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A new approach to managing Virtual Infrastructure using the *EnSpeed VM Orchestrator*

A Thinsy White Paper

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Widespread adoption of Virtual Infrastructure software is causing an explosion in the number of Virtual Machines running in datacenters. Management of this Virtual Machine 'sprawl' is manpower intensive, and thereby expensive. The *EnSpeed VM Orchestrator* is a Next Generation Virtual Infrastructure Management Server that aims to reduce the cost of managing Virtual Machines by means of the following core features:

1. Integrated Management of Storage and Virtualization

2. Fully Multi-User Server provides self service capabilities
3. Full Lifecycle Management of Virtual Machines

Integrated Management of Storage and Virtualization

Most Virtualization projects have included external Storage such as a SAN or NAS. The reason for this architecture is that current Virtualization Software from market leaders requires external Storage for essential features such as High Availability and Live Migration. The unintended consequence of this architecture is that Storage is managed separately from the Virtualization Servers. *EnSpeed VM Orchestrator* solves that problem by providing a user friendly interface to managing the Storage features offered by *EnSpeed LiveSync VMM*.

Multi User Capabilities are built into the VM Orchestrator

The *EnSpeed VM Orchestrator* was designed with multi-user capabilities. Products such as VMware Virtual Infrastructure were targeted at system administrators. They are built as single user applications, and

used by individual system administrators to manage a cluster of VM Servers. End users of these VMs do not have access to the Virtual Infrastructure Management Console.

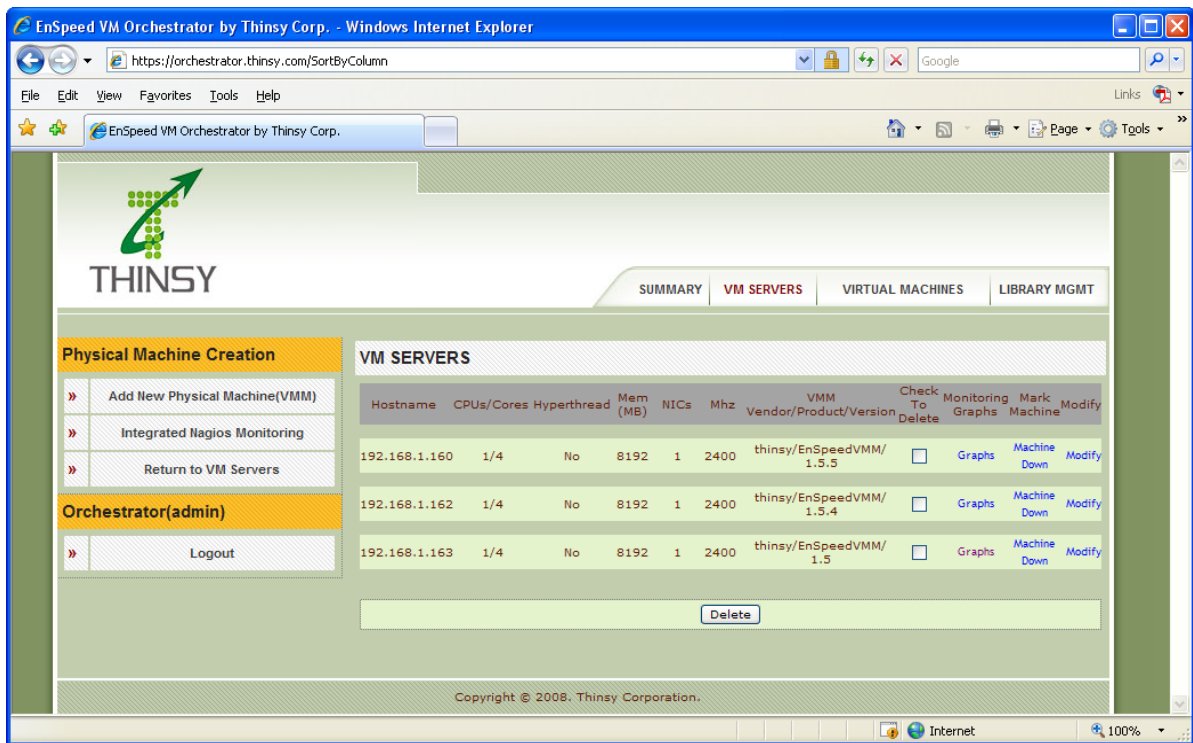
The VM Orchestrator has been designed for ISPs and ASPs. In order for ISPs/ASPs to provide Cloud Compute services, they need a management server that is capable of supporting customers from multiple companies.

