A Gentle Introduction to z/VM System Installation for the Inexperienced

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Rocket Software, Inc.

Monday, February 4, 2013
Session Number 12458
Agenda - i

• Introductions

• Observation:
  • Goals and Objectives, or “What you’re going to do”
  • Raw Materials

• Orientation:
  • Many paths, one destination

• Decisions:
  • Identify and Provision Resources

• Actions:
  • Example: A tour through one possible installation scenario
Agenda - ii

• Observation:
  • What did we just do?

• Orientation:
  • Were the results successful?

• Decision:
  • Now that I’ve got this thing, what do I do with it?

• Action:
  • Next steps

• Additional Resources
Introduction
About Rocket Software

- http://www.rocketsoftware.com/about

- Rocket Software was founded in 1990 with an initial focus on developing and delivering software solutions to IBM mainframe customers deploying IBM DB2. Within the first five years, Rocket licensed all of its intellectual property to IBM, and all of Rocket's products were rebranded and licensed to enterprises through IBM's worldwide sales channel.

- Since those early years, Rocket has expanded its software OEM business to cover a wide spectrum of enterprise infrastructure products in the areas of Business Intelligence, Storage, Networks, Terminal Emulation, Integration, Security, and Database. And in addition to IBM, Rocket has licensed its products to a number of major OEMs that include Microsoft, RSA, EMC, Nortel, Motorola, and HP.

- In parallel with a significant R&D investment in developing software products, Rocket Software began a series of strategic acquisitions in 2000. As a result, Rocket now has well over 100 software products that are licensed both through OEM partners and resellers, and via direct sales through Rocket's acquired branded sales channels, such as Mainstar, Servergraph, CorVu, BlueZone, and Seagull.

- Rocket values the technical skills and deep domain expertise of the employees at the companies we acquire. We endeavor to keep the teams intact and entrust them to manage and expand the product lines that they initially created. This philosophy has allowed Rocket to grow to more than 700 employees around the world, including Eastern and Western Europe, Australia, Asia and North America.
Introduction
About your speaker

- Customer background
  - 22 years at University of Arkansas
    - …starting with VM/370 R6 PLC 3 (CDC Omega 480-III, anyone?)
    - …lots of Unix / Linux (Solaris, HP-UX, AIX, NCR/Teradata, Various distros)
    - …lots of really cool toys and technologies
  - Detour: “A Certain Major Retailer”
    - It was the early 1980’s - “Distributed Systems”
- Reincarnated as a Developer in 2003
  - Lead design / development
    - IBM Backup and Restore Manager for z/VM
    - IBM Archive Manager for z/VM
  - Co-conspirator
    - IBM Tape Manager for z/VM
    - IBM Operations Manager for z/VM
- Away From the Keyboard…
  - Certified Law Enforcement Officer, Search and Rescue Worker, Emergency Medical First Responder, Farmer/Rancher, Old-school Film Photographer, and Curmudgeon
Observation
What we’re about to do...

• Goal: Provide basic instruction on how to perform the initial system installation for z/VM

• Objectives:
  • Define the basic requirements
  • Identify available options for z/VM installation packaging and distribution
  • Identify necessary system resources
  • Review the planning process
  • Navigate the installation process
  • Discuss post-installation configuration
Observation
Basic requirements

• You are using a currently supported processor
  • IBM z10 EC, z10 BC, z196, z114, zEC12 “as well as future
generations of System z”

• You are using a currently supported z/VM release
  • This presentation uses z/VM 6.2 for all examples
  • You have already ordered and received installation materials

• Example scenario: Foundation-level instruction
  • Non-SSI installation process
    • Cluster Installation procedure is functionally similar
    • More decisions, More hardware resources
  • Non-URM installation
    • Important if your site opts for management via URM
Observation
“What’s in the box?”

- Make sure you received what you ordered.

- Review the Packing List.
  
  - Otherwise, how do you know you actually received what you asked for?

  - If you didn’t, where is it?

  - If the materials you received are inconsistent with the packing list, stop now – and don’t resume until the situation is corrected.
    
    - It’s not common, but mistakes happen. Fix It Now.
Orientation
Many paths…

• Source media
  • Tape
    • ECKD DASD required
    • TCP/IP Network is not required
  • DVD or Digital Download
    • ECKD or FBA DASD
    • TCP/IP infrastructure is required

• Installation destination
  • 1st Level ("Bare LPAR")
    • No pre-existing z/VM system
    • …or “clean sweep” desired
    • …or migration coming later
  • 2nd Level (as z/VM guest)
    • Build and test now…
    • …migrate later
    • …or other purposes
      • Test / Evaluation
      • Development
      • Education
Orientation

...one destination

• First stage
  • Deploy the initial installation system

• Second stage
  • Perform the actual system installation

• Exact steps are determined by:
  • Installation source media (Tape, Optical or download)
  • Initial system state: Bare LPAR, or pre-existing z/VM system
Orientation
...one destination

• Road map:
  • Steps are defined in one book: z/VM Installation Guide

• Assumptions for this exercise:
  • Not installing an SSI cluster
  • Not configuring for Unified Resource Manager (URM)

• For in-depth experience, PLEASE follow up with sessions 12314, 12346 & 12347 tomorrow (Tue, 5 Feb) afternoon:
  z/VM 6.2 SSI Installation and Configuration or non-SSI to SSI Migration Hands-on Lab located in Union Square 23-24, Fourth Floor!!!
Decision

Scenario: From tape, to 3390-3 DASD

• Resources required:

