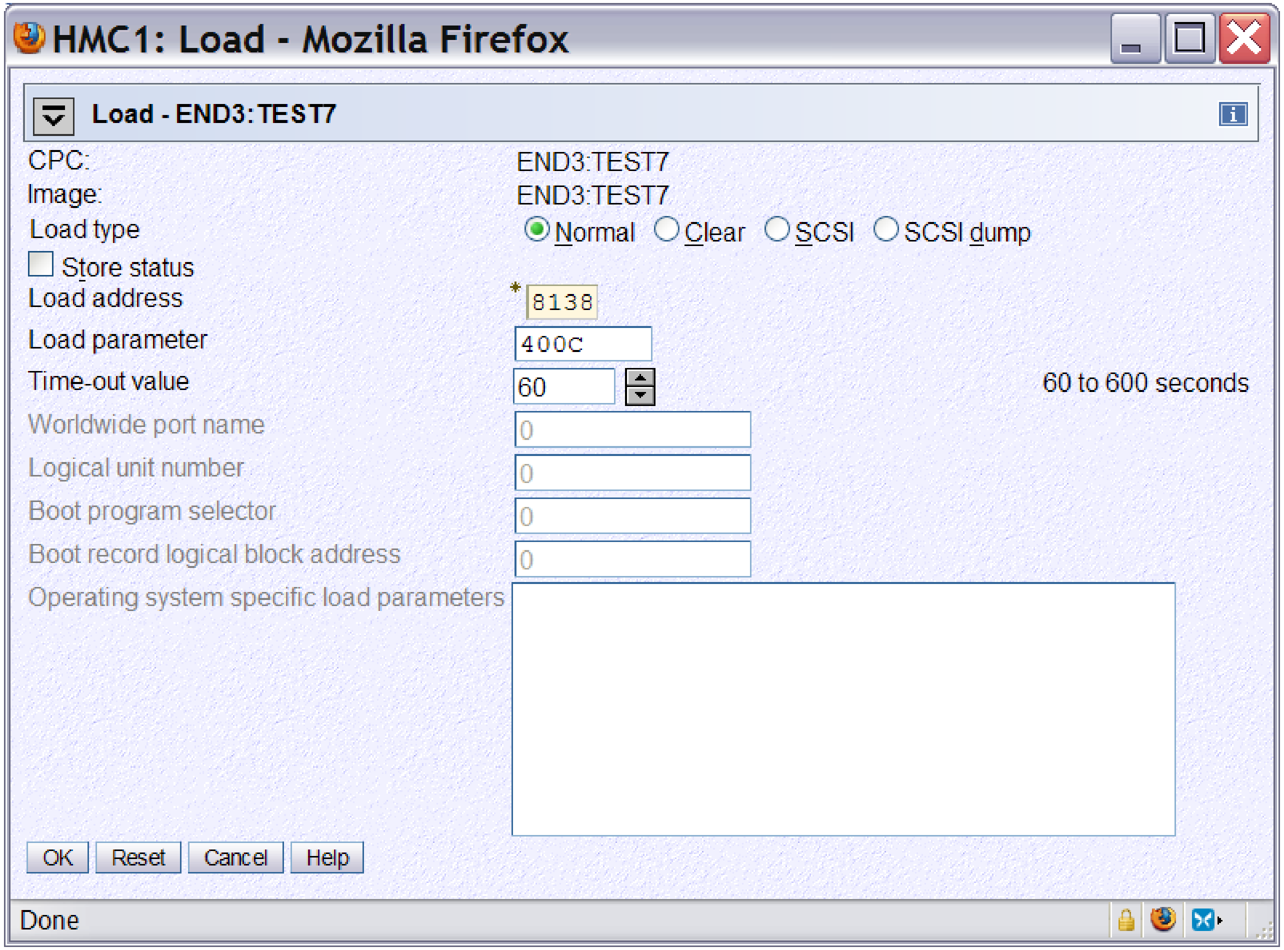
Enable the RACF/VM product

- The RACF product must be enabled
  - Updates to the SYSTEM CONFIG file
- CP must be rebuilt with the RACF modules included
- The SERVICE EXEC does all this for you
  - Log on to MAINT
  - Enter SERVICE RACF ENABLE
  - Check for errors using command VMFVIEW SERVICE
- The rebuilt CP nucleus is ready for testing
  - Placed on the secondary parm disk (MAINT CF2)
  - SYSTEM CONFIG updated to enable RACF/VM on all parm disks

ReIPL your system

- IPL using parameter disk 2
  - Shutdown your system
  - Bring up the Load screen on the HMC
    - Specify the address of the IPL volume
    - Specify a console address to show the stand alone loader
      - *This is the Load Parm*
      - *Use SYSG to use the integrated 3270 HMC console*
  - When the Standalone Loader screen appears
    - Change the “Extent” to 2
    - Specify a load parm of PROMPT
    - Optionally specify a console address
    - Press PF10 to load

