



Monitoring (Logging and Metrics)



Monitoring

- What?

- For Applications
- For Operations

4 layers of HA and Resiliency provided by platform

- How?

- Log Event Streams

➤ Still need to be aware of the applications and platforms operational health

- Application Performance Monitoring
- Platform Performance Monitoring
- Logging Events

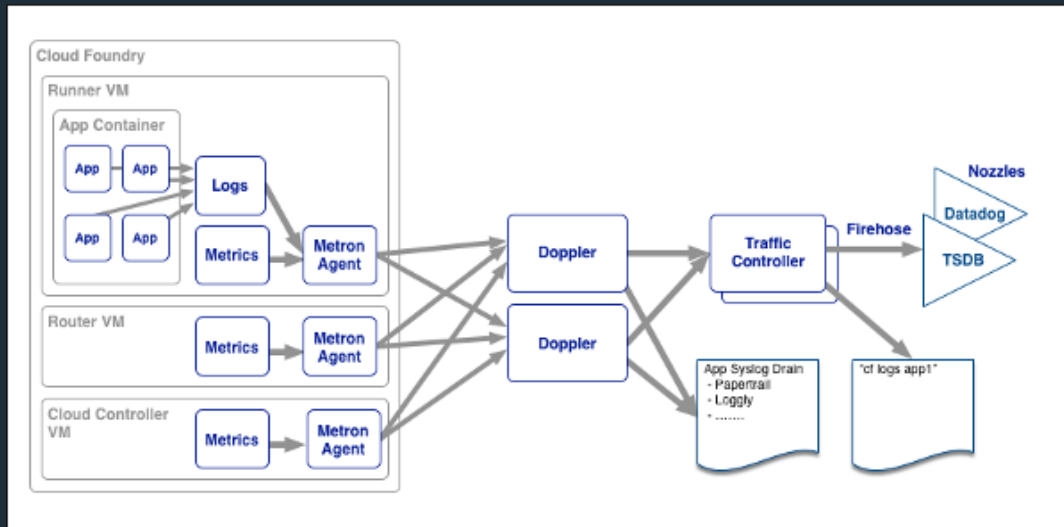


The Loggregator

- Allows application users and operators to:
 - Tail their application logs
 - Dump a recent set of application logs
 - Continually drain their application logs to 3rd party log archive and analysis service
 - Attach Firehose nozzles to filter and forward data stream to external analytics systems.
 - No longer single point of failure

Loggregator Technical Overview

- Applications write logs to STDOUT and STDERR
- Relevant Cloud Foundry component events added to application stream
- Log events collected, collated, and expose via API and the firehose



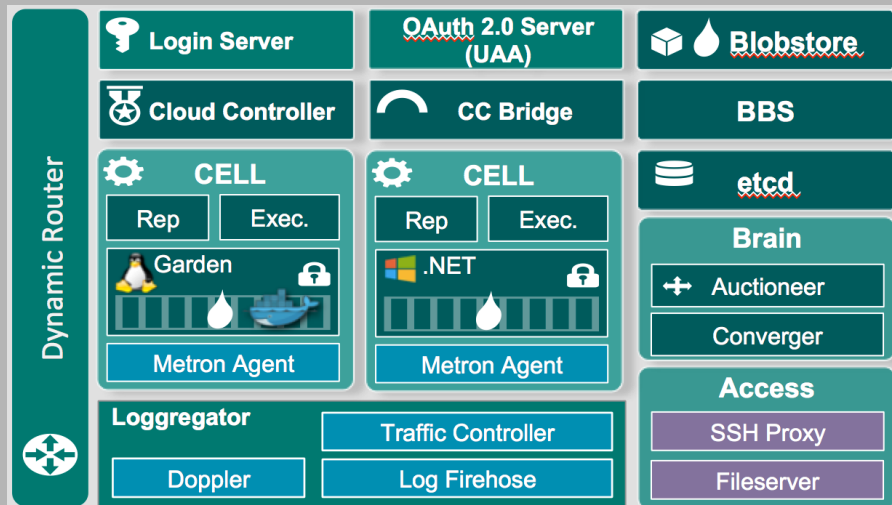
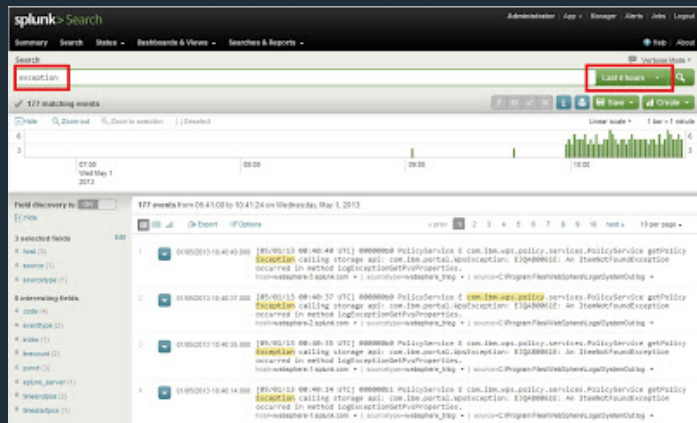
The Firehose

