

Ansible VM Lifecycle Management

System Orchestration Tool

Toshaan Bharvani - VanTosh bvba

<toshaan@vantosh.com>



Ansible Benelux Meetup 28/02/2015

28 February 2015

Toshaan Bharvani - VanTosh

- From Antwerp, Belgium
- Self-employed engineer/trainer (available for hire)
<http://www.vantosh.com>
- Involved with Enterprise OS : RHEL, CentOS, IBM AIX, OpenBSD, FreeBSD, SLES, ...
- Likes to keep everything secure : SELinux, WebSec, ...
- Lives in a virtual world : KVM, Xen, LXC, PowerVM, z/VM, ...
- Likes automation : Ansible, Puppet, Salt
- Works on both hardware and software side
- Wants to take over the world
- Twitter : [@toshywoshy](https://twitter.com/toshywoshy)
- Blog : <http://www.toshaan.com>

Table of contents

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practicle Ansible
VMInstaller

Conclusion

The End

- 1 What is Ansible?
- 2 Ansible for Virtual Machines
- 3 VMInstaller internals
- 4 Practicle Ansible VMInstaller
- 5 Conclusion

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

1

What is Ansible?

Introducing



“Ansible is a fictional machine capable of instantaneous or superluminal communication. Typically it is depicted as a lunch-box-sized object with some combination of microphone, speaker, keyboard and display. It can send and receive messages to and from a corresponding device over any distance whatsoever with no delay.”¹

- Configuration Management Tool
- System Orchestration Tool
- Remote Execution/Deployment Tool
- ...

¹Rocannon's World - Ursula K. Le Guin

An overview

What is Ansible?

Ansible for Virtual Machines

VMInstaller internals

Practice Ansible VMInstaller

Conclusion

The End

- Python2 based
- Server based, agentless²
- uses SSH (can use accelerated mode uses a daemon and port)
- host information in flat files, CMDB, scripts, ...
- executes a task on the host side
- Playbook : combination of tasks with meta information
 - YAML
 - JSON
- Templates : Jinja2
- works where Python2 works³

² Abstraction of SSH and in certain setup an agent might be required, but by default it is not necessary

³ Ansible can actually run without Python on the remote host, however it is not fully supported

Internal Design

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

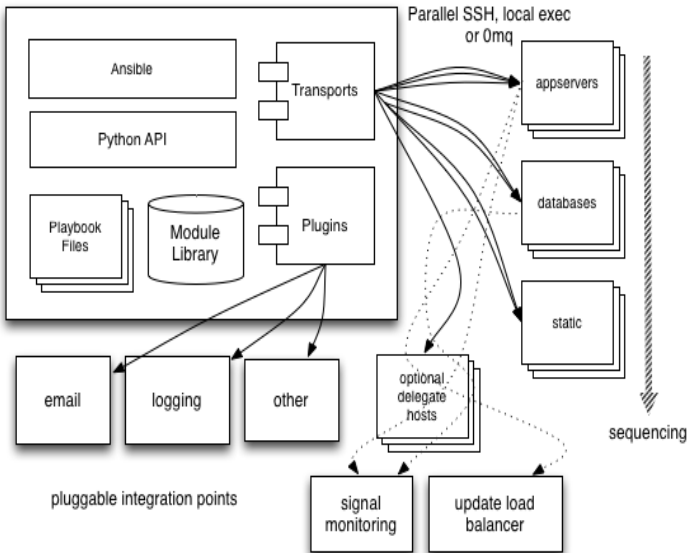
Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End



