CS294-14 Project Proposal

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Objectives

- Enable quick development and deployment of monitoring infrastructure
- Let you do relatively complicated things within the infrastructure, but make it extensible: we like writing code too.
- Allow reuse of running components – share work between concurrently running monitoring apps.
State-of-the-Art

• Ganglia
  – Telemetry from thousands of nodes

• P2
  – Declarative overlay networks

• IRIS
  – DHT-based query

• X-Trace / *-trace / d-trigger
  – Specialized forms of data, each in a stovepipe
Our New Idea

• Declarative specification for deployment
  – Do complicated things with your data, but only write the part that actually gets the data

• Composable modules for code reuse
  – Enables good scalability, esp. if computation gets placed in a smart way (exploit locality)

• Common formats to allow tool reuse.
  – Generalized filtering and aggregation tools.
Risks

- Finding good test cases is too hard
- Hard to evaluate or find users
- The result isn’t useful
  - Scalability & Reliability
- People won’t use the result
  - Prefer custom solutions anyways?
  - Activation energy problem
The Plan

• Should have User #1 in a week or two.
• Make it useful fast!
  – Start with imperative deployment as a backoff from our goal; incorporate declarative elements where most useful
• Use X-Trace as a test case, by early Nov.
  – Replace XTR front end with more general daemon; do fancy queries within framework.
• Do performance measurements in Nov.