

# Firehose: a Unified Message Bus for Infra Services

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<https://github.com/mtreinish/firehose/tree/boston-summit>

# OpenStack Infrastructure

**Imagine a big, complicated diagram here.**

# Firehose

- ▶ An MQTT broker for the OpenStack community infrastructure
- ▶ Has anonymous, read-only access via MQTT on 1883/tcp
- ▶ SSL/TLS MQTT also available on 8883/tcp
- ▶ Websockets supported (but temporarily disabled)

# MQTT

- ▶ Pub/sub messaging protocol
- ▶ Formerly MQ Telemetry Transport
- ▶ ISO/IEC PRF 20922
- ▶ Protocol dates back to 1999
- ▶ Lightweight design, low bandwidth

# MQTT Topics

- ▶ Topics are hierarchical
- ▶ Support wild carding

## MQTT Brokers

# MQTT Clients

# The Firehose

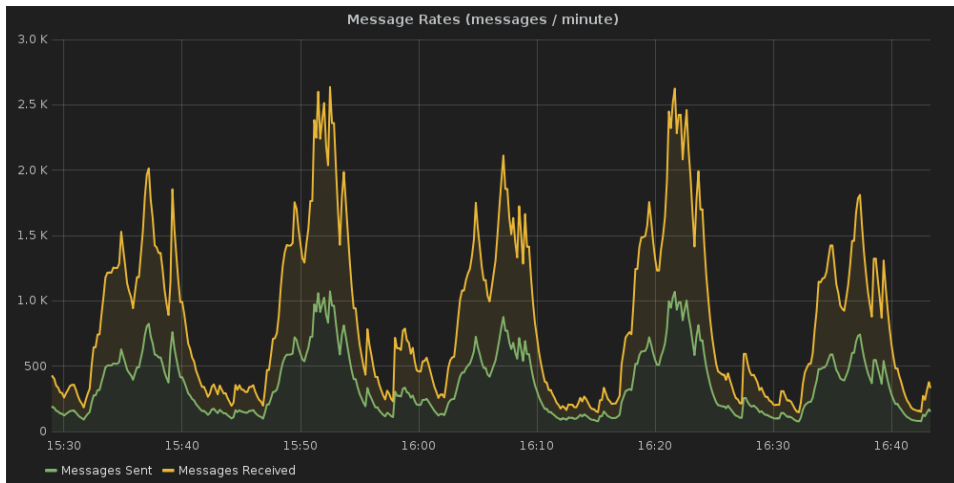


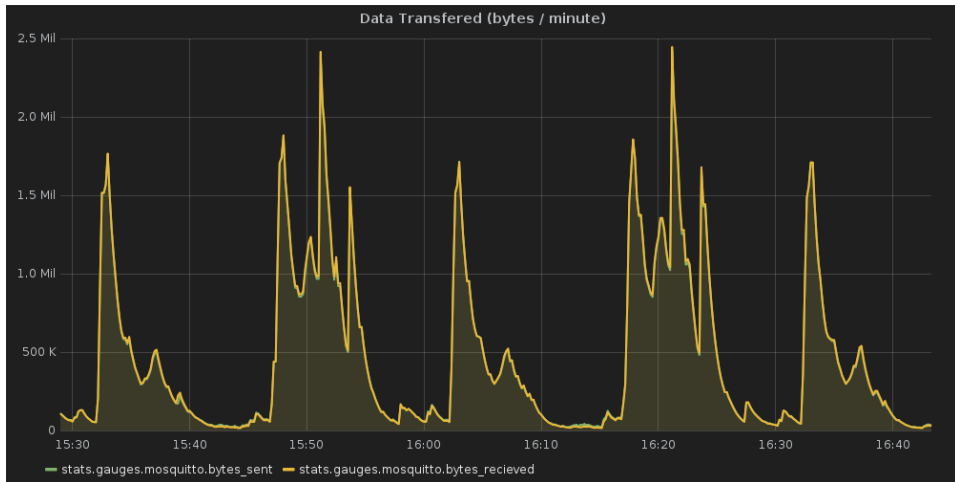
# Mosquitto

## Services Using the Firehose

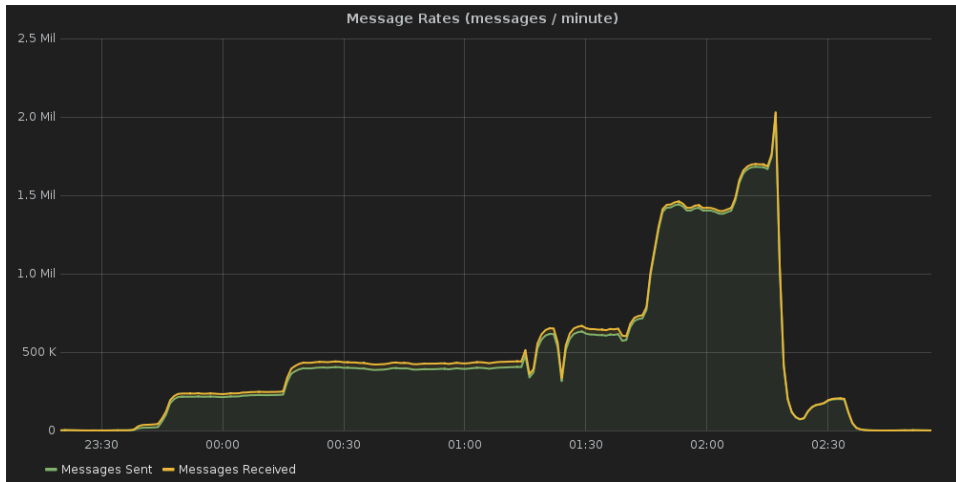
Service	Base Topic	Source of Messages
Ansible	ansible	Ansible MQTT Callback Plugin
Gerrit	gerrit	germqtt
Launchpad	launchpad	lpmqtt
Subunit Gearman Worker	gearman-subunit	subunit-gearman-worker

# Typical Firehose Load

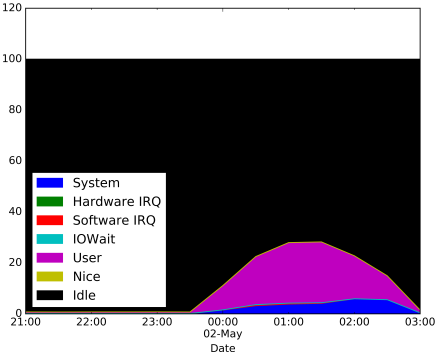




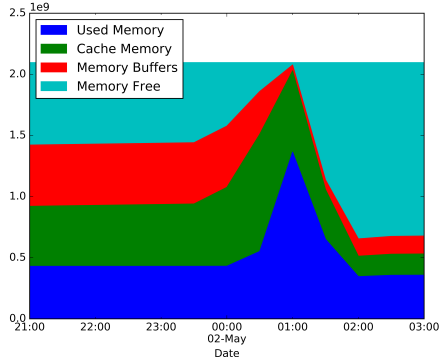
# The limits of scaling



# CPU Usage:



# Memory Usage:



## Using Firehose

Example mosquitto client subscriber command line (provided in a mosquitto-clients package on many distros):

```
mosquitto_sub -h firehose.openstack.org --topic '#'
