



Creating “Usable Systems” with z/VM

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Agenda

- What is a “Usable System”?
- How this applies to z/VM
- A story about an “express system installation”
- Restoring z/VM
- Extra components from day one
 - User interface
 - Deploying multi-layer automation



What is a “Usable System”?



Usable Systems

- A system which is as close as possible to achieving its stated purpose right from installation-time
- Compare macOS vs Windows
 - All your basic compute needs covered vs days of download and installation
- Time-to-value is hours (or minutes) rather than days (or weeks)



The z/VM context

- z/VM itself is functional quickly
 - Define guests in USER DIRECT, etc
- z/VM takes a bit longer to become “supportable”
 - Activate your features
 - Install your products
 - Install or enable an ESM
 - etc
- Skill needed to do this: moderate to high



How about a “Usable” z/VM system?

- z/VM is installed quickly
 - Based on “Best-practice”
- z/VM features pre-enabled and pre-configured
 - Directory manager, SMAPI, performance monitor, etc
- Other z/VM products pre-installed and configured as needed
 - Console automation, backup
- Any other useful “accessories” pre-installed
 - Virtual machine(s), e.g. Linux
- Skill needed to do this: low to moderate



Why does this matter?

Quotes from the field:

- Customers want systems ready on day one
- “I rely on IBM to provide expertise.”
- “Fast and easy are what my executives want to buy.”
- “I don’t have time to sift through choices.”
- Technical staff are already overcommitted



Why does this matter?

- Customers are unwilling to accept a technical solution that effectively relies upon premium-charge features to provide baseline usability, expected functionality that is included in the base price of a competing solution, or both.
- *Unlike 30 years ago, nobody expects to buy a vehicle where they must pay extra for floor mats, power windows, radio, and air conditioning.*
 - *These things are standard and built into the price of the vehicle.*
- Customers *are* willing to accept a technical solution that **bundles and seamlessly integrates** premium-charge features when it is presented as an integrated, premium product.



Realisations from OpenShift

- Customers recognize the inherent value in a product that ships out in a highly secured and expertly configured fashion.
- The user interface is critically important.
- Customers no longer place the amount of value they once did upon tailoring and customisation.
- Technical staff are not willing to go through the motions of following setup documentation which walks through manual procedures to produce a baseline configuration.
- Customers expect a working system on day one, which deploys with reasonable and secure default settings.
- Customers expect the ability to “test drive” any optional premium charge features.



A story

- New customer to LinuxONE, in a new country for IBM Z/LinuxONE
 - No Shopz!
- Long lead time for delivery, combined with aggressive go-live target
- How can we meet the target?

- How much z/VM + products can we build and integrate off-site?
 - No tape
 - No remote access



I have a new machine! I want z/VM! How do I get it on there?

- Download the install media
- Put it on a file server (or USB stick)
- “Boot from server” on HMC
- Install, following the book. But what do I have?
 - Basic z/VM, 1 spool disk, 1 page disk
 - No network configured
 - No optional features activated
 - No additional products installed
 - Does not meet security standards
 - Plus now I need to install Linux!

Is there a better way? How about:

- Download install media, put on server (or USB)
- “Boot from server” on HMC
- Configure a network connection
- Fill in panel with system information
- Restore the system
 - Restore using an FTP server may take as little as 10 minutes!
- Automatic customization of the system to your environment.
- Now, what do I have?



z/VM Express System Install

A customized z/VM system that is ready for your “Proof of Concept” work.

- Includes:
 - A running Linux server to get you started with your Linux workload
 - Security!
 - RACF is enabled, configured, and running
 - TCPIP is running with SSL configured
 - Default passwords removed
 - IDs such as OP1 are revoked
- Monitoring!
 - Operations Manager for z/VM is installed
 - Performance Toolkit enabled and running
- More features
 - Multiple paging disks configured
 - Dedicated dump space
 - DirMaint enabled and configured
 - SMAPI is configured



Restoring z/VM



What does it look like?

The temporary restore system is very similar to the installation RAMdisk based system used for a normal install

- Additional user IDs and commands have been added to support the restore process
- The initial startup is the same as the installation system
- Full screen CMS is used to make the restore process more intuitive.

Here is the initial screen on the HMC 3270:

The following slides show the restore process

```
https://end4hmc1.wslab.endicott.ibm.com/hmc/content?taskId=49&refresh=99
File Keys Font Help
15:22:21 z/VM V7 R2.0 SERVICE LEVEL 2201 (64-BIT)
15:22:21 SYSTEM NUCLEUS CREATED ON 2022-03-21 AT 16:54:14, LOADED FROM $RAMD$
15:22:21
15:22:21 *****
15:22:21 * LICENSED MATERIALS - PROPERTY OF IBM* *
15:22:21 * *
15:22:21 * 5741-A09 (C) COPYRIGHT IBM CORP. 1983, 2020. ALL RIGHTS *
15:22:21 * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE, *
15:22:21 * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE *
15:22:21 * CONTRACT WITH IBM CORP. *
15:22:21 * *
15:22:21 * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES. *
15:22:21 *****
15:22:21
15:22:21 HCPZCO6718I Using parm disk 1 on volume $RAMD$ (device FFFF).
15:22:21 HCPZCO6718I Parm disk resides on blocks 18000 through 52992.
15:22:21 The directory on volume $RAMD$ at address FFFF has been brought online.
15:22:21 HCPWRS2512I Spooling initialization is complete.
15:22:21 No dump unit - Dump function is SET OFF
15:22:21 HCPAAU2700I System gateway ZVMESI identified.
15:22:23 z/VM Version 7 Release 2.0, Service Level 2201 (64-bit),
15:22:23 built on IBM Virtualization Technology
15:22:23 There is no logmsg data
15:22:23 FILES: NO RDR, NO PRT, NO PUN
15:22:23 LOGON AT 15:22:23 UTC THURSDAY 06/09/22
15:22:23 SYSG LOGON AS MAINT USERS = 1
15:22:23 FILES: 0000001 RDR, 0000001 PRT, NO PUN
15:22:23 HCPIOP952I 2G system storage: Permanent = 2G Reconfigurable = --
15:22:23 HCPCRC8082I Accounting records are accumulating for userid OPERACCT.
15:22:23 HCPCRC8082I EREP records are accumulating for userid OPEREREP.
15:22:23 XAUTOLOG OPMGRM1
15:22:23 Command accepted
15:22:23 AUTO LOGON *** OPMGRM1 USERS = 2 BY MAINT
15:22:23 AUTO LOGON *** OPERATOR USERS = 3 BY OPMGRM1
HCPCFO6776I OPERATOR removed your userid as the system operator ID.
z/VM V7.2.0 2020-06-28 13:09
*** ** CLEAR the screen to CONTINUE.. *** **
HCPCLS6056I XAUTOLOG information for OPMGRM1: The IPL command is verified by the
IPL command processor.
HOLDING ZVMESI
42/1
```

Full screen CMS is used for the basic interface

Set up the network: all the values are on 1 panel.



```
File Edit Settings View Communication Actions Help
ZVMESI Installation System Columns 1 - 79 of 81
Partition ATS12C03 is running on system END4 (2965-Z02)
IFL cores: 3 on-line, 2 standby. Memory: 110G maximum.
Ready; T=0.01/0.01 17:44:47
-
====>
F7 = Backward F8 = Forward F10 = Left F11 = Right F12 = Retrieve
MA j 06/003
```

```
File Edit Settings View Communication Actions Help
z/VM Express System Installation
Please enter your network information in the fields below

z/VM Host Name: _____
Domain Name: _____
z/VM IP Address: _____
Subnet Mask: _____ Enter /nn for mask bits or x.x.x.x
Gateway IP Address: _____ This is the address of your router
Linux Host Name: lxocpb01 (default name is shown)
Linux IP Address: _____ (default is the next IP address)
DNS Addresses: _____ Domain Name Servers
One server address is required
Additional servers are optional

VLAN Id: _____ VLAN number is optional
MTU Size: _____ MTU is Maximum Transmission Unit
Device Address: _____ Press PF4 to choose
OSA Port Number: 0 (0 or 1)
Connection Type: IP (only used for the installation system)
Enable the TELNET server?: NO (optional on the installation system)

PF1=HELP PF3=QUIT PF4=Select PF5=Process ENTER=Refresh
MA g 04/025
```

