pSSID: An Open-Source Wi-Fi Monitoring System

INFORMATION AND TECHNOLOGY SERVICES — UNIVERSITY OF MICHIGAN

https://github.com/UMNET-perfSONAR/TechEx-2024-pSSID

Overall System Architecture
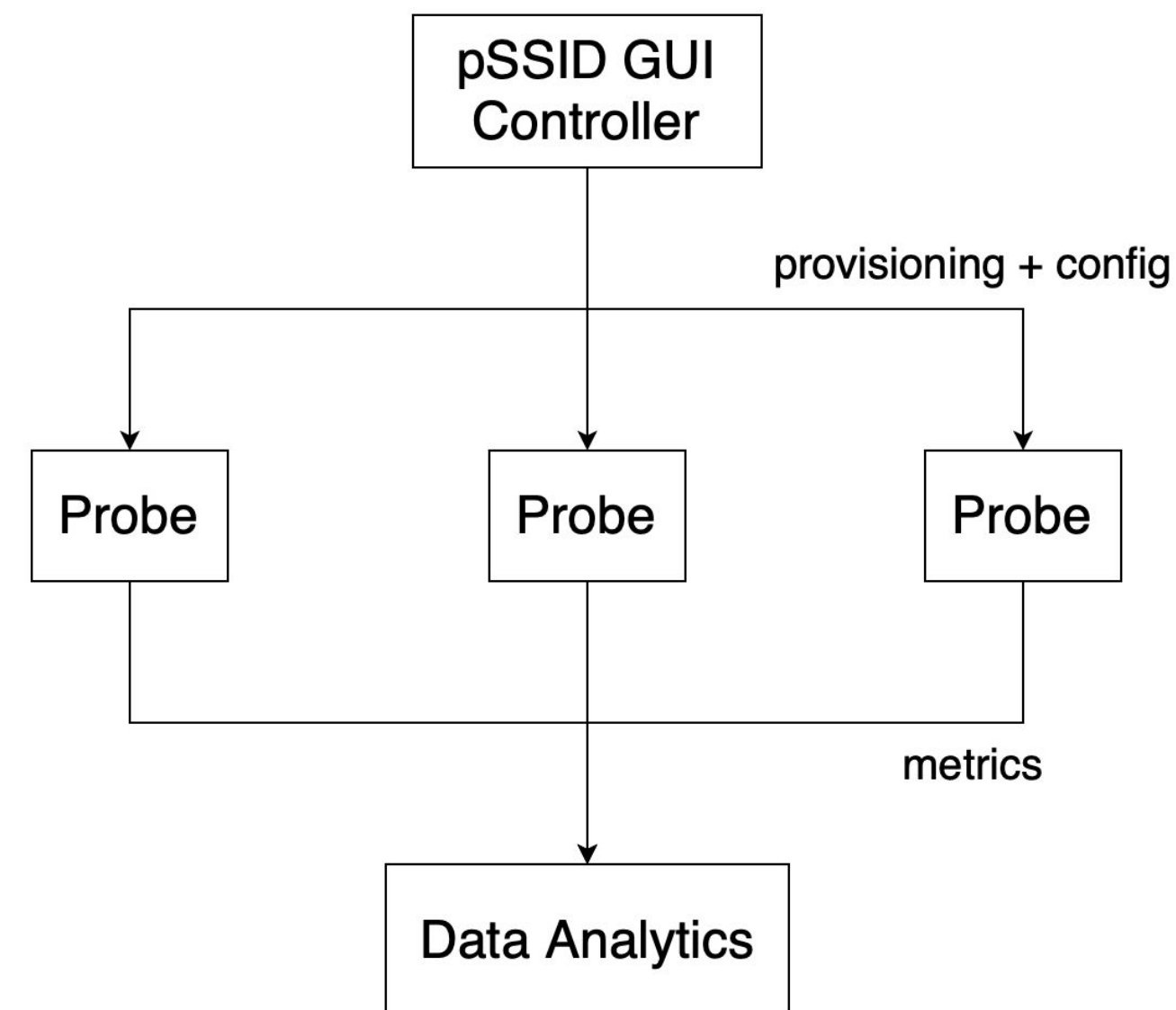
- pSSID is an open-source Wi-Fi monitoring system developed at the University of Michigan and Virginia Tech University
