Monitoring an Openstack cluster
with icinga/nagios

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September 2015

CIRRAX

Cirrax GmbH since 2011

- based in Bern (Switzerland)
- Linux and network consulting and engineering
- Project Management
- Private and Public OpenStack Cloud
- Active contributors to OpenStack and other OpenSource projects

- one tool for system status: icinga/nagios

- monitor generic resources like memory, disk, CPU etc.

- monitor external availability of services like https, ping etc.

- openstack-nagios-plugins to monitor openstack health

  - similar to OpenStack client tools

  - written in python

  - use OpenStack libraries

  - use nagiosplugin library

  - hosted on github

  - contributions welcome!

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Check services

./check_nova-services

```
$ nova hypervisor-stats
+-----------------------+-------+
| Property              | Value |
+-----------------------+-------+
| count                 | 2     |    # 2 compute nodes
| current_workload      | 0     |
| disk_available_least  | 98    |
| free_disk_gb          | 97    |
| free_ram_mb           | 6394  |
| local_gb              | 98    |
| local_gb_used         | 1     |
| memory_mb             | 7930  |    # total memory
| memory_mb_used        | 1536  |    # memory uses by vm's
| running_vms           | 1     |
| vcpus                 | 4     |    # total vcpus
| vcpus_used            | 1     |    # vcpus used by vm's
+-----------------------+-------+

$ ./check_nova-hypervisors
NOVAHYPERVISORS OK - [memory_used:1536 memory_percent:19 vcpus_used:1 vcpus_percent:25
                                                           running_vms:1] |

    memory_percent=19;90;95;0;100
    memory_used=1536;;;0;7930
    running_vms=1;;;0
    vcpus_percent=25;90;95;0;100
    vcpus_used=1;;;0;4
```

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Check services

./check_nova-services

```
$ nova service-list
+----+------------------+--------+------+----------+-------+--------------+-------------+
| Id | Binary           | Host   | Zone | Status   | State | Updated at   | Disabled R. |
+----+------------------+--------+------+----------+-------+--------------+-------------+
| 1  | nova-conductor   | 0.t.ch | nova | enabled  | up    | ...T14:09:02 | -           |
| 2  | nova-consoleauth | 0.t.ch | nova | enabled  | up    | ...T14:09:05 | -           |
| 3  | nova-scheduler   | 0.t.ch | nova | enabled  | up    | ...T14:09:04 | -           |
| 4  | nova-cert        | 0.t.ch | nova | enabled  | up    | ...T14:09:04 | -           |
| 5  | nova-compute     | 1.t.ch | nova | enabled  | up    | ...T14:09:03 | -           |
| 6  | nova-compute     | 2.t.ch | nova | enabled  | down  | ...T14:09:01 | -           |
| 7  | nova-compute     | 3.t.ch | nova | disabled | down  | ...T14:09:09 | Maintenance |
+----+------------------+--------+------+----------+-------+--------------+-------------+

$ ./check_nova-services
NOVASERVICES CRITICAL - [up:5 disabled:1 down:2 total:7] | disabled=1;@1:;;0 down=.......

$ ./check_nova-services --host 1.t.ch
NOVASERVICES OK - [up:1 disabled:0 down:0 total:1] | disabled=0;@1:;;0 down=........

$ ./check_nova-services --binary nova-compute
NOVASERVICES CRITICAL - [up:1 disabled:1 down:2 total:3] | disabled=1;@1:;;0 down=.......
```