Filling in the network information

A menu can be used to select a device address



```

z/VM Express System Installation
Please enter your network information in the fields below

z/VM Host Name:  workshop
Domain Name:     ibm.com
z/VM IP Address: 9.60.87.36
Subnet Mask:     /23      Enter /nn for mask bits or x.x.x.x
Gateway IP Address: 9.60.86.1 This is the address of your router
Linux Host Name: lxocpb01      (default name is shown)
Linux IP Address: 9.60.87.37   (default is the next IP address)
DNS Addresses:   9.60.70.82   Domain Name Servers
                                     One server address is required
                                     Additional servers are optional

VLAN Id:        _____ VLAN number is optional
MTU Size:       8992        MTU is Maximum Transmission Unit
Device Address: _____ Press PF4 to choose
OSA Port Number: 0         (0 or 1)
Connection Type: IP         (only used for the installation system)
Enable the TELNET server?: NO (optional on the installation system)
    
```

```

z/VM Express System Installation
Please enter your network information in the fields below

z/VM Host Name:  workshop
Domain Name:     ibm.com
z/VM IP Address: 9.60.87.36
Subnet Mask:     /23      Enter /nn for mask bits or x.x.x.x
Gateway IP Address: 9.60.86.1 This is the address of your router
Linux Host Name: lxocpb01      (default name is shown)
Linux
DNS Ad
VLAN I
MTU Si
Device
OSA Po
Connec
Enable
Select the Device Address
/ 4100 - 4101 - 4102 OSA Adapter ChpID 01
- 4103 - 4104 - 4105 OSA Adapter ChpID 01
- 4106 - 4107 - 4108 OSA Adapter ChpID 01
- 4109 - 410A - 410B OSA Adapter ChpID 01
- 410C - 410D - 410E OSA Adapter ChpID 01
- 410F - 4110 - 4111 OSA Adapter ChpID 01
- 4500 - 4501 - 4502 OSA Adapter ChpID 05
- 4503 - 4504 - 4505 OSA Adapter ChpID 05
- 4506 - 4507 - 4508 OSA Adapter ChpID 05
- 4509 - 450A - 450B OSA Adapter ChpID 05
- 450C - 450D - 450E OSA Adapter ChpID 05
- 450F - 4510 - 4511 OSA Adapter ChpID 05
- 4512 - 4513 - 4514 OSA Adapter ChpID 05
- 4515 - 4516 - 4517 OSA Adapter ChpID 05
- 4518 - 4519 - 451A OSA Adapter ChpID 05
- 451B - 451C - 451D OSA Adapter ChpID 05
- 451E - 451F - OSA Adapter ChpID 05
- 5700 - 5701 - 5702 OSA Adapter ChpID 0C
- 5703 - 5704 - 5705 OSA Adapter ChpID 0C
- 5706 - 5707 - 5708 OSA Adapter ChpID 0C
- 5709 - 570A - 570B OSA Adapter ChpID 0C
- 570C - 570D - 570E OSA Adapter ChpID 0C
- 570F - 5710 - 5711 OSA Adapter ChpID 0C
Press the HELP key for more information
PF1=HELP PF4=Select value(s) PF12=Return(no selection)
    
```


IPWIZARD is used to verify the network settings

Next, start the restore process



```
ZVMESI Installation System          Columns 1 - 79 of 81

Ready; T=0.01/0.01 17:56:15
setupnet
DTCIPW2508I DTCIPWIZ EXEC is attempting to create the necessary
DTCIPW2508I configuration files
The TCP/IP stack (TCPIP) must be restarted as part of this procedure. Would
you like to restart TCPIP and continue?
Enter 0 (No), 1 (Yes)
USER DSC  LOGOFF AS  TCPIP  USERS = 7  FORCED BY MAINT
USER DSC  LOGOFF AS  TCPIP  USERS = 7  FORCED BY MAINT
USER DSC  LOGOFF AS  TCPIP  USERS = 7  FORCED BY MAINT
Successfully PINGed Interface (9.60.87.36)
Successfully PINGed Gateway (9.60.86.1)
Successfully PINGed DNS (9.60.70.82)
DTCIPW2519I Configuration complete; connectivity has been verified
DTCIPW2520I File PROFILE TCPIP created on TCPIP 198
DTCIPW2520I File TCPIP DATA created on TCPIP 592
DTCIPW2520I File SYSTEM DTCPARMS created on TCPIP 198
Ready; T=0.51/1.33 17:56:42

-

====>
```

```
File Edit Settings View Communication Actions Help

z/VM Express System Installation

Enter a selection for the intended workload of this system:

1. Red Hat OpenShift Container Platform
2. IBM Cloud Infrastructure Center
3. Other Linux based workload

Enter your selection (1 to 3): _
```



This is the basic panel of information

```

z/VM Express System Installation
Please enter or update the fields highlighted below

System Name: WORKSHOP      System Group Name: _____

Installation destinations:

Volume: M01RES  Address: _____  IPL volume for z/VM
Volume: VMCOM1  Address: _____  z/VM Common volume
Volume: 720RL1  Address: _____  z/VM Release 7.2 product volume
Volume: M01U01  Address: _____  z/VM Additional Products
Volume: M01S01  Address: _____  Spool volume
Volume: M01S02  Address: _____  Dedicated dump space (optional)

A sequence number (01, 02) is added to each Label Prefix to form a Label

Linux volumes: (Minimum of 1 volumes required, minimum 30051 cylinders)

Label prefix: ZVML  Beginning address: _____  Number of addresses: 1

Paging volumes: (You must specify at least 1 paging device)

Label prefix: M01P  Beginning address: _____  Number of addresses: _____

Networking: (Addresses are used in triples, 3 at a time)

Primary OSA device address: 4100  Port: 0  VLAN: _____ (optional)
Failover OSA device address: _____  Port: 0  Failover OSA is optional

MAC Address Prefix: 02 _____  Must begin with 02

Restore using z/VM FTP client?: NO  "NO" uses the HMC media support
  
