

Z/VM One Touch — VMOT User Guide and Reference



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•Introduction

This manual describes how to use **Z/VM One Touch**; generally known as **VMOT**, the term that will be used in this and other product publications.

Prerequisites, installation and administration are discussed in the *Installation and Administration Guide and Reference*.

Overview

VMOT offers a standard Web interface to make it easy to unlock the tremendous cost saving potential of running hundreds of independent Linux systems inside a single IBM System z mainframe running z/VM.

By operating multiple Linux systems under z/VM, entire server farms may be consolidated onto one mainframe with enormous savings in energy, cabling, staffing and maintenance costs. For a fuller discussion of these potential savings, see IBM's Consolidate and Conquer page at: <http://www-1.ibm.com/servers/eserver/zseries/os/linux/consolidate.html>

VMOT builds on the solid foundation of z/VM to simplify the otherwise complex process of installing, monitoring and managing a large number of Linux systems.

Without **VMOT**, the complex hours long process of building a Linux system needs to be repeated for each Linux system that will be run under VM. With **VMOT**, a new Linux system can be created in about ten minutes or less after making a few selections in a browser window.

Once Linux systems are created, **VMOT** provides a Web interface to manage, start, stop and dispatch commands to either single Linux systems or selected groups.

VMOT provides two levels of grouping, one for the Administrator and one for users, to aid in the task of managing and controlling the large numbers of Linux systems that can be running under VM.

With **VMOT**'s Web client, all the work required to manage a Linux virtual machine requires no specialized VM or Linux technical skills. **VMOT**'s simple Web interface allows people with minimal technical knowledge to manage Linux systems under VM without having to deal with the several underlying VM tasks such as directory updates, CP commands, CMS commands, and 3270 sessions.

VMOT business cases

VMOT offers significant opportunities in a number of situations:

- **Production** environments seeking cost savings by consolidation of large numbers of lightly loaded servers into a single manageable platform, especially those with spare mainframe cycles.
- **Developers** needing to test complex server and client networks without the headaches of providing space, power, cabling and hubs. With VMOT, several groups of Linux systems can be configured for different development levels without needing any more hardware, floor space or cabling.
- **Educational providers** offering courses in System, Database, Network or Server (Web, Samba, NFS etc.) Administration, Kernel coding and complex tools such as IDEs and object modeling that require more resources than are normally available in standard issue PCs.

Students can have an environment where their dedicated Linux systems are available from any location and they can quickly restore their system to a known configuration if it becomes unusable. This gives students a safe environment to experiment with system internals without the danger of requiring the intervention of support staff to restore a disabled system.

- **Disaster Recovery Facilities** can be preloaded with customer server farms without the expense and depreciation of duplicating each customer's physical server configuration in hardware and cabling.

•Disk Storage Savings

With VMOT, a common read-only disk copy of a Linux configuration can be shared among any number of Linux systems. System changes can be propagated simply by updating this one copy.

Web Panels

All user access to **VMOT** is controlled through a number of web panels:

- Logon
- Display and Manage Images
- Create New Images
- View Batch Job Requests

Additionally help information is available from all panels except **Logon**.

Users with administration authority may also access Administration panels for management of Userids, Major Groups, Groups and IP Addresses. See the *Installation and Administration Guide and Reference* for information on the administration panels

•VMOT Group Design

Groups and Major Groups are used to organise Linux Images in a hierarchy that can simplify management of large numbers of Linux Images. Grouping is used within VMOT to:

- Organise Linux Images into logical subsets to facilitate management and control of these images by individual user groups.
- Limit access to Linux Images to authorized **VMOT** userids.

Grouping applies to Linux Images, **VMOT** userids and IP Addresses

•Grouping Scenario

For example, a college can set up a Major Group for a semester of a single course and have each student able to set up images in his default group. Students wanting to share images for a project can be enrolled in a project group where each student in the group can control that group's images. Students outside the project group or the course Major Group have no access to that project's images.

At the end of the term, all the Major Group's Linux images can be deleted with one command by the Major Group administrator, normally the instructor.