EnSpeed VM Orchestrator has three privilege levels for users. Different functions are exposed to users of the three different privilege levels.

which is exclusive to users of the highest Privilege Level – Manager.

Users of medium privilege level – Power Users, have the ability to create sub-ordinate users. This feature is designed for ISPs and ASPs who wish sell Cloud Compute services using the VM Orchestrator. A designated ‘Power User’ of a client company can have multiple sub-ordinate users, each of whom owns a single VM.

Finally, ‘Regular Users’ own exactly one VM, and have the ability to power on/off the VM, and view a full graphical console to the Virtual Machine.




The screen capture above shows the “VM Servers” tab,

Virtual Machines logout(jagane1)

| | | | | | |
|-------------------|-------------------------|---------------|------------------------------|-------------------------|-----------------|
| VMID 29 | VM Name MyUbu | | Powered Up On Primary VMM | 192.168.1.202: /vms1 | No Backup VMM |
| Memory 512 MB | Disk0 8192 MB | Disk1 0 MB | Disk2 0 MB | MAC 00:16:3e:a2:0:1d | IP Not known |
| | | | | | Clone VM |

Disconnect | Options | Clipboard | Send Ctrl-Alt-Del | Refresh



Username:

Options enspeed-desktop // Tue Sep 23, 10:50 AM

The above screen capture is shows the graphical console of an Ubuntu Virtual Machine. This virtual machine is owned by a 'Regular User' and the functionality available to the user is limited to power on/off, change CDROM, and display graphical console.

Full Lifecycle Management of Virtual Machines

A VM's lifecycle comprises its **creation, operation, backup and deletion**. The VM Orchestrator provides extensive functionality in each stage of a VM's life, with particular emphasis on features useful to Cloud Compute providers.

VM Creation

The two ways to create a VM are:

1. **'Blank VM'** with a CDRROM emulated using an ISO image of an OS install CD.
2. From a **'Virtual Appliance'** in the Virtual Appliance Library

ISO Library

'ISO File' is a term used to describe a file created by copying the contents of a CDRROM bit for bit. The VM Orchestrator provides functionality to upload and store ISO files, typically created from OS install CDs.

A fresh install of an OS in a VM is easily accomplished using the 'Blank VM' method of creating a VM.

Virtual Appliance Library

'Virtual Appliance' is a term used to refer to a zip file containing the virtual disk image(s), and a descriptive xml

file. The virtual disk image(s) contain pre-packaged functionality, for example, a Content Management Server consisting of the Drupal Application installed on CentOS. Using the data in the xml file, and the virtual disk images, any number of Drupal Virtual Machines can be created on VM Servers.

Virtual Appliances can be obtained from the following sources:

1. Downloading EnSpeed Virtual Appliances from the EnSpeed Virtual Appliance Directory.
2. Copying back an existing VM from one of the VM Servers.
3. Taking a full backup of one of the VMs running in the VM Server cluster.

One scenario of use of the Virtual Appliance library is described here:

- Download the EnSpeedCentos5 Virtual Appliance into the VM Orchestrator
- Create a VM called 'mybase' on VM Server 192.168.1.160 using the Virtual Appliance EnSpeedCentos5
- Install the Oracle DB on Virtual Machine 'mybase'
- Customize Oracle to suit purposes
- Perform a 'Copy Back VM' on 'mybase' and create new Virtual Appliance 'OracleCentos'

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SUMMARY VM SERVERS VIRTUAL MACHINES LIBRARY MGMT

Virtual Appliance Creation

- » Copy Back VM
- » Copy Back VM Status
- » Download Enspeed Virtual Appliance
- » Download Virtual Appliance Status
- » Upload Vdisk And Create VA
- » Return to Library Management