```

DASD devices can also be selected from a menu
Multiple devices can be selected

```

z/VM Express System Installation
Please enter or update the fields highlighted below

System Name: WORKSHOP      System Group Name: vmgroup

Inst  Select the IPL volume for z/VM
-----
Vol  -- 6000 HJRS62 10017 cyl  -- 6001 HJCM01 10017 cyl
Vol  -- 6002 VM6002 10017 cyl  -- 6003 HJL721 10017 cyl
Vol  -- 6004 HJTD01 10017 cyl  -- 6005 HJSP01 10017 cyl
Vol  -- 6006 HJPG01 10017 cyl  -- 6007 HJPG02 10017 cyl
Vol  -- 6008 INSRES 10017 cyl  -- 6009 INSCOM 10017 cyl
Vol  -- 600A INS720 10017 cyl  -- 600B INSS01 10017 cyl
Vol  -- 600C INSP01 10017 cyl  -- 600D INST01 10017 cyl
Vol  -- 600E IBM1PK 10017 cyl  -- 600F IBM1PK 10017 cyl
A se  / 6010 VM6010 10017 cyl  / 6011 VM6011 10017 cyl
     / 6012 VM6012 10017 cyl  / 6013 VM6013 10017 cyl
Linu  / 6014 VM6014 10017 cyl  / 6015 VM6015 10017 cyl
Lab  -- 6016 VM6016 10017 cyl  -- 6017 VM6017 10017 cyl
     -- 6018 0X0202 10017 cyl  -- 6019 0X0201 10017 cyl
     -- 601A HXLX1A 10017 cyl  -- 601B 0X0201 10017 cyl
Pagi  -- 601C 0X0201 10017 cyl  -- 601D 0X0201 10017 cyl
     -- 601E 0X0201 10017 cyl  -- 601F 0X0201 10017 cyl
Lab  -- 6040 HUFF1F 30051 cyl  -- 6041 HXLX41 30051 cyl
     -- 6042 HXLX42 30051 cyl  -- 6043 HXLX43 30051 cyl
Netw  -- 6044 HXLX44 30051 cyl  -- 6045 HXLX45 30051 cyl
     -- 6046 HXLX46 30051 cyl  -- 6047 HXLX47 30051 cyl
Pri  -- 6048 VM6048 30051 cyl  -- 6049 VM6049 30051 cyl
Fai  -- 604A VM604A 30051 cyl  -- 604B VM604B 30051 cyl
     -- 604C VM604C 30051 cyl  -- 604D VM604D 30051 cyl
MAC  -- 604E VM604E 30051 cyl  -- 604F VM604F 30051 cyl
     -- 6050 VM6050 30051 cyl  -- 6051 VM6051 30051 cyl
Res  -- 6052 VM6052 30051 cyl  -- 6053 VM6053 30051 cyl
     -- 6054 VM6054 30051 cyl  -- 6055 VM6055 30051 cyl
     -- 6056 VM6056 30051 cyl  -- 6057 VM6057 30051 cyl
     -- 6058 VM6058 30051 cyl  -- 6059 VM6059 30051 cyl
     -- 605A VM605A 30051 cyl  -- 605B VM605B 30051 cyl
     -- 605C VM605C 30051 cyl  -- 605D VM605D 30051 cyl
     -- 605E 0X605E 30051 cyl  -- 605F 0X605F 30051 cyl

Press the HELP key for more information

PF1=HELP PF2=Toggle column PF4=Select values PF6=Clear selections PF12=Cancel
  
```

The required values are filled in
We are using the FTP client for this restore

If FTP is used, give the information for that server



```
z/VM Express System Installation
Please enter or update the fields highlighted below

System Name: WORKSHOP          System Group Name: VMGROUP

Installation destinations:

Volume: M01RES  Address: 6010  IPL volume for z/VM
Volume: VMCOM1  Address: 6011  z/VM Common volume
Volume: 720RL1  Address: 6012  z/VM Release 7.2 product volume
Volume: M01U01  Address: 6013  z/VM Additional Products
Volume: M01S01  Address: 6014  Spool volume
Volume: M01S02  Address: 6015  Dedicated dump space (optional)

A sequence number (01, 02) is added to each Label Prefix to form a Label

Linux volumes: (Minimum of 1 volumes required, minimum 30051 cylinders)

Label prefix: ZVML  Beginning address: 6048  Number of addresses: 1

Paging volumes: (You must specify at least 1 paging device)

Label prefix: M01P  Beginning address: 6049  Number of addresses: 4

Networking: (Addresses are used in triples, 3 at a time)

Primary OSA device address: 4100  Port: 0  VLAN:      (optional)
Failover OSA device address: 5700  Port: 0  Failover OSA is optional

MAC Address Prefix: 020403          Must begin with 02

Restore using z/VM FTP client?: YES  "NO" uses the HMC media support
```

```
File Edit Settings View Communication Actions Help

z/VM Express System Installation
Please enter or update the fields highlighted below

Installation FTP Server:      This is the same server used to boot this
                             partition with the installation image files.

Host name or IP Address: 9.60.87.29

FTP User ID: hmc

FTP Password:

Path or directory: zvmesi-ckd

PF1=HELP  PF2=Toggle  PF3=QUIT  PF4=Select  PF5=Process  PF7=Backward
```



The panel is filled out and correct. Show the DASD addresses that will be used.

```
ZVMESI Installation System          Lines 22 - 48 of 48
                                   Columns 1 - 79 of 81

Installation selections and values are saved.

Partition ATS1ZC03 is running on system END4 (2965-Z02)
IFL cores: 3 on-line, 2 standby. Memory: 110G maximum.

If these addresses are incorrect, run RESTORESIS CONFIG and make corrections.

These volumes will be initialized and the basic system is restored to these:
ECKD DASD  6010 VM6010, new label will be M01RES
ECKD DASD  6011 VM6011, new label will be VMCOM1
ECKD DASD  6012 VM6012, new label will be 720RL1
ECKD DASD  6013 VM6013, new label will be M01U01
ECKD DASD  6014 VM6014, new label will be M01S01

These volumes will be initialized and formatted for Paging or Dump space:
ECKD DASD  6015 VM6015, new label will be M01S02
ECKD DASD  6049 VM6049, new label will be M01P01
ECKD DASD  604A VM604A, new label will be M01P02
ECKD DASD  604B VM604B, new label will be M01P03
ECKD DASD  604C VM604C, new label will be M01P04

These volumes will be initialized and allocated for the Linux:
ECKD DASD  6048 VM6048, new label will be ZVML01

Next step to perform:
  Run RESTORESIS START to install and customize the system.
Ready; T=0.04/0.05 18:09:08
-

====>
```

Here is the start of the restore process, labeling all the disks and starting 1 restore.

```
File Edit Settings View Communication Actions Help

ZVMESI Installation System          Lines 47 - 85 of 85
                                   Columns 1 - 79 of 81

  Run RESTORESIS START to install and customize the system.
Ready; T=0.04/0.05 18:09:08
restoresis start
Starting background format of CP volumes.

Labeling all the restore disks.
Labeling address 6010 with label M01RES
DASD 6010 ATTACHED TO MAINT 3000 WITH DEVCTL HYPERPAV BASE
DASD 6010 ATTACHED TO SYSTEM M01RES HYPERPAV BASE
Labeling address 6011 with label VMCOM1
DASD 6011 ATTACHED TO MAINT 3000 WITH DEVCTL HYPERPAV BASE
DASD 6011 ATTACHED TO SYSTEM VMCOM1 HYPERPAV BASE
Labeling address 6012 with label 720RL1
DASD 6012 ATTACHED TO MAINT 3000 WITH DEVCTL HYPERPAV BASE
DASD 6012 ATTACHED TO SYSTEM 720RL1 HYPERPAV BASE
Labeling address 6013 with label M01U01
DASD 6013 ATTACHED TO MAINT 3000 WITH DEVCTL HYPERPAV BASE
DASD 6013 ATTACHED TO SYSTEM M01U01 HYPERPAV BASE
Labeling address 6048 with label ZVML01
DASD 6048 ATTACHED TO MAINT 3000 WITH DEVCTL HYPERPAV BASE
DASD 6048 ATTACHED TO SYSTEM ZVML01 HYPERPAV BASE

Restoring the z/VM system, 6 volumes.
Restoring RESCKD to DASD 6010, volume 1 of 6
PDDRMS309I Restoring data to MAINT 2000 from Pipelines

Retrieving file: RESCKD0H
Cylinder 614 of 6148 completed (10%)
Retrieving file: RESCKD0Z
Cylinder 1229 of 6148 completed (20%)
Retrieving file: RESCKD1C
Cylinder 1844 of 6148 completed (30%)
Retrieving file: RESCKD1H
Cylinder 2459 of 6148 completed (40%)
Retrieving file: RESCKD1K
Cylinder 3074 of 6148 completed (50%)
Retrieving file: RESCKD1L
Cylinder 3689 of 6148 completed (60%)

====>
F7 = Backward  F8 = Forward  F10 = Left  F11 = Right  F12 = Retrieve
```



