How To Effectively Incorporate Linux on System z Events Into Your OPS/MVS or SOLVE:Operations Automation Policies

August 9, 2012 - SHARE Session 11266

Summer Spaulding
CA Technologies
Connecting Linux on System z to Your CA z/OS Automation Products

In this session, we will explain how to install the Connector and will provide an overview of its capabilities. This session will be of interest to any OPS/MVS or SOLVE:Operations customer who runs workloads on Linux on System z (or is considering doing so).
Companies are consolidating their disparate Linux workloads onto the mainframe

- Such sites have relied on CA OPS/MVS® Event Management and Automation or CA SOLVE:Operations Automation for many years
- Their Operators and Systems Programmers have many years experience in z/OS mainframe data centers but know only basic IBM z/VM and Linux on System z
- They understand the business importance of the production Linux on System z workloads and the services they enable
- They desire the same high level of management and visibility as they do on z/OS

Today Linux on System z is more integrated with mainframe applications
Systems programmers understand that there is much similarity between USS and Linux on System z resources (e.g., processes).
Sites are looking to prevent manual errors in management of their Linux on System z guests and applications.

Customers recognize that Linux on System z requires very similar automation to that needed to manage their z/OS resources.

User interfaces that provide centralized focal point resource management are desired.
CA Mainframe Connector for Linux on System z

- Started Task independent of other client software
- Provides TCP/IP pipe between Linux on System z, z/VM & z/OS
- Command/response for Linux on System z objects from z/OS
- Event feed from Linux on System z to z/OS
- Automatic discovery of z/VM and Linux on System z systems
CA Mainframe Connector Logical Overview

- **CA SOLVE:Operations**
- **CA OPS/MVS**

Mainframe Connector for Linux on System z

- **z/OS**
  - Commands & Responses
  - Unsol Msgs

- **z/VM**
  - **z/VM Agent**
  - **Linux Agent**
  - **Linux on System z instance**
  - **SYSLOG-NG**

- **Control Program**

Both SuSE’s SYSLOG-NG and RedHat’s RSYSLOG are supported

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Mainframe Connector for Linux region on z/OS

- This runs as a standalone region on z/OS as a ‘black box’, providing a communication path for the z/VM and Linux on System z agents which can be utilized by CA SOLVE:Operations or CA OPS/MVS

z/VM Agent

- The z/VM agent interfaces with the Connector for Linux region to deliver unsolicited events/messages. It will also receive z/VM commands from Connector for Linux region and return the responses

Linux on System z Agent(s)

- The Linux on System z agent(s) interfaces with the Connector for Linux region to deliver unsolicited messages and receive Linux commands and return the responses
Install and Configuration Process

- **Step 1**
  - Install and set Up a z/OS Region

- **Step 2**
  - Install and configure z/VM Agents

- **Step 3**
  - Install and configure the Linux Syslog Daemon

- **Step 4**
  - Install and configure Linux Agents

- **Step 5**
  - Update OPS/MVS Parms or SOLVE:Operations Parameter Group
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Installing z/OS component

Requires currently supported version of z/OS

SMPE-based allowing CA MSM installation or pax-Enhanced ESD installation

SMPE delivers required software for z/OS, zVM and Linux on System z agents

Setup process requires that the CAIT72 target zone and the CAID72 distribution zone names be used
Installing z/OS component – cont’d

- Install-Deploy-Configure Linux Connector using CA MSM
  OR
- Use Enhanced-ESD process to
  - Unpack the UNIX pax file
  - UNZIPJCL to execute GIMUNZIP to create MVS installation files
- After you unzip the data sets, do one of the following:
  - Rename dsnpref.CAI.LX10.CC2DJCL to dsnpref.LX10.CC2DJCL
  - Copy the members in dsnpref.CAI.LX10.CC2DJCL into dsnpref.LX10.CC2DJCL
- Ensure that the dsnpref.LX10.CC2DLINK data set is in your system LNKLST.
- Allocate a data set to ISPTABL DD (FB 80 PDS) for INSTALL utility
Installing z/OS component – cont’d

- Initiate Install Utility
  - EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)’
Install Utility (August 2011)
CA Mainframe Connector for Linux on System z Version 1.0
(LX10 - SP0)

