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Monitoring (Logging and Metrics)

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Monitoring

- What?
  - For Applications
  - For Operations
- How?
  - Log Event Streams
  - Application Log Analytics
  - Application Performance Monitoring
  - Platform Performance Monitoring
  - Logging Events

4 layers of HA and Resiliency provided by platform

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

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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

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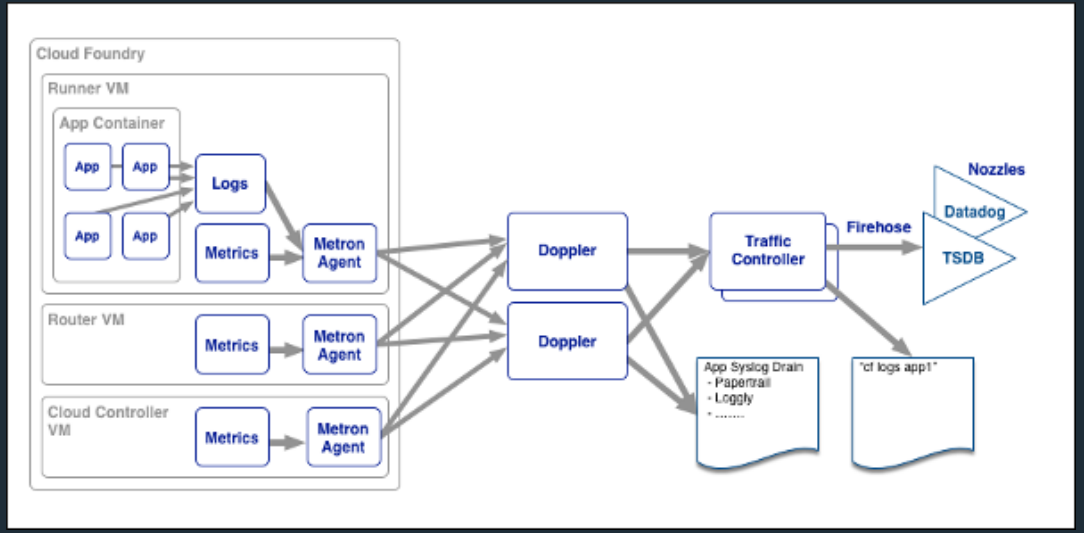
Loggregator Technical Overview

- 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



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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

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Log Management Services

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

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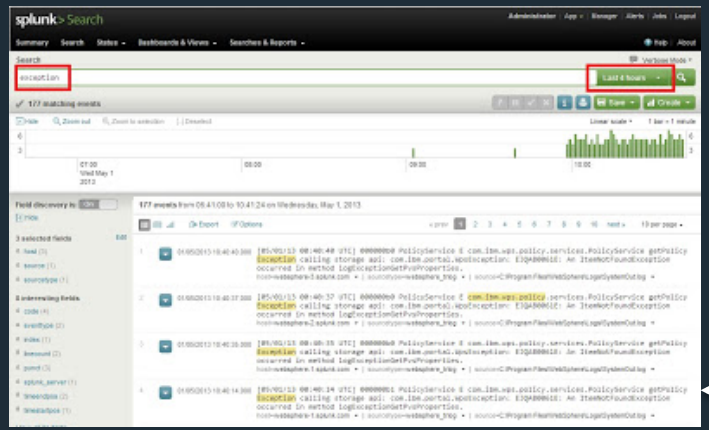
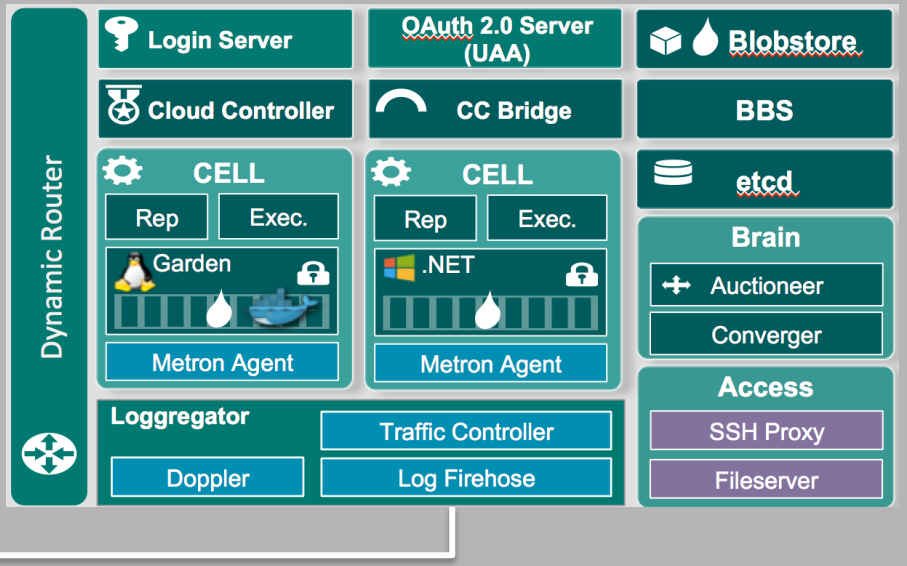
Log Management Services