  • An LPAR or a Virtual Machine
    • “Virtual” is a matter of perspective
      • Hint: it’s all virtual

  • A tape drive

  • 8 3390-3 DASD volumes
    • …plus one, temporarily, for LPAR method

  • A local, non-SNA 3270 terminal (or integrated 3270 console)
Action
Foundation: Installation Worksheets

- Minimum requirement:
  - z/VM Installation Guide: Table 1, Table 2 & Table 4

- First or Second Level?
- Minidisk or SFS?
  - *Hint: “old timer” bias favors Minidisk*
- Default system language
- DASD type and model
- Common service filepool name
- SSI, or non-SSI?
  - *This scenario is non-SSI*
- Unified Resource Manager?
  - *Not in this scenario*
# Action

## Installation Guide Tables 1 & 2

### Table 1. Tape Installation Worksheet 1

<table>
<thead>
<tr>
<th>Install To</th>
<th>Product</th>
<th>Install To</th>
<th>Product</th>
<th>Install To</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM</td>
<td>OSA</td>
<td>PERFTK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VMHCD</td>
<td>RACF</td>
<td>DIRM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSCS</td>
<td>ICKDSF</td>
<td>TCP/IP</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Default system language: 
- DASD type and model: 
- Common service filepool name: 

- Installation Type:  
  - Non-SSI 
  - SSI 
- Number of Members: 
- SSI Cluster Name:

### Table 2. Tape Installation Worksheet 2

Would you like to have your system automatically configured to be managed by the Unified Resource Manager or some other SMAPI client for system management? (Y/N)  

Keep the following in mind:  
  - If you say YES, you should not attempt to manage your system in any other way.  
  - If you'd like to manage your own system, or use a purchased external security manager or a purchased directory manager, say NO.
### Action

### Installation Guide, Table 4

<table>
<thead>
<tr>
<th>Volume Type</th>
<th>Default Label</th>
<th>New Label</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON</td>
<td>VMCOM1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMON2</td>
<td>VMCOM2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELVOL</td>
<td>620RL1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELVOL2</td>
<td>620RL2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RES</td>
<td>M01RES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPOOL</td>
<td>M01S01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAGE</td>
<td>M01P01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORK</td>
<td>M01W01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: You must not use any of IBM’s default volume labels for a volume other than the volume for which it is originally defined.

**Hint:** We’ll see these again in a moment...
### Action

**Installation Guide Tables 1 & 2**

#### Table 1. Tape Installation Worksheet 1

<table>
<thead>
<tr>
<th>Install To</th>
<th>Product</th>
<th>Install To</th>
<th>Product</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>VM</td>
<td>M</td>
<td>OSA</td>
<td>PERFTK</td>
</tr>
<tr>
<td>M</td>
<td>VMHCD</td>
<td>M</td>
<td>RACF®</td>
<td>DIRIM</td>
</tr>
<tr>
<td>M</td>
<td>RSCS</td>
<td>M</td>
<td>ICKDSF</td>
<td>TCP/IP</td>
</tr>
</tbody>
</table>

- Default system language: AMEN6
- DASD type and model: 3390-3
- Common service filepool name: VMCOMSRV

#### Table 2. Tape Installation Worksheet 2

Would you like to have your system automatically configured to be managed by the Unified Resource Manager or some other SMAPI client for system management? (Y/N) **NO**

Keep the following in mind:

- If you say YES, you should not attempt to manage your system in any other way.
- If you'd like to manage your own system, or use a purchased external security manager or a purchased directory manager, say NO.
### Installation Guide, Table 4

#### Table 4. Tape Installation Worksheet 4 (Non-SSI Only)

<table>
<thead>
<tr>
<th>Volume Type</th>
<th>Default Label</th>
<th>New Label</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON</td>
<td>VMCOM1</td>
<td>62DCM1</td>
<td>2138</td>
</tr>
<tr>
<td>COMMON2</td>
<td>VMCOM2</td>
<td>62DCM2</td>
<td>2139</td>
</tr>
<tr>
<td>RELVOL</td>
<td>620RL1</td>
<td>62DRL1</td>
<td>213A</td>
</tr>
<tr>
<td>RELVOL2</td>
<td>620RL2</td>
<td>62DRL2</td>
<td>213B</td>
</tr>
<tr>
<td>RES</td>
<td>M01RES</td>
<td>62DRES</td>
<td>213C</td>
</tr>
<tr>
<td>SPOOL</td>
<td>M01S01</td>
<td>62DS01</td>
<td>213D</td>
</tr>
<tr>
<td>PAGE</td>
<td>M01P01</td>
<td>62DP01</td>
<td>213E</td>
</tr>
<tr>
<td>WORK</td>
<td>M01W01</td>
<td>62DW01</td>
<td>213F</td>
</tr>
</tbody>
</table>

*Note: You must not use any of IBM’s default volume labels for a volume other than the volume for which it is originally defined.*
Action

“Make me a virtual machine like this”

USER WATSON ******* 256M 1024M BEG
INCLUDE USERPROF
ACCOUNT ROCKET VMLAB
IPL CMS
MACHINE ESA
OPTION TODEENABLE
CONSOLE 0009 3215
MDISK 0191 3390 101 50 VM540A WR VML2R VML2W VML2M
MDISK 0291 3390 151 50 VM540A WR VML2R VML2W VML2M

