Wavefront Nozzle for PAS on PCF
Cloud-Native Monitoring and Analytics for Pivotal Application Service

AT A GLANCE
Wavefront by VMware is a Pivotal Technology Partner that provides fully integrated PAS monitoring and analytics solution that complements Pivotal technology.

KEY BENEFITS
- Get packaged, real-time insight into the performance of the Pivotal Application Service (PAS) and Pivotal Cloud Foundry (PCF) key components.
- Utilize the Wavefront Query Language and Analytics Engine to customize PAS application and underlaying PCF component and VMS metrics, and proactively detect and troubleshoot anomalies.
- Gather and analyze all PAS custom code and PCF metrics to understand the impact of the code in production, perform trend analysis, and do capacity planning.

What is Wavefront Nozzle for PAS and Key Benefits
Pivotal Application Service (PAS) is based on Pivotal Cloud Foundry (PCF). PAS on PCF helps DevOps and developer teams quickly develop and deliver cloud applications by abstracting underlying cloud complexities. Due to shorten release cycles, enterprises are facing an explosion of metrics they have to analyze quickly. The engineering teams need continuous visibility at scale into applications, VMs, cluster components and cloud services health and performance so that they can maintain agile code delivery and detect cloud service anomalies early.

The Wavefront by VMware metrics-driven analytics platform delivers out-of-the-box visibility across PAS and PCF components. Using Wavefront by VMware Nozzle for PAS/PCF to collect metrics from key PAS applications and PCF components, engineering teams can efficiently run and monitor PAS, the PCF platform and associated services. Wavefront enables both developers, PAS and PCF administrators with shareable, self-serve metrics.

Wavefront helps them to:
- **Deliver and monitor cloud services** faster by understanding the health of the entire PAS on PCF environment using pre-built, analytics-driven dashboards with application metrics
- **Troubleshoot and resolve any PCF component issues** with real-time system performance metrics by correlating applications and their underlying PCF components and VMs
- **Utilize packaged PCF alerts**; or create customized ones using the Wavefront Query Language
- **Trend and retain all PAS and PCF metrics** for historical trend analysis and proactive capacity planning

“The cloud native movement is about making distributed systems thinking ubiquitous, but with that comes the need for a profound new skillset that every PCF platform operator, SRE and developer would need, and no skillset is complete without a handy set of tools. My first tool of choice is Wavefront, we have been using it as the first step in our observability approach for PAS applications running across multiple clouds with multiple kubernetes and non-kubernetes clusters.”

Emand Benjamin, Chief Technologist, Application Platforms, VMware OCTO
Key Features and Capabilities

The Wavefront PAS/PCF Nozzle includes three components: Nozzle, Service Broker and Proxy. It retrieves metrics from Loggregator and PCF BOSH Health Monitor and sends them to Proxy. Also, developers can send their custom application metrics to Proxy via Service Broker. All these metrics are sent to Wavefront in a fast and reliable manner for instant visualization and analysis.

![Wavefront PAS/PCF Integration Diagram]

Figure 1: Wavefront PAS/PCF Integration

The Wavefront PAS/PCF Nozzle collects, analyzes and visualizes metrics from key PCF components including GoRouter, UAA, Diego BBS, Doppler Server, Cloud Controller and more. With more profound insights, cloud operators can detect, resolve and remediate any PCF resource consumption bottleneck and see errors sooner, at any scale. Over 12 packaged dashboards deliver full views of the overall health of the PCF platform, plus in-depth granular PCF component metrics and detailed container metrics.

![Wavefront PAS/PCF Summary of PCF Components]

Figure 2: Wavefront PAS/PCF Summary of PCF components
A full list of dashboards is below:

**Summary Dashboard** with:
- Key metrics: Router, API, User Account and Authentication (UAA), NATS, Doppler, Consul
- Diego status metrics: Brain, Cell, Database, Available Memory, CPU Load and more
- Jobs metrics: Top 10 Running Jobs by CPU, Memory, Persistent and Ephemeral Disk Usage
- Cloud Controller metrics: Failed and Queued Jobs, Max Response Queue Size, Router & API Requests

**GoRouter Dashboard** with Throughput, Response Codes, Time Since Last Route Register Received, Handling Latency, Total Routes Registered, Memory and Heap Allocated, GC Pause

**UAA Dashboard** with User Authentication Failures, User Authentications, Password Changes, Client Authentications Failures, Client Authentications Principal Authentication Failures

**Diego BBS Dashboard** with BBC Time to Run LRP Convergence, BBS Time to Handle Requests, Cloud Controller and Diego in Sync. More App Instances Than Expected, Fewer App Instances Than Expected, Crashed App Instances, Running App Instances, 1h Rate of Change of Running App Instances
Diego Nsync-Bulker Route-Emitter Dashboard with:
- Nsync-Bulker metrics: Nsync-Bulker Time to Sync, Go Routines, Memory Allocated, GC Pause Time
- Nsync-Listener metrics: Go Routines, Memory Allocated, GC Pause Time
- Route Emitter metrics: Route Emitter Time to Sync, Go Routines, GC Pause Time, Routes Registered

Loggregator Traffic Controller Dashboard with Doppler Proxy Latency, Doppler Proxy Connections, Uptime, Memory Allocated, Heap Allocated, GC Pause Time


Container Dashboard with CPU, Memory and Disk Usage

Diego Auctioneer Dashboard with Task Placement Failures, App Instance Placement Failures, Time to Fetch Cell State, App Instance Starts

Doppler Server Dashboard with Firehose Messages Dropped, Firehose Throughput, Received Envelopes, Received Messages, Allocated Memory and Heap, GC Pause Time, Go Routines, Message Router Sinks, Uptime

Metron Agent Dashboard with Dropsonde Listener Received Bytes and Messages, Dropsonde Listener Messages, Dropsonde Unmarshaller Events, Dropsonde Marshaller Envelopes, Doppler Forwarder Messages, Message Aggregator Events Received, grpc Sent Bytes and Messages, Allocated Memory and Heap, GC Pause Time