- Streaming endpoint of logs, HTTP events and application container metrics, and metrics from Elastic Runtime components.
- Secured to system operators/admins
- Nozzles used to consume data from the firehose
 - Datadog Nozzle
 - Syslog Nozzle

Log Management Services

- External logging systems configured for application and system level components
- Supported 3rd Party services
 - Splunk
 - Papertrail
 - Sumo Logic

Log Management Services



Metrics

Metrics: Why Are They Important?

- Developers have the need for a real time, detailed view into system measures
- Compare typical activity to peak load and historical data for performance tuning
- Very important to understand when to scale your app or platform

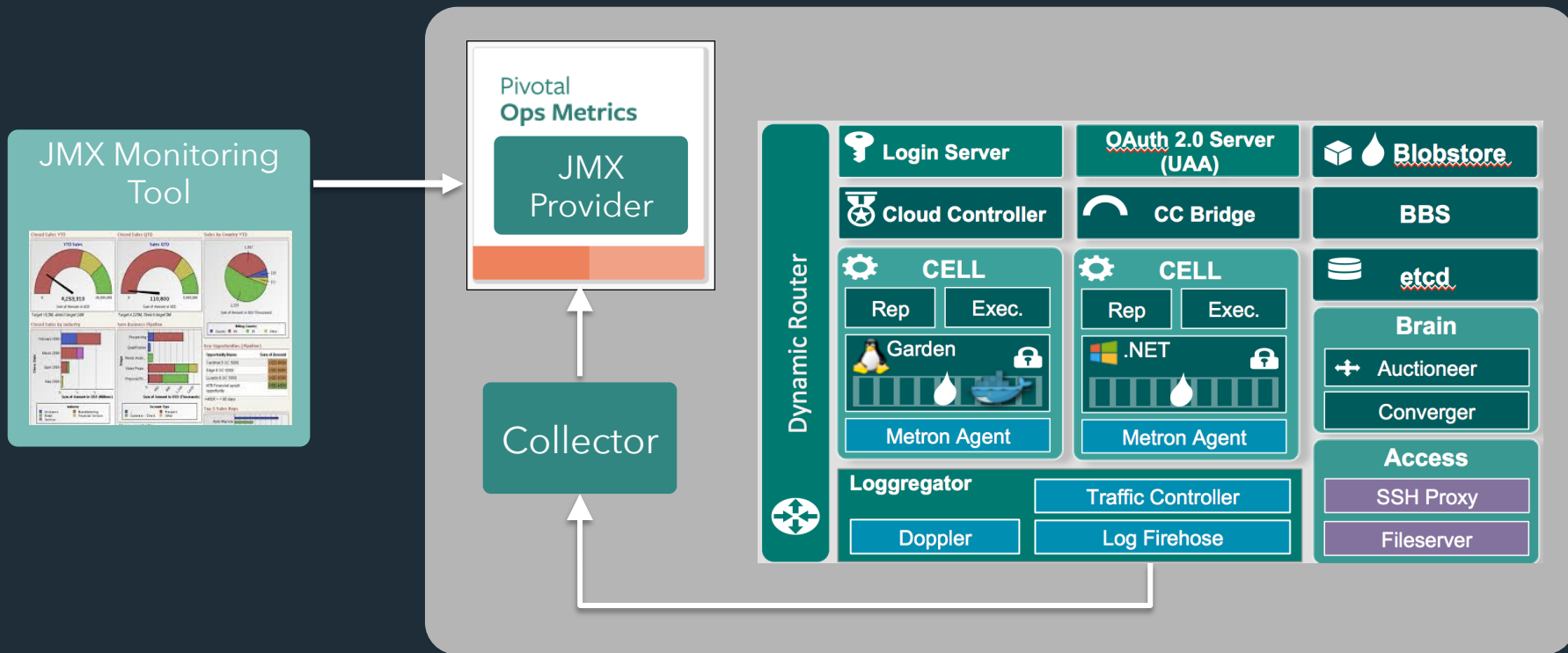
Metrics Pipeline Destinations

- Ops Metrics
- Built in Apps & Platform Metrics (Roadmap)
- 3rd Party
 - APM: New Relic, App Dynamics, Dynatrace
 - Ops: Datadog, Amazon Cloud Watch