Enter to continue F1 for Help
F3 to EXIT All rights reserved.
*DSLIST F5 for INSTDB

Copyright (c) 2011 CA.
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Option ==>  _

1  Set Installation Parameters
2  Install CA Mainframe Connector for Linux on System z
3  Setup a CA Mainframe Connector for Linux on System z Region
4  Create VTAM Major Node
5  Maintain CA Mainframe Connector for Linux on System z

X  Exit
Option ===>

A  Sequential display of parameters

1  Software Delivery Method
2  Data Set Prefixes
3  USS Path For Linux Connector
4  Data Set Prefixes (Setup)
5  IBM Data Sets
6  Load Libraries
7  SMP/E Member Location
8  SSL Support
9  Block Sizes
10 Job Card Information
11 Additional JCL Statements

X  Exit
Select the software delivery method used for CA Mainframe Connector for Linux on System z

Electronic
   Data Set Prefix . . . . TEST2.CAI

Cartridge
   Tape Unit . . . . . . . CART Expiry Date. . . . . . . . 98000

CA Mainframe Software Manager
   SMP/E CSI Used. . . . . .
Option ==> _

1. Add a CA Mainframe Connector for Linux on System z Region
2. Copy a CA Mainframe Connector for Linux on System z Region
3. Regenerate a CA Mainframe Connector for Linux on System z Region
4. Review Latest Generated Jobs List
5. Delete a CA Mainframe Connector for Linux on System z Region

X Exit

*DSLIST
Setup Specify Linux Connector Region Name

Command ===>

Take the default or enter your site-specific started task region information:

Region name . . . . . . LNXCONE
Member identifier . . . B
Region description . . TEST2 Region___________________________
**XE21 DLIST**  -------------------  **SETUP**  Region Information  -------------------------------

Command ===>

Linux Connector Region: LNXCONB
Take the defaults or enter your site-specific region initialization parameters:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>z/OS Parameters</td>
<td></td>
</tr>
<tr>
<td>TCPIP.DATA Data Set Name</td>
<td>TCPIP.MVXE21.TCPIP.DATA</td>
</tr>
<tr>
<td>TCP/IP Stack Name</td>
<td>TCPIP</td>
</tr>
<tr>
<td>Linux Syslog Daemon Port</td>
<td>601</td>
</tr>
<tr>
<td>z/VM Parameters</td>
<td></td>
</tr>
<tr>
<td>User Name</td>
<td>CAVLUSER</td>
</tr>
<tr>
<td>Minidisk Volume Serial (valid)</td>
<td>DSK133</td>
</tr>
<tr>
<td>Minidisk Start Cylinder</td>
<td>1193</td>
</tr>
<tr>
<td>z/OS Linux Connector IP Address</td>
<td>141.202.200.250</td>
</tr>
<tr>
<td>z/OS Linux Connector IP Port</td>
<td>2636</td>
</tr>
</tbody>
</table>

*DSLIST*
Linux Connector Region: LNXCONB
The following list of members has been generated in the JCL library, TEST2.LNXR10.LX10.CNTL
Submit and run each SBn job in sequence.

Enter J to Submit the member, B to Browse, S or E to Edit. Press F1 for help.

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAVLRUNB</td>
<td>Generated Member - VM Exec to run $UTVM002</td>
</tr>
<tr>
<td>CAVLUSRAN</td>
<td>Generated Member - VM User Definition</td>
</tr>
<tr>
<td>LNXCONB</td>
<td>Generated Member - Product region startup JCL</td>
</tr>
<tr>
<td>SB#DSLST</td>
<td>Generated Member - Region data set list</td>
</tr>
<tr>
<td>SBLNXPRM</td>
<td>Generated Member - Region initialization parameters</td>
</tr>
<tr>
<td>SBSAFF</td>
<td>Generated Member - Region security parameter file</td>
</tr>
<tr>
<td>SB2SHALC</td>
<td>Allocate shared region files</td>
</tr>
<tr>
<td>SB3LDVIP</td>
<td>Load of MODS, PANELS and OSCNTL files</td>
</tr>
<tr>
<td>SB5LPDPS</td>
<td>Copy members to PDS files</td>
</tr>
<tr>
<td>SB90DUMP</td>
<td>Optional - DFSMSdss Dump (refer JCL comments)</td>
</tr>
<tr>
<td>^DSLIST</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Prompt</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>APFLIST</td>
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<td>CAVLRUNB</td>
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<td>I02INSMP</td>
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<tr>
<td>SB5LDPDS</td>
<td></td>
</tr>
</tbody>
</table>
Installing z/OS component – cont’d