* 
MDISK 2137 3390 0 END 62DINS MR VML2R VML2W VML2M
MDISK 2138 3390 0 END 62DCM1 MR VML2R VML2W VML2M
MDISK 2139 3390 0 END 62DCM2 MR VML2R VML2W VML2M
MDISK 213A 3390 0 END 62DRL1 MR VML2R VML2W VML2M
MDISK 213B 3390 0 END 62DRL2 MR VML2R VML2W VML2M
MDISK 213C 3390 0 END 62DRES MR VML2R VML2W VML2M
MDISK 213D 3390 0 END 62DS01 MR VML2R VML2W VML2M
MDISK 213E 3390 0 END 62DP01 MR VML2R VML2W VML2M
MDISK 213F 3390 0 END 62DW01 MR VML2R VML2W VML2M
Action: Inspect the virtualized install setup

l watson by dmartin

Enter your password,
or
To change your password, enter: ccc/nnn/nnn
where ccc = current password, and nnn = new password

ICH70001I WATSON LAST ACCESS AT 12:19:22 ON TUESDAY, JULY 31, 2012
z/VM Version 5 Release 3.0, Service Level 1002 (64-bit),
built on IBM Virtualization Technology
There is no logmsg data
FILES: NO RDR, NO PRT, NO PUN
LOGON AT 12:22:33 CDT TUESDAY 07/31/12
z/VM V5.3.0  2011-04-06 16:48

Ready; T=0.01/0.01 12:22:43
q v dasd
DASD 0190 3390 530RES R/O 107 CYL ON DASD 3180 SUBCHANNEL = 000E
DASD 0191 3390 VM540A R/W  50 CYL ON DASD 332A SUBCHANNEL = 0001
DASD 019D 3390 530W01 R/O 146 CYL ON DASD 3183 SUBCHANNEL = 0010
DASD 019E 3390 530W02 R/O 400 CYL ON DASD 3184 SUBCHANNEL = 000F
DASD 0291 3390 VM540A R/W  50 CYL ON DASD 332A SUBCHANNEL = 0002
DASD 2138 3390 62DCM1 R/W  3339 CYL ON DASD 2138 SUBCHANNEL = 0003
DASD 2139 3390 62DCM2 R/W  3339 CYL ON DASD 2139 SUBCHANNEL = 0004
DASD 213A 3390 62DRL1 R/W  3339 CYL ON DASD 213A SUBCHANNEL = 0005
DASD 213B 3390 62DRL2 R/W  3339 CYL ON DASD 213B SUBCHANNEL = 0006
DASD 213C 3390 62DRES R/W  3339 CYL ON DASD 213C SUBCHANNEL = 0007
DASD 213D 3390 62DS01 R/W  3339 CYL ON DASD 213D SUBCHANNEL = 0008
DASD 213E 3390 62DP01 R/W  3339 CYL ON DASD 213E SUBCHANNEL = 0009
DASD 213F 3390 62DW01 R/W  3339 CYL ON DASD 213F SUBCHANNEL = 000A
Ready;
Action:
Manual virtual machine tweaks

- Get rid of CMS underpinnings
  - CP SYSTEM CLEAR
    - clear memory; reset virtual machine to “POR” state
  - CP DETACH 190 191 19D 19E 291
    - drop CMS-related DASD resources
  - CP TERM CONMODE 3270
    - ask CP to handle virtual console as a 3270, not a 3215

- Request operator intervention provision tape
  - Tape 181 attached R/O
    - …magic happens, courtesy of privileged third-party user…
**Action**  
Manual virtual machine tweaks

cp system clear  
Storage cleared - system reset.  
cp det 190 191 19d 19e 291  
0190 0191 019D 019E 0291 DETACHED  
Tape 181 attached R/O  
cp term conmode 3270  
cp q v da  

DASD 2137 3390 62DINS R/W  3339 CYL ON DASD 2137 SUBCHANNEL = 0003  
DASD 2138 3390 62DCM1 R/W  3339 CYL ON DASD 2138 SUBCHANNEL = 0004  
DASD 2139 3390 62DCM2 R/W  3339 CYL ON DASD 2139 SUBCHANNEL = 0005  
DASD 213A 3390 62DRL1 R/W  3339 CYL ON DASD 213A SUBCHANNEL = 0006  
DASD 213B 3390 62DRL2 R/W  3339 CYL ON DASD 213B SUBCHANNEL = 0007  
DASD 213C 3390 62DRES R/W  3339 CYL ON DASD 213C SUBCHANNEL = 0008  
DASD 213D 3390 62DS01 R/W  3339 CYL ON DASD 213D SUBCHANNEL = 0009  
DASD 213E 3390 62DP01 R/W  3339 CYL ON DASD 213E SUBCHANNEL = 000A  
DASD 213F 3390 62DW01 R/W  3339 CYL ON DASD 213F SUBCHANNEL = 000B

**NOTE:** DASD Volumes are conveniently pre-initialized for this example...
Action
Launch “Install from Tape”

DASD 2137 3390 62DINS R/W 3339 CYL ON DASD 2137 SUBCHANNEL = 0003
DASD 2138 3390 62DCM1 R/W 3339 CYL ON DASD 2138 SUBCHANNEL = 0004
DASD 2139 3390 62DCM2 R/W 3339 CYL ON DASD 2139 SUBCHANNEL = 0005
DASD 213A 3390 62DRL1 R/W 3339 CYL ON DASD 213A SUBCHANNEL = 0006
DASD 213B 3390 62DRL2 R/W 3339 CYL ON DASD 213B SUBCHANNEL = 0007
DASD 213C 3390 62DRES R/W 3339 CYL ON DASD 213C SUBCHANNEL = 0008
DASD 213D 3390 62DS01 R/W 3339 CYL ON DASD 213D SUBCHANNEL = 0009
DASD 213E 3390 62DP01 R/W 3339 CYL ON DASD 213E SUBCHANNEL = 000A
DASD 213F 3390 62DW01 R/W 3339 CYL ON DASD 213F SUBCHANNEL = 000B
TAPE 0181 ON DEV 0531 3590 GIVEN BY DMARTIN R/O SUBCHANNEL = 0012

cp ipl 181 clear loadparm cnsl0009
Action

Install from Tape: ICKDSF loads...