Finishing the process

- The process continues, restoring each disk image
- In the background, the page and spool volumes are formatted and allocated
- When the restore completes, the restored system is customized to the customer environment
 - See the changes made on the screen image
- The restored system is booted up for the first time to initialize the spool
- It is ready to IPL!

```
File Edit Settings View Communication Actions Help
ZVMESI Installation System Lines 262 - 300 of 300
Columns 1 - 79 of 81

Customizing the restored system.

Updating SAPL IPL parameters.
Writing SAPL...
HCPSAL6803I ENTER UP TO 3 LINES OF IPLPARMS
HCPSAL6797I MINIDISK VOLID AT OFFSET 39 IS MNTCF1

Updating the SYSTEM CONFIG file.
CONFIGURATION FILE PROCESSING COMPLETE -- NO ERRORS ENCOUNTERED.

Updating the System Logo file.

Updating the User Directory.
z/VM USER DIRECTORY CREATION PROGRAM - VERSION 7 RELEASE 2.0
EOJ DIRECTORY UPDATED
HCPDIR494I User directory occupies 61 disk pages

Updating the VMSES configuration.

Updating the TCPIP configuration.

Creating file for Linux TCP/IP configuration.

Updating Operations Manager configuration.

Testing the start up of the restored system.
AUTO LOGON *** ZVMBOOT USERS = 9

Checking that the initial system IPL is finished.

System customization is complete!

Next steps:
- Shutdown the installer system by entering this command:
  SHUTDOWN SYSTEM ZVMESI
- Load or boot the Partition from address: 6010

Ready; T=56.61/59.92 19:01:58
====>
F7 = Backward F8 = Forward F10 = Left F11 = Right F12 = Retrieve
MA g 42/009
```



Extra components from day one

Add a Linux system...



Express Linux Automation and Networking

- Make your new z/VM system more “usable”
 - “Express Linux Automation and Networking” – ELAN
- Red Hat Enterprise Linux 8
- Preloaded accessories:
 - Web server (Apache)
 - DNS Server (BIND)
 - HA-Proxy
- Ansible automation to install “subsystems” on your z/VM:
 - OpenShift Container Platform
 - IBM Cloud Infrastructure Center



Initial page

- Basic guidance for initial setup provided over HTTP
 - Switch to HTTPS after

The screenshot shows the initial page of the z/VM Express System Installation. At the top left is a circular icon, followed by the text "z/VM Express System Installation". At the top right are links for "Get Started" and "Get Help". The main heading is "Ready! for Hybrid Cloud with z/VM on LinuxONE". Below this, a paragraph states: "You are using **z/VM Express System Installation** -- the finest hybrid cloud hypervisor system on IBM Z and LinuxONE! To get started, click on the tabs below for details." There are three tabs: "Local Hosts Definitions", "Z/VM ESI Certificate Authority", and "Get Set!".



Hosts setup

- Hints for updating your local hosts file
 - In case you can't get a (timely) update of your network DNS

z/VM Express System Installation Get Started Get Help

Ready! for Hybrid Cloud with z/VM on LinuxONE

You are using **z/VM Express System Installation** -- the finest hybrid cloud hypervisor system on IBM Z and LinuxONE!
To get started, click on the tabs below for details.

Local Hosts Definitions Z/VM ESI Certificate Authority Get Set!

Local host definitions

You will need to add entries to your local hosts configuration to reach the tools and pages properly. Here are the names you will need for the OCP Cluster itself:

```
10.2.75.179 lxocpb01.ocp-z-poc.z.stg.ibm api.ocp-z-poc.z.stg.ibm
10.2.75.179 console-openshift-console.apps.ocp-z-poc.z.stg.ibm oauth-openshift.apps.ocp-z-poc.z.stg.ibm
## The following are used for direct access to the OCP monitoring components,
## add them as well if you want this direct access
10.2.75.179 grafana-openshift-monitoring.apps.ocp-z-poc.z.stg.ibm
10.2.75.179 prometheus-k8s-openshift-monitoring.apps.ocp-z-poc.z.stg.ibm
```

On macOS and Linux, the file to edit is `/etc/hosts`. On Windows, it is usually `C:\Windows\system32\drivers\etc\hosts` (you need Administrator access to edit the file).



Local CA

- Did we mention security? ;)
- All certificates are signed using this CA
- Avoid certificate exceptions and warnings
 - Things still work if you're not able to install the CA cert(s)

z/VM Express System Installation Get Started Get Help

Ready! for Hybrid Cloud with z/VM on LinuxONE

You are using **z/VM Express System Installation** -- the finest hybrid cloud hypervisor system on IBM Z and LinuxONE!
To get started, click on the tabs below for details.

Local Hosts Definitions **Z/VM ESI Certificate Authority** Get Set!

z/VM ESI Certificate Authority

There are several components of the z/VM ESI system that are secured using SSL/TLS. To make it easier to manage the certificates for these components, we have created a basic Certificate Authority (CA) and signed all certificates using this CA. This means you will only have to download and accept two certificates (a Root CA and an Intermediate CA).

A certificate bundle file (both the certificates in a single file) is found [here](#) -- use the bundle if you **know** that your system can process a PEM bundle. If you're not sure, use the individual certificate files [here](#) and [here](#). Once downloaded, go through the process of installing the certificates to your system trust store.

The process for installing a certificate varies depending on your OS, browser, and version. For example, some versions of Mozilla Firefox have an internal certificate store and will prompt to install the certificate into the browser trust store as soon as you download, while newer versions use the system certificate store.

Linux	MacOS	Windows
-------	-------	---------

Once you've accepted this certificate, you can view all the pages and tools in this system without exceptions or alerts.

If your site doesn't allow the installation of additional CA certificates, talk to your LinuxONE Expert about how to access the components of your OpenShift Container Platform PoC System.



On your marks...

- Click a button to switch to HTTPS

z/VM Express System Installation Get Started Get Help

Ready! for Hybrid Cloud with z/VM on LinuxONE

You are using **z/VM Express System Installation** -- the finest hybrid cloud hypervisor system on IBM Z and LinuxONE!
To get started, click on the tabs below for details.

Local Hosts Definitions Z/VM ESI Certificate Authority **Get Set!**

Ready... Set...

Once you've done the steps in the previous tabs, you're all set to access the secure portion of the z/VM ESI portal.
If you have trouble, just press the Back button on your browser to return here and troubleshoot the steps.

GO!



On your marks...

- Click a button to switch to HTTPS

z/VM Express System Installation Get Started Get Help

Ready! for Hybrid Cloud with z/VM on LinuxONE

You are using **z/VM Express System Installation** -- the finest hybrid cloud hypervisor system on IBM Z and LinuxONE!
To get started, click on the tabs below for details.

[Local Hosts Definitions](#) [Z/VM ESI Certificate Authority](#) [Get Set!](#)

Ready... Set...

Once you've done the steps in the previous tabs, you're all set to access the secure portion of the z/VM ESI portal.
If you have trouble, just press the Back button on your browser to return here and troubleshoot the steps.

[GO!](#)



Success!

- Some simple help tabs for available functions
- Extra navigation options appear in the menus

A screenshot of the z/VM Express System Installation web interface. The page title is 'z/VM Express System Installation'. The navigation menu includes 'Get Started', 'Monitor', 'Administration', and 'Get Help'. The main heading is 'Get Started with Hybrid Cloud on LinuxONE'. Below this, a paragraph states: 'You are using z/VM Express System Installation (ESI), the world's finest pocket-sized private cloud solution for IBM Z and LinuxONE! Click on the tabs for more details on what you can build using z/VM ESI.' There are three tabs: 'Openshift Container Platform', 'IBM Cloud Infrastructure Center', and 'Management Utilities'.

z/VM Express System Installation

Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with Hybrid Cloud on LinuxONE

You are using z/VM Express System Installation (*ESI*), the world's finest pocket-sized private cloud solution for IBM Z and LinuxONE!
Click on the tabs for more details on what you can build using z/VM ESI.

Openshift Container Platform | IBM Cloud Infrastructure Center | Management Utilities



Success!