PARMLIB(SiLNXPRM)

ABENDCMD=S LNXCIONN
STACKNAME=TCPIP21
STACKTYPE=IBM
IPPORT=3636
LXPORT=2636
SLPORT=514
CMDTOKEN=CALINUXCOMMANDS:
MSGTOKEN=CALINUXUNSOLMSG:
MULTICLIENT=NO
CMDPORT=
MSGPORT=
LXIN0009 Stack Type set to IBM
LXIN0009 Stack Name set to TCPIP21
N3AT01 TCPIP START COMMAND PROCESSED
N00503 *** LinuxCon INITIALIZATION COMPLETE LINUXCON ***
Installing z/VM agent

Software delivered as part of the z/OS component SMPE install

Requires currently supported version of z/VM

Requires either:
- Library for REXX on zSeries (5695-014)
- Alternate Library for REXX on zSeries Version 1.4.0 for use with z/VM
Define a user ID for the z/VM agent to the z/VM system:

- Log on to the user ID responsible for directory maintenance on the target z/VM system
- Transfer the CAVLUSRi data set member to the 191 disk as agent_user_id DIRECT
Transfer required zVM components from z/OS

- dsnpref.LX10.CNTL(CAVLUSRi)
  - z/VM directory for the agent user ID
    - CMS file name: `agent_user_id`
    - CMS file type: DIRECT
  - Populated through INSTALL Utility or through CA MSM Configuration Services
Transfer required zVM components from z/OS

USER CAVLUSER password 64M 64M ABCG
IPL CMS
MACH ESA
SPOOL 000C 2540 READER *
SPOOL 000D 2540 PUNCH A
SPOOL 000E 1403 A
CONSOLE 009 3215 T
LINK MAINT 0190 0190 RR  ➙ May need to change to meet your environment
LINK MAINT 019D 019D RR  ➙ May need to change to meet your environment
LINK MAINT 019E 019E RR  ➙ May need to change to meet your environment
LINK TCPMAINT 198 198 RR  ➙ May need to change to meet your environment
LINK TCPMAINT 592 592 RR  ➙ May need to change to meet your environment
MDISK 191 3390 1 003 VOLIDX MR  ➙ VOLIDX is volume in your environment
Define a user ID for the z/VM agent to the z/VM system:
- Log on to the user ID responsible for directory maintenance on the target z/VM system
- Transfer the CAVLUSRI data set member to the 191 disk as agent_user_id DIRECT
- Customize the password in the directory to suit your requirements
- Add the directory to the z/VM system directory
- Install the changed directory using the DIRECTXA utility

- Log on to the agent user ID (CAVLUSERI)
- Transfer the other data set members to the 191 disk for the agent user ID
Transfer required zVM components from z/OS

- dsnpref.LX10.CNTL(CAVLRUNi)
  - REXX program that runs $UTVM002
  - Member contains the z/OS region IP address and port number specified during z/OS region setup
    - CMS file name: CAVLRUNA
    - CMS file type: EXEC
  - Populated through INSTALL Utility or through CA MSM Configuration Services
/* Start the Linux Connector VM Agent */
ADDRESS COMMAND

/* Modify the following with the IP addr and port of Linux Connector */
ipAddr = "????.????.????.??"  \(\text{← IP address assigned to } z/OS\text{ LNXCON STC}\)
port = "?????"  \(\text{← IP address assigned to } z/OS\text{ LNXCON STC}\)

"CP SET MSG ON"
"ACCESS 592 H"

EXEC "$UTVM002" ipaddr port

IF RC = 1 THEN
  PUSH "EXEC CAVLRUNA"

EXIT RC
dsnpref.LX10.CE2JOBJ0(CAVLPROF)

- Profile for the agent user ID
  - CMS file name: PROFILE
  - CMS file type: EXEC

/* Profile for CAVLAGNT */
ADDRESS COMMAND

"EXEC CAVLRUNA"

