vQUERY: TRACKING CONFIGURATION + PERFORMANCE

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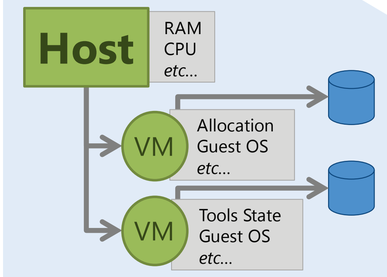
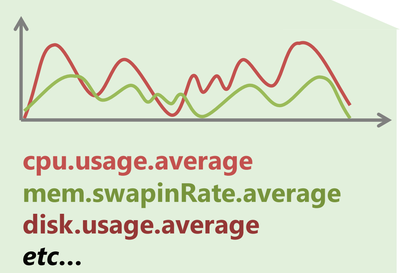
OVERVIEW

- Performance monitoring in IaaS datacenters
  - Resources shared by many VMs
  - Applications composed of multiple VMs
  - VM location/resources change dynamically
    - Migration, resizing
- vQuery: incorporate configuration monitoring
  - Contention and (re-)location affect performance
  - VMs as black boxes, monitored externally

- Collect **configuration** and **performance** data

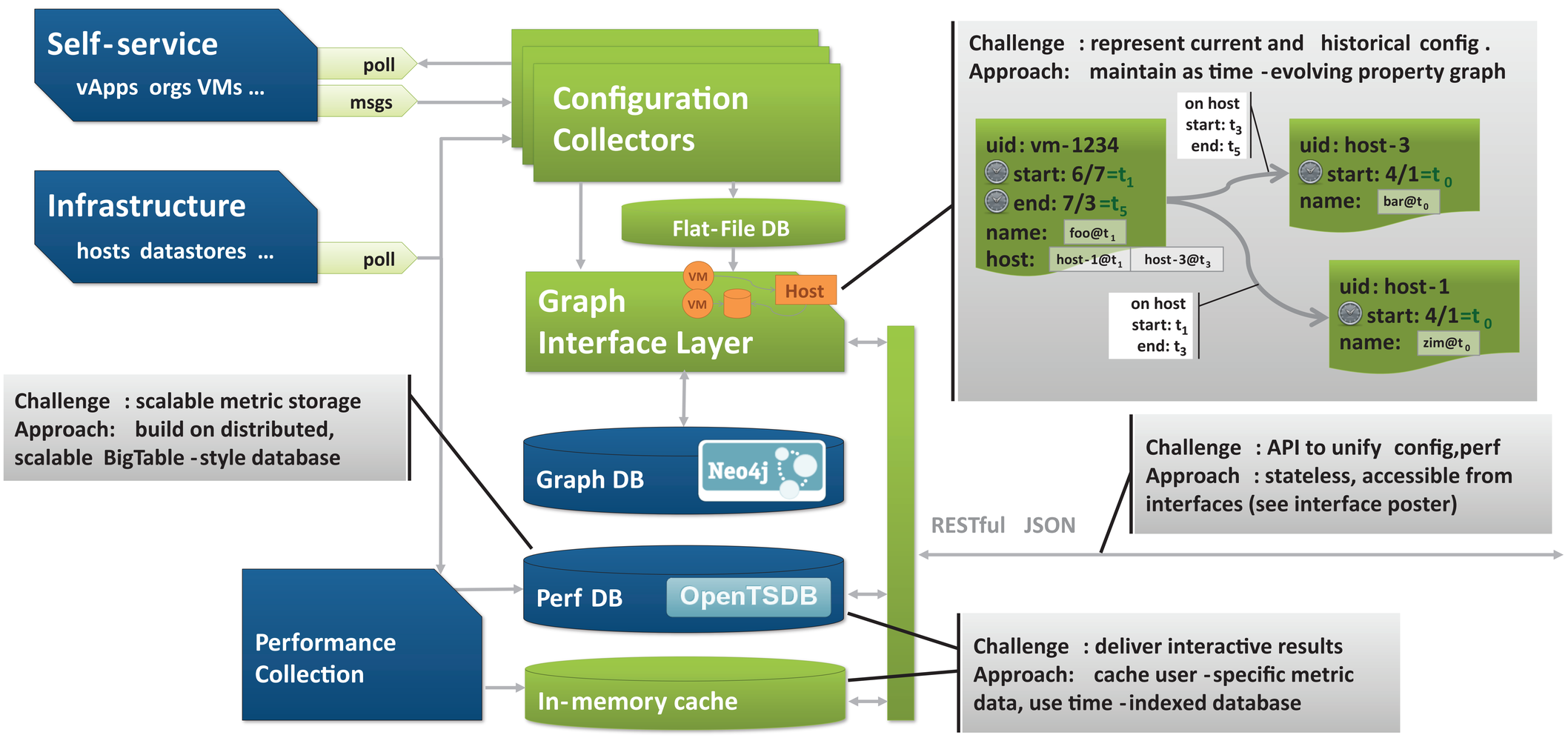




cpu.usage.average
mem.swapinRate.average
disk.usage.average
etc...

- Fine-granularity, long-term storage for both
- Goal: integrate configuration in diagnosis, analysis, UI

ARCHITECTURE

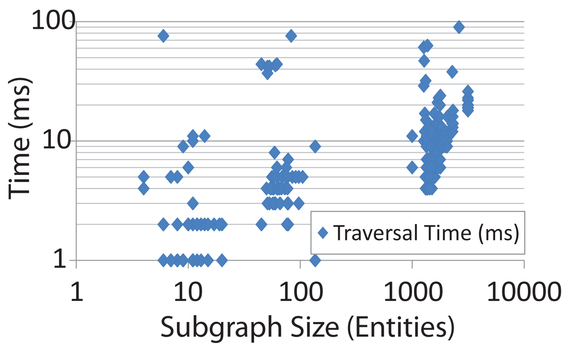


EVALUATION

INTERACTIVE QUERY LATENCY

Ex: Configuration Data

- Extract subgraph
- Retrieve two attributes
- <0.1sec for 1000s of entities



Ex: Performance Data

- Extract timeslice of data for single metric
- For one entity: 6.56GB (5.6 years) in <400ms
- OpenTSDB: subpar scaling for large #entities

CONTINUING WORK

- Generalize well across IaaS systems
  - Seems feasible (see Abstracting IaaS poster)
- Drives interactive UI for cross-layer monitoring
  - See interface poster
- Deploying on new PDL vCloud
- Next: automatically correlate config + perf
  - Case studies of configuration-reliant queries
  - Use for existing problem diagnosis techniques

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