- Some simple help tabs for available functions
- Extra navigation options appear in the menus

A screenshot of the z/VM Express System Installation web interface. The page title is "z/VM Express System Installation". The navigation menu includes "Get Started", "Monitor", "Administration", and "Get Help". The main heading is "Get Started with Hybrid Cloud on LinuxONE". Below the heading, there is a paragraph: "You are using z/VM Express System Installation (ESI), the world's finest pocket-sized private cloud solution for IBM Z and LinuxONE! Click on the tabs for more details on what you can build using z/VM ESI." Below this text are three tabs: "Openshift Container Platform", "IBM Cloud Infrastructure Center", and "Management Utilities".

z/VM Express System Installation

Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with Hybrid Cloud on LinuxONE

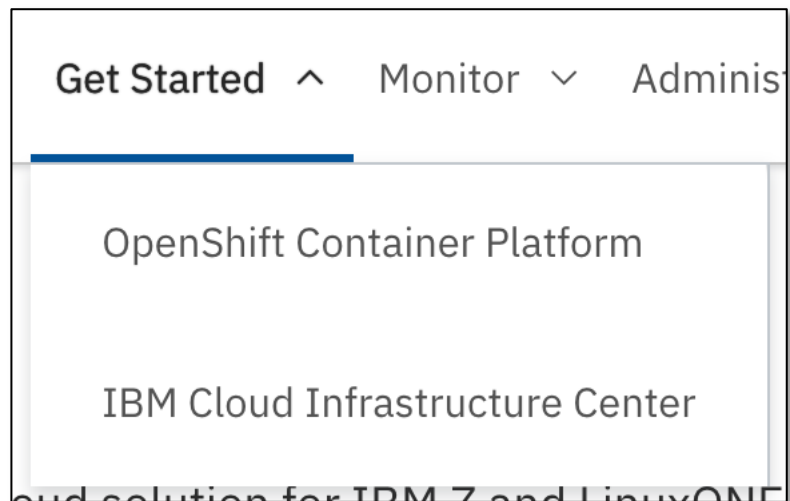
You are using z/VM Express System Installation (*ESI*), the world's finest pocket-sized private cloud solution for IBM Z and LinuxONE!
Click on the tabs for more details on what you can build using z/VM ESI.

Openshift Container Platform | IBM Cloud Infrastructure Center | Management Utilities

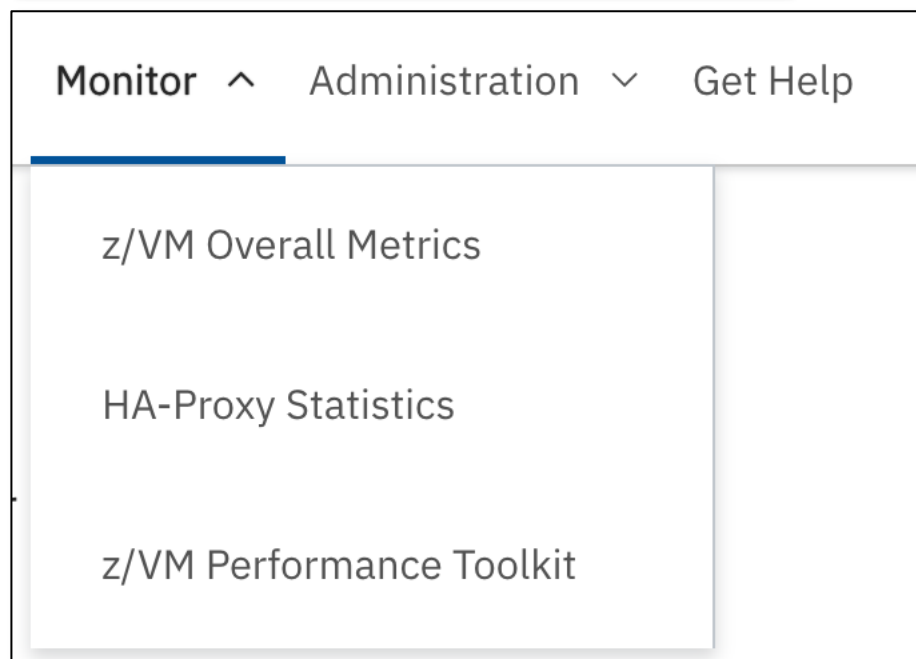


Functions

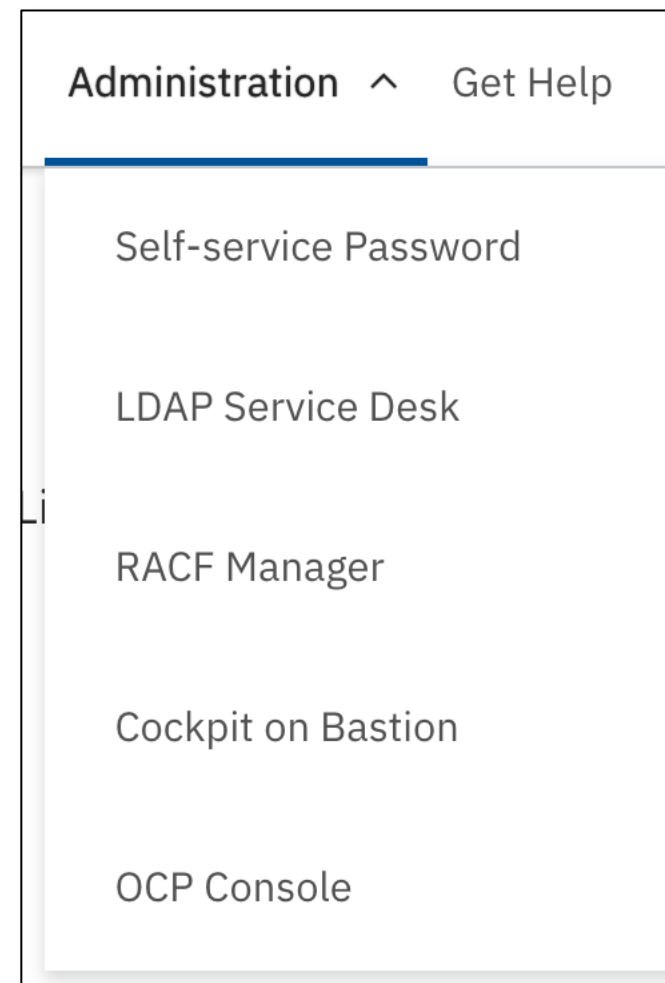
- “Subsystem” deployment



- Monitoring



- Administration





Select OpenShift Container Platform

- Tabs provide guidance on how to proceed

A screenshot of the z/VM Express System Installation web interface. The page title is "z/VM Express System Installation". The navigation menu includes "Get Started", "Monitor", "Administration", and "Get Help". The main heading is "Get Started with Openshift Container Platform on LinuxONE". Below the heading, a message states: "You are on the way to having a working OCP cluster! This is a minimal cluster for proof-of-concept purposes. There's a couple of things you need to do to get started -- click on the tabs below for details." Three tabs are visible: "OCP Versions", "OCP Pull Secret", and "OCP Cluster Build Log".

z/VM Express System Installation

Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with Openshift Container Platform on LinuxONE

You are on the way to having a working OCP cluster! This is a minimal cluster for proof-of-concept purposes. There's a couple of things you need to do to get started -- click on the tabs below for details.

OCP Versions | OCP Pull Secret | OCP Cluster Build Log



Select OCP version

- Choose from available versions
 - Major versions
 - “stable” stream

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with Openshift Container Platform on LinuxONE

You are on the way to having a working OCP cluster! This is a minimal cluster for proof-of-concept purposes. There's a couple of things you need to do to get started -- click on the tabs below for details.

OCP Versions | OCP Pull Secret | OCP Cluster Build Log

Openshift Container Platform Version

You can select the OCP version you want to use for your cluster.

