Openstack Service Analysis

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Outline

Presentation

Context

Monitoring & Troubleshooting

Research objectives

First Results

Future work

Question
What are the components of openstack?

Nova, Swift, Cinder, Neutron, Horizon

Nova is the main component used to deploy and manage VMs
Presentation
Nova logical architecture

Communication is made through the Queue (RabbitMQ)


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Context

- Rapid evolution: two releases per year
- Understand execution failures
- Libraries redundancy
- Incompatibility between libraries
- Need debugging and monitoring tools
Monitoring

How data is collected?

- **Bus listener:** listen to RabbitMQ Queue
  - Ceilometer, stacktach

- **Polling agents**
  - less interesting due to overhead
Troubleshooting

- **Log file:** rsyslog for log management
  collect log from all compute nodes

- **Osprofiler:** use tracepoint as Lttng
  python libraries write for openstack developer
Monitoring & Troubleshooting

Some Weaknesses

- high overhead
- events are collected periodically by polling
- loss of events
Research objectives

- Provide a way to analyse and debug openstack service
- Detect the failure during execution and show request flow
- Detect libraries incompatibilities between openstack platforms (when multiple versions of openstack are used)
First Results

Step one: use RabbiMQ

- VMs lifecycle (start, stop, migrate ...)
- User actions
- Host scheduling
First Results

Step two: use Lttng

- Statistics about service execution (error, warning ...)
- VM distribution
Future work

- Usage statistics  (VM consumption, metrics ...)
- Request flow analysis (commands, request/response)
- Host scheduling context  (why hostA is chosen ?)
- live-migration context  (why migration happened at a specific moment)
QUESTIONS ?
References

https://opensource.com/resources/what-is-openstack

https://lttng.org/docs/#doc-python-application


https://projects.eclipse.org/projects/tools.tracecompass

http://docs.openstack.org/developer/ceilometer/events.html

https://www.elastic.co/guide/index.html

http://stacktach.readthedocs.org/en/latest/