Expanding Livmomi

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Overview

- What is Livmomi?
- Why does it matter?
- Expanding Feature-set Controls
- Challenges
- Research Topics
- Wrap Up
VMware Environment

- VCenter
  - Hypervisor1
    - VM1
  - Hypervisor2
    - VM2
    - VM3
What is Livmomi?

- Livmomi: Set of scripts (developed within LC) written in Python using the Pyvmomi open-source API
  - Pyvmomi: Python VMware Managed Object Management Interface
  - Allows us to manage and gather information about VMs

- VMware environment consist of vCenters and hypervisors used for hosting and monitoring VMs
Why Does it Matter?

- What used to take minutes using VMware’s vSphere GUI is done in seconds with Livmomi
- Increased efficiency and productivity in LC infrastructure clusters
- Various features are not supported via the GUI
- Who's using it — SAG, LC
Powering On and Off VMs

- New script that was added to the Livmomi suite
- Powers on and off VMs
- Supports hostlists and wildcards
- Returns status if operation is already complete
Retrieving Host Info From Specified VMs

- View the power states of VMs

```
(venv)[xie3@lgw2:livmomi]$ ./get_host_vms.py --host 192.168.60.17 --user administrator --password
--human --state
192.168.60.17
lt-vm7: PoweredOn
lt-vm6: PoweredOn
lt-vm5: PoweredOn
lt-vm4: PoweredOn
lt-vm3: PoweredOn
lt-vm2: PoweredOn
lt-vm1: PoweredOn
```

- Find a VM's host given its name

```
(venv)[xie3@lgw2:livmomi]$ ./get_host_vms.py --host 192.168.60.17 --user administrator --password
--human --vm lt-vm4
192.168.60.17
lt-vm4
```

- All flags can be combined together
VM Snapshot Operations by Snapshot ID

- Snapshots previously were being identified by the name
- Now operations can be done by using the snapshot ID

```
Displaying list of snapshots on virtual machine lt-vml
VM: lt-vml; Snapshot name: Snapshot-2018-08-08; Snapshot ID: 11; Description: ; CreateTime: 2018-08-08 21:49:00.251965+00:00
VM: lt-vml; Snapshot name: Snapshot-2018-08-08; Snapshot ID: 12; Description: ; CreateTime: 2018-08-08 21:49:06.031018+00:00
VM: lt-vml; Snapshot name: Snapshot-2018-08-08; Snapshot ID: 13; Description: ; CreateTime: 2018-08-08 21:49:10.081025+00:00
The total number of snapshots for VM: lt-vml is 3

[shorti@lgw2:livmomi]$ ./snapshot_vm.py --vm lt-vml --operation remove --snap_id 13 --host 192.168.60.17
Removing snapshot Snapshot-2018-08-08 from VM: lt-vml
```
Other Tasks and Features

• Created `colorize()` function to add color and highlights to output

• Fixed `parse_hostlist()` function to support lists with names that include dashes

• Created `splitter()` to replace `parse_hostlist()`
  • Faster run times
  • Flexible user input formatting
  • Ordered output

```
['lt-vm1', 'lt-vm2', 'lt-vm3', 'lt-vm4', 'lt-vm5', 'lt-vm9', 'lt-vm10', 'lt-vm50', 'lt-vm51',
 'lt-vm52', 'lt-vm53', 'lt-vm54', 'lt-vm55', 'lt-vm56', 'lt-vm57', 'lt-vm58', 'lt-vm59', 'lt-vm60',
 'lt-vm61', 'lt-vm62', 'lt-vm63', 'lt-vm64', 'lt-vm65', 'lt-vm66', 'lt-vm67', 'lt-vm68', 'lt-vm69',
 'lt-vm70', 'lt-vm71', 'lt-vm72', 'lt-vm73', 'lt-vm74', 'lt-vm75', 'lt-vm76', 'lt-vm77', 'lt-vm78',
 'lt-vm79', 'lt-vm80', 'lt-vm81', 'lt-vm82', 'lt-vm83', 'lt-vm84', 'lt-vm85', 'lt-vm86', 'lt-vm87',
 'lt-vm88', 'lt-vm89', 'lt-vm90']
```
Improvement on Host Lists Parsing Time

Real: actual process run time beginning to end
User: time required by CPU to execute user-defined code
Sys: time required by CPU to execute system calls
Challenges

- Working with the Pyvmomi API and figuring out its intricacies
- Some of the Pyvmomi documentation is outdated
- Unable to use Git in the testing environment due to security limitations
Research Topics

• What's the best way to customize the OS on a newly cloned VM?

• Is it possible to migrate one vm to another environment all together?

• Create a script that will update a ESXi/Host
What's Next

- Wrap Livmomi up into a RPM for easier installation on LC systems
- Expand the Pyvmomi API
- Adding new functionality to Livmomi
- Implement Chris Moussa's parse_hostlist function
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