Normal Adhoc Mode

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

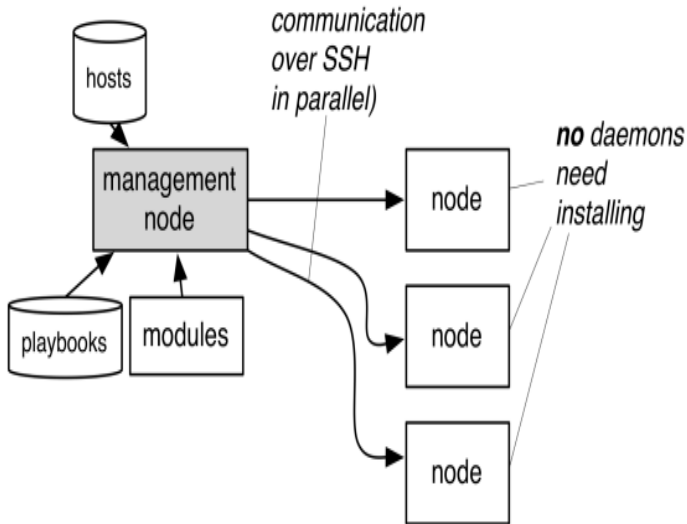
Ansible for
Virtual Machines

VMInstaller
internals

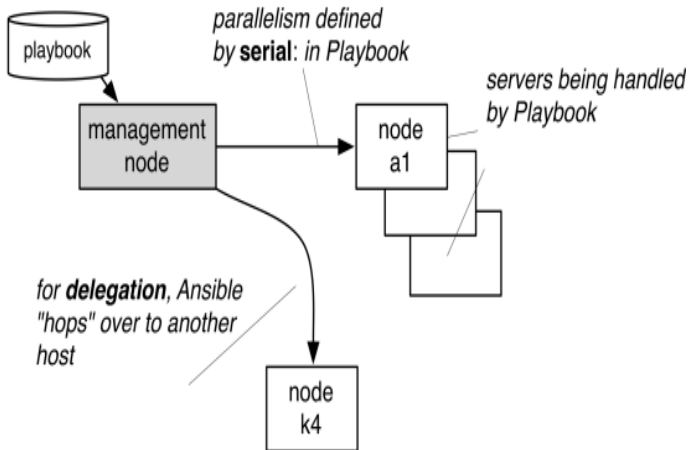
Practice Ansible
VMInstaller

Conclusion

The End



Delegation Mode



What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

2

Inventory

- hosts file is by default in ini format

```
1 [hypervisors]
2   hypervisor0 ansible_ssh_host=hyper0.vantosh.com ansible_ssh_port=22221
3     ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
4       key0
5   hypervisor1 ansible_ssh_host=hyper1.vantosh.com ansible_ssh_port=22222
6     ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
7       key1
8   hypervisor2 ansible_ssh_host=hyper2.vantosh.com ansible_ssh_port=22223
9     ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
10      key2
11  hypervisor3 ansible_ssh_host=hyper3.vantosh.com ansible_ssh_port=22224
12    ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
13      key3
14
15 [virtualmachines]
16   vm0 ansible_ssh_host=vm0.vantosh.com ansible_ssh_port=22230
17     ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
18       key4
19   vm1 ansible_ssh_host=vm1.vantosh.com ansible_ssh_port=22231
20     ansible_ssh_user=ansible ansible_ssh_private_key_file=/path/to/my/private/
21       key5
22   vm2
23   vm3
```

Inventory - Virtual Machine (el6)

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practical Ansible
VMInstaller

Conclusion

The End

```
1 ---
2 hyper: hypervisor0
3 distro: centos6
4 rootpwd: $1$f0pPKH0e$0xrNcWX07Ki9DPmpcmJ7X.
5 virtualfilespace: /virtual/
6 disks:
7   - { path: /virtual/star-boot0.qcow2 , size: 512M }
8   - { path: /virtual/star-root0.qcow2 , size: 6G }
9   - { path: /virtual/star-swap0.qcow2 , size: 512M }
10  - { path: /virtual/star-swap1.qcow2 , size: 512M }
11 vmwaittime: 5
12 virtualcpus: 1
13 ramsize: 512
14 language: en_US
15 keyboard: us
16 timezone: "Europe/Brussels"
17 nics:
18   - { type: bridge , name: br0 , model: virtio }
19 networks:
20   - network --bootproto=dhcp --device=eth0 --onboot=on --hostname=star.
    vantosh.com
21 partitions:
22   - part /boot --ondisk=vda --asprimary --fstype="ext4" --fsoptions='defaults
    ,noatime,discard' --grow --size=1
23   - part pv.01 --ondisk=vdb --asprimary --grow --size=1
24   - volgroup VolGroupRoot --pesize=131072 pv.01
25   - logvol / --fstype="ext4" --fsoptions='defaults,noatime,discard' --name=
    LogVolRoot0 --vgname=VolGroupRoot --grow --size=1
26   - part swap --onpart=vdc --asprimary --fstype="swap" --fsoptions='defaults,
    discard' --grow --size=1
27   - part swap --onpart=vdd --asprimary --fstype="swap" --fsoptions='defaults,
    discard' --grow --size=1
28 bootloader: bootloader --location=mbr --driveorder=vda,vdb,vdc,vdd
29 sshdkeylength: 8192
30 users:
31   - { name: supervisor , id: 1000 , ssh: yes , sshpubkey: /home/toshywohy/.
    keys/id_star.pub }
```