splunk>





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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

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Metrics Pipeline Destinations

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

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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

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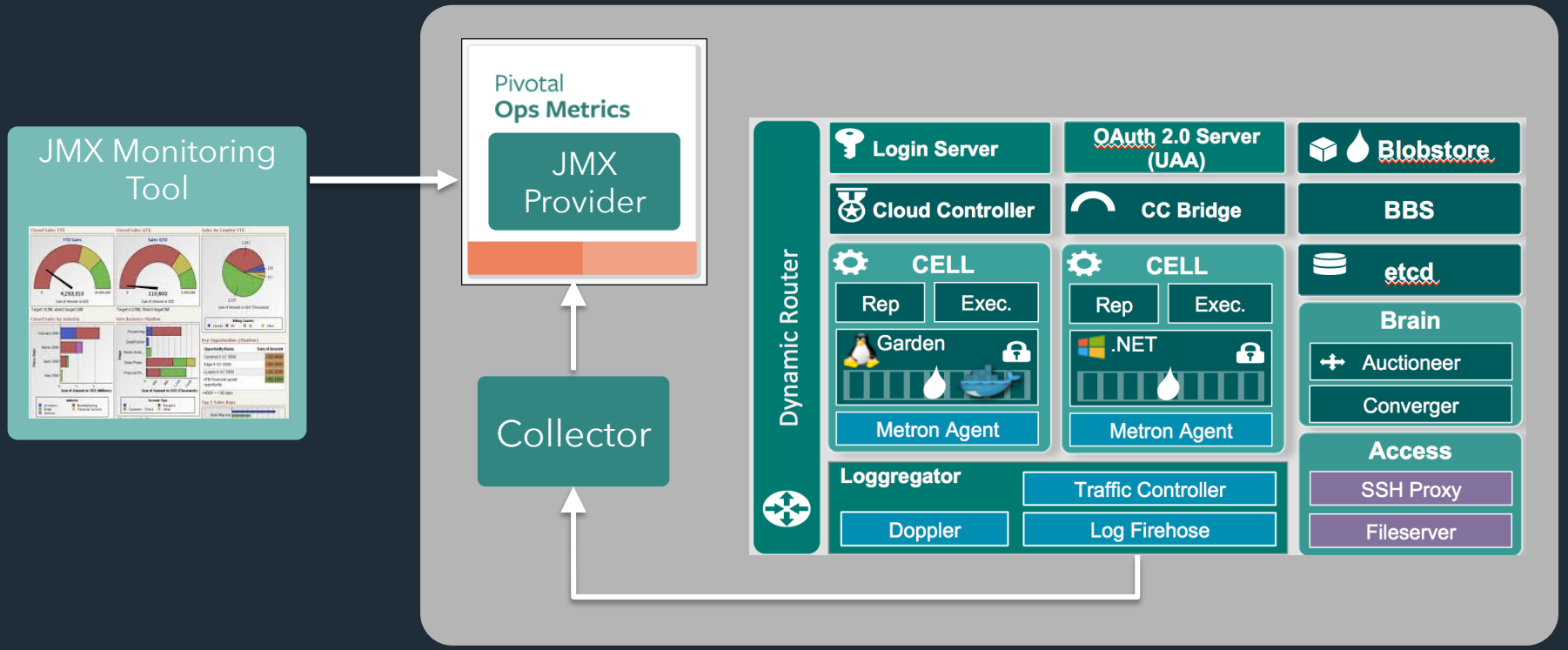
JMX Metrics Services



