Distributed Event-driven Monitoring Model for Cloud Datacenters

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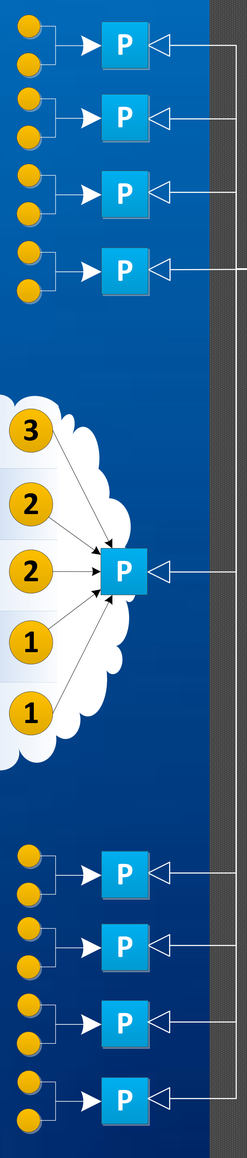
Introduction

When monitoring distributed infrastructure, huge amounts of monitoring data are typically produced by multiple distributed producers spread across many individual computing nodes. There are reports of monitoring data rates up to 1 MB/s per node [1].



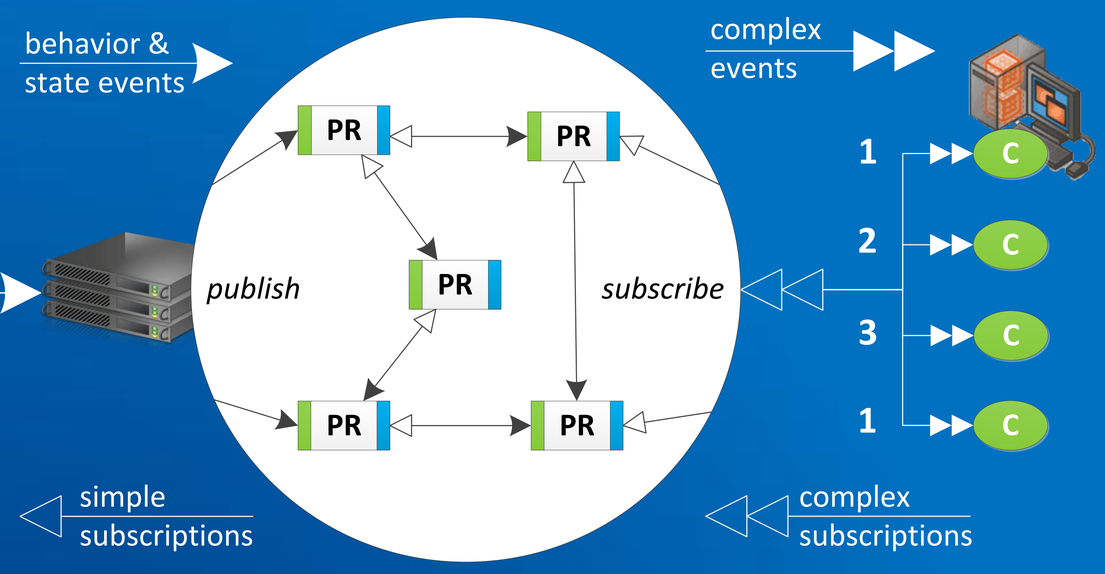
Scope

In order to determine the state and behavior of a particular resource all the relevant data must be collected, processed and evaluated. We are interested in behavior-related monitoring data (e.g. logs) in particular.

Additionally, when monitoring cloud datacenters and all its main layers simultaneously, the monitoring system must also be able to cope with dynamically changing multi-tenant environment [2].