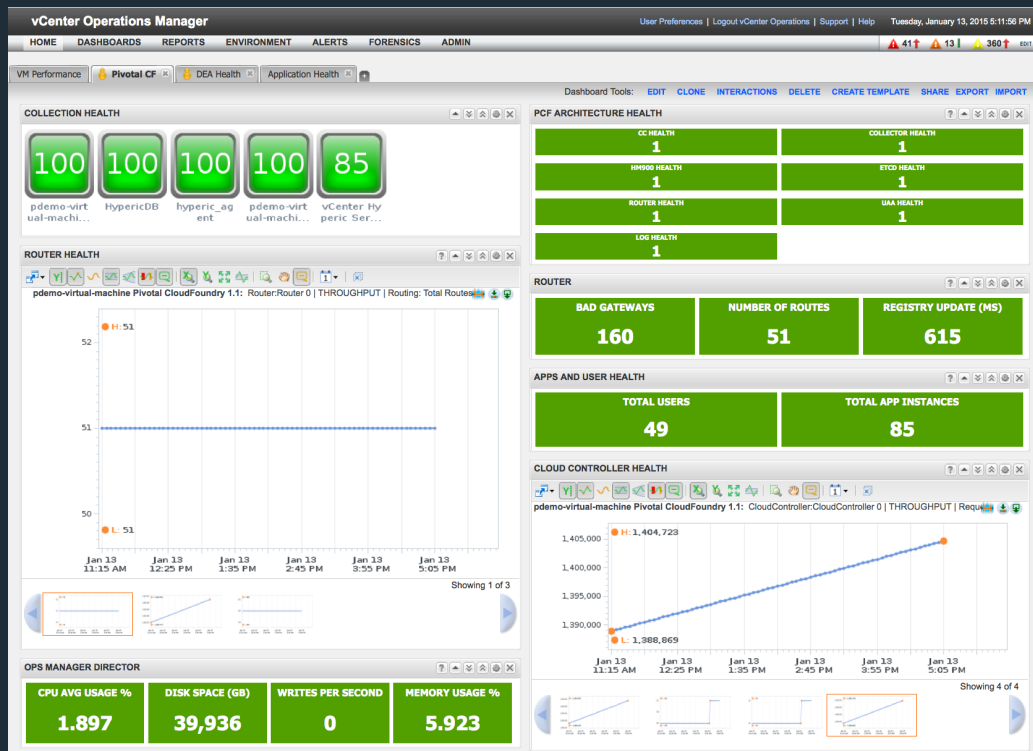
Pivotal Ops Metrics

- Provides JMX Interface into key Pivotal CF Components: Cells, CC, Router, UAA etc...
- Can be plugged into any JMX endpoint like JConsole, Datadog or Hyperic
- Leverages Loggregator/Firehose to capture exposed metrics

JMX Metrics Services



Pivotal Ops Metrics Hyperic Dashboard



Built in Platform Metrics (Roadmap)