Alternatively, each department can have it's own Major Group and Groups can be set up for each course, section and term.

•Groups and Major Groups

Major Groups are collections of Groups.

•Group and Major Group Rules

- The same Group name can be used in more than one Major Group.
- Every Linux Image belongs to a Major Group.Group combination.
- Each Userid belongs to one Major Group and is assigned its Default Group (the same identifier as the userid) and any number of groups assigned by the Group Administrator.

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- A userid may create, view and control Linux Images belonging to his Major Group and one of his authorised Groups.
- Group and Major Group identifiers may be a maximum of 16 characters¹.

New Images are assigned IP Addresses belonging to either their Major Group or **Public** — a pseudo-Major Group for IP Addresses that may be assigned to any Linux Image.

¹ The characters are restricted to those acceptable in a CMS SFS directory name (the Administrator constructs Groups and Major Groups with the CMS CREATE DIRECTORY command).

VMOT Web Panels

Note: Cookies must be enabled on your browser for any VMOT panel to work.

All user access to **VMOT** is controlled through a number of web panels:

- Logon
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•**Logon**

Userids and **Passwords** are maintained inside **VMOT**. They are not stored in the CP **DIRECTory**. Logon will fail with either unknown users or incorrect passwords.

Data entered in the **USERid:** and **Password:** boxes are converted to uppercase.

Once a correct **USERid/Password** combination is entered and the **LOGON** button is pressed, the Main Function window shows the available functions. The Main Functions and the **LOGOFF** button are always available at the top of any **VMOT** panel.

The message: **LOGON requires a valid USERid and Password** is displayed when the userid and/or password are invalid. Please confirm that you have a correct userid and password. You may have to contact your **VMOT** administrator. Remember that this userid/password combination only applies to **VMOT**. It is neither a CP nor a Linux/390 **USERid/Password**.

•**Main Function Selections**

After a successful **Logon**, you will be presented with the main function selections. Main function selections are displayed near the top of each **VMOT** panel. Clicking on any of these functions takes you to the panel handling that function. In the help panels, clicking on any of the function selections takes you to the help panel describing that function. The Main Function Selections are:

- Display and Manage Images
- Create New Images
- View Batch Job Requests

You will also see:

- a **LOGOFF** button to log you off from **VMOT** and return you to the **Logon** panel and

a [View Help Information](#) link which will take you to panel help.

VMOT Display and Manage Images

Display and Manage Images

LOGOFF View Help Information

Either...

λ click on any **Image Name** to change its configuration and review logfiles, or

λ select one of these requests... Script Activate Deactivate Delete

Existing Images for Group Pattern ADMINISTRATOR.VLMADMIN ...

Refresh

Image Name	Creator USERid	Current Status	Type of Server	CPUs	CPU Size	IP Address	Date	Time
MYSAMPLE	VLMADMIN	Configured	Sample	1	128M	192.168.0.211	(today)	12:56:56

Once a Linux/390 image is created, this panel is used to monitor and control it along with the other images within your Major Group and authorised Groups. Your Major Group along with your currently selected Group is shown in the pull-down box following:

Existing Images for Group Pattern.

Groups and Major Groups

Your Userid is assigned a Major Group and one or more Groups. See on page 5 for more information.

Display Selections

When first entered, the panel shows existing Linux/390 images created in your Major Group and Default Group (your Userid).

Selection Mask

The Selection Mask appears as two input boxes above the image list. The mask can apply to either the Image Name, the Creator or both. A single * can be used in any position in either mask. This * can represent zero or more characters. You may also enter a single Image Name and/or Creator. The * is not required at the end. Any entry of characters in either mask will return all **VMOT** managed images with name and/or creator beginning with these characters within the Major Group.Group specified.

Trailing Blanks in a Selection Mask

To avoid selecting Images that begin with the same character string where one name is shorter than the others, you must enter a blank after the shorter name. **Trailing blanks do not show in the Selection Mask.**

Group Pattern Pull-Down

Your Userid is your Default Group. Within this box, you may select another group authorised for your Userid, or * to display all groups within your Major Group.