Inventory - Virtual Machine (debian)

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual MachinesVMInstaller
internalsPractice Ansible
VMInstaller

Conclusion

The End

```
1 ---
2 hyper: hypervisor2
3 distro: debian7
4 locale: en_US.UTF-8
5 keyboard: us
6 timezone: Europe/Brussels
7 rootpwd: $!$aE.C1rlH$00/ReCFABgz49g2fvw02D.
8 virtualfilepath: /virtual/
9 disks:
10 - { path: /virtual/alien-boot0.qcow2 , size: 1G , name: vda }
11 - { path: /virtual/alien-root0.qcow2 , size: 9G , name: vdb }
12 - { path: /virtual/alien-home0.qcow2 , size: 9G , name: vdc }
13 - { path: /virtual/alien-swap0.qcow2 , size: 1G , name: vdd }
14 virtualcpus: 1
15 ramsize: 128
16 nics:
17 - { type: bridge , name: br1 , model: virtio }
18 networks:
19 - { name: eth0 , ipaddress: 192.168.122.142 , netmask: 255.255.255.0 ,
20   gateway: 192.168.122.241 , nameserver: 192.168.122.1 }
21 partitions:
22 - '512 10 2048 ext3 $defaultignoref { } $primaryf { } $bootablef { } method{ format
23   } format{ } use_filesystem{ } filesystem{ ext3 } mountpoint{ /boot }
24   options/noatime{ noatime } device{ /dev/vda } .'
25 - '500 10000 1000000000 ext4 method{ lvm } vg_name{ rootvg } device{ /dev/vdb
26   } .'
27 - '500 10000 1000000000 ext4 $lvmokf { } in_vg{ rootvg } lv_name{ rootlv0 }
28   method{ format } format{ } use_filesystem{ } filesystem{ ext4 } mountpoint{
29   / } options/noatime{ noatime } .'
30 - '500 10000 1000000000 ext4 method{ lvm } vg_name{ homevg } device{ /dev/vdc
31   } .'
32 - '500 10000 1000000000 ext4 $lvmokf { } in_vg{ homevg } lv_name{ homelv0 }
33   method{ format } format{ } use_filesystem{ } filesystem{ ext4 } mountpoint{
34   /home } options/noatime{ noatime } .'
35 - '512 10 2048 linux-swap method{ lvm } vg_name{ swapvg } device{ /dev/vdd }
36   .'
37 - '512 10 2048 linux-swap $lvmokf { } in_vg{ swapvg } lv_name { swaplv0 }
38   method{ swap } format{ } device{ /dev/vdd } .'
39 vmwaittime: 7
```

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

3

Virtual Machines

Playbooks - el6

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual MachinesVMInstaller
internalsPractice Ansible
VMInstaller

Conclusion

The End

```
1 ---
2 - name: install-vm-el6
3   hosts: "{{ host }}"
4   vars_files:
5     - "vars/distros/{{ distro }}.yml"
6   gather_facts: no
7   sudo: yes
8   pre_tasks:
9     - local_action: slurp src={{ ansible_ssh_private_key_file }}.pub
10     sudo: no
11     register: sshpubkey
12     - action: qemu-img dest={{ item.path }} size={{ item.size }} format="qcow2"
13       options="preallocation=metadata"
14       with_items: disks
15       delegate_to: "{{ hyper }}"
16     - action: template src="{{ ansible_playbook_dir }}/templates/el6/kickstart.cfg"
17       dest="{{ virtualfiles_path }}/{{ inventory_hostname }}.cfg"
18       delegate_to: "{{ hyper }}"
19     - action: template src="{{ ansible_playbook_dir }}/templates/common/install-vm.sh"
20       dest="{{ virtualfiles_path }}/{{ inventory_hostname }}-create-vm.sh"
21       owner=root group=root mode=770
22       delegate_to: "{{ hyper }}"
23     - action: command /bin/bash {{ virtualfiles_path }}/{{ inventory_hostname }}-
24       create-vm.sh
25       delegate_to: "{{ hyper }}"
26       register: createdvm
27     - local_action: pause minutes={{ vmwaittime }}
28     - action: template src="{{ ansible_playbook_dir }}/templates/common/minram.sh" dest="{{
29       virtualfiles_path }}/{{ inventory_hostname }}-minram.sh" owner=root group=
30       root mode=770
31       delegate_to: "{{ hyper }}"
32       when: ramsize < minram
33     - action: command /bin/bash {{ virtualfiles_path }}/{{ inventory_hostname }}-
34       minram.sh
35       delegate_to: "{{ hyper }}"
36       when: ramsize < minram
37     - action: virt guest={{ inventory_hostname }} command=start
38       delegate_to: "{{ hyper }}"
39     ignore_errors: yes
```

