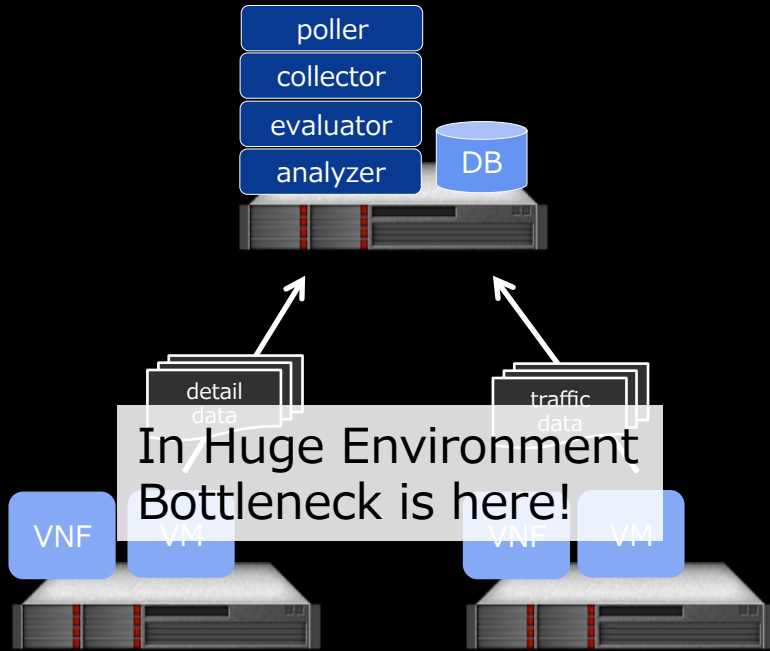


DMA(Distributed Monitoring and Analysis): Monitoring Practice and Lifecycle Management for Telecom