- pSSID's usage case is to monitor EduRoam at campus scale
- pSSID is designed to be scalable for enterprise and campus environments with a web based GUI for probe management and Ansible automation for system provisioning

Web GUI Controller
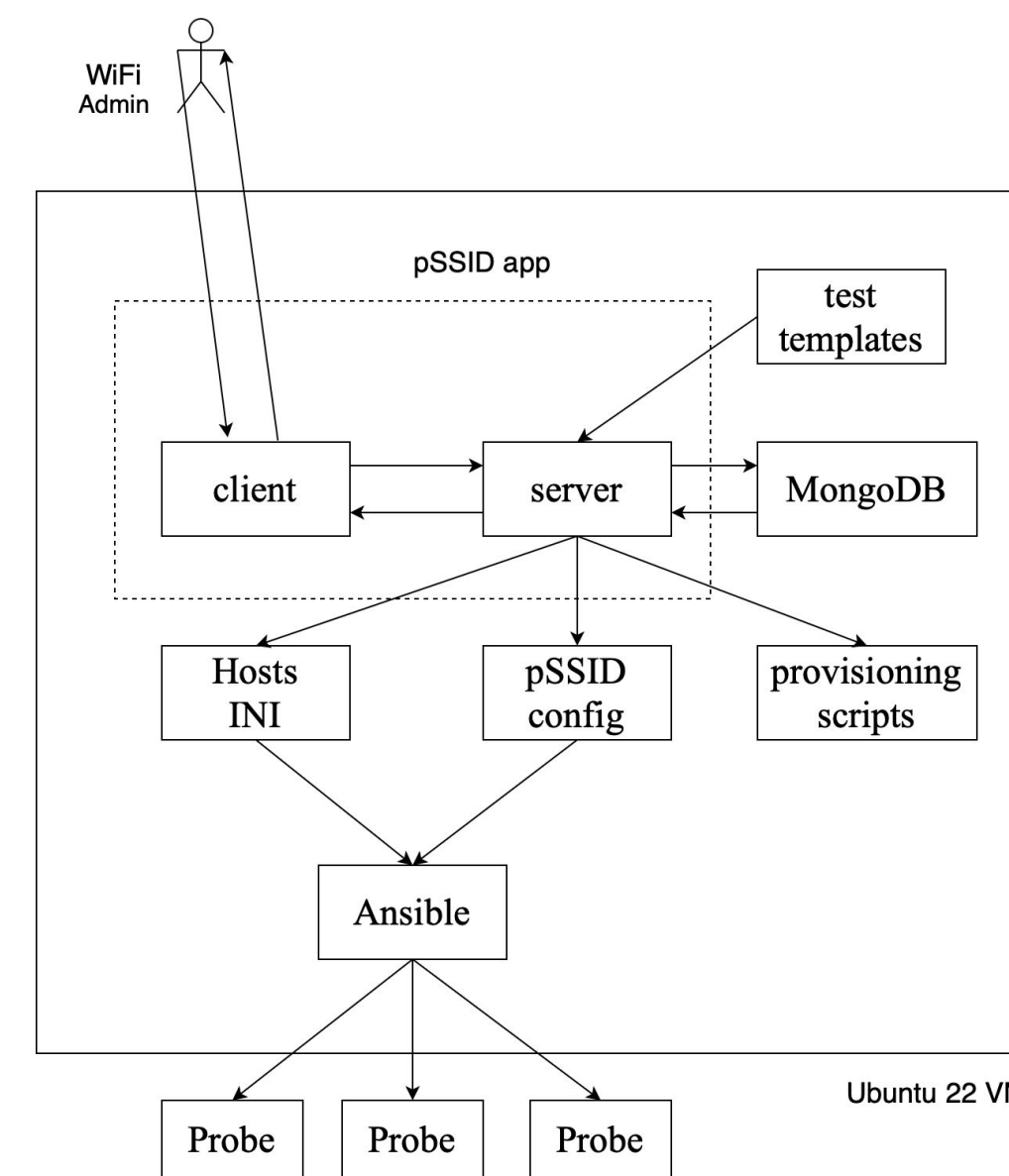