Choose your OCP version:

OCP Version (currently selected is 4.7) ▾



Build your OCP cluster!

- Follow the steps to obtain your *pull secret* from Red Hat
- Paste it into the field
- Go to the “Build Log” tab to watch it happen 😊

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with Openshift Container Platform on LinuxONE

You are on the way to having a working OCP cluster! This is a minimal cluster for proof-of-concept purposes. There's a couple of things you need to do to get started -- click on the tabs below for details.

OCP Versions **OCP Pull Secret** OCP Cluster Build Log

Openshift Container Platform Pull Secret

To successfully build the OCP cluster you will need a special file (known as the *pull secret*) from Red Hat.

Follow these steps:

1. Go to the Red Hat Openshift site [here](#) . You will be asked to log on.
2. When the Pull Secret page appears, click on **Copy pull secret**. You will see a *Copied!* confirmation to let you know the secret is in your clipboard.
3. Return here and paste the secret into this field:

Paste the pull secret here

Once you've done this, the process to build the cluster will start. The **OCP Cluster Build Log** tab will show the log of the build, and the **Metrics** pages will show information on system activity.



Select IBM Cloud Infrastructure Center

- Tabs provide guidance on how to proceed

A screenshot of the "z/VM Express System Installation" web interface. The page title is "z/VM Express System Installation" and it includes navigation links for "Get Started", "Monitor", "Administration", and "Get Help". The main heading is "Get Started with IBM Cloud Infrastructure Center on z/VM **ESI**". Below this, a message states: "You are on the way to having a working installation of IBM Cloud infrastructure Center, ready to start managing Linux guests in your z/VM ESI system! Start the build of your system -- click on the tabs below for details." Two tabs are visible: "Source Credentials" and "IBM Cloud Infrastructure Center Build Log".

z/VM Express System Installation

Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with IBM Cloud Infrastructure Center on z/VM **ESI**

You are on the way to having a working installation of IBM Cloud infrastructure Center, ready to start managing Linux guests in your z/VM ESI system!
Start the build of your system -- click on the tabs below for details.

Source Credentials IBM Cloud Infrastructure Center Build Log



Select IBM Cloud Infrastructure Center

- Tabs provide guidance on how to proceed

A screenshot of the z/VM Express System Installation web interface. The page title is "z/VM Express System Installation". In the top right corner, there are navigation tabs: "Get Started", "Monitor", "Administration", and "Get Help". The main heading is "Get Started with IBM Cloud Infrastructure Center on z/VM **ESI**". Below the heading, the text reads: "You are on the way to having a working installation of IBM Cloud infrastructure Center, ready to start managing Linux guests in your z/VM ESI system! Start the build of your system -- click on the tabs below for details." At the bottom, there are two buttons: "Source Credentials" and "IBM Cloud Infrastructure Center Build Log".

z/VM Express System Installation

Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with IBM Cloud Infrastructure Center on z/VM **ESI**

You are on the way to having a working installation of IBM Cloud infrastructure Center, ready to start managing Linux guests in your z/VM ESI system!
Start the build of your system -- click on the tabs below for details.

Source Credentials | IBM Cloud Infrastructure Center Build Log



Select IBM Cloud Infrastructure Center

- This could be the same location as you restored ESI from, or different
 - More protocols supported here
- Press “Test” to validate
 - “Start” is enabled if okay
- Press “Start” to deploy
 - Watch the log tab

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

Get Started with IBM Cloud Infrastructure Center on z/VM *ESI*

You are on the way to having a working installation of IBM Cloud infrastructure Center, ready to start managing Linux guests in your z/VM ESI system!
Start the build of your system -- click on the tabs below for details.

Source Credentials IBM Cloud Infrastructure Center Build Log

Credentials to access your z/VM ESI download location

z/VM ESI needs to fetch IBM Cloud Infrastructure Center from the location on your network where it was restored from. We didn't keep your details from before (for security), so please enter them here.

Protocol: Hostname or IP address: Port:

User ID: Password:

Path to files:

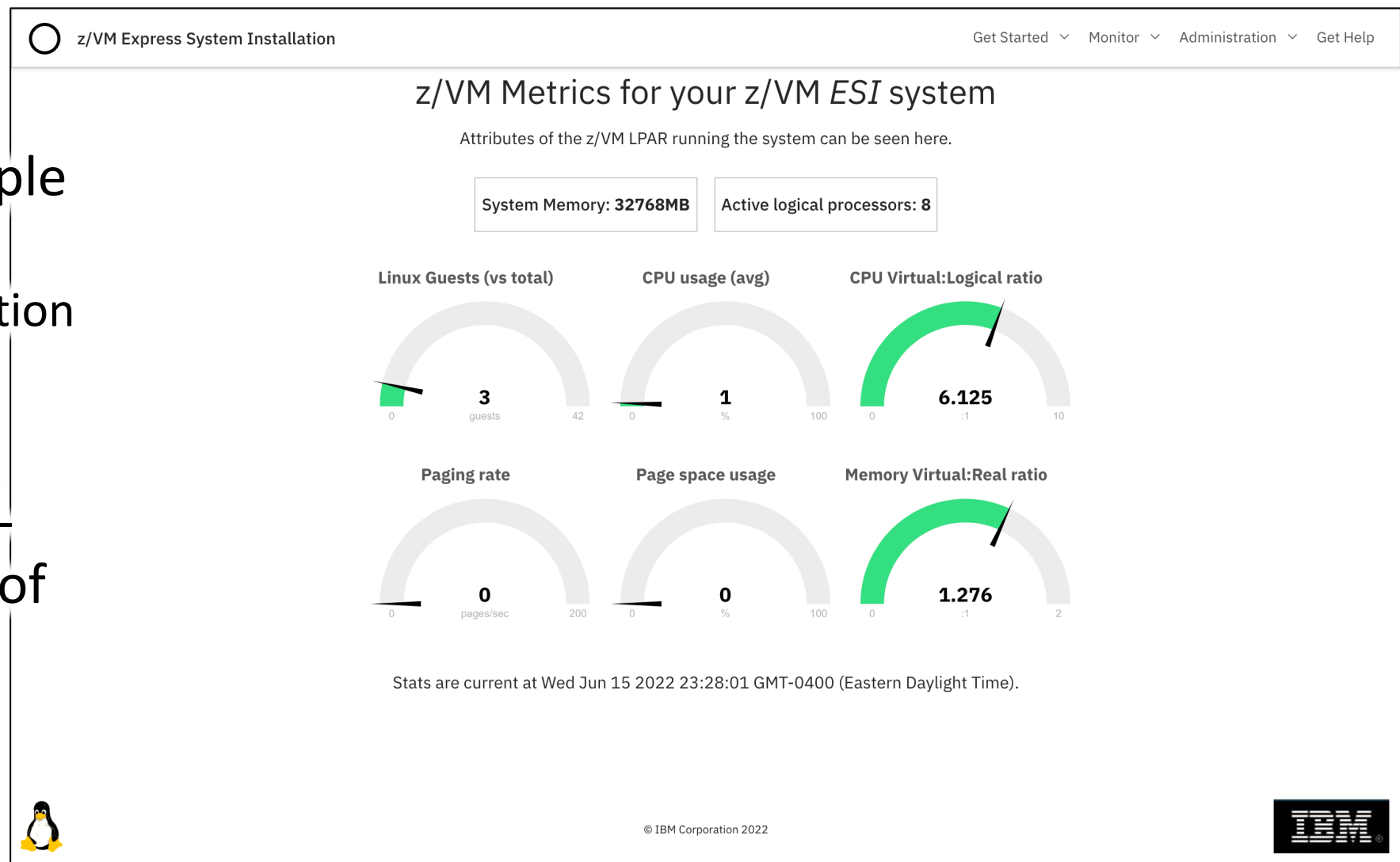
Click **Test** to validate your details, then **Start** to build the system!