Playbooks - debian

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual MachinesVMInstaller
internalsPractice Ansible
VMInstaller

Conclusion

The End

```
1 ---
2 - name: install-vm-debian
3   hosts: "{{ host }}"
4   vars_files:
5     - "vars/distros/{{ distro }}.yml"
6   gather_facts: no
7   sudo: yes
8   pre_tasks:
9     - local_action: slurp src={{ ansible_ssh_private_key_file }}.pub
10     sudo: no
11     register: sshpubkey
12     - action: qemu-img dest={{ item.path }} size={{ item.size }} format="qcow2"
13       options="preallocation=metadata"
14       with_items: disks
15       delegate_to: "{{ hyper }}"
16     - action: template src="templates/debian/post-preseed.sh" dest="{{ webpath
17       }}{{ inventory_hostname }}.sh" owner=apache group=apache mode=666 setype=
18       "httpd_sys_content_t"
19       delegate_to: "{{ webserver }}"
20     - action: template src="/.ansible/playbooks/templates/debian/minimal-
21       preseed.cfg" dest="{{ virtualfilepath }}{{ injectfile }}"
22       delegate_to: "{{ hyper }}"
23     - action: template src="/.ansible/playbooks/templates/common/install-vm.sh
24       " dest="{{ virtualfilepath }}{{ inventory_hostname }}-create-vm.sh"
25       owner=root group=root mode=770
26       delegate_to: "{{ hyper }}"
27     - action: command /bin/bash {{ virtualfilepath }}{{ inventory_hostname }}-
28       create-vm.sh
29       delegate_to: "{{ hyper }}"
30     register: createdvm
31     - local_action: pause minutes={{ vmwaittime }}
32     - action: template src="templates/common/minram.sh" dest="{{
33       virtualfilepath }}{{ inventory_hostname }}-minram.sh" owner=root group=
34       root mode=770
35       delegate_to: "{{ hyper }}"
36     when: ramsize < minram
37     - action: command /bin/bash {{ virtualfilepath }}{{ inventory_hostname }}-
38       minram.sh
39       delegate_to: "{{ hyper }}"
```



```
1 ---
2 distroname: centos6
3 distrotype: rhel6
4 minram: 512
5 location: "http://be.mirror.eurid.eu/centos/6/os/x86_64/"
6 repos:
7   - { name: "CentOS-base", uri: "http://be.mirror.eurid.eu/centos/6/os/x86_64/"
8     , cost: 100 }
9   - { name: "CentOS-updates", uri: "http://be.mirror.eurid.eu/centos/6/updates/
10    x86_64/", cost: 200 }
11   - { name: "CentOS-fasttrack", uri: "http://be.mirror.eurid.eu/centos/6/
12    fasttrack/x86_64/", cost: 300 }
13   - { name: "CentOS-extras", uri: "http://be.mirror.eurid.eu/centos/6/extras/
14    x86_64/", cost: 400 }
15 textargs: 'text ks=file:/{ inventory_hostname }.cfg console=ttyS0,115200
16   headless noshell nofirewire'
```

Variables - debian

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practical Ansible
VMInstaller

Conclusion

The End

```
1 ---
2 distroname: debian7
3 distrotype: debianwheezy
4 debianname: wheezy
5 minram: 256
6 injectfile: preseed.cfg
7 location: http://be.mirror.eurid.eu/debian/dists/wheezy/main/installer-amd64/
8 mirrorcountry: be
9 mirrorurl: ftp.be.debian.org
10 mirroredir: /debian
11 textrargs: "auto=true DEBIAN_FRONTEND=text noshell fb=false console=ttyS0
12             ,115200 lowmem"
13 webserver: mangal
14 webpath: /var/www/virtual/vantosh.com/ks/
15 weburl: http://ks.vantosh.com/
```

```
1 ---
2 distroname: debian6
3 distrotype: debiansqueeze
4 debianname: squeeze
5 minram: 256
6 injectfile: preseed.cfg
7 location: http://be.mirror.eurid.eu/debian/dists/squeeze/main/installer-amd64/
8 mirrorcountry: be
9 mirrorurl: ftp.be.debian.org
10 mirroredir: /debian
11 textrargs: "auto=true DEBIAN_FRONTEND=text noshell fb=false console=ttyS0
12             ,115200 lowmem"
13 webserver: mangal
14 webpath: /var/www/virtual/vantosh.com/ks/
15 weburl: http://ks.vantosh.com/
```