What is Distributed

Centralized Architecture

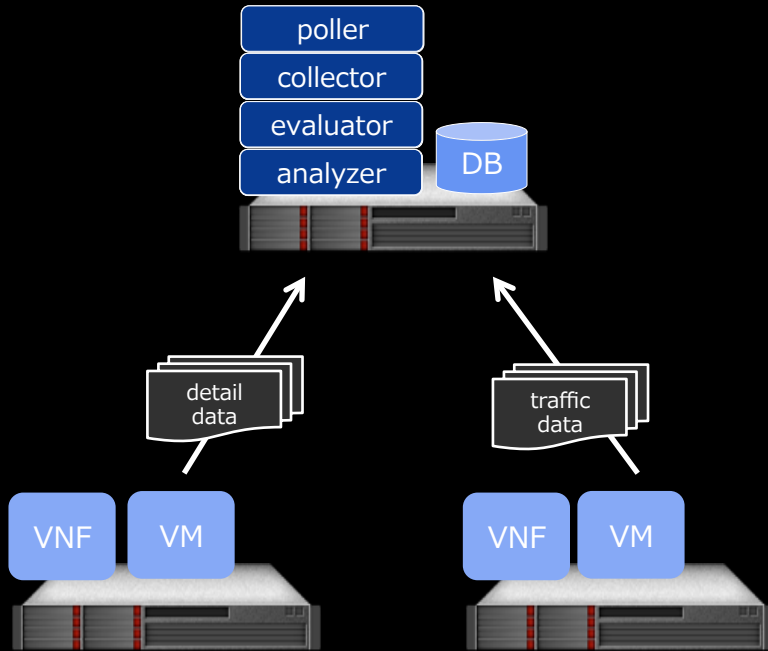


Challenges

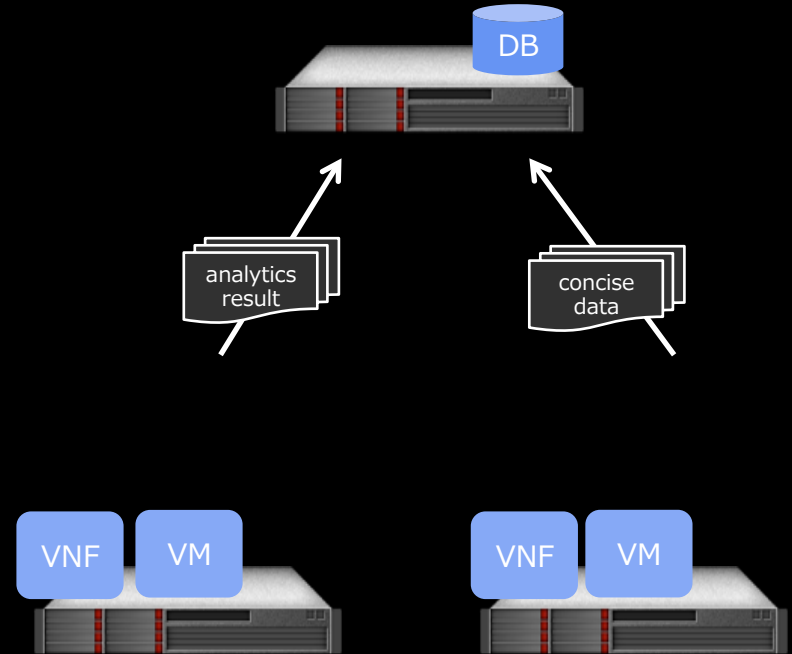
1. Increasing Targets
2. Increasing Items
3. Shorten Interval