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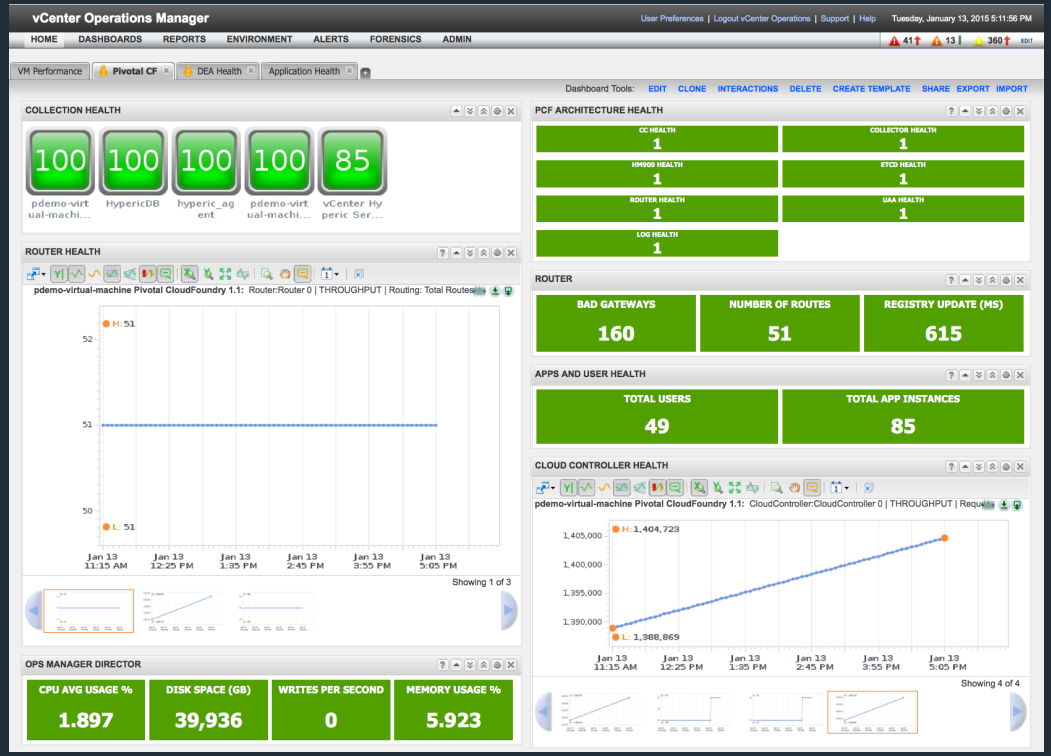
Pivotal Ops Metrics Hyperic Dashboard



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

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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)
- 24 Hours of Metrics Available

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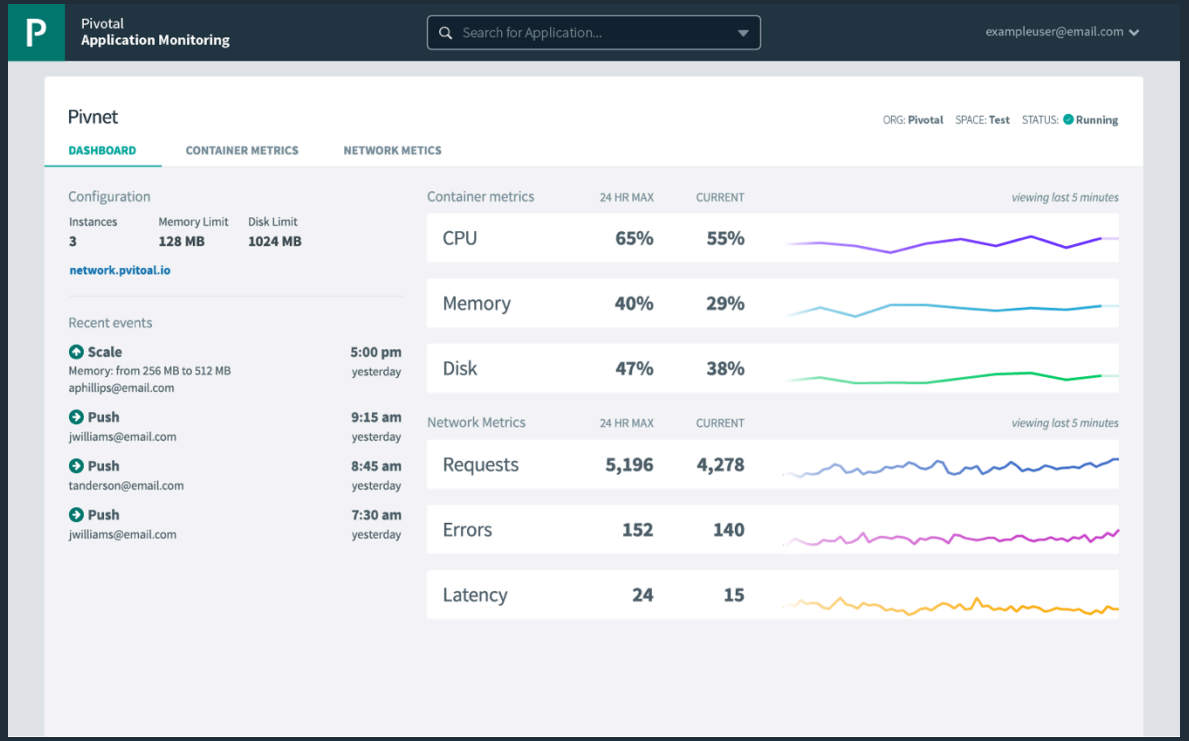
Application Dashboard