- Not in core
- Extended Jeroen Hoekx qemu-img module
 - added options value
 - sizing options more granual
 - resize is not automaticly

Install script

```
1  #!/bin/bash
2
3  if [ ! -f /etc/libvirt/qemu/{ inventory_hostname }.xml ]; then
4
5  virt-install \
6      --name={ inventory_hostname } \
7      --vcpus={ virtualcpus } \
8  {% if minram is defined and ramsize < minram %}
9      --ram={ minram } \
10 {% else %}
11     --ram={ ramsize } \
12 {% endif %}
13     --hvm \
14     --accelerate \
15     --os-variant={ distrotype } \
16 {% for disk in disks %}
17     {% if disk.size[-1:] == 'T' %}
18         {% set disk_size = (disk.size[:-1]|float) * 1024 %}
19     {% elif disk.size[-1:] == 'G' %}
20         {% set disk_size = (disk.size[:-1]|float) %}
21     {% elif disk.size[-1:] == 'M' %}
22         {% set disk_size = (disk.size[:-1]|float) / 1024 %}
23     {% elif disk.size[-1:] == 'K' %}
24         {% set disk_size = (disk.size[:-1]|float) / 1024 / 1024 %}
25     {% else %}
26         {% set disk_size = (disk.size[:-1]|float) %}
27     {% endif %}
28     --disk path={ disk.path },device=disk,size={ disk_size },cache=writeback,
29         format=qcow2,io=threads,bus=virtio \
30 {% endfor %}
31 {% for nic in nics %}
32     --network {{ nic.type }}={{ nic.name }},model={{ nic.model }} \
33 {% endfor %}
34     --location={ location } \
35 {% if injectfile is defined %}
36     --initrd-inject={ virtualfilepath }{{ injectfile }} \
37 {% else %}
38     --initrd-inject={ virtualfilepath }{{ inventory_hostname }}.cfg \
39 {% endif %}
```

What is Ansible?

Ansible for
Virtual MachinesVM Installer
internalsPractice Ansible
VM Installer

Conclusion

The End

Kickstart file

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

```
1 # config
2 install
3 cmdline
4 skipx
5 reboot
6 url --url={{ location }}
7 # authentication
8 rootpw --iscrypted {{ rootpwd }}
9 auth --usesshadow --passalgo=sha512
10 firewall --enabled --service=ssh
11 selinux --enforcing
12 # localisation
13 lang {{ language }}
14 keyboard {{ keyboard }}
15 timezone --isUtc {{ timezone }}
16 # network
17 {% for network in networks %}
18 {{ network }}
19 {% endfor %}
20 # partition
21 zerombr
22 clearpart --all --initlabel
23 {% for partition in partitions %}
24 {{ partition }}
25 {% endfor %}
26 {{ bootloader }}
27 # first booting
28 firstboot --disable
29 logging --level=info
30 reboot
31 # repositories
32 {% for repo in repos %}
33 repo --name={{ repo.name }} --baseurl={{ repo.uri }} --cost={{ repo.cost }}
34 {% endfor %}
35 # package selection
36 %packages --nobase --excludedocs
37 @core
38 %end
39 # post script
```

Preseed file

```
1  ### Installer
2  d-i debian-installer/splash boolean false
3  d-i debian-installer/consoledisplay string console-setup
4  debconf debconf/frontend select readline
5
6  ### Localization
7  d-i debian-installer/locale string {{ locale }}
8  d-i debian-installer/keymap select {{ keyboard }}
9  d-i keymap select {{ keyboard }}
10 d-i console-setup/ask_detect boolean false
11 d-i console-setup/layoutcode string {{ keyboard }}
12
13 ### Host name configuration
14 d-i netcfg/get_hostname string {{ inventory_hostname }}
15 d-i netcfg/get_hostname seen false
16 d-i netcfg/get_hostname priority {{ inventory_hostname }}
17 d-i netcfg/get_domain string {{ domain }}
18
19 ### Network configuration
20 {% for network in networks %}
21 d-i netcfg/choose_interface select {{ network.name }}
22 {% if network.dhcp is defined %}
23 d-i netcfg/disable_autoconfig boolean false
24 d-i netcfg/disable_dhcp boolean false
25 {% else %}
26 d-i netcfg/dhcp_options select Configure network manually
27 d-i netcfg/disable_dhcp boolean true
28 d-i netcfg/confirm_static boolean true
29 d-i netcfg/get_ipaddress string {{ network.ipaddress }}
30 d-i netcfg/get_netmask string {{ network.netmask }}
31 d-i netcfg/get_gateway string {{ network.gateway }}
32 d-i netcfg/get_nameservers string {{ network.nameserver }}
33 {% endif %}
34 {% endfor %}
35
36 ### Mirror settings
37 d-i mirror/protocol string http
38 d-i mirror/country string {{ mirrorcountry }}
39 d-i mirror/http/hostname string {{ mirrorurl }}
```

What is Ansible?