EXIT RC
Transfer required zVM components from z/OS

- dsnpref.LX10.CE2JOBJ0(GENIUCVM)
  - REXX program that generates the IUCVMSG module
    - CMS file name: GENIUCVM
    - CMS file type: EXEC
Transfer required zVM components from z/OS

— **dsnpref.LX10.CE2JOB0(IUCVMSG)**
  - Inter-User Communications Vehicle (IUCV) message handler
    - CMS file name: IUCVMSG
    - CMS file type: TEXT

— **dsnpref.LX10.CE2JOB0($UTVM002)**
  - Compiled REXX program that is the agent
    - CMS file name: $UTVM002
    - CMS file type: EXEC

Important! Transfer the IUCVMSG and $UTVM002 members using the binary data type
Installing z/VM agent – cont’d

- Run the GENIUCVM EXEC
  - The IUCVMSG module is generated
- Logoff agent user ID
- XAUTOLOG agent user ID
- Add start of agent user ID to AUTOLOG1
Add the following statements in the /etc/rsyslog.conf file for the Linux system:

- $WorkDirectory /var/spool/rsyslog  # where to place spool files
- $ActionQueueFileName fwdRule1  # unique name prefix for spool files
- $ActionQueueMaxDiskSpace 1g  # 1gb space limit (use as much as possible)
- $ActionQueueSaveOnShutdown on  # save messages to disk on shutdown
- $ActionQueueType LinkedList  # run asynchronously
- $ActionResumeRetryCount -1  # infinite retries if host is down
- *.* @@[host_name]:601  # host_name specifies the name or IP address of the z/OS system on which the z/OS region is running.

Note: You can change the port number, but the corresponding SLPORT value in the SiLNXPRM parameter member for the z/OS region must match.

Restart rsyslog daemon with the new configuration

/etc/init.d/rsyslog restart
— Add the following statements in the `/etc/syslog-ng.conf` file for the Linux system:

```plaintext
destination loghost { tcp("host_name" port(601)); };
log { source(src); destination(loghost); };
```

- `host_name` specifies the name or IP address of the z/OS system on which the z/OS region is running.
  - If you are using Internet Protocol Version 6 (IPv6), use the `tcp6()` driver instead of the `tcp()` driver
- Note: You can change the port number, but the corresponding SLPORT value in the SiLNXPRM parameter member for the z/OS region must match

— Restart syslog-ng daemon with the new configuration

```
/etc/init.d/syslog restart
```
Installing Linux agent

Software delivered as part of the z/OS component SMPE install in designated USS directory

Packaged in an RPM file
- calxagnt-v.r-1.s390x.rpm

Requires IBM-certified version of one of the following operating systems:
- Red Hat at minimum release level 6
- SuSE at minimum release level 11.1
Select one or more files with / or action codes.

```
<table>
<thead>
<tr>
<th>Type</th>
<th>Filename</th>
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<tbody>
<tr>
<td>Dir</td>
<td>.</td>
</tr>
<tr>
<td>Dir</td>
<td>..</td>
</tr>
<tr>
<td>File</td>
<td>calxagt-1.0-1.s390x.rpm</td>
</tr>
<tr>
<td>File</td>
<td>ZLXAGENT</td>
</tr>
</tbody>
</table>
```
Install the Linux agent

- Transfer calxagnt-1.0-1.s390x.rpm file to each zLinux server to be monitored in the following directory:
  - For SuSE, /usr/src/packages/RPMS/s390x
  - For Red Hat, /usr/src/redhat/RPMS/s390x

- Install the Linux agent software using the following command:
  
  ```bash
  rpm -Uhv rpm_file_name
  ```
Enable the Linux agent to issue z/VM CP commands:

Enter the following command:

```
modprobe vmcp
```

This allows the Linux agent to issue CP commands in the current session.

Add the command in the `/etc/init.d/boot.local` (SuSE) or `/etc/rc.local` (Red Hat) file.