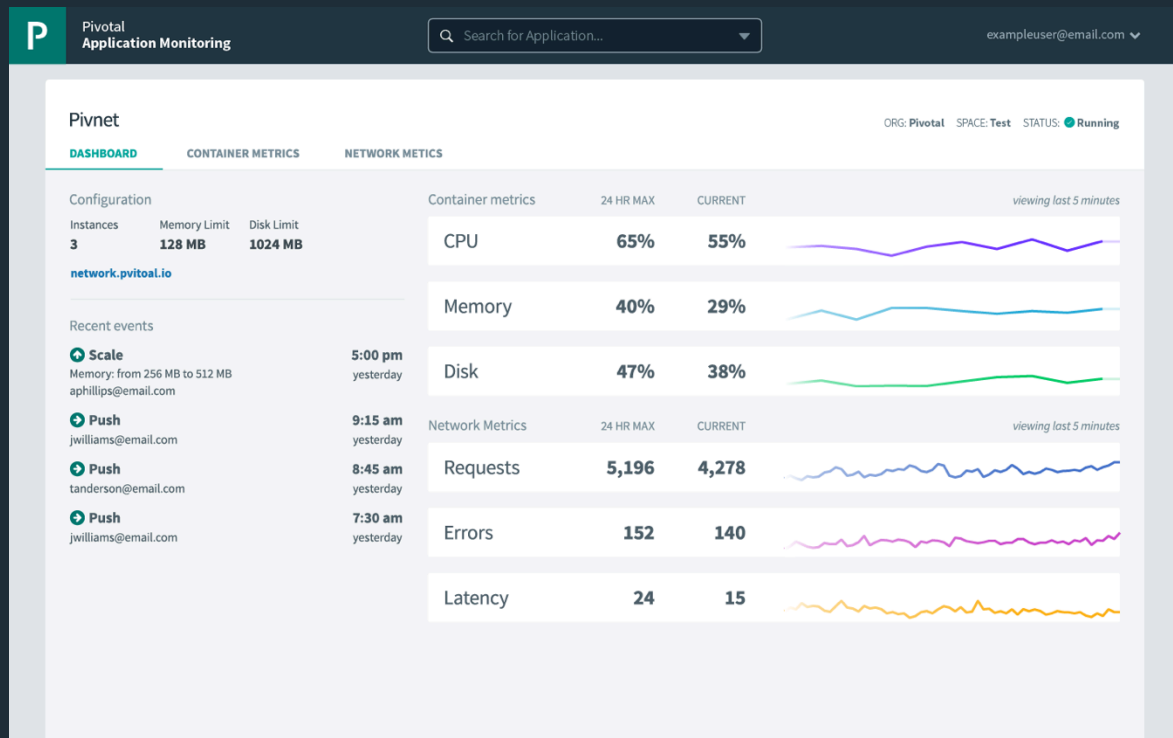
- Built in conjunction with consolidated platform metrics for both Applications and Platform Components
- Leverages Loggregator/Firehose data stream
- Capabilities:
 - Email and SNMP notifications on platform component failures
 - Platform Capacity thresholds notifications

Built in Application Metrics

- Built on Loggregator/Firehose Architecture
- HTTP metrics: HTTP requests, HTTP request errors, and average latency (updated every second)
- Container metrics: CPU, disk, and memory (updated every 30 seconds)
- App events: create, update, start, stop, crash (updated on occurrence)

