Operations @ Scale

The Challenge: Operating a Cloud-Scale Service

Monitoring Today
- **Volume & Velocity**: scale of data, rate of data
  - 1,000,000s of requests per second, 10,000s of servers & network elements, 100s of services, multiple data centers, multiple layers, PBs of data
- **Variety & Veracity**: multiple sources & forms of data, uncertainty & noise
  - Logs, app metrics, HW telemetry, network (sflow/netflow), complaints
  - Multiple systems, owners & admins (app, server, storage, net)
  - Multiple paths, alternative systems – built for failure HA approach

Operations Today
- **Can show what is happening, what has happened**
  - Collect all data, search, visualize, alert based on static thresholds
- **But... too much Information, too much hands on, too much expertise**
  - Lots of dashboards, reports, and alerts
  - Hard to understand, opaque, requires interdisciplinary DevOps skills
  - Important problems take too long to solve or are overlooked
  - Trends and imminent problems are not detected before service is affected

Why it happened
- Diagnostic tools
- Contextual data
- Focus

Visualization
- Topology view
- First Person View
- Application flows

Anomaly detection
- Automatic monitoring
- Smart, real-time alerts
- Dynamic thresholds

Cognitive
- Business value
- Insights to system behavior
- Relationships between metrics

What may happen
- Predictions, forecasts
- Models, risks, priorities
- Implications

What can I do
- Prescriptive, informed decisions
- Proactively minimize problems
- Remedies, avoidance, adaptations

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Computing as a Service
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