The Linux agent can issue CP commands the next time the Linux system starts.
Update the SOLVE service in the xinetd configuration:

- Create a file, named solve, in the /etc/xinetd.d directory, using the following name for the server program:
  
  /usr/sbin/calxagnt

- Sample SOLVE Service file:

  #Linux Agent for CA Mainframe Connector
  
  service SOLVE
  
  {
    socket_type = stream
    protocol = tcp
    wait = no
    user = root
    server = /usr/sbin/calxagnt
  }

  Note: If you are using SuSE, you can use YaST (Yet another Setup Tool) to create this file
If root privilege is **not** required, change the user under which the agent runs

(Optional) Add the following server argument to run the agent from a home directory:

```
server_args = -d home_directory_path
```

Enter the following command to restart the xinetd daemon:

```
service xinetd restart
```

Communication between the Linux agent and the z/OS region is configured
With CA OPS/MVS R12.0 or higher
— **INITLXC = YES/NO**
  - Starts the unsolicited message subtask processing at CA OPS/MVS initialization
  - F OPSx,RESTART(LXC) is the CA OPS/MVS command to restart or stop the unsolicited message subtask

— **BROWSELXC = YES/NO**
  - Controls whether unsolicited z/VM and Linux on System z message event records are written to OPSLOG

— **LXCRULES = YES/NO**
  - Enables )API LX* rules for unsolicited z/VM and Linux on System z messages
    - LXLOG001I for Linux on System z
    - LXMSG001I for z/VM
    - LXEVT001I for z/VM event message
Parameters must match the corresponding values specified in the Connector for Linux region

- LXCONMSG = ‘CALINUXUNSOLMSG:’
  - Name of z/OS name token pair containing the IP port number of Connector for Linux region message task

- LXCONCMD = ‘CALINUXCOMMANDS:’
  - Name of z/OS name token pair containing the IP port number of Connector for Linux region command task

NOTE the colons are part of the name!
Executes from within one of CA OPS/MVS’s USS servers

- VMCMD VMNODE(\textit{nodename}) COMMAND(‘command text’) WAIT(seconds) STEM(stem)

- LXCMD LINUX(\textit{linuxname}) VMNODE(\textit{nodename}) COMMAND(‘command text’) WAIT(seconds) STEM(stem)

- \textit{nodename} and \textit{linuxname} values are determined via topology messages sent to the unsolicited message subtask when
  - Connection is started
  - New systems are added after our connection is already active
  - Values will be put into a structured format for use with ADDRESS LXCON

- \textbf{WAIT} ignored if command initiated from an AOF rule
Executes from within the CA OPS/MVS address space

- LIST LINUX(*linuxname*) VMNODE(*nodename*)
  - Gathers topology data received from the Connector for Linux Region
  - Put records of topology data for matching LINUX and/or VMNODE names into the REXX EDQ
  - Available as resource data for System State Manager (SSM)
LXC events are presented as AOF Generic API events.

Only an activated CA OPS/MVS API interface can process the LXC message events:

- To activate the AOF API interface, set the APIACTIVE parameter to YES
  - `OPSPRM('SET','APIACTIVE','YES')`
CA OPS/MVS Linux Connector interface (LXCON) connects with the Linux Connector component through a local IP connection.

This interface delivers unsolicited message events from monitored VM and Linux systems as normalized messages that are processed as CA OPS/MVS API events.

Write API rules that specify how CA OPS/MVS can respond to these Linux and VM events.

Typically, the System State Manager (SSM) component of CA OPS/MVS is used to monitor and control the availability of Linux systems that run as VM guest computers.
CA Mainframe Connector for Linux on System z

Linux Connector API Rules

— The Address LXCON host command can be used to display any connected VM and Linux systems and to issue commands to the systems

— Every Linux Connector API event ID begins with a common prefix

- \textit{LX}

- Write individual API rules for specific LXCON events

- Write a single rule for all events
  - )API LX*
CA Mainframe Connector for Linux on System z
Linux Connector API Rules

— **Z/VM Messages**

  — **Description:**
    - LXMSG001I z/VM-node message-type user ID message-text

  — **Example**
    - LXMSG001I ZVM002 MSG POLLGEN NMVM0001 00:34:49 Hello

— **Z/VM Events**

  — **Description**
    - LXEVT001I z/VM-node user ID event-type

  — **Example**
    - LXEVT001I ZVM002 LINUX113 RUNNABLESTATEENABLED
CA Mainframe Connector for Linux on System z
Linux Connector API Rules