Refresh button

Click on the Refresh button to reselect the image list according to the existing or modified selection mask and Group pull-down.

Sample Listing Contents

A table is displayed with the following header and image information extracted according to the selection mask:

<u>Image Name</u>	<u>Creator USERid</u>	<u>Current Status</u>	<u>Type of Server</u>	<u>CPUs</u>	<u>CPU Size</u>	<u>IP Address</u>	<u>Date</u>	<u>Time</u>
MYSAMPLE	VLMADMIN	Configured	Sample	1	128M	192.168.0.211	(today)	12:56:56

In this case, images with creator beginning with GH in the Default Group, GHAEH, were selected. The date and time show when the image was created.

Managing an Image

Clicking on an Image Name takes you to a **Manage Image nnnnnnnn** panel. See for more information.

Viewing last batch job

Note that clicking on the **Status** value on any row of this table takes you to the VM/Linux console log of the batch job currently operating or last run in that image. See Viewing console log for more information.

Image Management Buttons

An Image Management Function may be selected which will operate on **all** displayed images:

Script

Run a script on the displayed Linux Virtual Machine images. You will be presented a box where you can enter the script.

Activate

Start and automatically IPL/boot the displayed Linux Virtual Machine images.

Deactivate

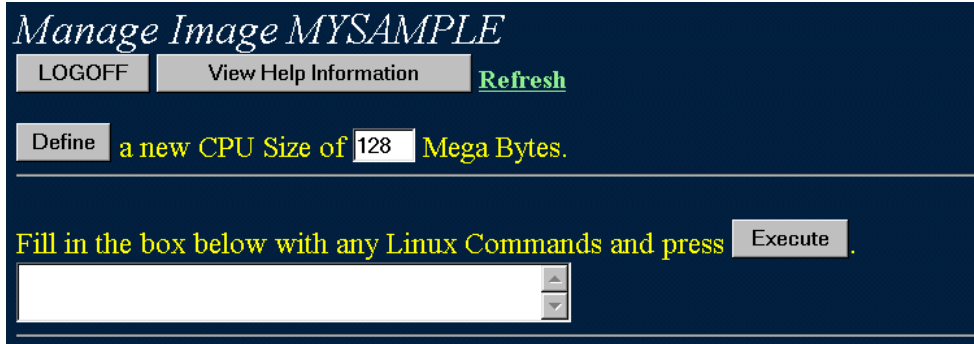
Shutdown and logoff the displayed Linux Virtual Machine images.

Delete

Delete the displayed Linux Virtual Machine images.

You will have an opportunity to review the list of images the Function will operate upon after clicking on the **SUBMIT** button. To avoid this operation, press the browser back button or make another selection.

Manage Image



This panel is used to perform the following tasks on a single Linux image:

- Change virtual storage size
- Execute Linux commands
- View the current disk configuration
- Add disk space to the Linux configuration
- View completed batch jobs.

Refresh Button

Click on the **Refresh** button to view any updates to the storage, disk configuration or list of batch jobs.

•Functions

•Change virtual storage size

Enter the new virtual storage desired for the Linux image and click **Define**.

•Execute Linux commands

Enter the commands in the box and click **Execute**.

•Disk Management

This panel shows the current disk configuration and supplies input boxes to allow you to add more disks to the Linux image

Disk Configuration Display

The disk configuration data of a sample Linux/390 image is shown below:

Command line is: `dasd=0150-015f root=/dev/dasda1 ro noinitrd iucv=TCPIP`
 Currently configured DASD is as follows...

Unit Address	3390 DASD in Cylinders	Device Name	Mount Point	FS Type	Options	Dump	FSCK
0150	0400	/dev/dasda1	/	ext2	defaults,errors=remount-ro	0	1
0152	1112	/dev/dasdc1	/usr	ext2	defaults,ro	0	1

Fill in the number of **3390 DASD Cylinders** and a unique **Mount Point** to add more disk space.
 Press **Add** to submit your request.

