# Overview

- Develop experiment's interface to perfSONAR
- Enable possibility to subscribe to different events (filter) and support different clients - integration via messaging, streaming data via topic/queue
- Provide mapping/translation btw sonar infrastructure and experiment's topology
- Current sonar infrastructure
  - 214 active sonars, 126 latency sonars, 128 bandwidth
  - Full mesh ~ 16k links/event
- Current event-types measured by sonar infrastructure
  - histogram-owdelay – one way delays over time period – in total 16k events/5 mins (currently 10%) - each event contains histogram
  - packet-loss-rate – number of packets lost/packets sent – in total 16k links/5 mins (currently 10%) – each event contains key/value pairs (ts, loss)
  - packet-count-sent – packets sent
  - packet-count-lost – packets lost
  - packet-trace – in total 16k events/hour (currently 60%) - each event contains tracepath
  - throughput – observer amount of data sent over period of time – in total 16k events/week – each event contains key/value pair (ts, throughput)

Architecture
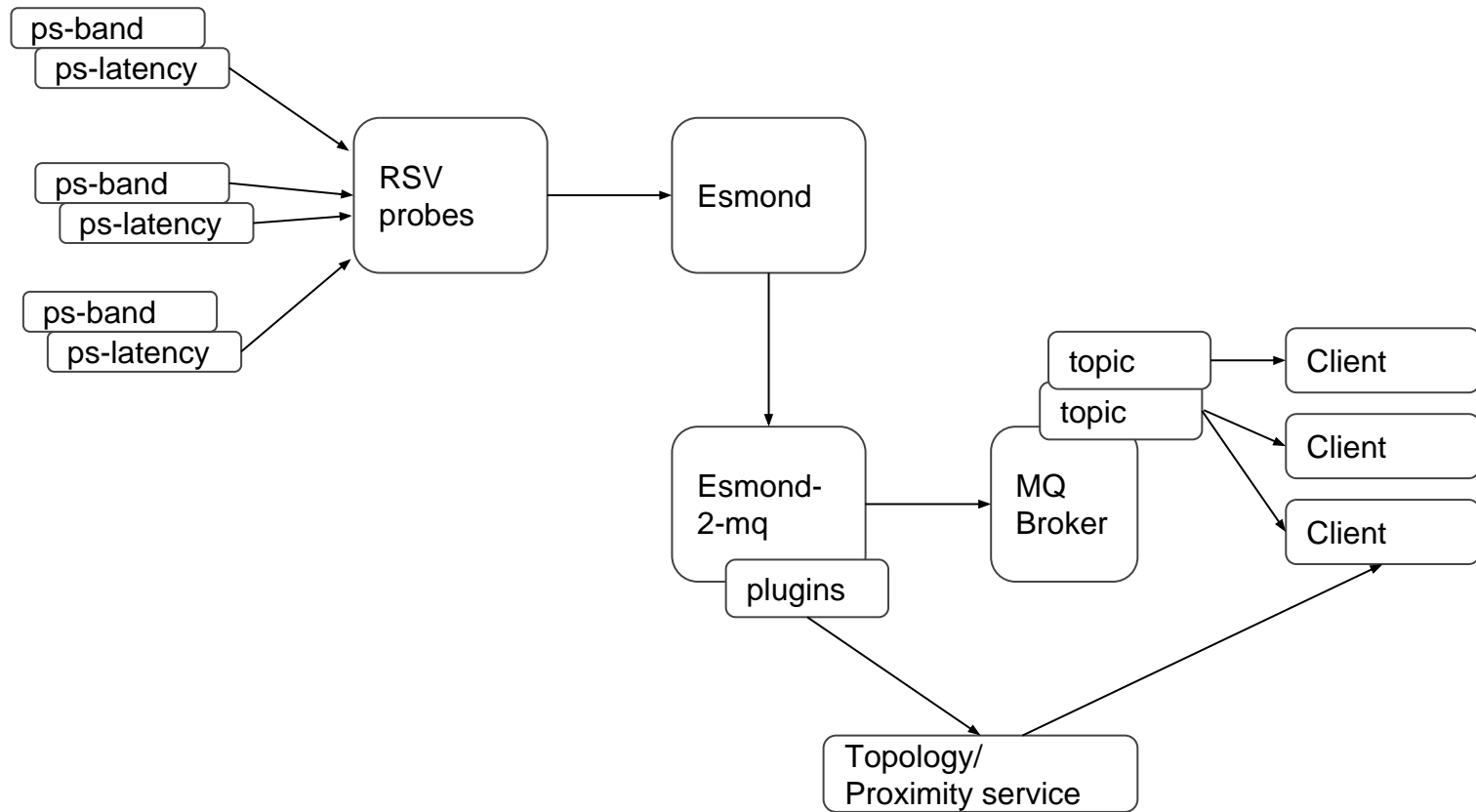
Components

- RSV probes (OSG) – collecting metrics
- Esmond (OSG) – datastore
- Esmond2mq
  - retrieves all data (meta+raw) from esmond depending on existing mesh configs
  - optionally runs a plugin to add additional information
  - publishes to a topic
- Proximity/topology services
  - handles mapping/translation of services (service to service; storage to sonar), service to site (sonar to site)
  - can test different algorithms (site mapping, traceroutes, geoip, etc.)
- Clients
  - consume data from topic, optionally connect to proximity/topology service to get mappings

Prototype

- TBD

Structure

```
[
    {
        "source":"10.1.1.1",
        "destination":"10.1.1.2",
        "event-types":[
            {
                "base-uri":"/esmond/perfsonar/archive/f6b732e9f351487a96126f0c25e5e546/packet-retransmits/base",
                "event-type":"packet-retransmits",
                "summaries":[

                ],
                "time-updated":1397482734
            },
            {