— Linux Syslog-ng Messages

  − Description
    • LXLOG001I Linux-name z/VM-host facility severity message-text

  − Example
    • LXLOG001I LINUX113 ZVM002 user notice logger: Test Message
One cross-enterprise SSM table

<table>
<thead>
<tr>
<th>SSM Control</th>
<th>CA11 -- OPS VIEW --</th>
<th>Row 1 to 1 of 1</th>
<th>Date/Time: 2011/10/10 08:44</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wait ==&gt; 30</td>
</tr>
<tr>
<td>System ===&gt;</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
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### One cross-enterprise SSM table

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**Bottom of data**
**Linux Resources in CA OPS/MVS**

**Guests and Applications**

- Unique table for each type of resource
  - LINUX_APPLS
  - LINUX GUESTS
  - STCTBL

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OPSVIEW brings together resources from LINUX_APPLS, LINUX_GUESTS, STCTBL tables.

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**Exceptions exist**
With CA SOLVE:Operations R11.9 or higher
System Administrators are able to configure how, or even if, CA SOLVE:Operations connects via the LINUXCONNECT parameter group.
— Define system tokens or ports that CA SOLVE:Operations will use to connect

— Define an alternate IP Address if Connector for Linux region is contactable via a different host

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| Command ===>
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<td>Enable Dynamic Discovery? .................... NO (Yes or No)</td>
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<tr>
<td>Load Discovered VM Images? ................... NO (Yes or No)</td>
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<td>Linux Resource Template ..................... LINUXONVM (to build resources)</td>
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Administrators are able to

- Enable/disable dynamic discovery of z/VM and Linux on System z systems
- Choose whether discovered images are loaded immediately or just defined for later inspection
— The last two parameters allow users to define the default system image version for discovered z/VM System Images and also the template to use when adding discovered Linux on System z systems.

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CA SOLVE:Operations
Automatic Discovery of z/VM System Images