- pSSID's Web GUI allows configuring and provisioning for probes at enterprise scale
- GUI generates pSSID config and Ansible inventory files for automated provisioning
- Runs on Ubuntu 22 VM
- pSSID uses a chron syntax for precision scheduling
- Interactive demo available via QR Code
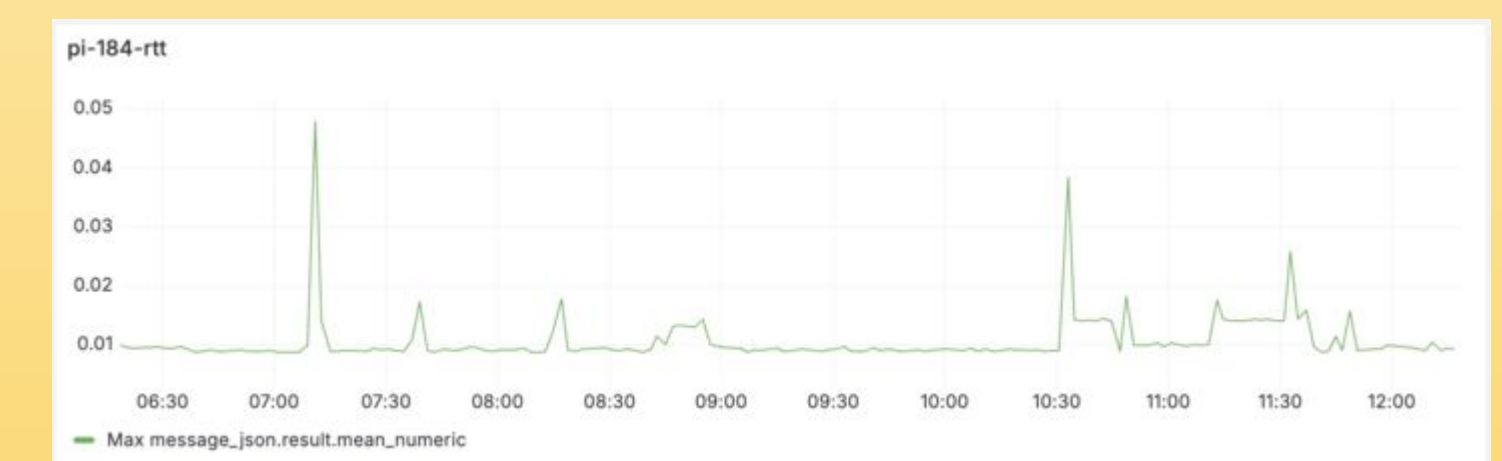
Probe Anatomy