                "base-uri":"/esmond/perfsonar/archive/f6b732e9f351487a96126f0c25e5e546/throughput/base",
                "event-type":"throughput",
                "summaries":[
                    {
                        "summary-type":"average",
                        "summary-window":"86400",
                        "time-updated":1397482735,
                        "uri":"/esmond/perfsonar/archive/f6b732e9f351487a96126f0c25e5e546/throughput/averages/86400"
                    }
                ],
                "time-updated":1397482735
            },
        "input-source":"host1.example.net",
        "input-destination":"host2.example.net",
        "ip-transport-protocol":"tcp",
        "measurement-agent":"10.1.1.1",
        "metadata-key":"f6b732e9f351487a96126f0c25e5e546",
        "subject-type":"point-to-point",
        "time-duration":"20",
        "time-duration":"14400",
        "tool-name":"bwctl/iperf3",
        "uri":"/esmond/perfsonar/archive/f6b732e9f351487a96126f0c25e5e546/"
    }
]
```

Throughput vs OWdelay vs Trace

```
[
    {
        "ts":1397421672,
        "val":7016320000.0
    },
    {
        "ts":1397442692,
        "val":7225480000.0
    },
    {
        "ts":1397466492,
        "val":7095460000.0
    },
    {
        "ts":1397482700,
        "val":7042540000.0
    }
]
```

```
[
    {
        "ts":1397504013,
        "val":{
            "34.4":506,
            "34.5":85,
            "34.6":5,
            "34.7":4
        }
    },
    {
        "ts":1397504052,
        "val":{
            "34.4":510,
            "34.5":80,
            "34.6":7,
            "34.7":3
        }
    },
.....
]
```

```
{
    "ts":1397566094,
    "val":[
        {
            "error_message":null,
            "ip":"198.124.238.65",
            "mtu":"9000",
            "query":"1",
            "rtt":"0.246",
            "success":1,
            "ttl":"1"
        },
        {
            "error_message":null,
            "ip":"198.124.238.65",
            "mtu":"9000",
            "query":"2",
            "rtt":"0.195",
            "success":1,
            "ttl":"1"
        },
```