Sample Load screen

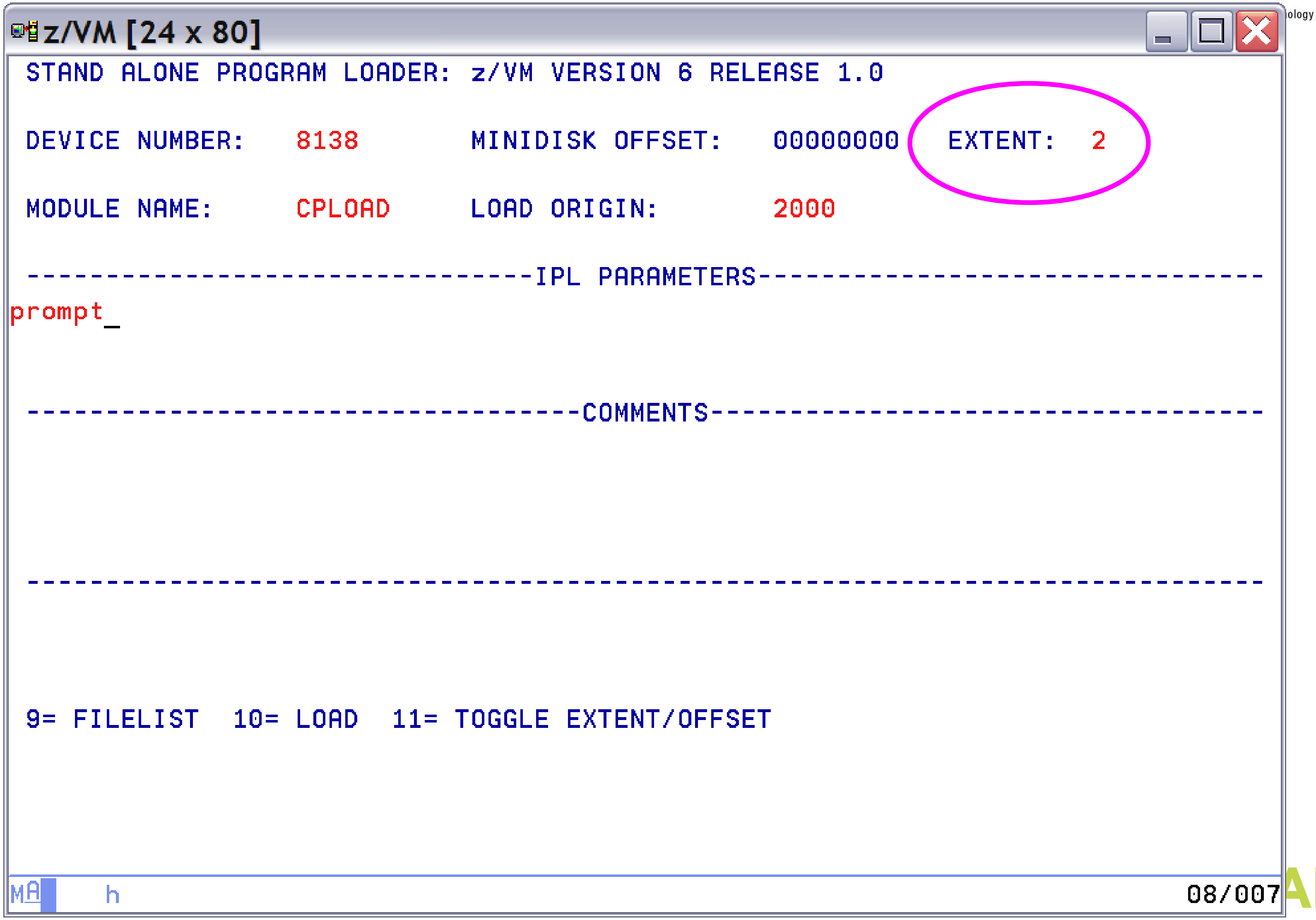


HMC1: Load - Mozilla Firefox

Load - END3:TEST7

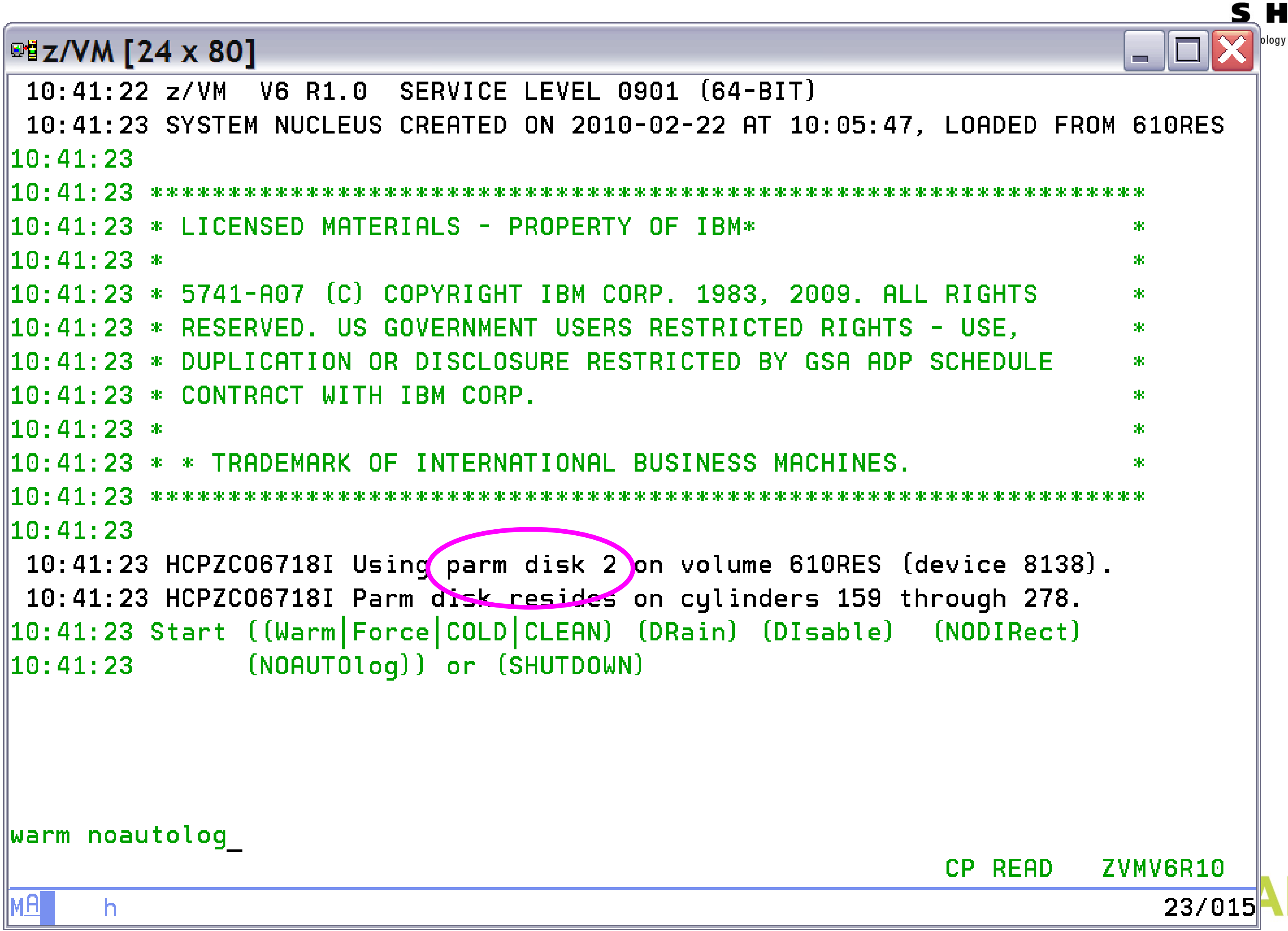
CPC:	END3:TEST7
Image:	END3:TEST7
Load type	● Normal ○ Clear ○ SCSI ○ SCSI dump
□ Store status	
Load address	* 8138
Load parameter	400C
Time-out value	60 — 60 to 600 seconds
Worldwide port name	0
Logical unit number	0
Boot program selector	0
Boot record logical block address	0
Operating system specific load parameters	