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



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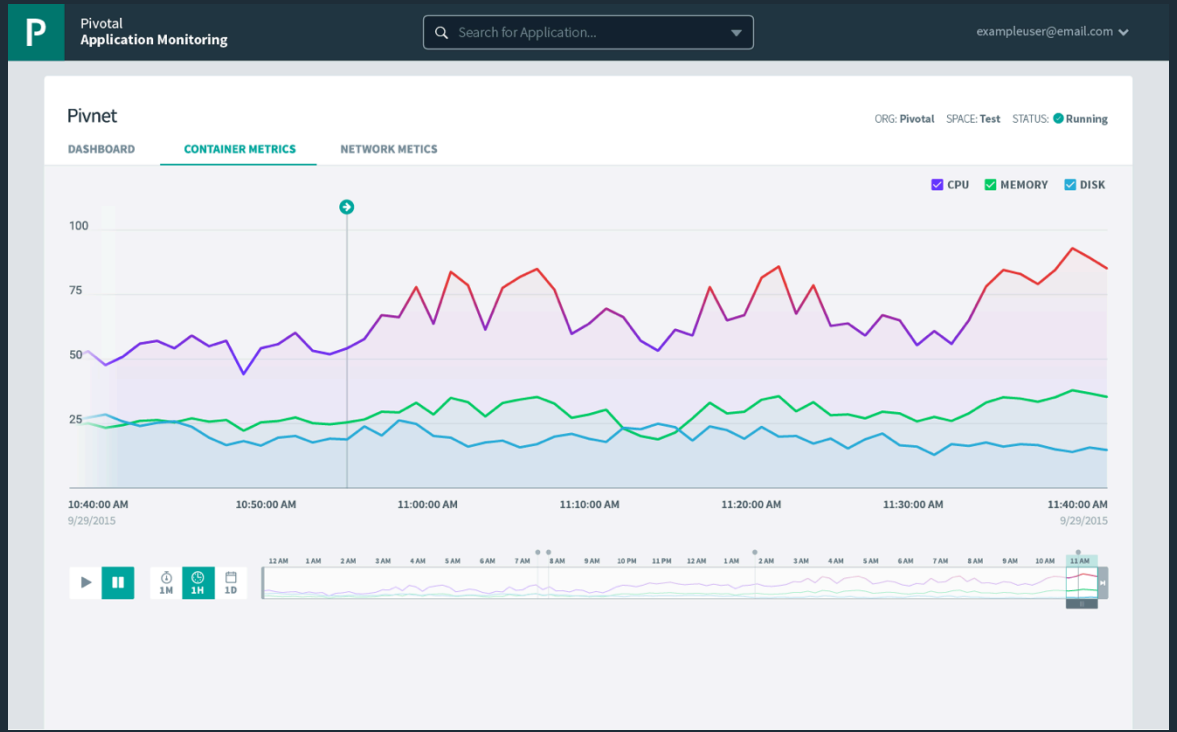
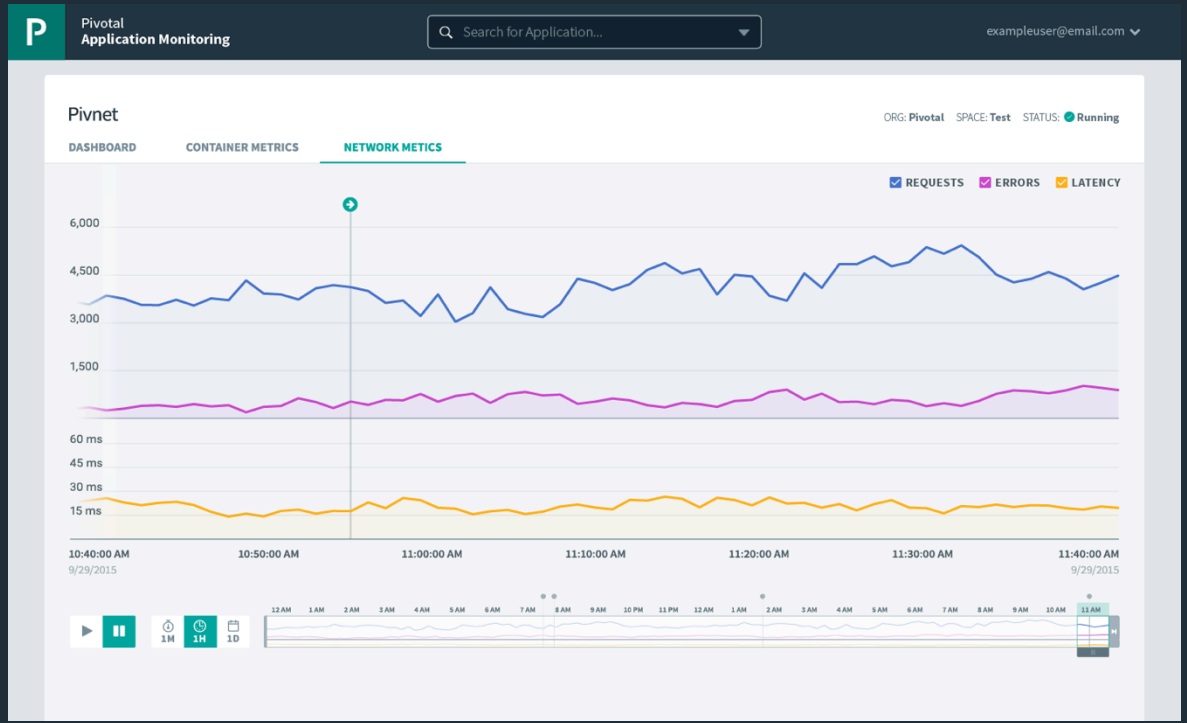
Container Metrics Detail