Test Start!



Simple z/VM metrics

- Basic metrics for simple awareness
 - CPU/Mem configuration
 - CPU consumption
 - Memory utilisation
- Working on "wizard"-style interpretations of the metrics
 - Hints in tooltips





Performance Toolkit

- For when basic metrics are not enough!

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

IBM
*Performance
Toolkit for VM*

Remote Performance Monitoring Session Setup

Web Server Logon

You are connected to the data retrieval interface of the Performance Toolkit for VM on system **ESIHACK1**. Data retrieval authorization is based on your VM user identification on that system. Please enter your userid and password

VM UserID: Password:

VM Logon BY UserID: (use this userid for password validation when LOGONBY capability is enabled for the Toolkit server machine)

Desired screen layout:

Max. Data Lines: Line length:

Up to 12 kB of data can be retrieved per selection, including all control information. Output may be truncated if space is not sufficient for all lines.



HA-Proxy statistics

- HA-Proxy is used for load balancing of OCP
 - Pre-configured
- Helps you stay aware of the state of OCP services

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

HAProxy version 1.8.27-493ce0b, released 2020/11/06

Statistics Report for pid 5894

> General process information

pid = 5894 (process #1, nbproc = 1, nbthread = 1)
 uptime = 25d 2h26m26s
 system limits: memmax = unlimited; ulimit-n = 8052
 maxsock = 8052; maxconn = 4000; maxpipes = 0
 current conns = 1; current pipes = 0/0; conn rate = 1/sec
 Running tasks: 1/25; idle = 100 %

active UP (green)

active UP, going down (yellow)

active DOWN, going up (orange)

active or backup DOWN (red)

active or backup SOFT STOPPED for maintenance (blue)

backup UP (purple)

backup UP, going down (pink)

backup DOWN, going up (light purple)

not checked (grey)

active or backup DOWN for maintenance (MAINT) (brown)

Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.

Display option: External resources:
 • Scope:
 • [Primary site](#)
 • [Updates \(v1.8\)](#)
 • [Online manual](#)
 • [Hide 'DOWN' servers](#)
 • [Disable refresh](#)
 • [Refresh now](#)
 • [CSV export](#)

	Queue			Session rate			Sessions					Bytes		Denied		Errors			Warnings		Server												
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle			
ocp4-kubernetes-api-server																																	
Frontend				0	0	-	0	0	3 000	0			0	0	0	0	0	0					OPEN										
ocp4-machine-config-server																																	
Frontend				0	0	-	0	0	3 000	0			0	0	0	0	0	0					OPEN										
ocp4-router-http																																	
Frontend				0	0	-	0	0	3 000	0			0	0	0	0	0	0					OPEN										
ocp4-router-https																																	
Frontend				0	0	-	0	0	3 000	0			0	0	0	0	0	0					OPEN										
ocp4-kubernetes-api-server																																	
bootstrap-0	0	0	-	0	0	-	0	0	-	0	0	?	0	0	0	0	0	0	0	0	0	0	25d2h DOWN	L4TOUT in 1001ms	1	Y	-	1	1	25d2h	-		
master-0	0	0	-	0	0	-	0	0	-	0	0	?	0	0	0	0	0	0	0	0	0	0	25d2h DOWN	L4TOUT in 1001ms	1	Y	-	1	1	25d2h	-		
master-1	0	0	-	0	0	-	0	0	-	0	0	?	0	0	0	0	0	0	0	0	0	0	25d2h DOWN	L4TOUT in 1001ms	1	Y	-	1	1	25d2h	-		
master-2	0	0	-	0	0	-	0	0	-	0	0	?	0	0	0	0	0	0	0	0	0	0	25d2h DOWN	L4TOUT in 1001ms	1	Y	-	1	1	25d2h	-		



Cockpit on the ELAN

- Cockpit is a web interface to Linux
 - Packaged with RHEL 8
- If you need to manage the ELAN (including command prompt!) you can use this

A screenshot of the Cockpit web interface. The browser title is "z/VM Express System Installation". The page header includes "Get Started", "Monitor", "Administration", and "Get Help" with dropdown arrows. The main content area shows "Cockpit on Installation Support Node". The background is a dark, grid-patterned image with the Red Hat logo and "Red Hat Enterprise Linux" text. A white login form is centered, titled "Red Hat Enterprise Linux". It has fields for "User name" and "Password". A "Use 1Password" button is next to the user name field. Below the fields is a link for "Other options" and a blue "Log in" button. At the bottom, it says "Server: lxocpb01.ocp-z-poc.z.stg.ibm" and "Log in with your server user account."



Self-service Password

- Security – z/VM LDAP is set up as login backend for both OCP and ICIC
 - Supplied sample accounts
 - Account creation coming soon!
 - RACF Native Authentication
- RACF commands to reset a password? No!
 - SSP can be used instead

A screenshot of the 'z/VM Express System Installation' web interface. The page title is 'z/VM Express System Installation' with navigation links for 'Get Started', 'Monitor', 'Administration', and 'Get Help'. The breadcrumb trail shows 'Self service password' and '>_ SSH Key'. A green tree icon is centered on the page. A green bar with a checkmark says 'Change your password'. Below it, a yellow bar with an information icon says 'Enter your old password and choose a new one.' A yellow box lists password constraints: Minimum length: 9, Maximum length: 100, Minimum number of digits: 2, Minimum number of different classes of characters: 1, Forbidden characters: /@%, Maximum consecutive identical characters: 2, Your new password may not be the same as your old password, and Your new password may not be the same as your login. At the bottom, a light blue box contains four input fields: 'Login', 'Old password', 'New password', and 'Confirm', each with a lock icon. A green 'Send' button is at the bottom right of the form.



RACF Manager

- z/VM LDAP has LDBM and SDBM backends enabled
 - LDBM uses RFC2307bis schema
 - SDBM is used in some of the Ansible automation (esp. CIC)
- OCP and CIC use LDBM
- RACF Manager uses SDBM
 - Simple RACF updates if needed
 - Add/change/delete ACL entries

A screenshot of the RACF Manager web interface. The page title is 'z/VM Express System Installation'. In the top right, there are links for 'Get Started', 'Monitor', and 'Admin'. Below the title bar, there are two main navigation options: 'Service Desk' and 'RACF Manager', each with a green icon. A search bar is on the right. The main content area has a blue header with 'RACF Manager' and a sub-header 'Select the operation you want to perform.' There are two main sections: 'Manage RACF Users' and 'Manage General Resources'. The 'Manage RACF Users' section has a 'User ID' input field and a green 'Submit' button. The 'Manage General Resources' section has a 'Minidisks (VMMDISK)' dropdown menu, a 'Resource name' input field, and a green 'Submit' button. At the bottom, there is a green banner that says 'Welcome to LDAP Tool Box service desk' and a footer that says 'LDAP Tool Box Service Desk - version 0.4'.