Ansible for
Virtual MachinesVMInstaller
internalsPractice Ansible
VMInstaller

Conclusion

The End

Post-preseed file

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual MachinesVMInstaller
internalsPractice Ansible
VMInstaller

Conclusion

The End

```
1  #!/bin/sh
2  TARGET='/target'
3  ### Go into the machine environment
4  chroot $TARGET
5  ### OpenSSH Settings
6  /bin/sed 's/\Port\ 22/Port\ {{ ansible_ssh_port }}/' -i /etc/ssh/sshd_config
7  /bin/sed 's/\LoginGraceTime\ 120/LoginGraceTime\ 60/' -i /etc/ssh/sshd_config
8  /bin/sed 's/\PermitRootLogin\ yes/PermitRootLogin\ no/' -i /etc/ssh/sshd_config
9  /bin/sed 's/UsePAM\ yes/UsePAM\ yes\nAllowUsers\ ansible/' -i /etc/ssh/
    sshd_config
10 /bin/mkdir /home/ansible/.ssh/
11 /bin/chmod 700 /home/ansible/.ssh/ ; \
12 /bin/echo "{{ sshpubkey.content|b64decode }}" > /home/ansible/.ssh/
    authorized_keys ; \
13 /bin/chmod 600 /home/ansible/.ssh/authorized_keys ; \
14 /bin/chown -R 999999.999999 /home/ansible/.ssh/
15 {# #/usr/bin/ssh-keygen -q -b {{ sshdkeylength }} -t rsa -f /etc/ssh/
    ssh_host_rsa_key -C '' -N '' #}
16 ### Sudo Settings
17 /bin/echo "ansible    ALL=(ALL)        NOPASSWD: ALL" > /etc/sudoers.d/ansible
18 chmod 440 /etc/sudoers.d/ansible
19 ### Delete unnecessary users
20 /usr/sbin/userdel games
21 /usr/sbin/userdel list
22 /usr/sbin/userdel irc
23 /usr/sbin/userdel proxy
24 /usr/sbin/userdel backup
25 /usr/sbin/userdel gnats
26 /usr/sbin/userdel news
27 exit
```

```
1 - name: create user
2   action: user name={{ item.name }} uid={{ item.id }}
3   with_items: users
4 - name: copy ssh public key
5   action: authorized_key user={{ item.name }} key="{{ lookup('file','item.
6     sshpubkey') }}"
   with_items: users
```


What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

4

DEMO

Demo

Toshaan
Bharvani -
VanTosh bvba

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

```
[toshywoshy@localhost]ansible$ ansible-playbook ~/.ansible/playbooks/install-vm-el6.yml
```

```
< PLAY [install-vm-el6] >
```

```
-----  
      ^ ^  
      (oo)\_____|  
      (__)|       )\/\  
          ||-----w |  
          ||         ||
```

```
skipping: no hosts matched
```

```
< PLAY RECAP >
```

```
-----  
      ^ ^  
      (oo)\_____|  
      (__)|       )\/\  
          ||-----w |  
          ||         ||
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

```
[toshywoshy@localhost]ansible$
```

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

5

Conclusion

Automation **MUST** [RFC2119] be easy



More information

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practice Ansible
VMInstaller

Conclusion

The End

- Ansible : <http://www.ansible.com/>
- Documentation : <http://docs.ansible.com/>
- Ansible Galaxy : <http://galaxy.ansible.com/>
- Github : <https://github.com/ansible/ansible>
- Ansible Install VM :
<https://github.com/toshywoshy/ansible-vm-install>

The End

What is Ansible?

Ansible for
Virtual Machines

VMInstaller
internals

Practical Ansible
VMInstaller

Conclusion

The End



Thank You



Toshaan Bharvani - VanTosh bvba <toshaan@vantosh.com>

<http://www.vantosh.com/>

Made with Beamer L^AT_EX
a T_EXbased Presentation program