Sample Standalone Loader screen



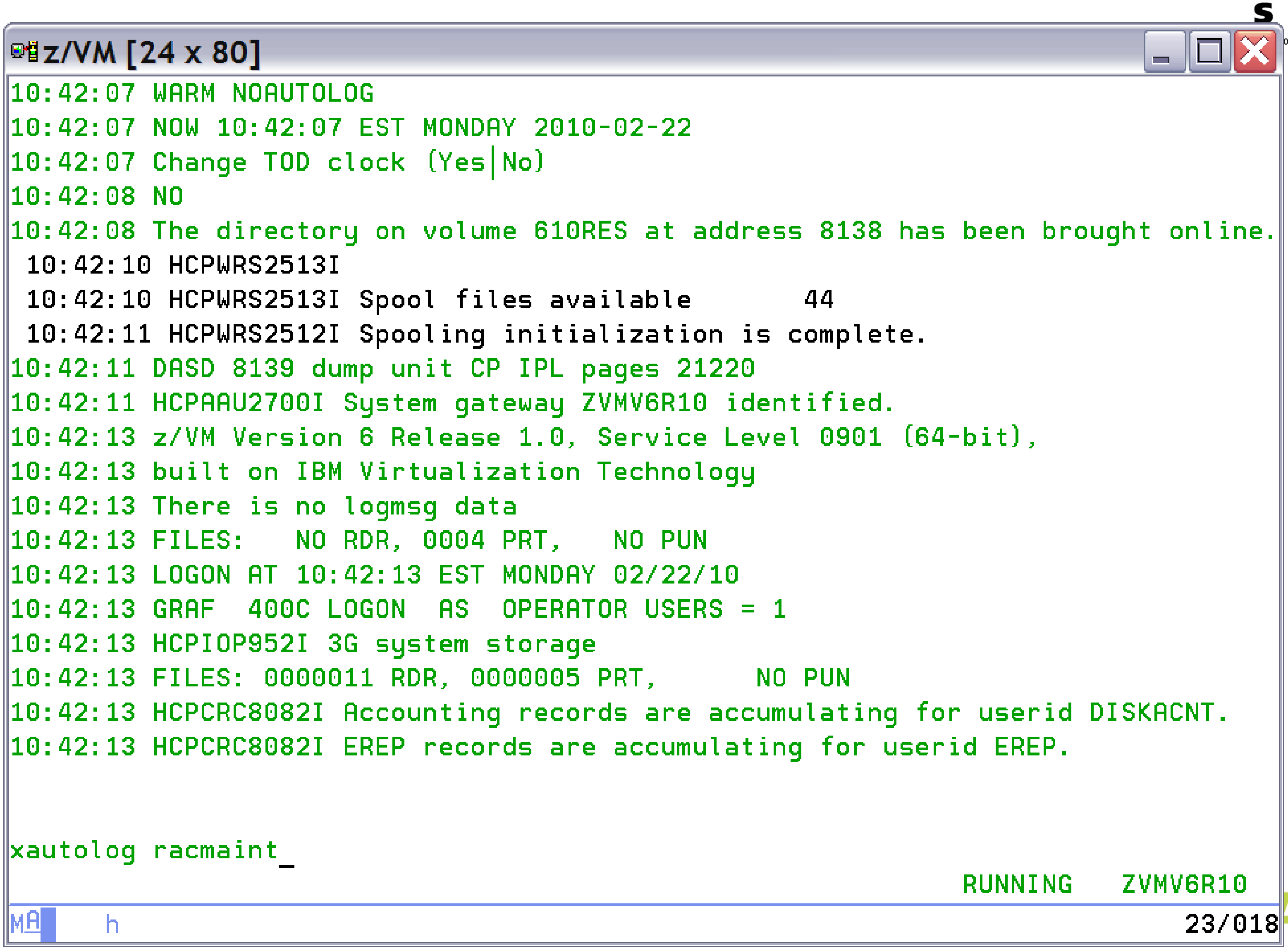
```
 STAND ALONE PROGRAM LOADER: z/VM VERSION 6 RELEASE 1.0

 DEVICE NUMBER:    8138       MINIDISK OFFSET:    00000000   EXTENT:   2

 MODULE NAME:      CPLOAD     LOAD ORIGIN:        2000

 --------------------------------IPL PARAMETERS--------------------------------
prompt_


 -----------------------------------COMMENTS-----------------------------------




 ------------------------------------------------------------------------------



 9= FILELIST  10= LOAD  11= TOGGLE EXTENT/OFFSET



MA      h                                                                08/007
```

Sample VM startup



```
 10:41:22 z/VM  V6 R1.0  SERVICE LEVEL 0901 (64-BIT)
 10:41:23 SYSTEM NUCLEUS CREATED ON 2010-02-22 AT 10:05:47, LOADED FROM 610RES
10:41:23
10:41:23 ****************************************************************
10:41:23 * LICENSED MATERIALS - PROPERTY OF IBM*                         *
10:41:23 *                                                               *
10:41:23 * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2009. ALL RIGHTS       *
10:41:23 * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE,        *
10:41:23 * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE      *
10:41:23 * CONTRACT WITH IBM CORP.                                       *
10:41:23 *                                                               *
10:41:23 * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES.               *
10:41:23 ****************************************************************
10:41:23
 10:41:23 HCPZCO6718I Using parm disk 2 on volume 610RES (device 8138).
 10:41:23 HCPZCO6718I Parm disk resides on cylinders 159 through 278.
10:41:23 Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable)  (NODIRect)
10:41:23       (NOAUTOlog)) or (SHUTDOWN)




warm noautolog_
                                                      CP READ   ZVMV6R10
MA     h                                                          23/015
```