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Check services/agents
cinder and neutron

```
$ cinder service-list
+------------------+--------+------+---------+-------+--------------+
|      Binary      |  Host  | Zone |  Status | State |  Updated_at  |
+------------------+--------+------+---------+-------+--------------+
| cinder-scheduler | 0.t.ch | nova | enabled |   up  | ...T09:26:42 |
|  cinder-volume   | 0.t.ch | nova | enabled |   up  | ...T09:26:46 |
+------------------+--------+------+---------+-------+--------------+
$ ./check_cinder-services
CINDERSERVICES OK - [up:2 disabled:0 down:0 total:2] | disabled=0;@1:;;0 down=...

$ neutron agent-list
+------+--------------------+--------+-------+----------------+--------------------------+
| id   | agent_type         | host   | alive | admin_state_up | binary                   |
+------+--------------------+--------+-------+----------------+--------------------------+
| 6... | Loadbalancer agent | 0.t.ch | :-]   | True           | neutron-lbaas-agent      |
| e... | L3 agent           | 0.t.ch | :-]   | True           | neutron-l3-agent         |
| b... | Open vSwitch agent | 2.t.ch | :-]   | True           | neutron-openvswitch-agent |
| b... | Open vSwitch agent | 1.t.ch | :-]   | True           | neutron-openvswitch-agent |
| 7... | Open vSwitch agent | 0.t.ch | :-]   | True           | neutron-openvswitch-agent |
| e... | Metadata agent     | 0.t.ch | :-]   | True           | neutron-metadata-agent   |
| 1... | Metering agent     | 0.t.ch | :-]   | True           | neutron-metering-agent   |
| 7... | DHCP agent         | 0.t.ch | :-]   | True           | neutron-dhcp-agent       |
+------+--------------------+--------+-------+----------------+--------------------------+
$ ./check_neutron-agents
NEUTRONAGENTS OK - [up:8 disabled:0 down:0] | disabled=0;@1:;;0 down=...
```

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```
$ neutron floatingip-list
+------+------------------+----------------------+---------+
| id   | fixed_ip_address | floating_ip_address  | port_id |
+------+------------------+----------------------+---------+
| f... |                  | xxx.xxx.xxx.9        |         |
| 5... | 192.168.0.13     | xxx.xxx.xxx.20       | 4...    |
| 2... | 192.168.0.12     | xxx.xxx.xxx.3        | 2...    |
+------+------------------+----------------------+---------+

$ ./check_neutron-floatingips -c 0:230 -w 0:200
NEUTRONFLOATINGIPS OK - [assigned:3 used:2] | assigned=3;200;230;0 used=2;;;0
```

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Ceilometer statistics

- ceilometer stores samples for events in the cloud

- regularly triggered audit events for usage

- data is used to measure past usage of OpenStack (eg for billing)

```
$ ./check_ceilometer-statistics -m volume
CEILOMETERSTATISTICS OK - [age:26.21m count:88samples value:1volume] | age=...
```

- we use this test to verify freshness of meters.

Rally

- Rally is a benchmarking tool
- run automated scenarios on a deployed cloud
- example scenario: boot and delete server
- one rally run: several iterations of different scenarios
- possibility to specify SLA

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Rally

Screenshots
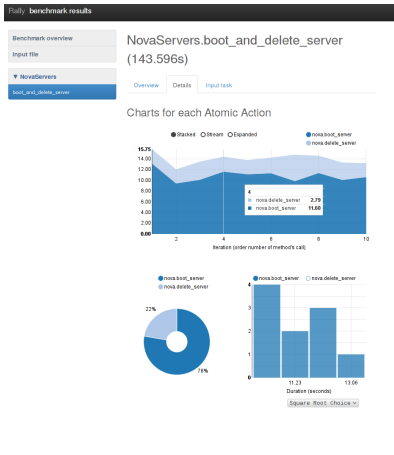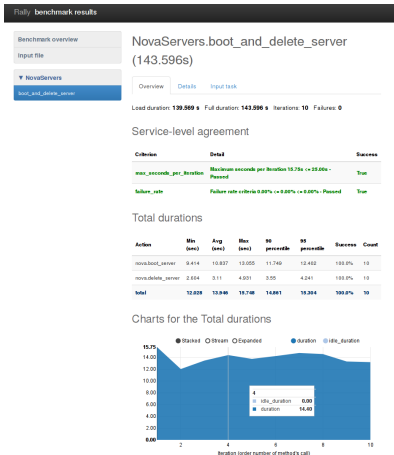
- ▶ Rally stores all result in database

- ▶ Output as HTML or json

- ▶ summarize json result for nagios/icinga

```
$ rally task results | ./check_rally-results

RALLYRESULTS OK - [errors:0 slafail:0] |
    errors=0;0;0 fulldur=542.087836981s loaddur=222.671538115s slafail=0;0;0 total=46
```

links and questions

- this presentation:
  https://cirrax.com/downloads/2015_OpenstackMonitoring.pdf

- openstack-nagios-plugins:
  https://github.com/cirrax/openstack-nagios-plugins

- Rally:
  https://wiki.openstack.org/wiki/Rally

- nagiosplugin library:
  https://pypi.python.org/pypi/nagiosplugin/

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