S ensor P roducer PR ocessing agent C onsumer **1|2|3** – access permisions

Research Goals

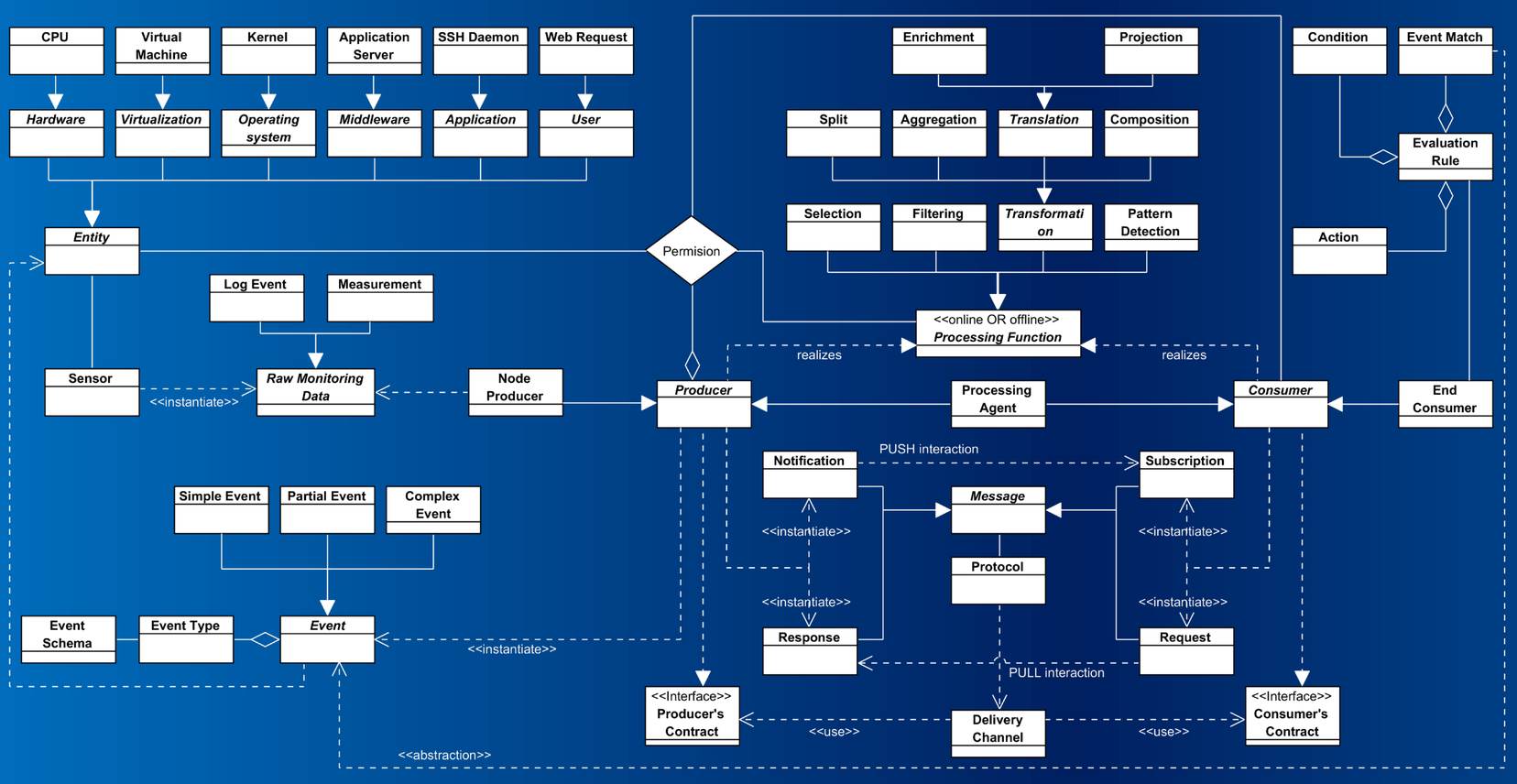


The volume, velocity, and variability of monitoring data produced by modern cloud datacenters multiply and the current approaches are insufficient for online processing of behavior-related monitoring data.

Aims and Objectives

The goal of our research is to design a *Distributed Event-driven Monitoring Architecture* (DEDMA) following a new monitoring model with focus on novel mechanisms and algorithms in the areas of monitoring data generation, production, distributed collection and processing, as well as multi-tenant monitoring.

Distributed Event-driven Monitoring Model



The model is founded on pattern-based publish-subscribe interaction and Complex Event Processing principles [3] with support for multi-tenancy. The monitored entities can belong to any of the main cloud layers.

Methodology

The solution and its respective components and algorithms will be evaluated experimentally and compared to existing approaches. To be able to achieve this, prototype implementation will be developed.

Conclusion and Expected Results

This poster presents the notion of *Distributed Event-driven Monitoring Architecture* (DEDMA) and its model. When compared to existing approaches we expect improvements in the terms of intrusiveness, network overhead, and throughput with respect to the number of producers, consumers, volume, velocity, and variability of monitoring data.

References

[1] Cretu-Ciocarlie, G. F., Budiu, M., and Goldszmidt, M. Hunting for problems with artemis. *WASL'08, USENIX Association*, 2008

[2] Etzion, O., and Niblett, P. *Event Processing in Action*, 1st ed. Manning Publications Co., Greenwich, CT, USA, 2010.

[3] Tovarňák, D., and Pitner, T. Towards Multi-Tenant and Interoperable Monitoring of Virtual Machines in Cloud. *SYNASC'12*, 2013

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