Sample VM startup - continued



```
10:42:07 WARM NOAUTOLOG
10:42:07 NOW 10:42:07 EST MONDAY 2010-02-22
10:42:07 Change TOD clock (Yes|No)
10:42:08 NO
10:42:08 The directory on volume 610RES at address 8138 has been brought online.
 10:42:10 HCPWRS2513I
 10:42:10 HCPWRS2513I Spool files available        44
 10:42:11 HCPWRS2512I Spooling initialization is complete.
10:42:11 DASD 8139 dump unit CP IPL pages 21220
10:42:11 HCPAAU2700I System gateway ZVMV6R10 identified.
10:42:13 z/VM Version 6 Release 1.0, Service Level 0901 (64-bit),
10:42:13 built on IBM Virtualization Technology
10:42:13 There is no logmsg data
10:42:13 FILES:    NO RDR, 0004 PRT,    NO PUN
10:42:13 LOGON AT 10:42:13 EST MONDAY 02/22/10
10:42:13 GRAF  400C LOGON  AS  OPERATOR USERS = 1
10:42:13 HCPIOP952I 3G system storage
10:42:13 FILES: 0000011 RDR, 0000005 PRT,      NO PUN
10:42:13 HCPCRC8082I Accounting records are accumulating for userid DISKACNT.
10:42:13 HCPCRC8082I EREP records are accumulating for userid EREP.



xautolog racmaint_
                                                                  RUNNING   ZVMV6R10
MA     h                                                                      23/018
```

Start up VM

- At the startup prompt, enter:
  - WARM NOAUTOLOG
  - This prevents any other guests from starting
- Once the system is up, enter:
  - XAUTOLOG RACMAINT
- RACF is now started with its initial database
  - A small set of basic profiles
- Disconnect from the Operator
  - DISC

Initialize the RACF database

- Only user IBMUSER is defined
  - User has full RACF authority “SPECIAL”
  - Already links to 6VMRAC10 191, to read RPIDIRCT SYSUT1
  - We use this user to build the database
- Logon to IBMUSER
  - Password is SYS1
  - The password is expired, you must change it.
    - Enter *newpass/newpass* when prompted
  - Ignore error messages from RACF

Load the initial RACF Database

- Access the RACF code disks
  - ACCESS 305 C
    - This is 6VMRAC10 505 – Test code for server
  - ACCESS 192 B
    - This is 6VMRAC10 191 – Contains RPIDIRCT SYSUT1
  - ACCESS 29E D
    - This is 6VMRAC10 29E – Test code for general users
- Run RPIBLDDS
  - This reads RPIDIRCT SYSUT1 B
    - Enter: RPIBLDDS RPIDIRCT
    - Clear the screen several times
- **Your database is initialized!**

Define the security admin and auditor

- Best practice is to separate these duties
  - Security Administrator: SYSADMIN
    - RACF attribute: SPECIAL
    - Included in the initial z/VM directory for this role
  - Security Auditor: SYSAUDIT, RACAUDIT, or AUDITOR
    - RACF attribute: AUDITOR
    - Note:
      AUDITOR exists in the initial z/VM directory, but is intended to run the AUDITOR monitoring utility. The others are not defined and you would have to add one of them to your system.
- This can easily be changed later on
- The role of MAINT is to maintain the RACF/VM code
  - And of course, the other components of z/VM

Still using IBMUSER

- Define the roles to RACF
    - Note: Using a RACF command session started with the RACF command
  - RACF
    - ALTUSER SYSADMIN SPECIAL
    - ALTUSER SYSAUDIT AUDITOR
    - ALTUSER MAINT OPERATIONS
    - ALTUSER BLDSEG OPERATIONS
  - END
  - Notes:
    - The OPERATIONS attribute allows MAINT to access resources without a PERMIT
    - User BLDSEG is part of the service process
- We are now done with IBMUSER
  - LOGOFF from this id

Revoke access to IBMUSER

- IBMUSER has no further purpose
  - But this id cannot be deleted from the RACF database
- Log on to your security administrator id
  - LOGON SYSADMIN
    - *You will have to set a new password during logon*
  - LINK 6VMRAC10 29E 29E RR
  - ACCESS 29E D
    - *The RACF code is not on the production Y disk yet*
- Make IBMUSER unusable
    - *Note: Using the RAC command to enter a single RACF command*
    - *The RAC command is the recommended command interface*
  - RAC ALTUSER IBMUSER REVOKE
  - RAC ALTUSER IBMUSER NOOPERATIONS NOSPECIAL