What is Distributed

Centralized Architecture



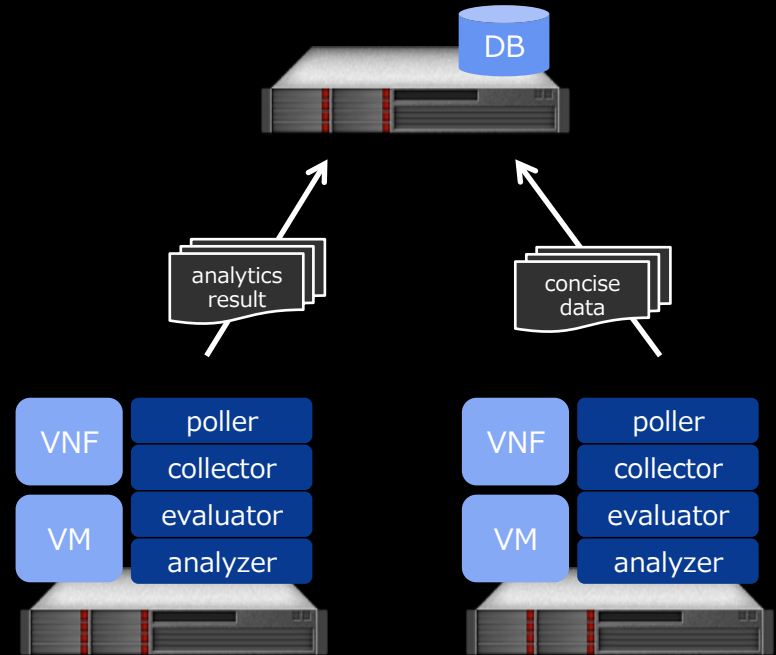
Distributed Architecture



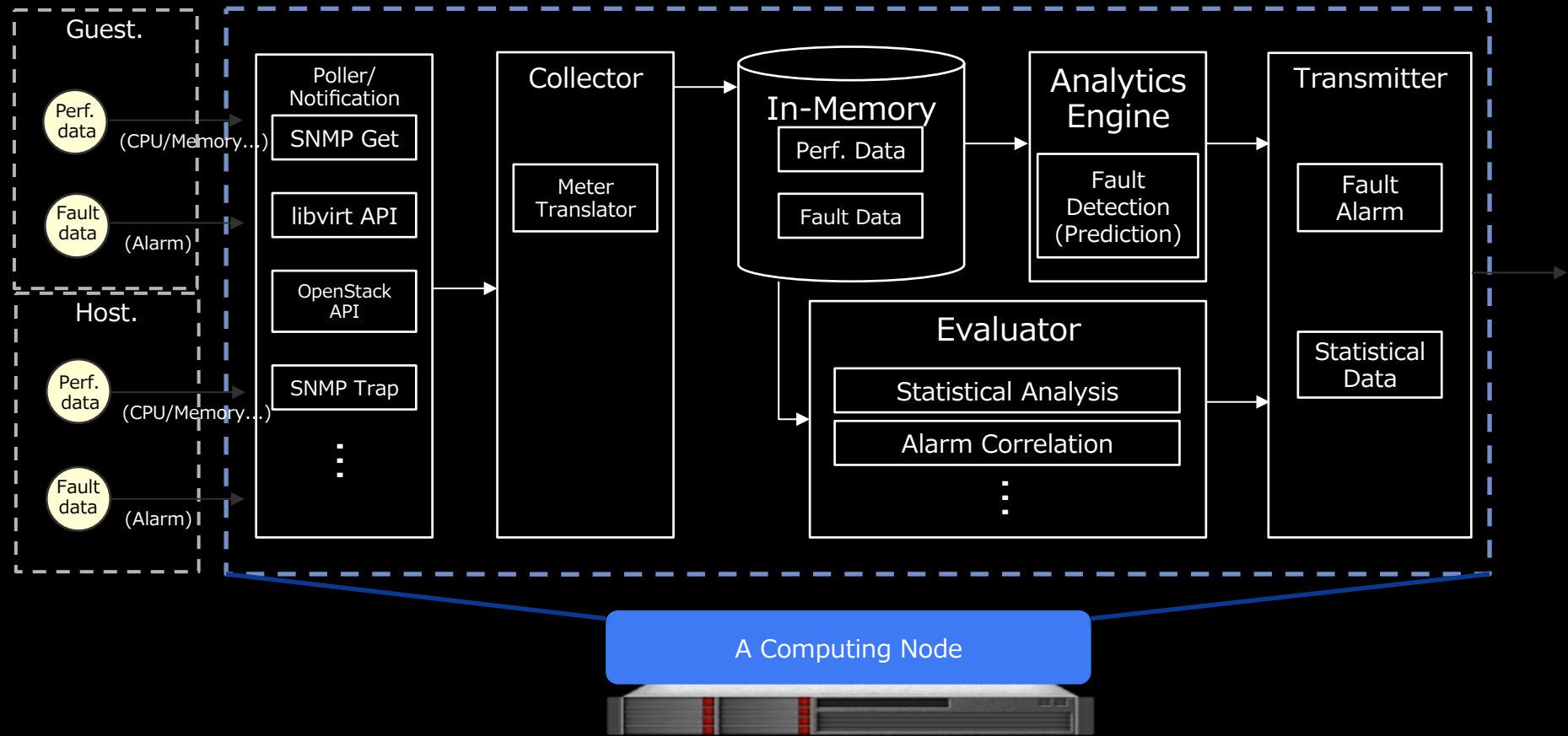
What is Distributed

- What's Good
 - Fine-grained Monitoring
 - Less Load
 - Scalable
- Because Each compute has its own monitoring