- New System Images

- Systems dynamically discovered

```
DENM9-------- Automation Services : System Image --
Select Option ===>
L - Local System Images
SHR - Shared System Images
SPX - Sysplex System Images
VM - VM System Images
X - Exit
```

```
DENM9-------- Automation Services : System Image --
S/B=Browse U=Update C=Copy D=Delete R=Resources STL=Set TLog Size

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<td>ZVM0002</td>
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```

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### Linux on System z Resources in CA SOLVE:Operations

#### Guests and Applications

![Resource Monitor](image)

<table>
<thead>
<tr>
<th>System</th>
<th>Class</th>
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<td>DASD</td>
<td>DASD</td>
<td>ACTIVE</td>
</tr>
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<td>CA31</td>
<td>INIT</td>
<td>1</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>CA31</td>
<td>INTNL</td>
<td>PR(SOLVCICS)</td>
<td>ACTIVE</td>
</tr>
<tr>
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<td>JES</td>
<td>JES2</td>
<td>ACTIVE</td>
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<td>STC</td>
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<td>TAPE</td>
<td>OETC</td>
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</tr>
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**ZVM011**

- **LINUX**
  - LINUX181
- **ZVM011**
  - LXAPP LINUX181.CALXAGNT
  - LXAPP LINUX181.QA1
  - LXAPP LINUX181.QA2
  - LXAPP LINUX181.QA3
  - LXAPP LINUX181.QA4
  - LXAPP LINUX181.QA5
  - LXAPP LINUX181.QA6
  - LXAPP LINUX181.QA7
  - LXAPP LINUX181.QA8
  - LXAPP LINUX181.QA9
  - LXAPP LINUX181.QA10
  - LXAPP LINUX181.QA11
  - LXAPP LINUX181.QA12
  - LXAPP LINUX181.QA13
  - VMGST
  - ZVM011

**ZVM011**

- **ACTIVE**
- **INACTIVE**
- **MANUAL**
- **ATTENTION**

**LINUX181.QA2** HAS BEEN STOPPED BY KILL
**LINUX181.QA3** IS STARTING
**LINUX181.QA5** IS ACTIVE
**LINUX181.QA6** HAS BEEN FORCED TERMINATED
**LINUX181.QA9** HAS BEEN STOPPED BY KILL
**LINUX181.QA10** IS ACTIVE
**LINUX181.QA11** IS INACTIVE
**LINUX181.QA12** IS ACTIVE
**LINUX181.QA13** IS ACTIVE
**LINUX181.QA14** IS INACTIVE
**LINUX181.QA15** IS INACTIVE
**LINUX181.QA16** IS INACTIVE
**LINUX181.QA17** IS INACTIVE
**LINUX181.QA18** IS INACTIVE
**LINUX181.QA19** IS INACTIVE
**LINUX181.QA20** IS INACTIVE
**LINUX181.QA21** IS INACTIVE
**LINUX181.QA22** IS INACTIVE
**LINUX181.QA23** IS INACTIVE
**LINUX181.QA24** IS INACTIVE
**LINUX181.QA25** IS INACTIVE
**LINUX181.QA26** IS INACTIVE
**LINUX181.QA27** IS INACTIVE
**LINUX181.QA28** IS INACTIVE
**LINUX181.QA29** IS INACTIVE
**LINUX181.QA30** IS INACTIVE
**LINUX181.QA31** IS INACTIVE
**LINUX181.QA32** IS INACTIVE

---

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SOPSOPO1 (23.38.03) -- SOLVE:Operations : VM Command Entry --------Line 1 of 12

VMCMD  ===>  _
ZVMOO1  ===>  

System  SOPSOPO1  Limit 200_  Wrap ON_  Edit OFF  Scroll ON_  Async ON_  
1---------10--------20--------30--------40--------50--------60--------70--------
MAINT  -L0004, LINUX123 - DSC , LINUX122 - DSC , LINUX121 - DSC
ZWEB05  - DSC , ZWEB04 - DSC , ZWEB03 - DSC , ZWEB02 - DSC
ZWEB01  - DSC , ZWEBLOG - DSC , LINUX120 - DSC , ZADMIN - DSC
ZWRITE  - DSC , ZTCP - DSC , ZSERVE - DSC , RSCS - DSC
RSCSDNS  - DSC , VMX$0002 - DSC , FTPSERVE - DSC , SNMPD - DSC
VMX$0001  - DSC , VMSPPOOL - DSC , VMSCHED - DSC , VMSERVU - DSC
VMSERVS  - DSC , VMSERVR - DSC , VMSECURE - DSC , TCPIP - DSC
GCS  - DSC , OPERSYMP - DSC , DISKACNT - DSC , EREP - DSC
OPERATOR  - DSC , CAVLUSER - DSC
VSM  - TCPIP

VMCMD999 END OF RESPONSES
** END OF DELIVERED MESSAGES **

F1=Help  F2=Split  F3=Exit  F4=Print  F5=Find  F6=Retrieve
F7=Backward  F8=Forward  F9=Swap  F10=Left  F11=Right
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<td>0</td>
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<td>?</td>
<td>00:00:00</td>
<td>init [5]</td>
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<tr>
<td>root</td>
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<td>0</td>
<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
<td>[kthreadd]</td>
<td></td>
</tr>
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<td>2</td>
<td>0</td>
<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
<td>[migration/0]</td>
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<td>0</td>
<td>11:48</td>
<td>?</td>
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<td>?</td>
<td>00:00:02</td>
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<td>?</td>
<td>00:00:00</td>
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<td>00:00:00</td>
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<td>0</td>
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<td>?</td>
<td>00:00:00</td>
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<td>0</td>
<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
<td>[kintegrityd/0]</td>
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<td>2</td>
<td>0</td>
<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
<td>[kblockd/0]</td>
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<td>0</td>
<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
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<td>11:48</td>
<td>?</td>
<td>00:00:00</td>
<td>[klowcrw]</td>
<td></td>
</tr>
</tbody>
</table>

F1=Help     F2=Split    F3=Exit     F4=Print    F5=Find     F6=Retrieve
F7=Backward F8=Forward  F9=Swap    F10=Left    F11=Right
Summary

Linux systems are increasingly being moved to System z

CA Mainframe Connector for Linux on System z can automatically "connect" Linux and z/VM systems to z/OS based automation

Through new interfaces, CA SOLVE:Operations and CA OPS/MVS on z/OS allow you to manage the environment holistically

CA Technologies has created a robust simulator to stress test
Interested in Seeing More?

Visit the CA Linux Management for Mainframe web portal at:

Contact Information

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