InSight2

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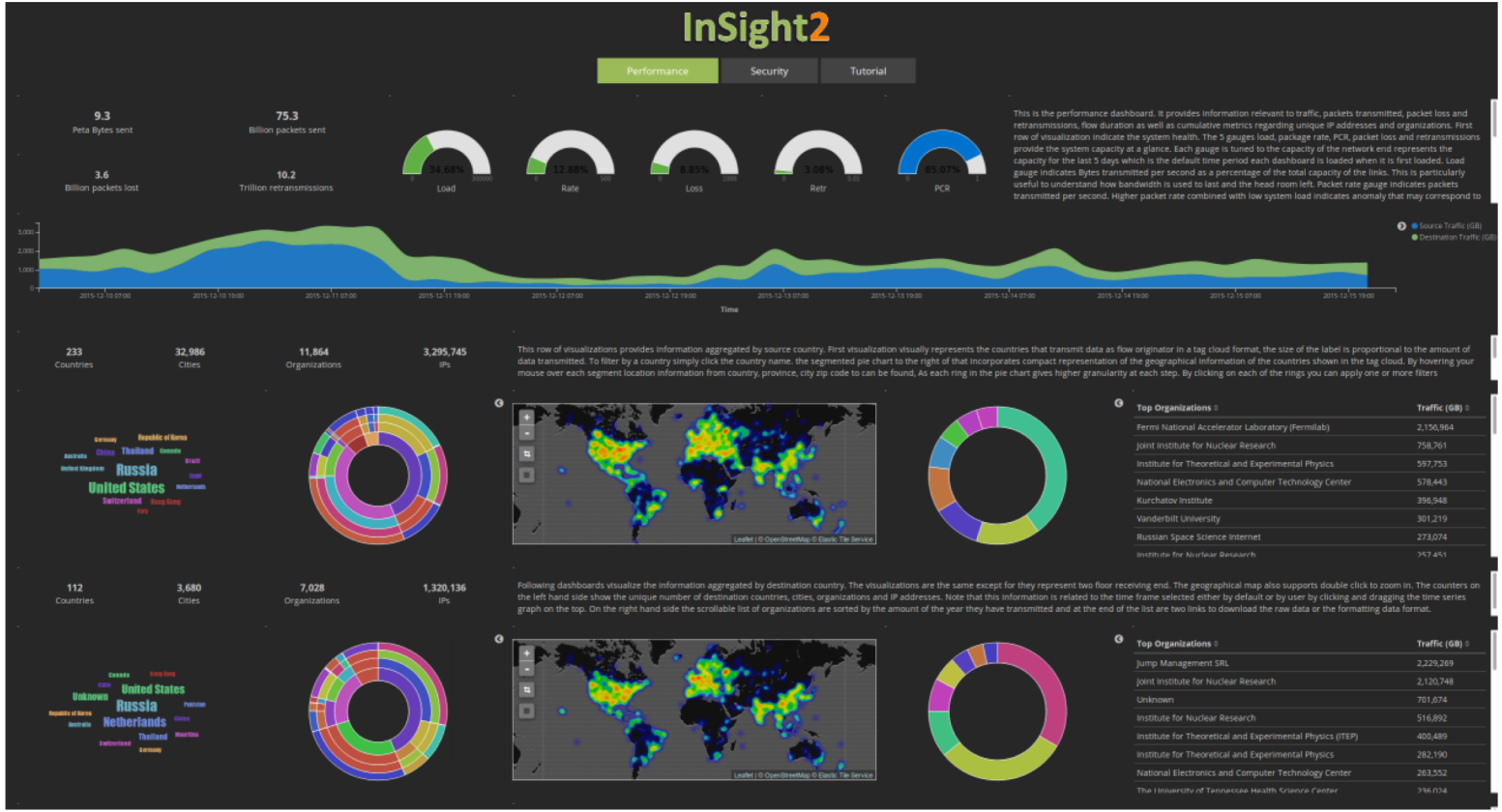
NSF Grant No. IRNC AMI-1450959
The InSight Advanced Performance Measurement System

What is InSight2?