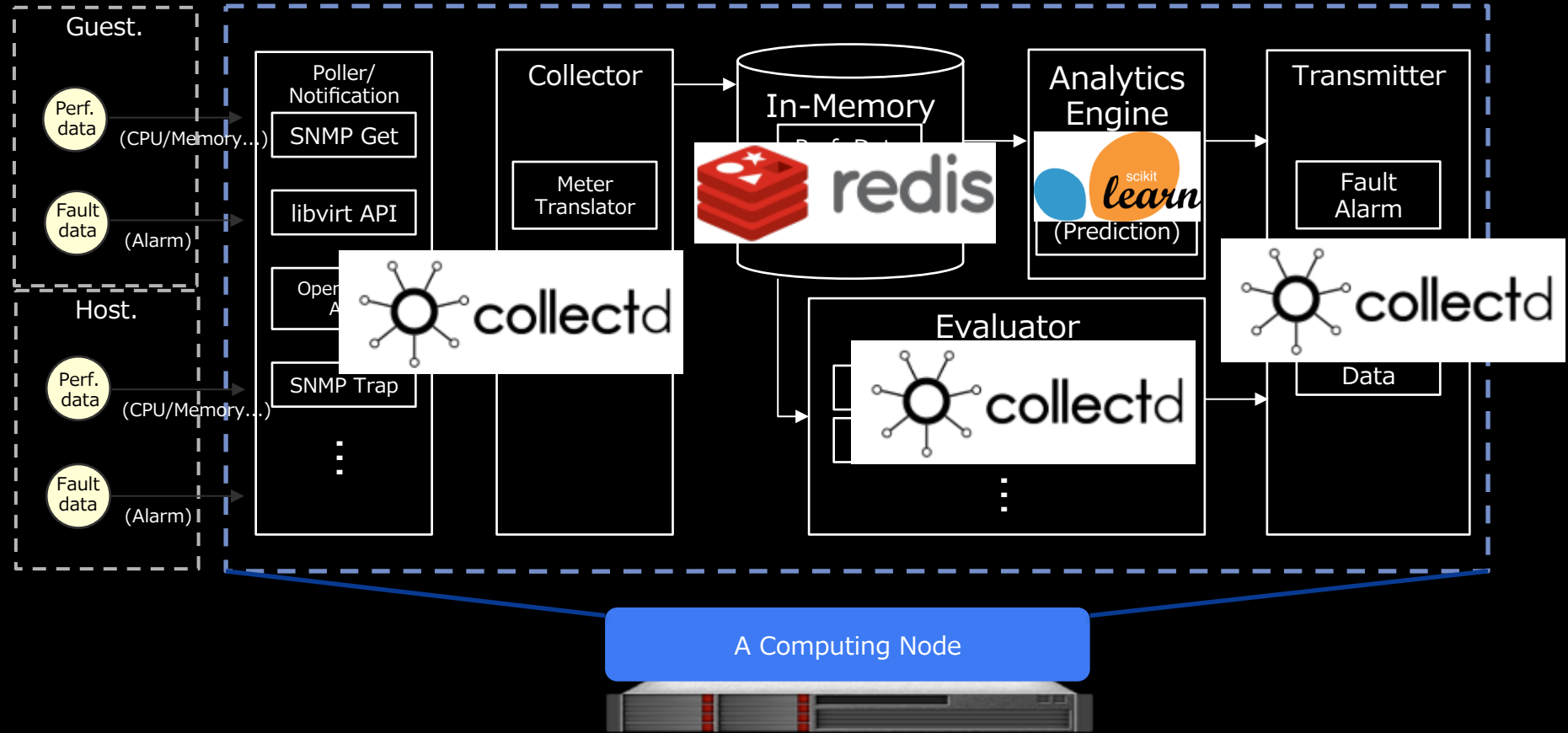
Distributed Architecture



Architecture