CLEAR SCREEN WHEN READY
ICK005E DEFINE INPUT DEVICE, REPLY 'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
CONSOLE
ICK006E DEFINE OUTPUT DEVICE, REPLY 'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
CONSOLE
ICKDSF - SA/XA/ESA DEVICE SUPPORT FACILITIES 17.0L
TIME: 21:24:14
07/31/12 PAGE 1

ENTER INPUT/COMMAND:

cpvolume format unit(2137) novfy volid(620svs) mode(esa) nofiller
ICKDSF init of 620SVS completes

... FORMATTING OF CYLINDER 3338 ENDED AT: 21:27:43
VOLUME SERIAL NUMBER IS NOW = 620SVS

CYLINDER ALLOCATION CURRENTLY IS AS FOLLOWS:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>START</th>
<th>END</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERM</td>
<td>0</td>
<td>3338</td>
<td>3339</td>
</tr>
</tbody>
</table>

ICK00001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
21:27:43 07/31/12

ENTER INPUT/COMMAND:

Press PA1 to drop out of ICKDSF and back to "CP READ"...
Action
ICKDSF finished; IPL stand-alone DDR

cp ipl 181 clear loadparm 0009
Action:
Reload 620SVS pre-packaged system

z/VM DASD DUMP/RESTORE PROGRAM
ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
ENTER:
SYSPRINT CONS
ENTER:
INPUT 181 TAPE (SKIP 1 LEAVE
ENTER:
OUTPUT 2137 DASD 620SVS
ENTER:
RESTORE ALL
RESTORING 620SVS
DATA DUMPED  10/25/11 AT 22.59.02 GMT FROM 620SVS RESTORED TO 620SVS
INPUT CYLINDER EXTENTS  OUTPUT CYLINDER EXTENTS
START       STOP       START       STOP
0           522         0           522
END OF RESTORE
BYTES RESTORED  386616984

ENTER:
...At completion: Press PA1 to drop back to CP READ...
Action

IPL pre-packaged system from 620SVS

```bash
cp ipl 2137 clear loadparm 0009
```

CP READ VMLAB
Action
“Starter System” launch

STAND ALONE PROGRAM LOADER: z/VM VERSION 5 RELEASE 5.0

DEVICE NUMBER: 2137    MINIDISK OFFSET: 00000000    EXTENT: 1

MODULE NAME: CPLOAD    LOAD ORIGIN: 1000

--------------------------------IPL PARAMETERS--------------------------------
cons=0009    Your job: Specify the console address, then press PF10

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

9= FILELIST  10= LOAD  11= TOGGLE EXTENT/OFFSET
Action
Launch starter system, stand back...

16:36:01 z/VM V6 R2.0 SERVICE LEVEL 0000 (64-BIT)
16:36:01 SYSTEM NUCLEUS CREATED ON 2011-10-07 AT 10:29:10, LOADED FROM 620SVS
16:36:01
16:36:01 *****************************************************************
16:36:01 HCPZCO6718I Using parm disk 1 on volume 620SVS (device 2137).
16:36:01 HCPZCO6718I Parm disk resides on cylinders 39 through 158.
16:36:01 Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable) (NODIRect) (NOAUTOlog)) or (SHUTDOWN)
16:37:48 COLD DRAIN NOAUTOLOG ... Respond as instructed ...

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... Respond as instructed ...
Action
Launch starter system, stand back...

16:37:48 Change TOD clock (Yes|No)
16:38:19 NO  ... Respond as instructed ...
16:38:19 The directory on volume 620SVS at address 2137 has been brought online.
16:38:20 HCPWRS2513I
16:38:20 HCPWRS2513I Spool files available      NONE
16:38:21 HCPWRS2512I Spooling initialization is complete.
16:38:21 DASD 2137 dump unit CP IPL pages 8675
16:38:21 HCPMLM3016I Management by the Unified Resource Manager is not available
   for this system.
16:38:21 HCPAAU2700I System gateway ZVM62SVS identified.
16:38:21 z/VM Version 6 Release 2.0, Service Level 0000 (64-bit),
16:38:21 built on IBM Virtualization Technology
16:38:21 There is no logmsg data
16:38:21 FILES:  NO RDR,  NO PRT,  NO PUN
16:38:21 LOGON AT 16:38:21 EST TUESDAY 07/31/12
16:38:21 GRAF  0009 LOGON AS OPERATOR USERS = 1
   ... additional start-up traffic omitted ...
DISCONN
Action
Starter system is up...

z/VM ONLINE

/ VV VVV MM MM
/ VV VVV MMM MMM
ZZZZZZ / VV VVV MMM MMM
ZZ / VV VVV MM MM MM
ZZ / VVVVV MM M MM
ZZ / VVVV MM MM
ZZZZZ / V MM MM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ===> 
PASSWORD ===> 