Setting RACF options

- The **SETROPTS** command sets RACF options
  - There are a lot of options!
- Most resource classes are inactive until activated
  - The CLASSACT subcommand of SETROPTS activates classes
  - RAC SETROPTS CLASSACT(class)
- Some classes are always active
  - USER (allows LOGON and XAUTOLOG commands)
  - TERMINAL (allows you to log in via a terminal)
- The next chart lists some of the classes
  - The complete list is in Appendix B of the Language Reference

Most common classes on z/VM

VMBATCH	Allows use of DIAG D4 (alternate userid)
VMCMD	Certain CP commands and other requests
VMLAN	Permission to connect to VSWITCH and Guest LANs
VMMDISK	Minidisks
VMNODE	Allows you to target other VM nodes via RSCS
VMRDR	Allows you to target other users via spooling commands
VMSEGMT	Allows access to restricted saved segments
VMXEVENT	Event profiles for commands and auditing
FACILITY	Allows a virtual machine to use the RACROUTE interface.

Activating classes

- The classes I need active on my system are:

  VMMDISK, VMLAN, VMCMD, VMRDR, VMBATCH

  - SETROPTS CLASSACT(VMMDISK VMLAN VMCMD VMRDR VMBATCH)
    - I will activate VMXEVENT and FACILITY also later on
- VMCMD, VMRDR and VMBATCH are discussed later
- VMMDISK resources were created via the RPIDIRCT file
- VMLAN resources control connections to a vswitch
  - A resource must be created for each one and permissions granted
  - Examples:
    - RDEFINE VMLAN SYSTEM.VSWITCH1 UACC(NONE)
    - PERMIT SYSTEM.VSWITCH1 CL(VMLAN) ID(TCPIP) AC(UPDATE)
    - PERMIT SYSTEM.VSWITCH1 CL(VMLAN) ID(LINUX1) AC(UPDATE)
  - Note that VMLAN resources also apply to restricted guest lans

VMCMD class

Resources protected by the VMCMD class

VMCMD Profile Name	What It Protects
STORE.C	STORE HOST command
TRSOURCE	TRSOURCE command
DIAG0E4	Diagnose code X'E4' (Minidisk query and define)
XAUTOLOG.*userid*	XAUTOLOG command by a class G user
DIAG088	Diagnose code X'88' (all subcodes) (DMSPASS)
DIAG0A0.HRTSTORE	Diagnose code X'A0' Subcode X'34' (security labels)
DIAG0A0.QUERYSEC	Diagnose code X'A0' Subcode X'30' (query label)
DIAG0A0.VALIDATE	Diagnose code X'A0' Subcodes X'04' and X'3C' (Validate userid and password or pass phrase)
RAC	RAC command processor
RACF	RACF command session

VMCMD examples

- No VMCMD resources are defined by default
  - Exception: RAC and RACF commands are UACC(READ)
    - Everyone is allowed to use them
  - The default settings defer permission checking to CP
  - CP uses directory entries or privilege classes for permission
- To control commands, define a resource then give permission
  - Example: protecting STORE HOST
      - RDEFINE VMCMD STORE.C UACC(NONE)
    - Allow MAINT to use this command
      - PERMIT STORE.C CLASS(VMCMD) ID(MAINT) ACCESS(READ)
  - Example: allow a general user to use XAUTOLOG
      - RDEFINE VMCMD XAUTOLOG.LINUX UACC(NONE)
      - PERMIT XAUTOLOG.LINUX CLASS(VMCMD) ID(BRUCE) AC(READ)

Allowing DIAG 88 for TCPIP servers

- Create DIAG088 resource in VMCMD class
  - RAC RDEFINE VMCMD DIAG088 UACC(NONE)
- Give servers permission to perform password validation using the CMS facility DMSPASS
  - RAC PERMIT DIAG088 CLASS(VMCMD) ID(FTPSERVE IMAP VMNFS REXECD) ACCESS(READ)
- Allow servers to use RACROUTE

  Permission to use RACROUTE is resource name ICHCONN in class FACILITY
  - RAC SETROPTS CLASSACT(FACILITY)
  - RAC RDEFINE FACILITY ICHCONN UACC(NONE)
  - RAC PERMIT ICHCONN CLASS(FACILITY) ID(FTPSERVE VMNFS REXECD) ACCESS(UPDATE)
- You must also read:

  Appendix A of *TCP/IP Planning and Customization*

Using Generic resources for some classes

- Use for VMRDR and VMBATCH
  - RAC SETROPTS CLASSACT(VMRDR VMBATCH)
  - RAC SETROPTS GENCMD(VMRDR VMBATCH)
  - RAC SETROPTS GENERIC(VMRDR VMBATCH)
- **VMRDR** – permit access to all virtual readers
  - RAC RDEFINE VMRDR * UACC(UPDATE)
    - *Makes default permission "update", which allows access*
- **VMBATCH** – allow some servers to act for others
  - RAC RDEFINE VMBATCH * UACC(NONE)
    - *Default permission defined as no access*
  - RAC PERMIT * CLASS(VMBATCH) ID(FTPSERVE VMNFS REXECD) ACCESS(CONTROL)
    - *Allow FTPSERVE, VMNFS, and REXECD to act on behalf of any user*

Exceptions to generic resources (examples)

Remember that a discrete profile overrides a generic one

- Restrict reader access to a service machine
  - Define the resource with no default access allowed
    - RAC RDEFINE VMRDR OPERATOR UACC(NONE)
  - Allow an authorized user to send files
    - RAC PERMIT OPERATOR CL(VMRDR) ID(PERFSVM) AC(UPDATE)
- Restrict FTP server's access to MAINT's resources
  - A discrete permission (PERMIT) overrides a generic permission or universal access (UACC)
  - An access permission of NONE overrides any higher permission
    - RAC RDEFINE VMBATCH MAINT UACC(NONE)
    - RAC PERMIT MAINT CLASS(VMBATCH) ID(FTPSERVE) ACCESS(NONE)

Define your password rules

- SETROPTS PASSWORD(options)
  - Many options to chose from
    - Reuse of old passwords (HISTORY)
    - Maximum time before change (INTERVAL)
    - Mixed case allowed (MIXEDCASE)
    - Number of guesses (REVOKE)
    - Expiration warning messages (WARNING)
    - Password syntax rules (RULE)
  - Example: 90 day interval, 4 attempts, no repeat on last 4 passwords

```
RAC SETROPTS
      PASSWORD(INTERVAL(90) HISTORY(4) REVOKE(4) NORULES)
```

Authorization Checking for z/VM Events

- VM may call RACF for authorization checking of certain z/VM events
- You may not require checking of some of these
  - It depends on your system security policy!
- Event profiles define the authorization checks
  - Profile for the entire system
  - Profiles for individual users (overrides system profile)
- By default, RACF checks all of these events
  - Listed on the next 2 charts

List of controlled events

COUPLE.G	Couple to restricted guest lan or VSWITCH
FOR.C	FOR command, IBMclass C
FOR.G	FOR command, IBMclass G
LINK	LINK command or directory statement
MDISK	Directory statement or LINK to own minidisk
STORE.C	STORE host memory command, IBMclass C
TAG	TAG command, for RSCS processing
TRANSFER.D	TRANSFER and CHANGE, IBMclass D
TRANSFER.G	IBMclass G spooling commands
TRSOURCE	TRSOURCE command

List of controlled events, continued

APPCPWVL	Used to verify passwords on APPC connect
DIAG088	Use of Diag 88 (Check auth and link minidisk)
DIAG0A0	Use of Diag A0 (Obtain ACI Groupname)
DIAG0D4	Use of Diag D4 (Set Alternate User ID)
DIAG0E4	Use of Diag E4 (Define Full-Pack Overlay)
DIAG280	Use of Diag 280 (Set POSIX security values)
RSTDSEG	Access to restricted saved segments

Creating event profiles

- To change the VM events checked by RACF, you must create an event profile
- The profiles have a dual purpose
  - Access checking
  - Auditing (not discussed here)
- Create a resource profile in the VMXEVENT class
  - The name can be anything you choose
  - More than 1 system profile can exist, but only 1 is active
  - Members are added to stop control of selected events
    - By default, all events are controlled

Resource profile for my system

- An example based on my needs for a lab system
    - *Note: Not based on IBM security policy!*
- I want RACF control of everything, except:
    - FOR command
        - Controlled by the SURROGAT profile. I only want to use SURROGAT for logon to shared user ids
    - TAG command
        - I have no restrictions on RSCS usage, no need to control TAG
    - Restricted segments
        - I will use the NAMESAVE authorization in the directory instead
    - User's own minidisks (in directory or via link command)
        - If it is yours, then no need for RACF to check your own access

RACF commands for my profile

- Create profile EVENTS1 in VMXEVENT

```
RAC RDEFINE VMXEVENT EVENTS1
RAC RALTER VMXEVENT EVENTS1 ADDMEM(FOR.C/NOCTL)
RAC RALTER VMXEVENT EVENTS1 ADDMEM(FOR.G/NOCTL)
RAC RALTER VMXEVENT EVENTS1 ADDMEM(TAG/NOCTL)
RAC RALTER VMXEVENT EVENTS1 ADDMEM(RSTDSEG/NOCTL)
RAC RALTER VMXEVENT EVENTS1 ADDMEM(MDISK/NOCTL)
RAC SETROPTS CLASSACT(VMXEVENT)
RAC SETEVENT REFRESH EVENTS1
```