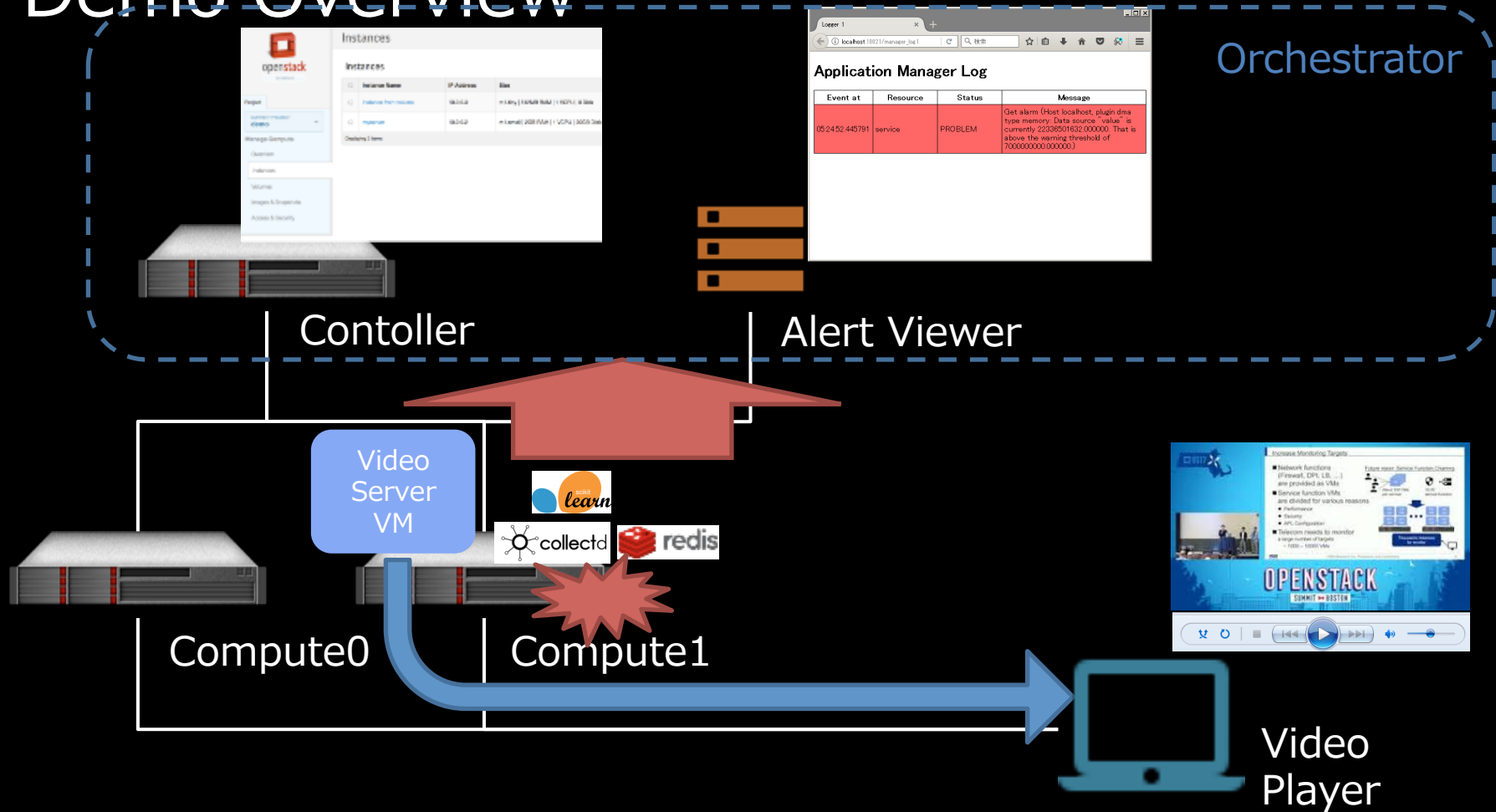


Architecture (Open Source Component)