Manage ISO Library

- » ISO Library
- » Upload New ISO

Orchestrator(admin)

- » Logout

Virtual Appliance Library Management

| Name | Memory(MB) | Disk0(GB) | Disk1(GB) | Disk2(GB) | Disk3(GB) | Modify | Select for Deletion |
|--------------------------|------------|-----------|-----------|-----------|-----------|--------|--------------------------|
| EnSpeedUbuntu-7.10-VA-v1 | 512 | 6 | -- | -- | -- | Modify | <input type="checkbox"/> |
| CentOS46Server-VA-v1 | 512 | 4 | 2 | -- | -- | Modify | <input type="checkbox"/> |
| CentOS51-usbmouse-xen-v1 | 512 | 4 | -- | -- | -- | Modify | <input type="checkbox"/> |
| EnSpeedAlfrescoVA-v2 | 512 | 4 | 1 | 2 | -- | Modify | <input type="checkbox"/> |
| webfront-07132008 | 512 | 4 | 2 | -- | -- | Modify | <input type="checkbox"/> |
| Rex-6.0.69 | 2048 | 20 | -- | -- | -- | Modify | <input type="checkbox"/> |
| vivu_int-07-22-2008 | 512 | 8 | 1 | 8 | -- | Modify | <input type="checkbox"/> |
| EnSpeedDrupalVA-v2 | 256 | 4 | 1 | 2 | -- | Modify | <input type="checkbox"/> |
| Centos51-8G-8G | 512 | 8 | 1 | 8 | -- | Modify | <input type="checkbox"/> |
| lightpole-07142008 | 512 | 4 | -- | -- | -- | Modify | <input type="checkbox"/> |
| EnSpeedSugarVA- | 256 | 4 | 1 | 2 | -- | Modify | <input type="checkbox"/> |

The above screen capture shows the Virtual Appliance library.

Virtual Appliances are a central concept in the lifecycle of a VM. Virtual Appliances downloaded from the public Virtual Appliance directories provide a quick and easy way to start off. For example, getting a LAMP stack up and running can be accomplished in a matter of minutes. Further, once a VM has been created and customized, the customized VM can be 'Copied Back' to create a Virtual Appliance.

VM Operation

The 'Virtual Machine' tab of a manager is shown below. VM Power On/Off, Deletion, and Migration are accomplished using buttons in this tab. Other interesting information in this view includes the Primary and Backup VM Server for each VM,

Appliance has the effect of 'Restoring the VM from backup'

VM Deletion

A powered off VM can be deleted from the VM Servers by pressing the 'Delete VM' button

| VMID | Name | Operations | Status | Primary VMM | Backup VMM |
|------|------------------|------------|---------------------------|---------------------|---------------------|
| 151 | thinbugz (admin) | | Powered Up On Primary VMM | 192.168.1.162:/vms1 | 192.168.1.163:/vms1 |
| 154 | Vivu (siva) | | Powered Up On Primary VMM | 192.168.1.163:/vms1 | 192.168.1.162:/vms1 |
| 157 | ltpole (haobo) | | Powered Up On Primary VMM | 192.168.1.162:/vms2 | 192.168.1.163:/vms2 |
| 158 | vivuint (siva) | | Powered Up On Primary VMM | 192.168.1.163:/vms2 | 192.168.1.162:/vms2 |
| 159 | webfnt2 (admin) | | Powered Up On Primary VMM | 192.168.1.162:/vms1 | 192.168.1.163:/vms1 |
| 162 | centos1 (admin) | | Powered Up On Primary VMM | 192.168.1.160:/vms1 | 192.168.1.163:/vms1 |

and the current status of the VM.

VM Backup

The EnSpeed VM Orchestrator, along with EnSpeed VMM with LiveSync enables full backup of running VMs without the need to shutdown the VM. The result of such a backup operation is the creation of a new Virtual Appliance in the Virtual Appliance directory. Creating a new VM from this Virtual

About Thinsy Corporation

Thinsy Corporation was founded with the mission of revolutionizing software application delivery using Virtualization technology. Thinsy is a privately held California Corporation. For more information, contact sales@thinsy.com