Output from creating an event profile

- When profile is activated, default members are made active

```
SETEVENT REFRESH EVENTS1
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: COUPLE
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: LINK
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: STORE.C
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: TRANSFER.D
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: TRANSFER.G
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: TRSOURCE
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG088
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG0A0
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG0D4
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG0E4
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG280
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: DIAG290
RPISET113W TURNING CONTROL ON AUTOMATICALLY FOR: APPCPWVL
RPISET126I SETEVENT COMPLETED SUCCESSFULLY.
```

- You can explicitly define these members in the profile for completeness

```
RALTER VMXEVENT EVENTS1 ADDMEM(COUPLE.G/CTL LINK/CTL)
```

Event profiles for specific users

- Profiles can be created to override the system profile for specific users
  - They are named USERSEL.*userid* in the VMXEVENT class
- If a user profile exists, none of the system profile is active for that user
  - Make sure you create a complete user profile
- They are created just like the system profile
  - RAC RDEFINE VMXEVENT USERSEL.DATAMOVE
  - RAC RALTER VMXEVENT USERSEL.DATAMOVE ADDMEM(LINK/NOCTL TAG/NOCTL MDISK/NOCTL)
  - RAC SETEVENT REFRESH USERSEL.DATAMOVE
  - etc.

Copy RACF files to production

- The initial configuration of RACF/VM is complete
  - Now we will put the code on the production disks
- Logon to MAINT
- Run PUT2PROD
  - Copies RACF code to production disks
    - This includes code to MAINT 19E for the user interface
      - *Also known as the “Y disk”*
  - Updates CP Parm disk 1 (MAINT CF1) from CP Parm disk 2
    - Copies the RACF enabled CPLOAD MODULE from parm disk 2
  - Check for errors when it completes
    - VMFVIEW PUT2PROD
- LOGOFF of MAINT

Initialize RACFVM

- Reconnect to OPERATOR
  - This task must be done from the OPERATOR user id
- Stop all RACF maintenance ids
  - Probably only RACMAINT is running, but just to be sure:
    - FORCE 6VMRAC10
    - FORCE MAINT
    - FORCE RACMAINT
- Start up the production RACF server
  - XAUTOLOG RACFVM
    - This will also XAUTOLOG AUTOLOG2 (see next page)
- Disconnect from OPERATOR

Set up AUTOLOG1 and 2 user ids

- AUTOLOG1 is started as part of the z/VM IPL sequence
  - This is the z/VM default configuration
  - The PROFILE EXEC is used to execute CP commands
  - Perform any system wide CP settings here (Class A commands)
  - We need RACFVM started before any other users
    - *CP XAUTOLOG RACFVM*
    - *CP LOGOFF*
- RACFVM initializes and connects to CP
  - When it is running, it executes XAUTOLOG AUTOLOG2
- AUTOLOG2 will XAUTOLOG all other SVMs
  - Basically, the SVM start ups previously done by AUTOLOG1
  - Copy PROFILE EXEC from AUTOLOG1 to AUTOLOG2
- Change AUTOLOG1 to only start RACFVM

RACF/VM is now operational

- You may start service machines for testing
  - To start all of them, just XAUTOLOG AUTOLOG2
  - Determine if any need access to additional resources
- Your last IPL was from the second parm disk
  - The PUT2PROD process has now updated parm disk 1
    - CPLOAD MODULE and SYSTEM CONFIG
  - It would be a good idea to test a normal system IPL using parameter disk 1
    - On OPERATOR:
    - SHUTDOWN REIPL EXTENT 1

The End

- **Thank you for listening!**
- Session 8482
- **Contact information**

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References

- **VM home page**
  - http://www.vm.ibm.com
- **z/VM Security and Integrity Resources**
  - http://www.vm.ibm.com/security
- **z/VM Statement of Integrity**
  - http://www.vm.ibm.com/security/zvminteg.html
- **VM documentation center**
  - http://publib.boulder.ibm.com/infocenter/zvm/v6r1/index.jsp

Other tasks

- How to define a new user
    - ADDUSER userid NAME('A. User') PASSWORD(password)
    - Password is expired, must be changed during logon
- How to reset a user's password:
    - RAC ALTUSER BRUCE PASSWORD(TEMP4YOU)
    - Password is expired, must be changed during the next logon
- How to delete various things:
    - Users: DELUSER *userid*
        - This does not delete resources owned by the user!
    - Resources: RDELETE *resourcename*
        - Any permissions to the resource are deleted also
    - Permissions: PERMIT ..... DELETE
- Changing resources
    - Use the RALTER command

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