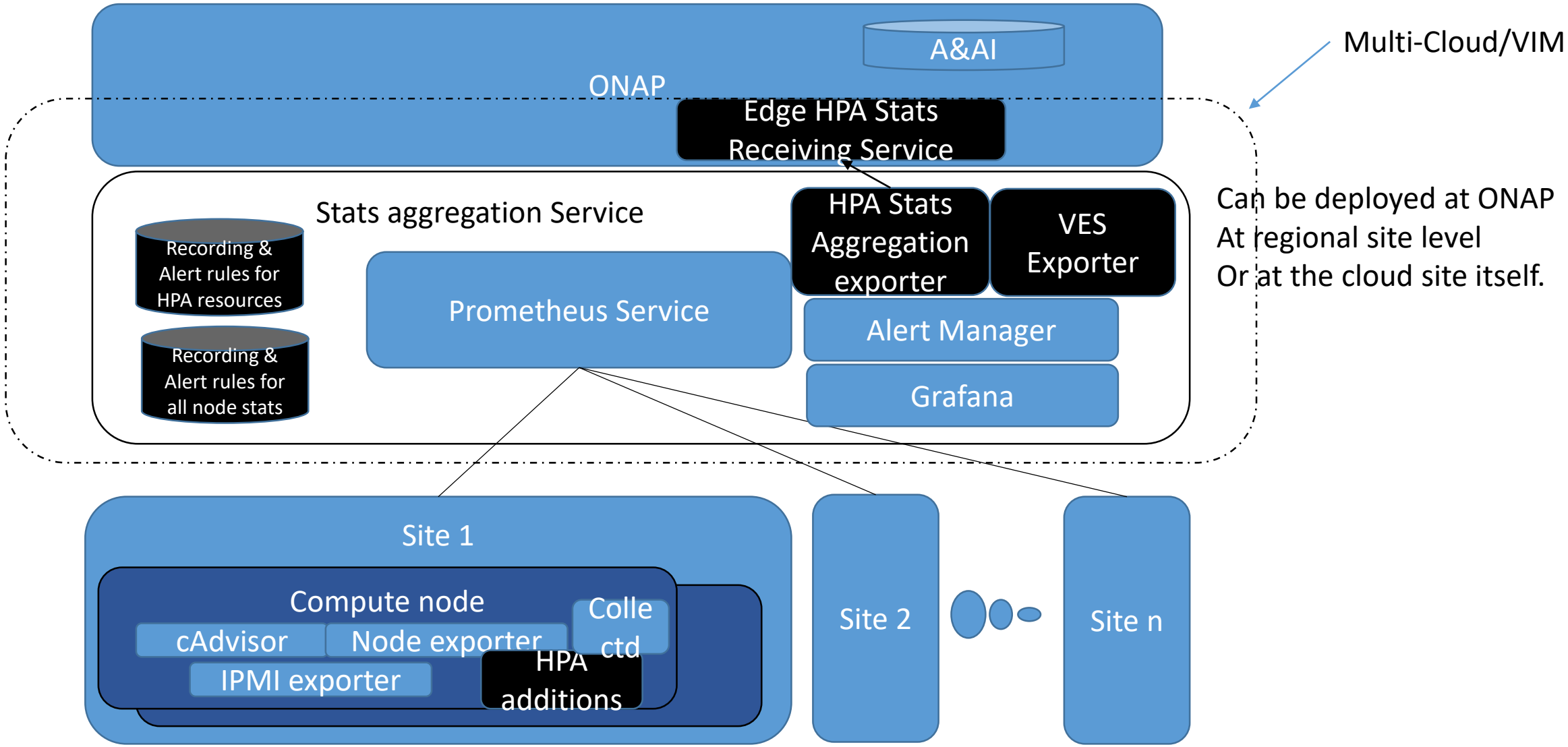
Telemetry Collection & Aggregation Infrastructure statistics & HPA telemetry

