The OPNFV Barometer with Telecom Operator, New Perspective for Monitoring

Yuki Kasuya, KDDI @yuki_kasuya (yu-kasuya@kddi.com)
Toshiaki Takahashi, NEC Communication Systems (takahashi.tsc@ncos.nec.co.jp)
Tomofumi Hayashi, Red Hat @s1061123 (tohayash@redhat.com)
Agenda

1. Challenges in KDDI
2. DMA Project (Distributed Monitoring and Analysis)
3. OPNFV Barometer
4. Summary
Challenges in KDDI
Future networks are based on Open Source
- KDDI must involved to OSS community

Immature culture for Open Source in KDDI
- Utilizing
- Communicating
- Contributing
Building Cultures for Open Source

- **Utilizing**✓
  - Created in-house hands-on lab in KDDI

- **Communicating**✓
  - Joined Japanese local community
  - Participated in Japan Open Source Events
    - OpenStack Days Tokyo(Presentation/Panels)
    - Open Networking Days Tokyo(Panels)

- **Contributing**
  - We have several requirements for NFV to community
  - How?
Challenges to Build Contributing Culture

■ 3 gaps for building contributing culture
  ● Need to have software engineering skills
  ● Need to have experiments to communicate in community
  ● Need to learn processes to contribute

■ To fill 3 gaps
  ● KDDI asked NEC and Red Hat to collaborate as Japanese team
  ● Starting Japanese local project for improving fault management, DMA
DMA (Distributed Monitoring and Analytics Project)
The Requirement Gap between Current and NFVI/Telecom

- Telecom’s end-to-end Fault Management (FM), including recovery process and its orchestration, requires more functionality than current NFVI implementation, especially

- **Scalability**
  - # of VMs
  - # of metrics
  - Capturing interval

- **Recovery process**
  - Recover First, Resolve Next

- **Analyzing metrics**
  - Flexible metric analysis
  - Metrics with annotation
DMA (Distributed Monitoring and Analysis) Concept

- Each computing has its monitoring function
  - Monitoring process is complete in each computing node

- What is good?
  - Scalability
  - Improve Recover Process
  - Advanced Analytics
1. Architecture discussion
   ● Decide to utilize current OSS projects as much as possible

2. PoC/Feasibility test
   ● To create some demo to search/understand which OSS is suitable for the architecture

3. Share experiments, including the gap found at PoC
   ● To have some presentations at OpenStack Summit (Boston and Sydney)

4. Going upstream
   ● Implement to solve some gap
   ● To search/find which OSS project is match for our requirement
     → OPNFV Barometer
The OPNFV Barometer
The Barometer project was started in response to a perceived need for a monitoring solution for the NFVI that met Telco requirements.

To that end, the Barometer project provides a metrics / events collection framework for an NFV Infrastructure.

Barometer includes Collectd, InfluxDB, and Grafana delivered as containers.

In addition to the framework, Barometer focuses on defining a common object model for metrics and events (ETSI TST008, TST008_ONAP, IFA027).

Barometer targets integration with ONAP through VES.

Next steps for Barometer are to address the needs of the Cloud Native (CN) Telco infrastructure using Prometheus and other CN projects.
Our Activity in OPNFV Barometer

- DMA and Barometer share the requirements and start the collaboration
  - Handling metrics in multiple layers (logical and physical, Hypervisor and OpenStack, etc)
  - Targeting large scale systems
  - Monitoring using collectd

- DMA proposed specific functions required by both projects
  - “local agent” component

- DMA put the “local agent” code into OPNFV community upstream, Barometer

[Links to Gerrit repositories]

https://gerrit.opnfv.org/gerrit/#/c/61953/
https://gerrit.opnfv.org/gerrit/#/c/61955/
https://gerrit.opnfv.org/gerrit/#/c/61957/
https://gerrit.opnfv.org/gerrit/#/c/61959/
“Local agent” Functionality

■ Local-agent implements following functions: annotation and dynamically config change

■ Annotation
  ● Add annotation for collectd's metrics with OpenStack information
    • Virtual machine name
      – instance-000001 of libvirt name <- "VM foobar" in OpenStack name
    • Network interface name
      – "tap-xxx" on the host <- OpenStack "VM foobar", network "YYY"

■ Dynamic config change
  ● Change config of metrics collection while services are running
    • e.g. shorten the collection interval
Summary
Summary

- For future networks, cultivating 3 cultures for Open Source in KDDI
- Starting FM project in Japanese local team
- Contributing to OPNFV Barometer, Building Contributing Culture in KDDI
We will have demos at LT!

Thursday, November 15, 5:30pm-5:40pm
  ● Last day, Last LT session,
  ● do NOT go home

(Will be recorded!)
Info

OPNFV Barometer repository https://github.com/opnfv/barometer
DMA repository https://github.com/distributed-monitoring

Thank you!