COMMAND ===> 

RUNNING ZVM62SVS
Action

...now login as MAINTSVS

z/VM ONLINE

/ VV VVV MM MM
/ VV VVV MMM MMM
ZZZZZZ / VV VVV MMM MMM
ZZ / VV VVV MM MM MM
ZZ / VVVV MM M MM
ZZ / VVV MM MM
ZZZZZ / V MM MM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ===> MAINTSVS
PASSWORD ===> 

COMMAND ===> 

RUNNING ZVM62SVS
Action

MAINTSVS login sequence

LOGON MAINTSVS
z/VM Version 6 Release 2.0, Service Level 0000 (64-bit),
built on IBM Virtualization Technology
There is no logmsg data
FILES:  NO RDR,  NO PRT,  NO PUN
LOGON AT 16:41:52 EST TUESDAY 07/31/12
DMSIND2015W Unable to access the Y-disk. Filemode Y (19E) not accessed
DMSWSP327I The installation saved segment could not be loaded
z/VM V6.2.0     2011-10-07 10:28
Press ENTER at this prompt
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSVMLIB does not exist
Ready; T=0.01/0.01 16:43:43

RUNNING   ZVM62SVS
Action
Pause for reflection

• You *did* complete the worksheets from earlier in the exercise, didn’t you? We’ll need them in a moment.
Action

Load installation tools from tape

DMSDCS1083E Saved segment CMSVMLIB does not exist

Ready; T=0.01/0.01 16:43:43
q ta all
An active tape was not found.

TAPE 0181 FREE
An offline tape was not found.

Ready; T=0.01/0.01 16:45:59
attach 181 to * 181

TAPE 0181 ATTACHED TO MAINTSVS 0181

Ready; T=0.01/0.01 16:46:11
rewind 181
Rewind complete

Ready; T=0.01/0.01 16:46:40
vmfplc2 fsf 7

Ready; T=0.01/0.01 16:47:06
vmfplc2 load * * a

Loading ...

DDR MODULE A2
ICKDSF MODULE A2
INSTPLAN EXEC A2

... Full detail is in the Installation Guide ...

Action
Invoke “INSTPLAN”

rewind 181
Rewind complete
Ready; T=0.01/0.01 16:48:50
instplan
NOTE: Follow the directions...
HCPINP8351E YOU MUST SPECIFY AN OPERAND ON THE INSTPLAN COMMAND
Ready(00100); T=0.01/0.01 16:49:59

instplan tape

NOTE THE NEW SYSTEM NAME...

NOTE THE NEW SYSTEM NAME...

RUNNING ZVM62.2VS
Action

Complete the INSTPLAN dialogue

*** z/VM INSTALLATION PLANNING ***

Mark the product(s) selected to be installed into the filepool with an "F" and those selected to be installed to minidisks with an "M"

M    VM          M    OSA          M    PERFTK
M    VMHCD       M    RACF          M    DIRM
M    RSCS        M    ICKDSF       M    TCPIP

Select a System Default Language.
_ AMENG        _ UCENG        _ KANJI

Select a System DASD model.
  x 3390 Mod 3        _ 3390 Mod 9

Enter the name of common service filepool.
  Filepool Name:     VMCOMSRV

Select a System Type: Non-SSI or SSI (SSI requires the SSI feature)
  x  Non-SSI Install:     System Name  vm62dpm
  _ SSI Install:          Number of Members _    SSI Cluster Name ________

  F1 = HELP     F3/F12 = QUIT     F5 = Process     ENTER = Refresh

All of these responses are directly from the worksheets.
Action

Complete the INSTPLAN dialog

*** z/VM INSTALLATION PLANNING PANEL 2 ***

Would you like to have your system automatically configured to be managed by the Unified Resource Manager or some other SMAPI client for system management? (Y/N)

Keep The Following in Mind:

If you say YES, you should not attempt to manage your system in any other way.

If you'd like to manage your own system, or use a purchased external security manager or a purchased directory manager say NO

F1 = HELP  F3/F12 = QUIT  F5 = Process  ENTER = Refresh
HCIPX8475I THE PRODUCTS YOU SELECTED TO LOAD TO MINIDISK ARE:
VM OSA PERF TK VMHC D RACF DIRM RSCS ICKDSF TCPIP

THE PRODUCTS YOU SELECTED TO LOAD TO SFS ARE:
NONE

THE SYSTEM DEFAULT LANGUAGE SELECTED:
AMENG

THE COMMON SERVICE FILEPOOL NAME IS:
VMCOMSRV

THE INSTALL TYPE YOU SELECTED IS:
Non-SSI

THE SYSTEM NAME IS:
VM62DPM

THE DASD TYPE YOU SELECTED TO LOAD ON IS:
3390 Mod 3
Action

INSTPLAN input confirmation

THE VOLUMES NEEDED TO LOAD z/VM ARE:
COMMON:  VMCOM1 VMCOM2
RELEASE:  620RL1 620RL2
SYSTEM:  M01RES M01S01 M01P01 M01W01

DO YOU WANT TO CONTINUE? (Y/N)