RACF Manager

- z/VM LDA
- SDBM bac
- LDBM u
- SDBM is
- Ansible
- OCP and C
- RACF Mar
- Simple
- Add

z/VM Express System Installation Get Started Monitor Administration Get Help

Service Desk RACF Manager

Search results: 2 entries found

Show 10 entries Filter:

Previous 1 Next

	Resource Name	Resource Owner
	LNXMaint.191	LNXMaint
	LNXMaint.200	LNXMaint

Showing 1 to 2 of 2 entries

Previous 1 Next

LDAP Tool Box Service Desk - version 0.4

Get Started Monitor Administration



RACF

- z/VM LDA
- SDBM bac
- LDBM u
- SDBM i
- Ansible
- OCP and
- RACF Ma
- Simple
- Add

z/VM Express System Installation Get Started ▾ Monitor ▾ Administration ▾ Get Help

Service Desk RACF Manager Search

LNXMaint.200

Resource Owner	LNXMaint	
Universal Access	NONE	
Access	<input type="radio"/> ICICCMPO	<input type="lock"/> READ
	<input type="radio"/> ICICMGTO	<input type="lock"/> READ
	<input type="radio"/> LNXMaint	<input type="lock"/> ALTER
	<input type="radio"/> LXOCPB01	<input type="lock"/> CONTROL
	<input type="radio"/> MAINT	<input type="lock"/> CONTROL
	<input type="radio"/> MAINT720	<input type="lock"/> CONTROL
	<input type="radio"/> OCPZBOOT	<input type="lock"/> READ
	<input type="radio"/> OCPZMAS0	<input type="lock"/> READ
	<input type="radio"/> OCPZMAS1	<input type="lock"/> READ
	<input type="radio"/> OCPZMAS2	<input type="lock"/> READ
	<input type="radio"/> OCPZWRK0	<input type="lock"/> READ
<input type="radio"/> OCPZWRK1	<input type="lock"/> READ	

[Account status](#)

Add ACL Entry

User ID

None

Submit

LDAP Tool Box Service Desk - version 0.4

Get Started ▾ Monitor ▾ Admin


Search



Increasing Usability through integration

Creating a *System* that is greater than the sum of its parts

Features – Automation



```
15:02:06 262251 of 262667 |cyl 262261 of 262667 |cyl 262271 of 262667 |cyl 262281 of 262667 |cyl 262291 of 262667 |cyl 262301 of 262667
15:02:06 y1 262381 of 262667 |cyl 262391 of 262667 |cyl 262401 of 262667 |cyl 262411 of 262667 |cyl 262421 of 262667 |cyl 262431 of 2626
15:02:06 Y 2253.490019" coreos-installer-serviceY1127": Finished formatting the device.
15:02:06 Y 2253.490325" coreos-installer-serviceY1127": Rereading the partition table... ok
15:02:07 Y 2254.350462" dasda:VOL1/ 0X0200:
15:02:07 Y 2254.352248" dasda:VOL1/ 0X0200:
15:02:07 Y 2254.360747" coreos-installer-serviceY1127": Error: source has sector size 512 but destination has sector size 4096
15:02:07 Y 2254.360867" coreos-installer-serviceY1127": Resetting partition table
15:02:07 Y 2254.626632" coreos-installer-serviceY1127": Error: install failed
15:02:07 Y 2254.370927" dasda:
15:02:07 Y0;1;31mFAILEDY0m" Failed to start CoreOS Installer.
15:02:07 See 'systemctl status coreos-installer.service' for details.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for CoreOS Installer Target.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Give Login Shell After CoreOS Installer.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Finalize CoreOS Installer Target.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Reboot after CoreOS Installer.
15:02:07 Y0;32m OK Y0m" Stopped daily update of the root trust anchor for DNSSEC.
15:02:07 Y0;32m OK Y0m" Stopped Run update-ca-trust.
15:02:07 Y0;32m OK Y0m" Stopped Network Manager Wait Online.
15:02:07 Stopping Network Manager...
15:02:07 Y0;32m OK Y0m" Stopped Daily Cleanup of Temporary Directories.
15:02:07 Y0;32m OK Y0m" Stopped Network Manager.
15:02:07 Stopping D-Bus System Message Bus...
15:02:07 Y0;32m OK Y0m" Stopped D-Bus System Message Bus.
15:02:07 Y0;32m OK Y0m" Stopped target Basic System.
15:02:07 Y0;32m OK Y0m" Closed D-Bus System Message Bus Socket.
15:02:07 Y0;32m OK Y0m" Stopped target System Initialization.
15:02:07 Y0;32m OK Y0m" Started Emergency Shell.
15:02:07 Y0;32m OK Y0m" Reached target Emergency Mode.
15:02:07 You are in emergency mode. After logging in, type "journalctl -xb" to view
15:02:07 system logs, "systemctl reboot" to reboot, "systemctl default" or "exit"
15:02:07 to boot into default mode.
15:02:07 Cannot open access to console, the root account is locked.
15:02:07 See sulogin(8) man page for more details.
15:02:07 Press Enter to continue.
```



Features – Automation

```
15:02:06 | 262251 of 262667 |cyl 262261 of 262667 |cyl 262271 of 262667 |cyl 262281 of 262667 |cyl 262291 of 262667 |cyl 262301 of 262667
15:02:06 | 262381 of 262667 |cyl 262391 of 262667 |cyl 262401 of 262667 |cyl 262411 of 262667 |cyl 262421 of 262667 |cyl 262431 of 262667
15:02:06 Y 2253.490019" coreos-installer-serviceY1127": Finished formatting the device.
15:02:06 Y 2253.490325" coreos-installer-serviceY1127": Rereading the partition table... ok
15:02:07 Y 2254.350462" dasda:VOL1/ 0X0200:
15:02:07 Y 2254.352248" dasda:VOL1/ 0X0200:
15:02:07 Y 2254.360747" coreos-installer-serviceY1127": Error: source has sector size 512 but destination has sector size 4096
15:02:07 Y 2254.360867" coreos-installer-serviceY1127": Resetting partition table
15:02:07 Y 2254.626632" coreos-installer-serviceY1127": Error: install failed
15:02:07 Y 2254.370927" dasda:
15:02:07 Y0;1;31mFAILEDY0m" Failed to start CoreOS Installer.
15:02:07 See 'systemctl status coreos-installer.service' for details.
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15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Give Login Shell After CoreOS Installer.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Finalize CoreOS Installer Target.
15:02:07 Y0;1;33mDEPENDY0m" Dependency failed for Reboot after CoreOS Installer.
```

```
* -- Operations Manager Action CONSEND scheduled for execution -- *
```

```
Reloading system manager configuration
```

```
Starting default target
```

```
Y 2256.096258" coreos-installer-serviceY1260": coreos-installer install /dev/dasda --ignition-url http://bastion.ocp-z-poc.wsc.ibm:8080/ign . . .
Y 2256.111267" coreos-installer-serviceY1260": Installing Red Hat Enterprise Linux CoreOS 46.82.202012051939-0 (Ootpa) s390x (4096-byte sectors)
Y 2256.140775" coreos-installer-serviceY1260": Skipping low-level format for /dev/dasda
Y 2256.141534" coreos-installer-serviceY1260": Disk /dev/dasda is invalid, formatting
Y 2256.141617" coreos-installer-serviceY1260": Auto-partitioning /dev/dasda
```

```
15:02:07 Y0;32m OK Y0m Stopped target Basic System.
15:02:07 Y0;32m OK Y0m Closed D-Bus System Message Bus Socket.
15:02:07 Y0;32m OK Y0m Stopped target System Initialization.
15:02:07 Y0;32m OK Y0m Started Emergency Shell.
15:02:07 Y0;32m OK Y0m Reached target Emergency Mode.
15:02:07 You are in emergency mode. After logging in, type "journalctl -xb" to view
15:02:07 system logs, "systemctl reboot" to reboot, "systemctl default" or "exit"
15:02:07 to boot into default mode.
15:02:07 Cannot open access to console, the root account is locked.
15:02:07 See sulogin(8) man page for more details.
15:02:07 Press Enter to continue.
```




Futures (aka Dreams)

- Management of system “groups”
 - Deploy an OCP cluster across multiple z/VMs, possibly automatically
 - Deploy multiple OCP clusters
 - Automatically deploy CIC nodes as required, without intervention
- Integrate further software components
 - Multi-Factor Authentication (MFA)
 - Others? (cards and letters please 😊)
- More Ansible automation for “Day Two” management of z/VM
 - Manage SYSTEM CONFIG
 - Page/spool space, DirMaint groups, etc



Summary

- Customer behaviour tells us that usability is vital
- Novel approaches to installing *systems* based on z/VM are possible!
- Delivering pre-configured systems dramatically improves time-to-value
 - Provide truly integrated system



Thank you!

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