```

# Listen for all Nova Comments in python

## ► CLI:

```
mosquitto_sub -h firehose.openstack.org --topic  
gerrit/openstack/nova/comment-added
```

## ► Python:

```
import paho.mqtt.client as mqtt

def on_connect(client, userdata, flags, rc):
    print("Connected with result code " + str(rc))
    client.subscribe('gerrit/openstack/nova/comment-added')

def on_message(client, userdata, msg):
    print(msg.topic+" "+str(msg.payload))

# Create a websockets client
client = mqtt.Client()
client.on_connect = on_connect
client.on_message = on_message

# Connect to the firehose
client.connect('firehose.openstack.org', port=1883)

# Listen forever
client.loop_forever()
```



## Potential Applications for Firehose

# Future Plans

- ▶ Add germqtt subscription support to:
  - ▶ Gerritbot (already PoC)
  - ▶ Zuul v3+
- ▶ Add more publishers:
  - ▶ Nodepool daemons
  - ▶ Zuul v3+
  - ▶ (your favorite service here)

## Where to get more information

- ▶ openstack-infra ML [openstack-infra@lists.openstack.org](mailto:openstack-infra@lists.openstack.org)
- ▶ #openstack-infra on Freenode
- ▶ <http://docs.openstack.org/infra/system-config/firehose.html>
- ▶ [https://docs.openstack.org/infra/system-config/firehose\\_schema.html](https://docs.openstack.org/infra/system-config/firehose_schema.html)
- ▶ <http://specs.openstack.org/openstack-infra/infra-specs/specs/firehose.html>
- ▶ <http://mqtt.org/>
- ▶ <https://mosquitto.org/>