Y

VM READ  ZVM62SVS
Action

Final INSTPLAN validation

*** z/VM INSTALLATION VOLUME DEFINITION ***

<table>
<thead>
<tr>
<th>TYPE</th>
<th>LABEL</th>
<th>ADDRESS</th>
<th>FORMAT (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON</td>
<td>62DCM1</td>
<td>2138</td>
<td></td>
</tr>
<tr>
<td>COMMON2</td>
<td>62DCMD</td>
<td>2139</td>
<td></td>
</tr>
<tr>
<td>RELVOL</td>
<td>62DRL1</td>
<td>213A</td>
<td></td>
</tr>
<tr>
<td>RELVOL2</td>
<td>62DRL2</td>
<td>213B</td>
<td></td>
</tr>
<tr>
<td>VM62DPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RES</td>
<td>62DRES</td>
<td>213C</td>
<td></td>
</tr>
<tr>
<td>SPOOL</td>
<td>62DS01</td>
<td>213D</td>
<td></td>
</tr>
<tr>
<td>PAGE</td>
<td>62DP01</td>
<td>213E</td>
<td></td>
</tr>
<tr>
<td>WORK</td>
<td>62DW01</td>
<td>213F</td>
<td></td>
</tr>
</tbody>
</table>

F1 = HELP      F3/F12 = QUIT      F5 = Process      ENTER = Refresh
Action
INSTPLAN completion

HCPIIX8377R YOU HAVE SELECTED NOT TO FORMAT YOUR DASD.
THIS ASSUMES THEY HAVE ALREADY BEEN FORMATTED.
DASD SELECTED ARE:

62DCM1    2138
62DCMD    2139
62DRL1    213A
62DRL2    213B
62DRES    213C
62DS01    213D
62DP01    213E
62DW01    213F

HCPINP8392I INSTPLAN EXEC ENDED SUCCESSFULLY
Ready; T=0.05/0.05 16:58:29

RUNNING    ZVM62SVS
Action

The moment of truth is at hand…

q da all
DASD 2137 CP OWNED 620SVS 8
DASD 2138 62DCM1 , DASD 2139 62DCM2 , DASD 213A 62DRL1 , DASD 213B 62DRL2
DASD 213C 62DRES , DASD 213D 62DS01 , DASD 213E 62DP01 , DASD 213F 62DW01
An offline DASD was not found.
Ready; T=0.01/0.01 16:59:36
att 2138-213f *
2138-213F ATTACHED TO MAINTSVS
Ready; T=0.01/0.01 16:59:54

install

RUNNING ZVM62SVS
“INSTALL” does the rest...

install

HCPIIS8381I CHECKING TAPE VOLUME NUMBER FOR DRIVE 181
HCPIIS8490I NOW LABELING VOLUME 2138 (1 OF 8)
HCPIIS8490I NOW LABELING VOLUME 2139 (2 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213A (3 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213B (4 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213C (5 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213D (6 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213E (7 OF 8)
HCPIIS8490I NOW LABELING VOLUME 213F (8 OF 8)
HCPIIS8380I RESTORING VOLUMES FOR VM62DPM

RUNNING ZVM62SVS
Action

“INSTALL” does the rest...

....
HCPIIS8341I WRITING OWNERSHIP FOR VM62DPM TO 213D 62DS01 COMPLETED SUCCESSFULLY
HCPIIS8341I WRITING OWNERSHIP FOR VM62DPM TO 213E 62DP01 COMPLETED SUCCESSFULLY
HCPIIS8380I UPDATING SYSTEM CONFIG

*******************
*     NOW IPLing VOLUME 213C     *
*        WITH COMMAND:          *
*        CP SYSTEM CLEAR       *
*        TERMINAL CONMODE 3270 *
*        IPL  213C CLEAR       *
*******************

RUNNING   ZVM62SVS
Action

INSTALL progress...

18:03:16  z/VM  V6 R2.0  SERVICE LEVEL 0000 (64-BIT)
18:03:16  SYSTEM NUCLEUS CREATED ON 2011-10-07 AT 10:29:10, LOADED FROM 62DRES
18:03:16  ****************************************************************
18:03:16  * LICENSED MATERIALS - PROPERTY OF IBM*                  *
18:03:16  * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2011. ALL RIGHTS *
18:03:16  * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE, *
18:03:16  * DUPPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE *
18:03:16  * CONTRACT WITH IBM CORP.                                 *
18:03:16  * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES.           *
18:03:16  ****************************************************************
18:03:16  HCPZCO6718I Using parm disk 1 on volume 62DCM1 (device 2138).
18:03:16  HCPZCO6718I Parm disk resides on cylinders 1 through 120.
18:03:16  The directory on volume 62DRES at address 213C has been brought online.
18:03:17  HCPWRS2513I
18:03:17  HCPWRS2513I Spool files available 31
18:03:18  HCPWRS2512I Spooling initialization is complete.
18:03:18  DASD 213D dump unit CP IPL pages 8035
18:03:18  HCPMLM3016I Management by the Unified Resource Manager is not available for this system.
18:03:18  HCPAAU2700I System gateway VM62DPM identified.

... You may recognize this from earlier, but there are subtle differences now ...
Action

INSTALL progress...

HCPWIN8428I  TOTAL PERCENT LOADED -> 90%

HCPWIN8380I  RESTORING MINIDISK 906 TO 62DW01

RESTORING M01W01
DATA DUMPED  10/25/11 AT 23.22.52 GMT FROM M01W01 RESTORED TO SCRATCH
INPUT CYLINDER EXTENTS    OUTPUT CYLINDER EXTENTS
START       STOP       START       STOP

RUNNING      VM62DPM

... At this point, we’re about 11 minutes into the INSTALL process ...
Action

INSTALL progress...

HCPWIN8319I TAPE LOAD COMPLETED SUCCESSFULLY
HCPPLD8341I POSTLOAD PROCESSING STARTED
DMSACC724I 4CC replaces C (4CC)

HCPIFP8493I ISSUING XAUTOLOG FOR VMSERVU
AUTO LOGON *** VMSERVU USERS = 3
HCPCLS6056I XAUTOLOG information for VMSERVU: The IPL command is verified by the
IPL command processor.

HCPIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON *** VMSERVR USERS = 4
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the
IPL command processor.

HCPIFP8493I ISSUING XAUTOLOG FOR VMSERVS
AUTO LOGON *** VMSERVS USERS = 5
HCPCLS6056I XAUTOLOG information for VMSERVS: The IPL command is verified by the
IPL command processor.

USER DSC LOGOFF AS VMSERVR USERS = 4 FORCED BY MAINT620
Action

INSTALL progress...

HCPIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON *** VMSERVR USERS = 5
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the
IPL command processor.

HCPIFP8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON *** VMSERVP USERS = 6
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the
IPL command processor.

HCPIFP8338I UPDATING SYSTEM TABLES AND CLEANING UP FILEPOOL DIRECTORIES

... Elapsed time at this point: About 15 minutes ...
Action

INSTALL progress...

DMSWSP100W Shared S-STAT not available

AUTO LOGON *** BLDCMS USERS = 7
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
HCPNSD440I The Named Saved System (NSS) CMS was successfully defined in fileid 0024.

BLDCMS : CONNECT= 00:00:01 VIRTCPU= 000:00.01 TOTCPU= 000:00.06
BLDCMS : LOGOFF AT 18:23:29 EDT TUESDAY 07/31/12 BY MAINT620
USER DSC LOGOFF AS BLDCMS USERS = 6 FORCED BY MAINT620

AUTO LOGON *** BLDCMS USERS = 7
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
DMSACC724I 493 replaces Z (493)
HCPNSD440I The Named Saved System (NSS) ZCMS was successfully defined in fileid 0025.

BLDCMS : CONNECT= 00:00:01 VIRTCPU= 000:00.01 TOTCPU= 000:00.05
BLDCMS : LOGOFF AT 18:23:41 EDT TUESDAY 07/31/12 BY MAINT620
USER DSC LOGOFF AS BLDCMS USERS = 6 FORCED BY MAINT620
**Action**

**INSTALL progress...**

HCPDPB899I Rewind not performed
HCPDPB040E Device 0182 does not exist

HCPICP8389W RSU TAPE NOT FOUND ON TAPE DRIVE 181 OR 182

HCPICP8397R MOUNT THE RSU TAPE ON TAPE DRIVE ADDRESS 181 or 182 AND ENTER ONE OF THE FOLLOWING:

181 OR 182 - ADDRESS OF THE TAPE DRIVE WHERE YOU HAVE MOUNTED THE RSU TAPE
NORSU      - TO SKIP RSU PROCESSING
EXIT       - TO QUIT

norsu

VM READ   VM62DPM
Action

INSTALL does SHUTDOWN REIPL

18:25:13 HCPWRP963I SHUTDOWN STEP USOAC - JOURNAL USER TERMINATION
18:25:14 HCPWRP963I SHUTDOWN STEP MFRSD - TERMINATE HARDWARE LOADER
18:25:14 HCPWRP963I SHUTDOWN STEP APISD - TERMINATE OTHER PROCESSORS
18:25:15 HCPWRP963I SHUTDOWN STEP ENASD - DISABLE TERMINAL DEVICES
18:25:15 HCPWRP963I SHUTDOWN STEP KCBSD - PERFORM ISFC SHUTDOWN TASKS
18:25:16 HCPWRP963I SHUTDOWN STEP ISHDN - SHUT DOWN I/O SUBSYSTEM
18:25:16 HCPWRP963I SHUTDOWN STEP SGPS - STOP OTHER PROCESSORS
18:25:17 HCPWRP959I VM62DPM SYSTEM TERMINATION IN PROGRESS ON 2012-07-31
18:25:17 HCPWRP963I SHUTDOWN STEP TXTDS - TERMINATE DATA TRACES
18:25:17 HCPWRP963I SHUTDOWN STEP SVACV - ACTIVATE TERMINATION SAVE AREAS
18:25:18 HCPWRP963I SHUTDOWN STEP CHMOF - DISABLE CHANNEL MEASUREMENT
18:25:18 HCPWRP963I SHUTDOWN STEP ISHD - DISABE ALL DEVICES
18:25:19 HCPWRP963I SHUTDOWN STEP CKPSH - TAKE A CHECKPOINT
18:25:19 HCPWRP963I SHUTDOWN STEP OPRCK - SAVE OPERATOR CONSOLE LIST
18:25:20 HCPWRP963I SHUTDOWN STEP MCWMD - DETERMINE MACHINE CHECK STATUS
18:25:20 HCPWRP963I SHUTDOWN STEP SDVRS - RESET IBM DASD CU CHARACTERISTICS
18:25:21 HCPWRP962I VM SHUTDOWN COMPLETED IN 8 SEC
18:25:21 HCPWRP963I SHUTDOWN STEP SGQXX - RESET OTHER PROCESSORS
18:25:21 HCPWRP9277I SYSTEM TERMINATION COMPLETE, ATTEMPTING RESTART
Action
INSTALL does SHUTDOWN REIPL

18:25:21 HCPWRP9277I 2012-07-31 SYSTEM VM62DPM
18:25:21 HCPWRP963I SHUTDOWN STEP SVADV - DEACTIVATE TERMINATION SAVE AREAS

At this point, press CLEAR to continue...