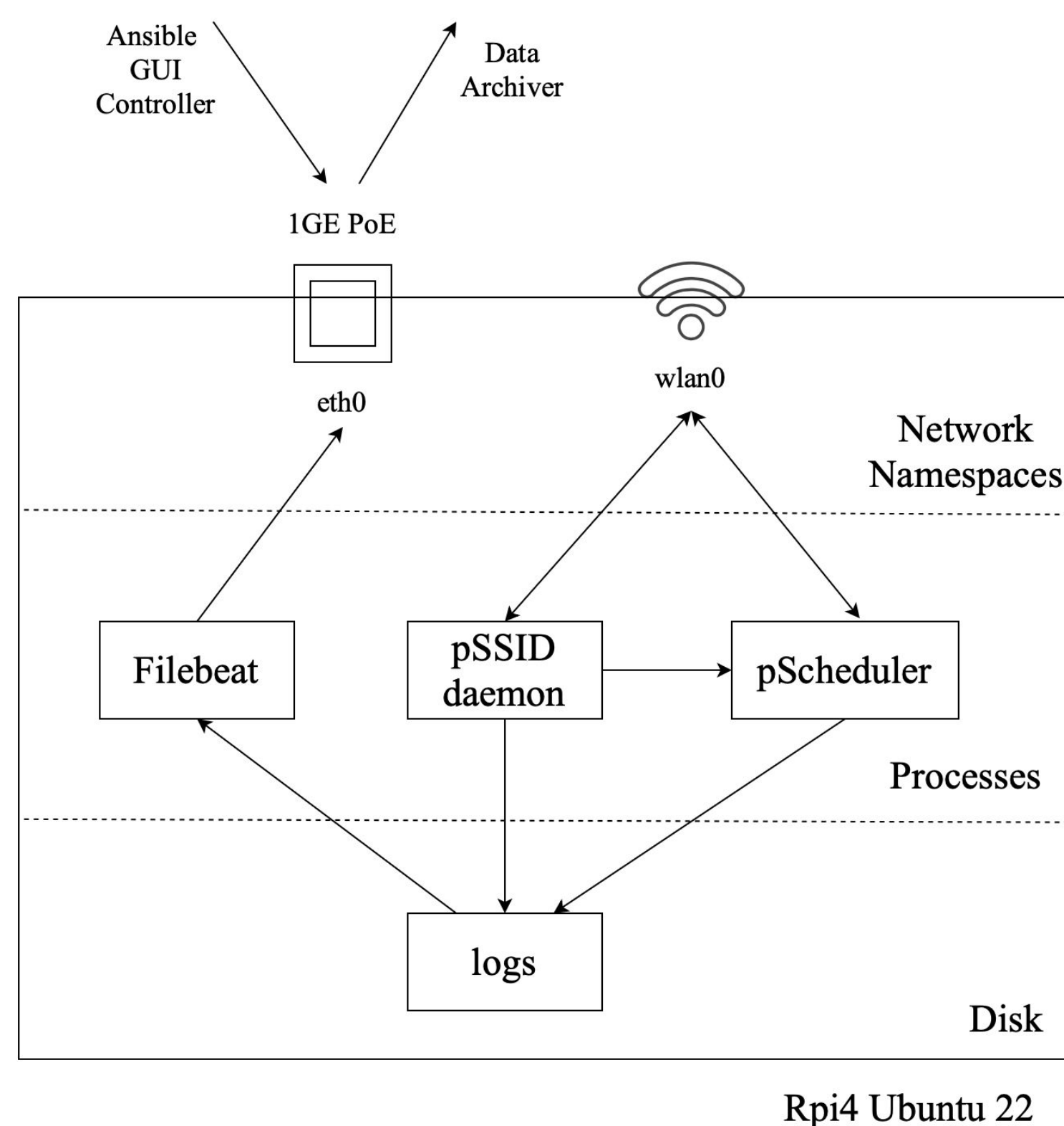
- pSSID integrates with perfSONAR to gather performance metrics
- Probes are provisioned and configured via Ansible
- Network Namespaces isolate the test interface from the management
- Use PoE for one cable provisioning and remote power cycling
