Graffiti

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A embedded graph database

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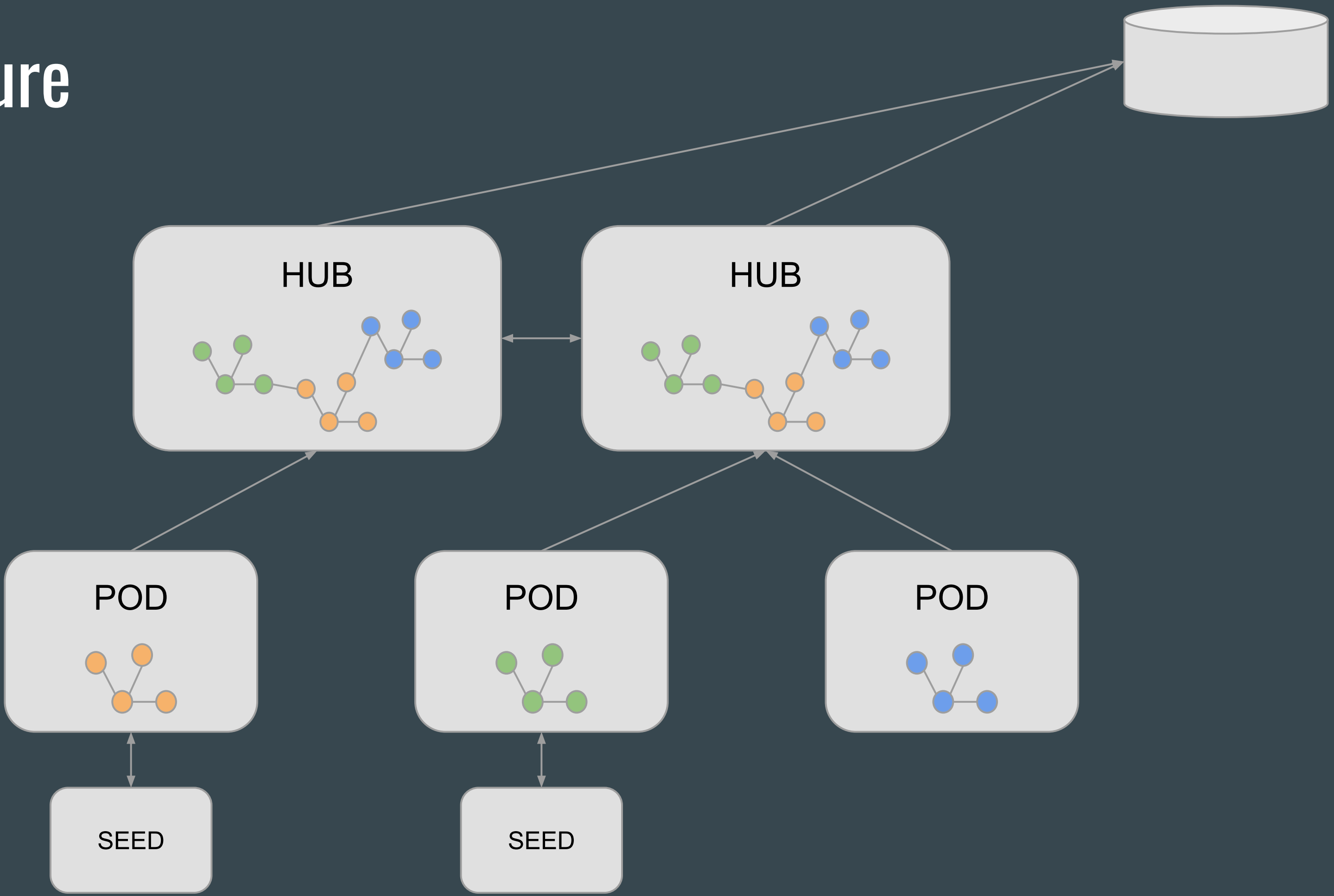
Graffiti overview

- Originates from Skydive
- Embedded
- Event based
- Time traveling
- High availability
- Query language with extension support

Architecture



Event based

- Graph as a Pub/Sub
  - Internal through callbacks
  - External with websocket
  - Subset of graph
  - Same publish API for all type of endpoint
- Node/Edge create, update, delete event
- Websocket supports different encoding type
  - JSON
  - Protobuf

History

- Revision of every graph modification
- Allow to see the graph at a specific point of time
- Allow to see a set of modification for a period of time
- New Gremlin step to support timed request
  - G.AT('-1m'), G.AT('01/02/2019 18:55:00')
  - G.AT('-1m', 30).V('123')
- Support Elasticsearch as backend or OrientDB
- Rolling index mechanism

High availability

- Replication between Hubs
- Pod round-robin connection
- Automatic reconnection with re-sync mechanism
- Etcd master election for rolling index