MORE... ZVM62SVS
Action

SHUTDOWN REIPL completes

18:26:07 z/VM SYSTEM RESTART FROM SHUTDOWN REIPL
18:26:07 z/VM V6 R2.0 SERVICE LEVEL 0000 (64-BIT)
18:26:07 SYSTEM NUCLEUS CREATED ON 2011-10-07 AT 10:29:10, LOADED FROM 62DRES
18:26:07
18:26:07 ******************************************
18:26:07 * LICENSED MATERIALS - PROPERTY OF IBM*
18:26:07 *
18:26:07 * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2011. ALL RIGHTS
18:26:07 * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE, *
18:26:07 * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE
18:26:07 * CONTRACT WITH IBM CORP.
18:26:07 *
18:26:07 *
18:26:07 * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES. *
18:26:07 ******************************************
18:26:07
18:26:07 HCPZCO6718I Using parm disk 1 on volume 62DCM1 (device 2138).
18:26:07 HCPZCO6718I Parm disk resides on cylinders 1 through 120.
18:26:07 The directory on volume 62DRES at address 213C has been brought online.
18:26:08 HCPWRS2513I
18:26:08 HCPWRS2513I Spool files available 31
18:26:09 HCPWRS2512I Spooling initialization is complete.
Action

SHUTDOWN REIPL completes

18:26:09 DASD 213D dump unit CP IPL pages 8038
18:26:09 HCPMLM3016I Management by the Unified Resource Manager is not available for this system.
18:26:09 HCPAAU2700I System gateway VM62DPM identified.
18:26:09 z/VM Version 6 Release 2.0, Service Level 0000 (64-bit), built on IBM Virtualization Technology
18:26:09 There is no logmsg data
18:26:09 FILES: NO RDR, NO PRT, NO PUN
18:26:09 LOGON AT 18:26:09 EDT TUESDAY 07/31/12
18:26:09 GRAF 0020 LOGON AS OPERATOR USERS = 1
18:26:09 HCPIOP952I 0128M system storage
18:26:09 FILES: 0000002 RDR, 0000001 PRT, NO PUN
18:26:09 HCPSO967I Disconnect OPERATOR – system restarted SHUTDOWN and system console not VM operator console
18:26:09 HCPCRC8082I Accounting records are accumulating for userid DISKACNT.
18:26:09 DISCONNECT AT 18:26:09 EDT TUESDAY 07/31/12
18:26:09
18:26:09 Press enter or clear key to continue
Observation
Basic installation is now complete

z/VM ONLINE

/ VV VVV MM MMM
/ VV VVV MMM MMM
ZZZZZZ / VV VVV MMM MMM
ZZ / VV VVV MM MM MM
ZZ / VV VVV MM MMM MM
ZZ / VVVVV MM M MM
ZZ / VVV MM MM
ZZZZZZ / V MM MM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ===> 
PASSWORD ===> 

COMMAND ===> 

RUNNING VM62DPM
Observation
Comments about basic installation

- Literally, it takes longer to describe and walk through the process than it does to do it.
  - On our lab system, the actual “heads down” time was about 30 minutes.
    - … not counting interruptions …
      - …which, of course, never happen…

- Attention to detail during worksheet completion will avoid execution-time complications.
  - … thus reducing the likelihood of frustration…
    - … or of Coming to the Attention of Important People …
Orient
What did this exercise accomplish?

• End result: A “second-level” z/VM 6.2 system
  • Not a cluster member (non-SSI)
  • “Traditionally” managed (non-UMR / non-SMAPI)

• What’s the point?
  • Test / development environment established
    • First-level hypervisor protects other guests from “collateral damage” if something horrible happens to this new system.
  • Other uses: “Your mileage may vary” depending on need
    • Training; initial deployment of new service updates or OEM products; “safe playground” for systems programmer
Decide

Q: Where to from here?

• A: “It depends.”

• Typical next steps:
  • Deploy in LPAR instead of as a 2\textsuperscript{nd}-level guest
    • \textit{Do NOT try to run same system volumes from two locations concurrently. At best, “results may be unpredictable.”}
  • Enable, configure and implement networking
    • TCP/IP
    • RSCS (NJE)
  • Provision resources for other guest virtual machines
    • Linux, \( z/OS, z/VSE, z/TPF, CMS \)
  • Provision systems management / security tools
    • RACF, DIRMINT, Automation, Tape Management, Backup…
    • Non-IBM OEM tools
Act

Next steps

• “Next steps” are dictated by installation needs.

• Needs of the enterprise dictate the level of complexity
  • Mix of features and products
  • Cluster or monolithic system configuration?
    • Two-way? Four-way?
      • Remote? How remote?
  • Traditional or URM system management?

• Goal: Keep it as simple as possible – but no more so.
Additional Resources a/k/a “Things I wish I had known…”

- This week:
  - Tuesday afternoon: z/VM 6.2 Hands-On Lab
  - Earlier today: Linux for Beginners Hands-On Lab
  - Thursday: Experiences with Linux and System z Cust. Panel
  - Friday (or any time during the week): ASK QUESTIONS!
    - Friday, 9:00 – Linux & VM Open Q&A
    - Friday, 11:00 – Linux & VM Program Wrap Up & Free-For-All

- Online
  - http://www2.marist.edu/htbin/wlvindex?LINUX-VM – Linux-390 Listserv
Questions?

You know it was a good day if you didn’t Hit or Bite anyone.

NATHANIAL PARIZEK, age 4

Session Number 12458
Time is really the only capital that any human being has and the thing that he can least afford to waste or lose...
-- Thomas Edison

THANK YOU for sharing your valuable time with me today!

Session Number
12458

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