- 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

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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)

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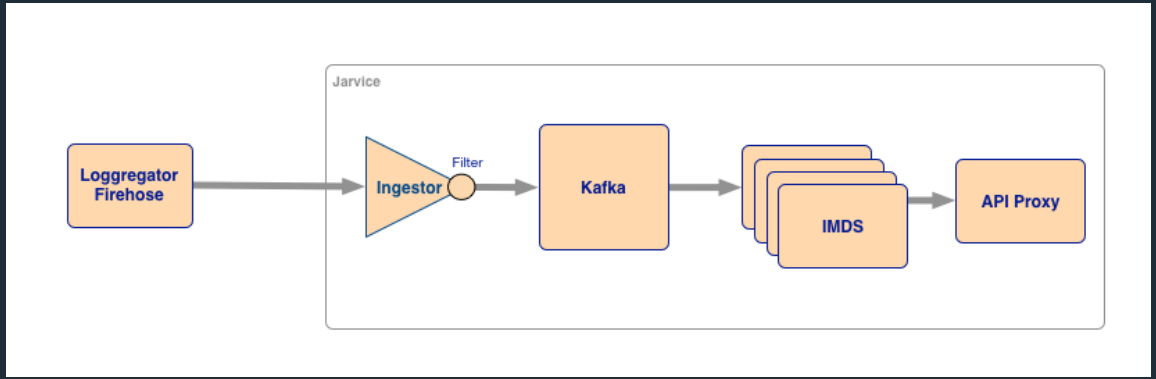
Platform Metrics Architecture

- Loggregator Firehose Nozzle used to capture data
- Exposed API for custom extension



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A NEW PLATFORM FOR A NEW ERA