Gremlin extension

- Has to be written in Go and will available through the REST API
- Sub set of Gremlin with time selection
- Skydive examples :
  - G.V('123').Flows()
  - G.V('123').Metrics()
  - G.V('123').Sockets() => New Graph (can be subscribed)

When to use it (and not)

Good for :

- A Golang embedded project
- Schema and Schema less
- A project which needs to extend Gremlin
- Distributed architecture
- Hierarchy of graphs

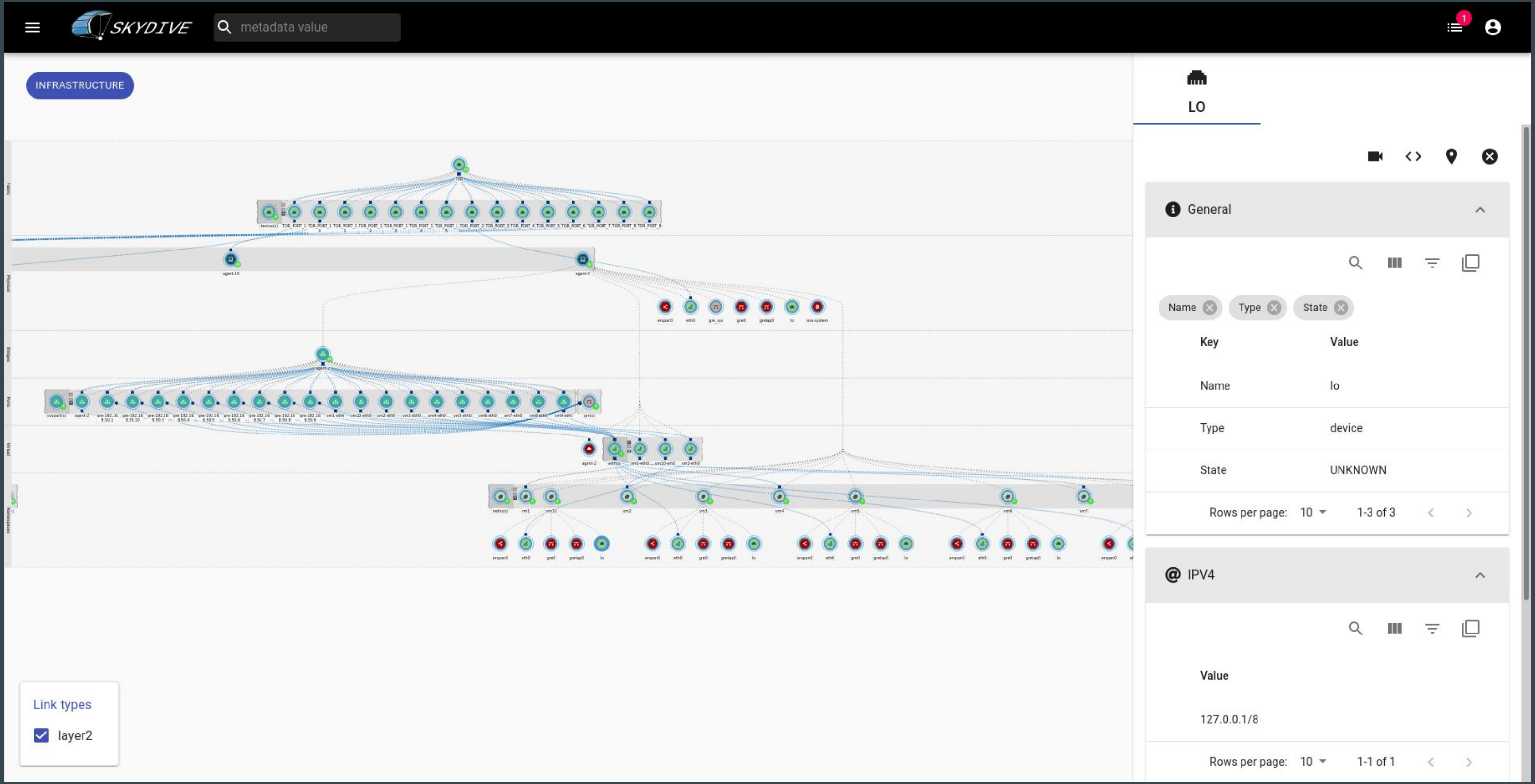
No so good for :

- Graph specific algorithm, ex: shortest path
- Node/Edge with lot of metadata

WebUI

- Event based
- Search
- Filtering through config file
- Layering support
- Custom action support
- Custom metadata rendering panel

WebUI



LO

General

Name Type State

Key	Value
Name	lo
Type	device
State	UNKNOWN

Rows per page: 10 1-3 of 3

IPV4

Value
127.0.0.1/8

Rows per page: 10 1-1 of 1

Demo

Demo

Python File system watcher :

1. Watches a directory
2. Creates nodes for file or directory
3. Creates edges for ownership and symlinks

Thanks

https://github.com/skydive-project/skydive/tree/master/graffiti

https://github.com/skydive-project/skydive-ui