Choose a logfile to view from any date below...
 (today) (552 records)

Where:

Unit Address	Virtual device number of the VM/ESA minidisk
3390 DASD Cylinders	Size of disk in 3390 cylinders (approx. 720 Kb/cyl)
Device Name	Linux/390 Device Identifier
Mount Point	Directory associated with this Device
FS Type	Linux file system type
Options	Various Linux file system options. Two common options are: defaults Read/Write access

	auto,ro Read Only access
Dump	flag for dumping
FCK	flag to perform file system check on boot.

•Adding disks

At the bottom of the disk configuration list are two input boxes you may use for adding VM/ESA minidisks to this image.

Fill in the number of 3390 DASD Cylinders you require and the Directory Name you wish to use for the mount point. Then click on the **Add** button. The batch job to add the minidisk to your Linux/390 image will be queued immediately; so, be sure before you click **Add**.

•Batch Job list

A table is displayed showing all the batch jobs submitted for this image in reverse chronological order.



•Viewing a batch job

Clicking on any item in the table will display the VM/Linux console log of that batch job. See Viewing console log for more information.

•View Log

The VM/Console Log is accessible from the View Batch Job Requests main function.

Direct entry from Display and Manage Images

The log may also be reached directly by clicking on the **Status** value on any row of the tables shown by **Display and Manage Images**. In that case, the console log of the batch job currently operating or last run in that image is displayed. To see earlier batch jobs for an image, you must click on **View Batch Job Requests** and select the job you want to see.

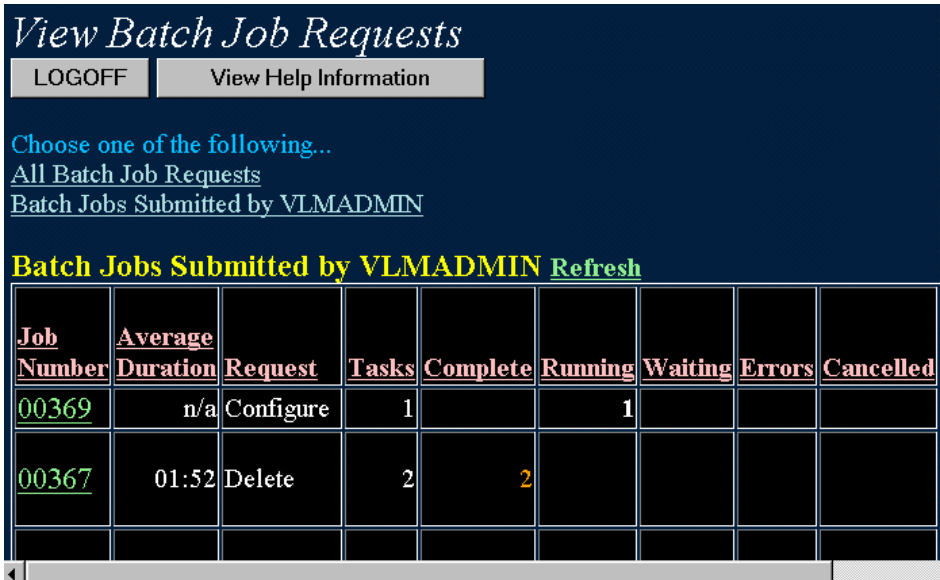
After the Listing Header, you are presented with two options:

Refresh	refreshes the console log. This option is only relevant for a batch job still in progress.
Go back to Job nnnnn	returns you to View Batch Job Requests with just that job displayed

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The remainder of the screen displays the console messages from VM/ESA and Linux/390 as a batch job runs.

View Batch Job Requests



View Batch Job Requests

LOGOFF View Help Information

Choose one of the following...
[All Batch Job Requests](#)
[Batch Jobs Submitted by VLMADMIN](#)

Batch Jobs Submitted by VLMADMIN Refresh

Job Number	Average Duration	Request	Tasks	Complete	Running	Waiting	Errors	Cancelled
00369	n/a	Configure	1		1			
00367	01:52	Delete	2	2				

Selection of this panel shows all batch jobs submitted by your VMOT userid. To view a job, click on a Job Number in the first column.

You will then see a task list for that job. Click on the **Task Number** to View the console log for that job.