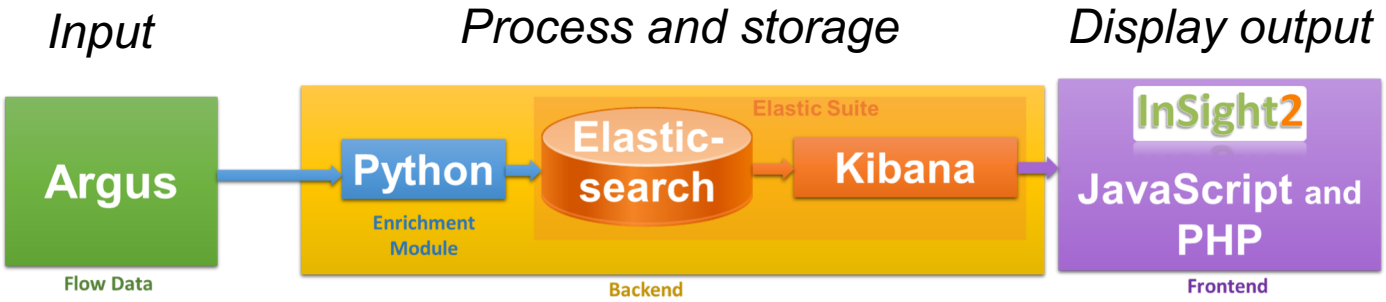
- Interactive web based platform for monitoring and modeling of historic as well as live network traffic.
- QoSient Argus: multi-faceted network flow data
- Further enrichment of the Argus data with GeoIP and Global Science Registry (GSR) information.
- Data modeling and visualization based on free software: Python, Elasticsearch, and JavaScript.
- Multi-threaded, scalable, and easily extendible.

Partial InSight2 Dashboard Example



Goals Completed 1/3

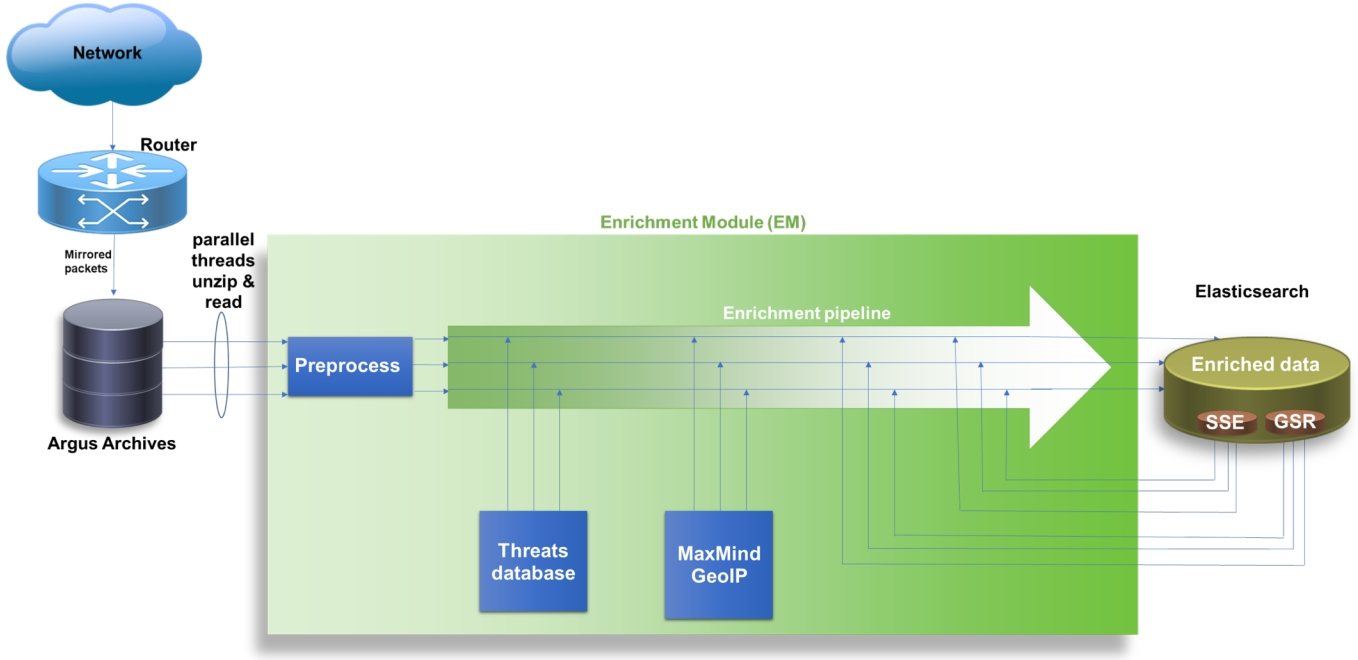
- Redeveloped from scratch using simplified and robust software architecture (vs Gloriad InSight).
- Object oriented design and implementation.