- Uses low cost hardware, currently Raspberry Pi 4 with Ubuntu 22

Data Analytics
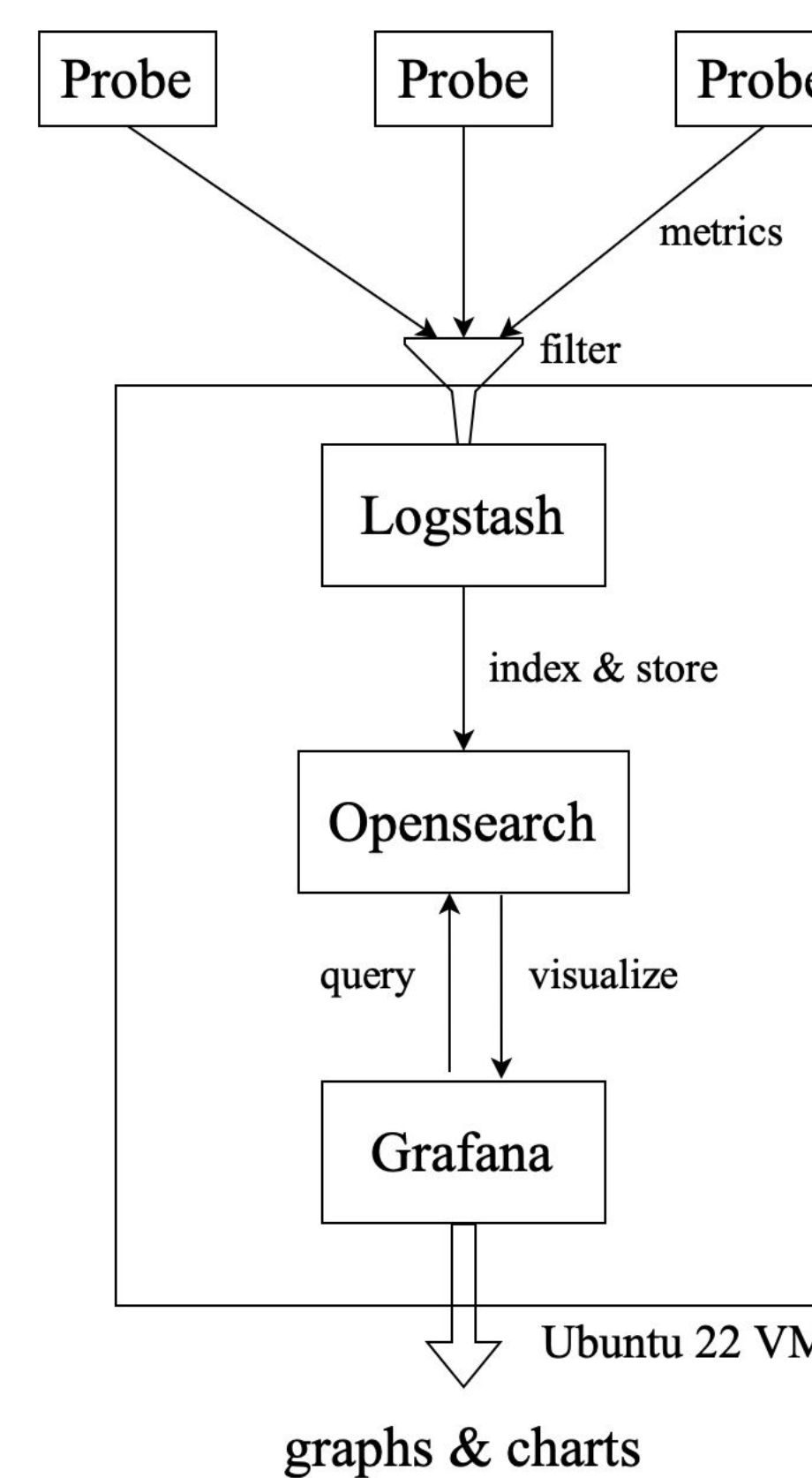
- Uses perfSONAR's Archiver solution for ease of deployment
- Runs on an Ubuntu 22 VM
- Ingest metrics from probes using a Filebeat -> Logstash connection
- Data stored in OpenSearch and visualized via Grafana

Example RTT Metrics