View Tasks for Batch Job 00367

LOGOFF View Help Information

Choose one of the following...
[All Batch Job Requests](#)
[Batch Jobs Submitted by VLMADMIN](#)

Delete request Refresh

Task Number	Duration	Status	Image	Return Code	Date	Time
0001	01:05	Complete	FOREIGN	0	19 Mar 2002	11:18:36
0002	02:39	Complete	IUCV-215	0	19 Mar 2002	11:20:38

View Task 0002 in Batch Job 00367

LOGOFF View Help Information

Choose one of the following..
[All Batch Job Requests](#)
[Batch Jobs Submitted by VLMADMIN](#)

Delete request for Image IUCV-215 (Complete 02:39)
[Refresh](#) or [Go back to Job 00367](#)
[Move to Last Line](#)

```
11:17:59 19 Mar 2002 Start of Job 00367, Task 0002
11:17:59
11:18:19 Deleting Image IUCV-215 from CP DIRECTORY...
11:20:17 Deleting Image IUCV-215 from CP DIRECTORY, rc: 0
11:20:17 Deleting Image IUCV-215 from CMS SFS...
Deleted USERS:
IUCV-215
```

Create New Images

This panel lets you select from the available options for creating a new Linux/390 image.

Type of Server

At the time of development, SuSE and Marist Linux/390 images were available. Your VMOT Administrator will have made at least one available for selection.

•Image Name

Normally you may enter whatever you like for a Linux Image name as long as it meets the requirements for a VM Userid and is not already in use. In the case where the IP Address connects to TCP/IP VM via an IUCV link, the userid name is defined in the link definition and must be used for the Image Name.

•non-IUCV

Select a unique name for the image.

•IUCV

Enter **IUCV** for the Image Name. The Userid Names defined for the IUCV links in the IP Addresses you select will be used for the Image Names.

•CPUs

Enter the number of virtual CPUs that will be available to your image. Virtual CPUs will allow simultaneous execution of tasks on a Linux/390 image provided that:

- multiple CPUs are available on the VM/ESA platform
- workload and VM/ESA performance settings permit this image to use multiple real CPUs.

•Number of Images

This number specifies the number of images that will be created with these options. When more than one image will be created, subsequent IP Addresses will be incremented from the number given for First Available IP Address.

•CPU Storage in Megabytes:

This number is the amount of CPU storage (RAM) the Linux/390 will believe it has. This virtual storage is managed by VM/ESA so that the Linux/390 image can treat its storage just the same as RAM.

•First Available IP Address:

Select one of the available IP Addresses in this pull-down list.

An Image Name of IUCV will restrict selection to IUCV Connection Types. Any other Image Name will select from non-IUCV Connection Types. Create Image can not create any more Images than there are compatible IP Addresses available.

•Viewing available IP addresses

Scroll through the IP Address pull-down list to review the properties of the IP Addresses that are available.

•Multiple images

If you are creating multiple images, this IP address, if compatible, will be used for the first image. Subsequent compatible and available IP addresses will be used for the other images.

Group

Your Default Group is preselected in this pull-down box. You may select another of your authorized groups by clicking on the pull-down and selecting the group you want.

•Optional Linux Commands

Any Linux commands you wish to be run after configuration of the Linux image may be specified here.

•Create button

After clicking this button, a status message with any errors will be displayed at the bottom of the panel. Once this message is displayed, you may correct any errors, create more images or select another function.

Import

Import a Server Model known as , provide...

λ a USERid in the CP DIRECTory of an already existing Linux/390 Image:

λ along with the Password for the "root operator":

Comment [1]: StartFragment

Any foreign Linux/390 USERid in the CP DIRECTory can be Imported. The USERid to be Imported will be CP XAUTOLOGged. All the required details for the Imported Image will be stored and listed as a Server Model when the Create Images topic is selected once the Import completes.

To import a server model:

1. Enter a **Server Model** name in the first textbox.
2. Enter the VM Userid of the Server Model to be imported.
3. Enter the root password for Server model in the last textbox.
4. Click the **Import** button.

Display and Manage Images indicates the status of the Import.

Comment [2]: EndFragment

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