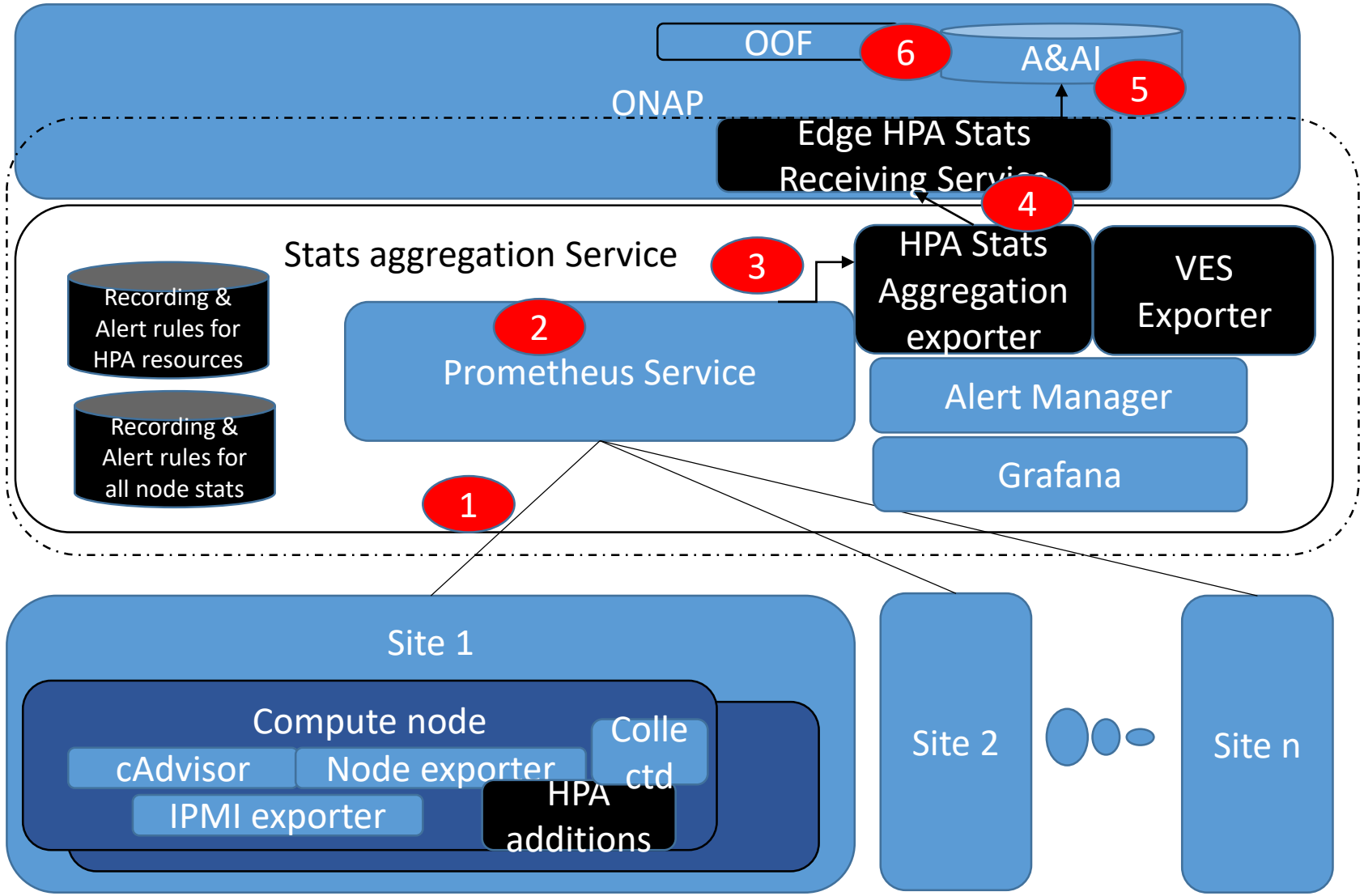
Requirements

- Collect hardware, infrastructure (Linux OS), Hypervisor and Kubelet statistics.
- Aggregate them for consumption
  - Via rules.
- Provide visualization of statistics
  - At site granularity level
  - At compute node granulairy level.
  - Historical level
  - Applying some formaulas
- Placement collection & aggregation service
  - At ONAP level.
  - At Regional Controller level
  - At Site level.

Architecutre components



Simple flow – for quick understanding



1. Prometheus scrapes various targets of compute nodes periodically. Collects counters.
2. Prometheus applies recording rules to put relevant data in time series DB.
3. Promethus runs alerting rules and sends the alerts to “HPA Stats aggregation exporter”.
4. “Aggregation exporter sends the stats to HPA stats receiver.

Note : If Site aggregation service is part of ONAP deployment, both exporter and receiving service need not be there as two different services.

5. A&AI DB is updated with HPA feature resource information.
6. OOF uses this information to ensure that VNFs are placed in sites that not only have capabilities, but also have enough resources.

Work items

- Create platform
  - Enable node exporter, cAdvisor, IPMI for compute nodes.
  - Enable Promethus service and Grafana Service
  - Enable existing Alert Manager for testing
  - Develop exporter (similar to Alert Manager service in Prometheus)
- Concentrate on HPA
  - Identify HPA features
    - Cores, Memory, Huge pages, PCIe devices
  - Identify the counters related
    - Current resource usage, free resources available.
  - Create recording & alert rules.
- Exporter and Service to receive the exported functions
  - Put it in A&AI - A&AI Schema changes?
  - TBD – per compute node basis or per site basis or per flavor basis.

Phases

- Phase 1 (no new development)
  - Prometheus micro services
  - Node exporter in compute nodes
  - cAdvisor in compute nodes
  - Create recording and alerting rules to see alert manager alerts HPA related feature metrics.
  - Use Grafana to ensure system is working fine
- Phase 2
  - Everything else…??? More breakdowns to multiple phases??
- Future
  - Common rule format & conversions to allow multiple monitoring systems.

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