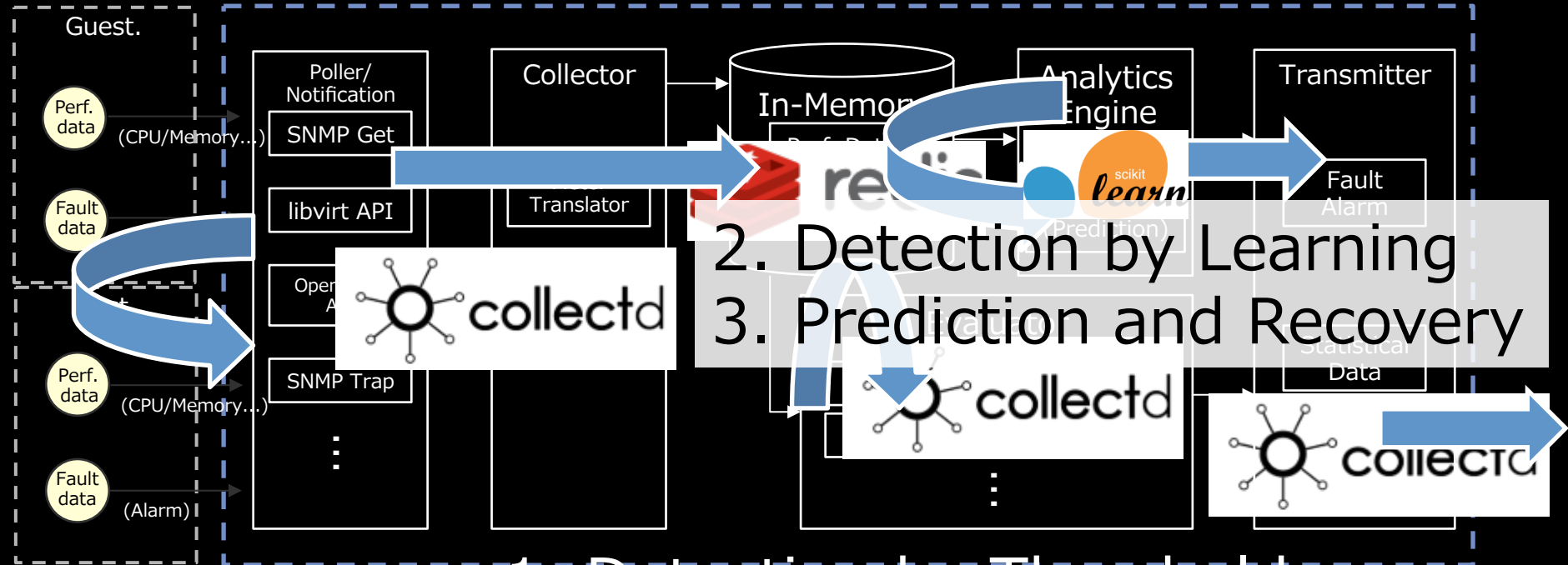


DEMO

Demo Overview



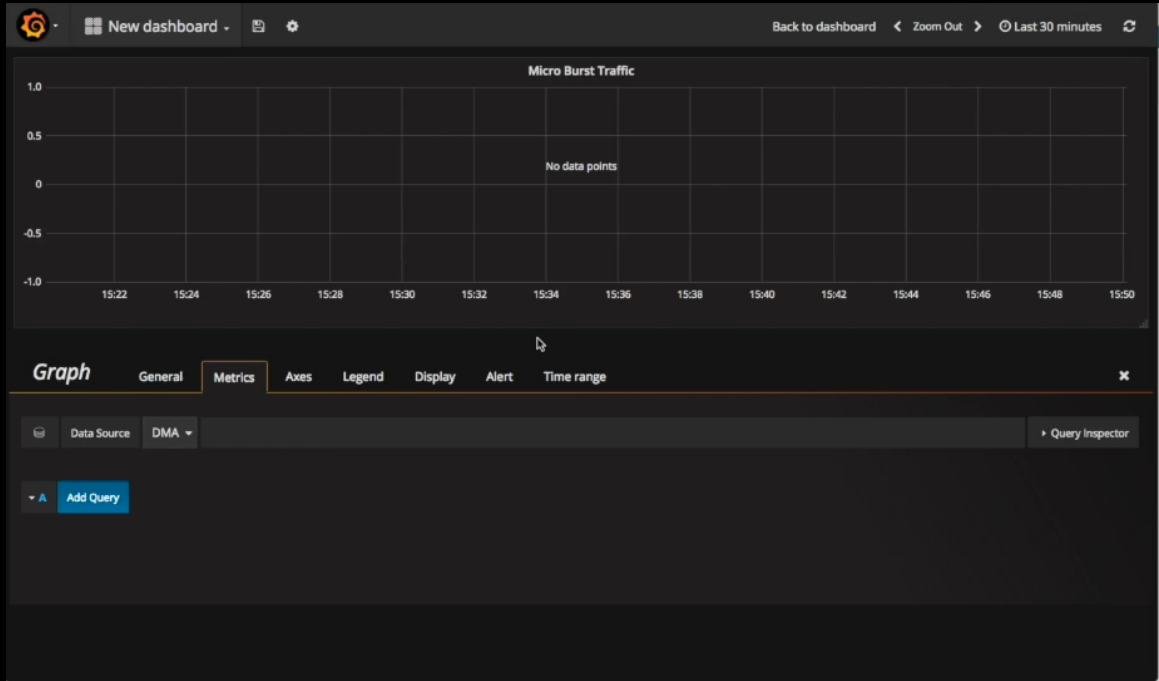
Detect/Recover Flows



send collectd data request to a central host

1. Detection by Threshold

- Burst Traffic
 - 8kb * 1k pkt
- Collect 0.1 sec interval

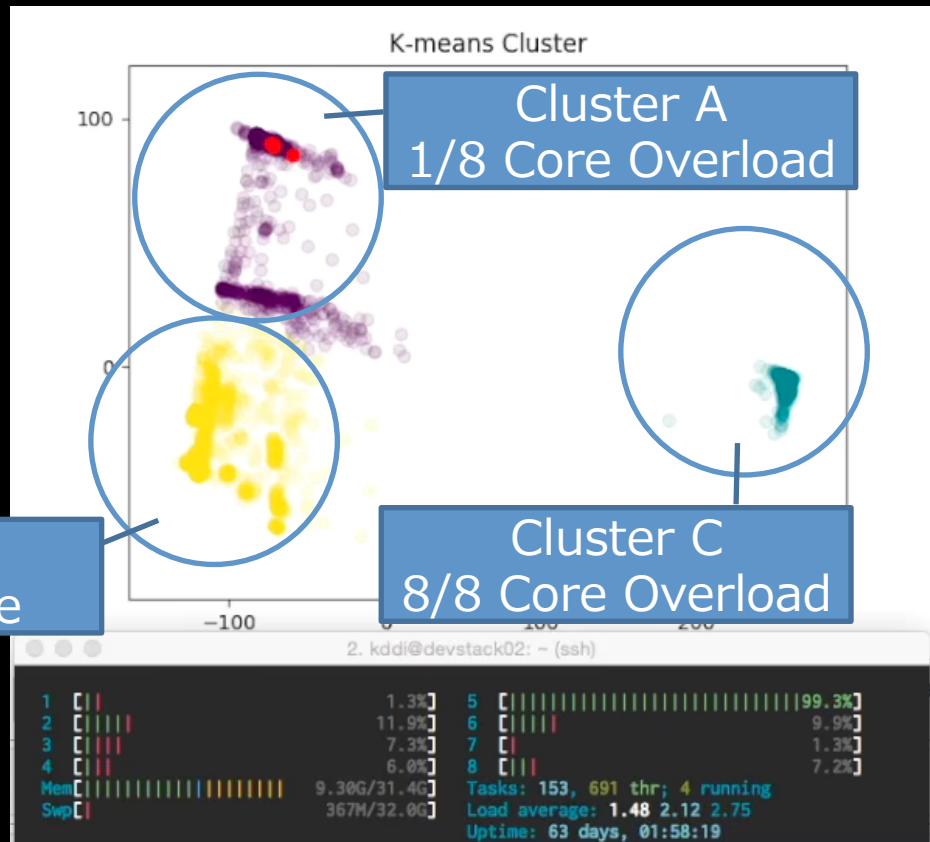


2. Detection by Learning

- Clustering CPU Behavior
 - PCA
 - Reduce 64 metrics to 2 metrics
 - 3 K-Means Clustering
 - Learn 7200 sec



Red Points are current 5sec



3. Prediction and Recovery

- Simulate memory leak
 - 200m/3sec leak

- Prediction
 - Before hitting threshold



The screenshot displays a Grafana dashboard with two main panels. The top-left panel, titled 'Telecom Operation Goal', lists objectives: 'High Quality Network' (High Speed, Low Latency, Not Congested, Wide Area, etc.) and 'NO Network Outage'. Below it is a video player for 'OPENSTACK SUMMIT BOSTON Video'. The top-right panel, titled 'DMA', shows a line graph of memory usage over time. The y-axis is labeled 'Memory (G:used, Y:free)' with markers at 0, 5, and 10 GB. The x-axis shows timestamps from 13:32:00 to 13:36:30. A blue callout box labeled 'Start Memory Leak' points to the start of the graph. The bottom-left panel shows an 'Application Manager Log' table with columns for Event at, Resource, Status, and Message. The bottom-right panel shows a table of instances with columns for Instance Name, Key, Availability Zone, Task, Power State, Time since created, and Actions. A blue callout box labeled 'Finish!' points to the 'nova' instance row. The 'Horizon' logo is visible in the bottom right corner.

Event at	Resource	Status	Message

Instance Name	Key	Availability Zone	Task	Power State	Time since created	Actions
nova		None	Running	6 minutes	Create Snapshot	

Start Memory Leak

Memory (G:used, Y:free)

Receive Alert

Finish!

Horizon

Learn More

- demo code
 - <https://github.com/distributed-monitoring>
- document
 - https://wiki.openstack.org/wiki/Distributed_Monitoring