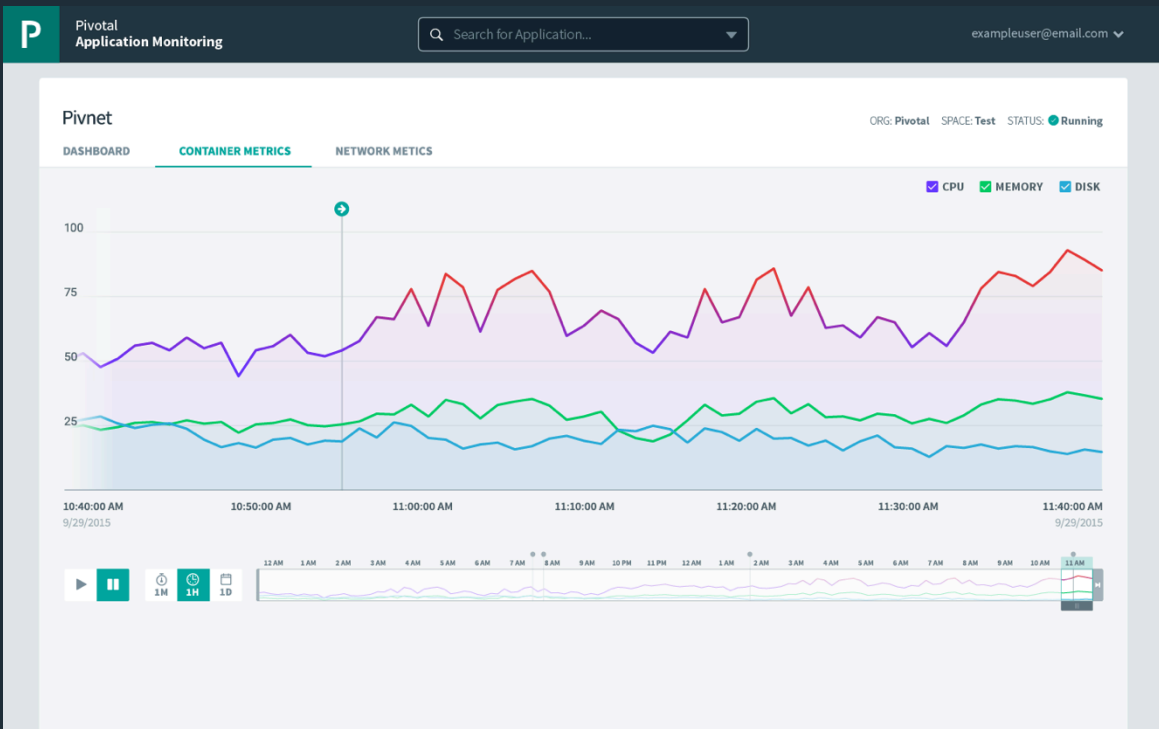
Application Dashboard

- Display current app status, scale, and route
- Streaming Data
 - last five minutes of container and network metrics
 - most recent app events



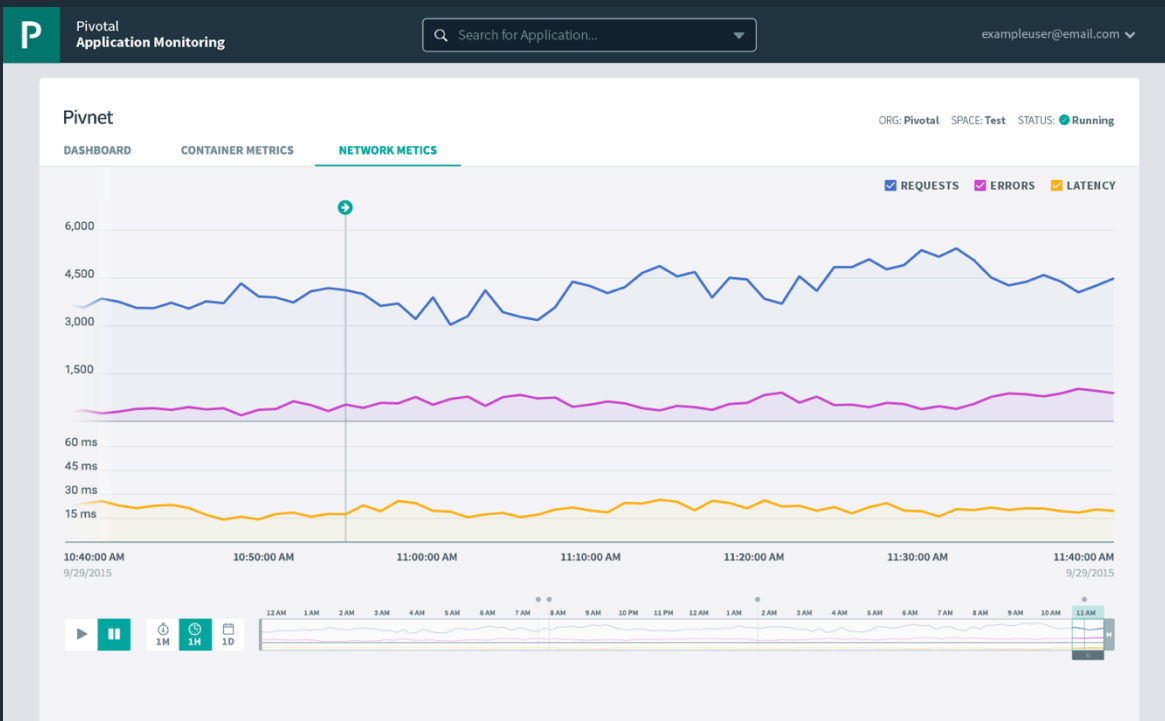
Container Metrics Detail

- View app events in context with streaming:
 - CPU
 - Disk
 - Memory
- Viewable by day, hour and minute



Network Metrics Detail

- View app events in context with streaming:
 - HTTP requests
 - HTTP errors
 - Latency
- Viewable by day, hour and minute



Built in Application Metrics (Roadmap)

- Events, logs, and metrics in one UI
- Notifications on events and thresholds
- Distributed tracing with SCS
- Per instance metrics (identify unhealthy app instances)
- Rich, rules-based auto-scaling
- Custom app metrics
- Increased capacity of prior metrics

Roadmap Goals – Metrics Based Automation

- Right-sizing app config (better understand usage over time to precisely scale apps)
- Canary deployments (incrementally distribute traffic to new app versions: replace old version if performant, immediately rollback if not)
- Capacity planning (use app metrics to drive a holistic view of demand on the platform, now and into the future)

Pivotal

A NEW PLATFORM FOR A NEW ERA