Monitoring and Measurement as a Service in SDI Deployed on SAVI Testbed

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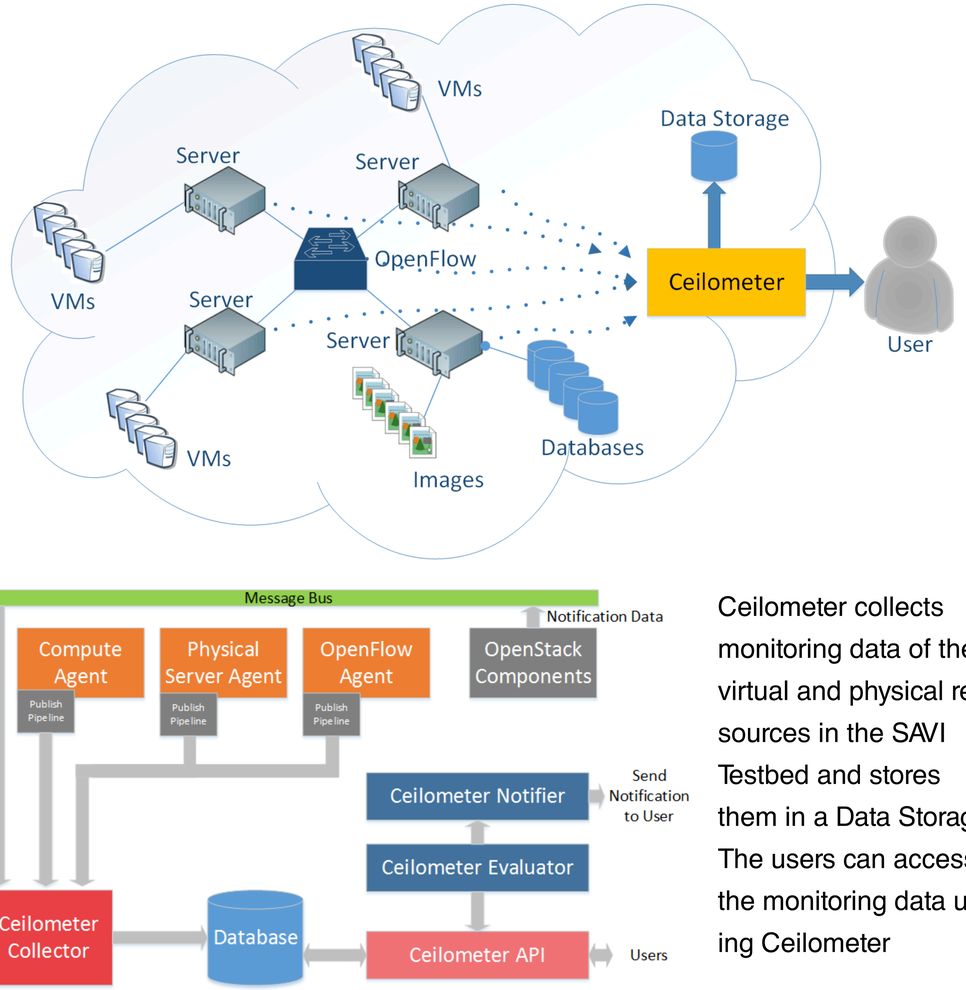
Introduction

Software Defined Infrastructure (SDI) provides a solution for converged management of heterogeneous resources in cloud infrastructures. Monitoring and measurement is an important part of SDI that facilitates converged management, as it provides support for real-time diagnostics, as well as smart applications. The monitoring and measurement system on the SAVI Testbed monitors heterogeneous resources in the cloud and provides monitoring data to users on demand. The monitoring system is built on top of Ceilometer, the telemetry component in OpenStack.

Highlights

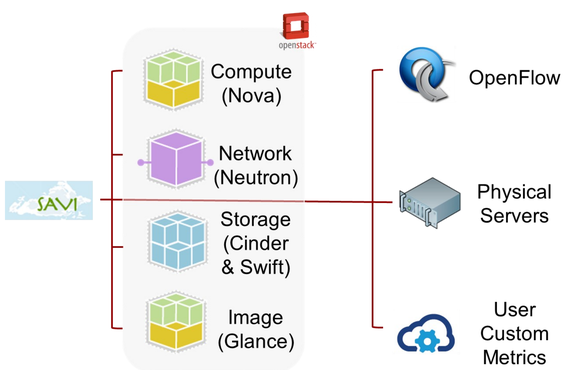
- **Converged Monitoring:** Based on the SDI concept, the system provides converged monitoring of compute, network, and heterogeneous resources
- **Monitoring as a Service:** provides monitoring service to user on-demand
- **Scalable:** System can be configured to handle higher demand when needed
- **Expandable:** System's architecture makes it highly expandable for supporting new monitoring tasks
- **User oriented:** Capable of handling user specific monitoring tasks



Ceilometer collects monitoring data of the virtual and physical resources in the SAVI Testbed and stores them in a Data Storage. The users can access the monitoring data using Ceilometer

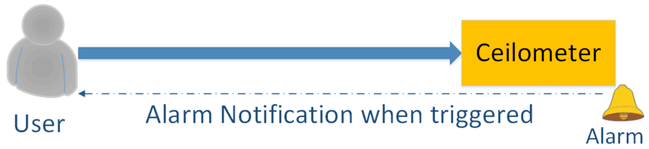
Meters

Extending from Ceilometer Havana, the SAVI Testbed's monitoring system is capable of monitoring OpenStack resources (Compute, Network, Image and Storage) as well as OpenFlow for network purposes, Physical servers and user-custom metrics.



Ceilometer's Alarm feature

- A monitoring system that allows user to receive notification under certain conditions
- Triggered when one (or more) of the services crosses a threshold
- Provides multiple options for user to specify alarm trigger action. (e.g. http, send email)



Custom Monitoring

- A feature in the system that allows user to monitor custom metrics (e.g. requests/sec in web server, processes running in VM)
- To utilize Custom Monitoring feature, a User Agent can be installed in a VM and configured to monitor the metrics interested
- User Agent retrieves monitoring data and delivers them to the Testbed's monitoring infrastructure for processing and storage

Future Work

- Offer data analytics capability to facilitate real-time diagnostics and converged management
- Stream processing capability
- Improve fault tolerance
- User interface for visualization