cloud-init

Building clouds one Linux box at a time
<table>
<thead>
<tr>
<th>Audience Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Know Nothing</strong></td>
</tr>
<tr>
<td>Only heard of it, never used it</td>
</tr>
</tbody>
</table>
cloud instance initialization software
Cloud Images_requirements

List of packages differentiating Debian Cloud Images from default Debian installation

common

- cloud-init
#cloud-config

timezone: America/Toronto
hostname: debconf17
ssh_import_id: gh:powersj

apt:
  sources:
    lxc:
      source: "ppa:ubuntu-lxc/stable"

packages:
  - htop
  - tree

package_update: true
package_upgrade: true
# Selection of example meta-data from AWS

ami-id: ami-fd4aa494

hostname:
domU-12-31-38-07-19-44.compute-1.internal

instance-id: i-87018aed

instance-type: m1.large

local-ipv4: 10.223.26.178

placement: {availability-zone: us-east-1d}

public-hostname:
ec2-184-72-174-120.compute-1.amazonaws.com

public-ipv4: 184.72.174.120

security-groups: default
# Demo 1: An Example Using KVM

# Create nocloud disk
cloud-localds seed.img user-data meta-data

# Boot image with nocloud disk
qemu-system-x86_64 -enable-kvm -m 512 -nographic
   -drive "file=stretch.qcow2,if=virtio"
   -drive "file=seed.img,if=virtio,format=raw"
   -device virtio-net-pci,netdev=net00
   -netdev type=user,id=net00
# Demo 2: An Example Using LXC

# Inject user-data via lxc

lxc config set stretch user.user-data - < userdata.cfg
lxc config show stretch
lxc start stretch
Boot Sequence

- cloud-final.service (modules:final)
- cloud-config.service (modules:config)
- cloud-init.service (init)
- cloud-init-local.service (init-local)
-- Boot Record 01 --
24.52400s (modules-config/config-apt-configure)
20.26100s (modules-config/config-ssh-import-id)
12.67400s (modules-final/config-package-update-upgrade-install)
00.39000s (modules-config/config-locale)
00.10000s (init-network/config-ssh)
00.06900s (modules-config/config-grub-dpkg)
00.04400s (init-network/config-users-groups)
00.01300s (init-local/search-NoCloud)
00.01000s (modules-final/config-keys-to-console)
00.00400s (init-network/consume-user-data)
00.00400s (init-network/config-growpart)
00.00300s (modules-final/config-final-message)
00.00300s (init-network/consume-vendor-data)
00.00200s (modules-final/config-ssh-authkey-fingerprints)
00.00200s (init-network/config-set_hostname)
00.00200s (init-network/config-resizefs)
00.00100s (modules-final/config-snappy)
Starting stage: init-local
| `->no cache found @00.00300s +00.00100s
| `->found local data from DataSourceNoCloud @00.03000s +00.01300s
Finished stage: (init-local) 00.14300 seconds

Starting stage: init-network
| `->restored from cache with run check: DataSourceNoCloud
[seed=/var/lib/cloud/seed/nocloud-net][dsmode=net] @03.18800s +00.00100s
| `->reading and applying user-data @03.22000s +00.00400s
| `->reading and applying vendor-data @03.22400s +00.00300s
| `->config-migrator ran successfully @03.25100s +00.00000s
| `->config-ubuntu-init-switch ran successfully @03.25100s +00.00100s
| `->config-seed_random ran successfully @03.25200s +00.00000s
| `->config-bootcmd ran successfully @03.25300s +00.00000s
| `->config-write-files ran successfully @03.25300s +00.00100s
# Search all datasources

2017-06-29 17:02:23,150 - __init__.py[DEBUG]: Searching for local data source in: ['DataSourceNoCloud', 'DataSourceConfigDrive', 'DataSourceOpenNebula', 'DataSourceDigitalOcean', 'DataSourceAzure', 'DataSourceOVF', 'DataSourceCloudSigma', 'DataSourceSmartOS']

# Search only ID’ed
2017-06-30 15:05:09,809 - __init__.py[DEBUG]: Searching for network data source in: ['DataSourceGCE', 'DataSourceNone']
Integration Test Framework

Validate user-data with a variety of data sources and OSes

Cover variety of scenarios:

- Smoke & Nightly Testing: Run latest daily image
- Development: Run local tree
- SRU & Debugging: Run special built deb

LXD: Fast, 50% of cloud-config module coverage

KVM: Add network, storage, remaining 50% of cloud-config coverage
Integration Test Framework

Download ➔ Customization ➔ Snapshot

Boot ➔ Collect ➔ Verify

Boot ➔ Collect ➔ Verify

Verify ➔ Collect ➔ Boot

Collect ➔ Verify ➔ Collect

Verify ➔ Collect ➔ Boot
Merge Requests and Releases

Automated, Better, Faster

Automated review now involves:

- Unit tests via tox, includes linting
- Build of the package
- Basic LXD-backed integration tests

Manual review by member of the team

0.7.8: September 12, 2016
0.7.9: December 23, 2016
0.7.10: soon...
#cloud-init on freenode
https://git.launchpad.net/cloud-init
https://cloudinit.readthedocs.io/
https://cloud-init.io/