InSight2 Architecture

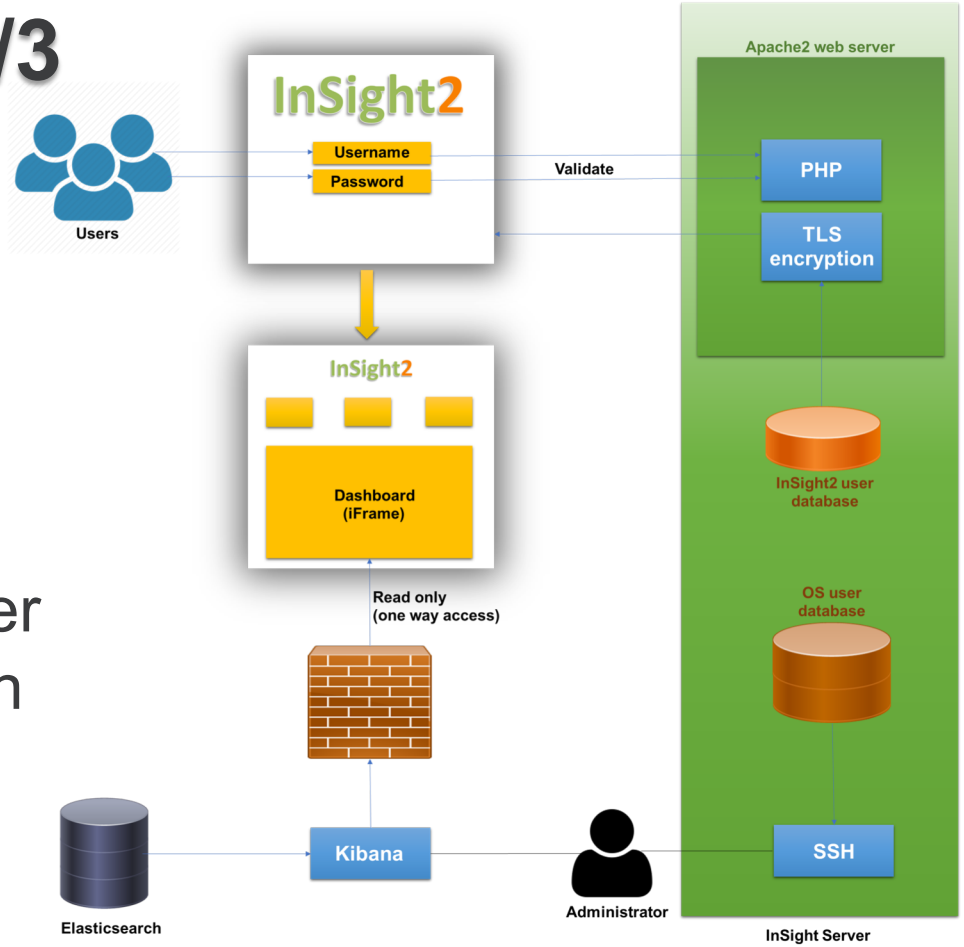
Goals Completed 2/3

- Python based multi-threaded data enrichment



Goals Completed 3/3

- Security features:
  - ✓ Authentication
  - ✓ TLS encryption
  - ✓ System admin and user dashboard segregation



Dashboards

Status gauges

Descriptions for each visualization segment

Network bandwidth usage

Tag cloud visualization

Connectivity between end-points

Producer consumer ratio

Jitter

Average number of hops

Granular information in a tabular format

Geographical location heatmap

Network utilization Vs Time matrix

Location (country, city…) and institution information

Connection setup time
Packet delay
Min, Max and average packet sizes

Bandwidth Utilization prediction using Markov Chains

Work in Progress

- Graph modeling of network traffic.
- Multi-scale Markov chain modeling.
- Automatic event detection based on tensors.
- Live-data testing at KISTI and Stanford Univ.

- Development of InSight2 API that will facilitate third-party contributions, e.g., new dashboards.