ActionCable vs Anycable vs Pusher

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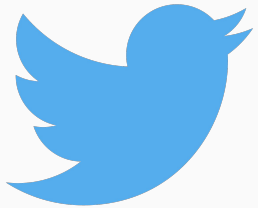
Growth Session #17 - August 23-24 2018

Background: The need for real-time features



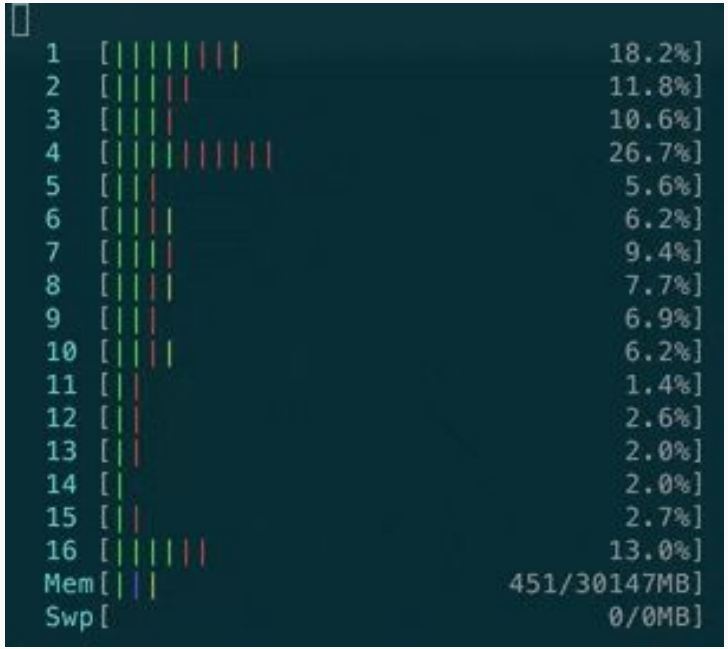





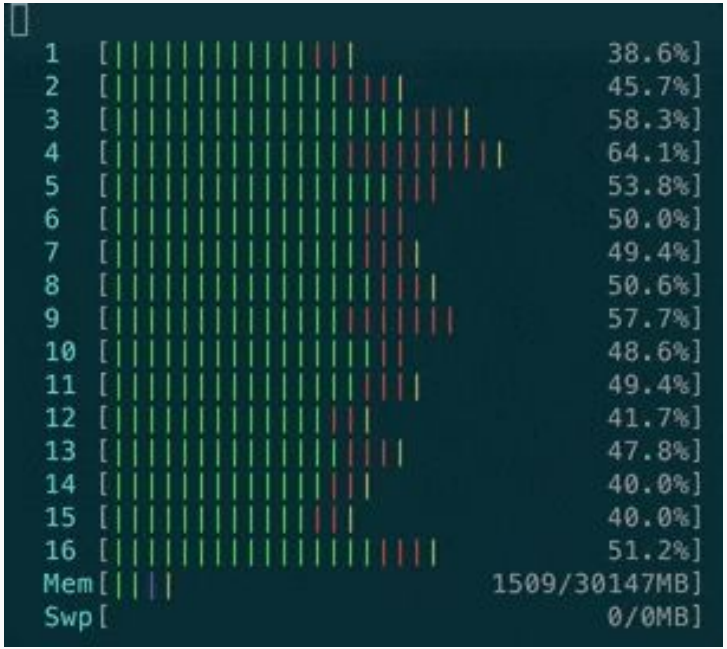
Real-time using Ruby on Rails options

- ActionCable
- AnyCable
- Pusher (3rd party service)

Why AnyCable? Reduced CPU Usage

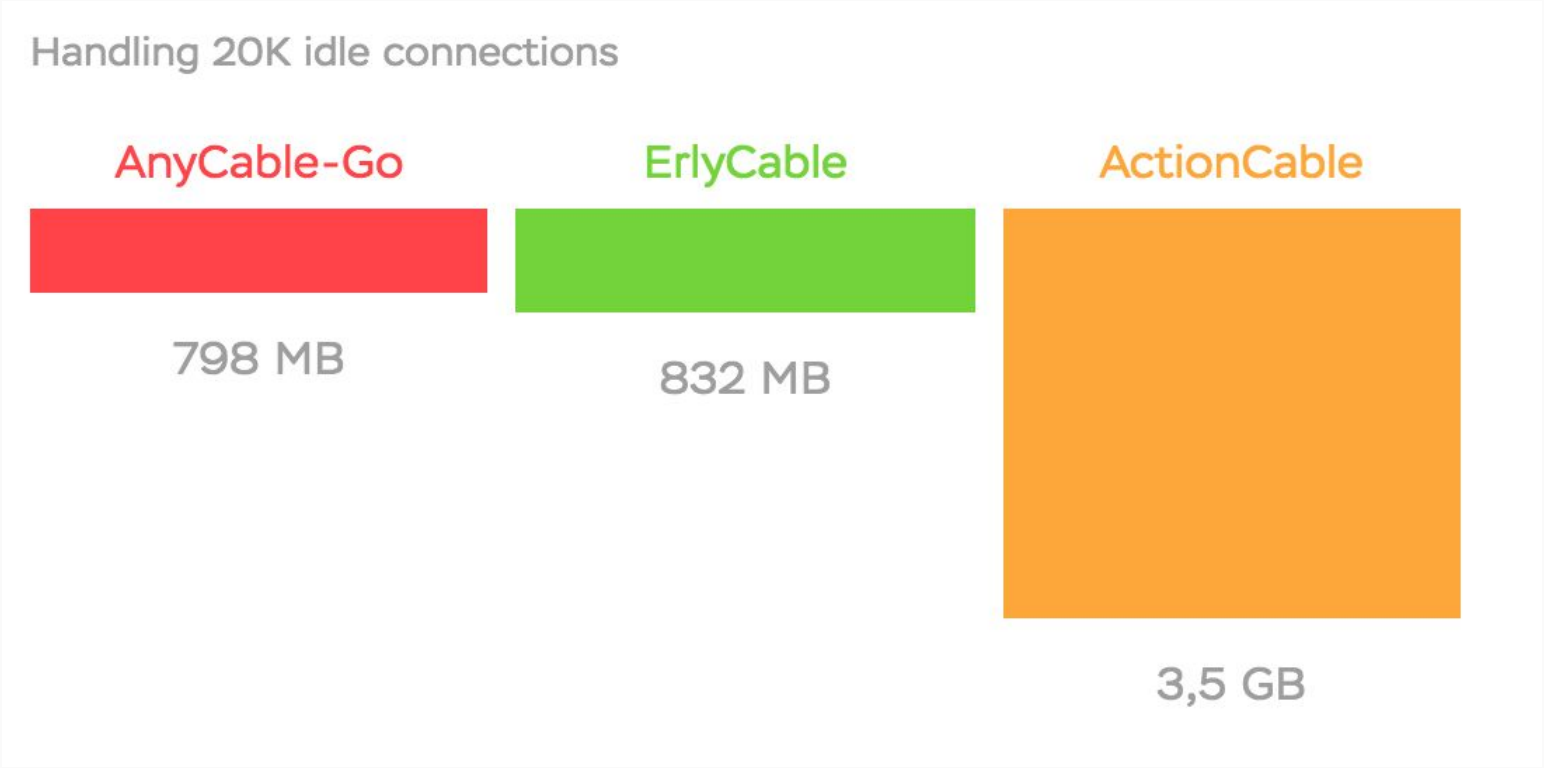


AnyCable

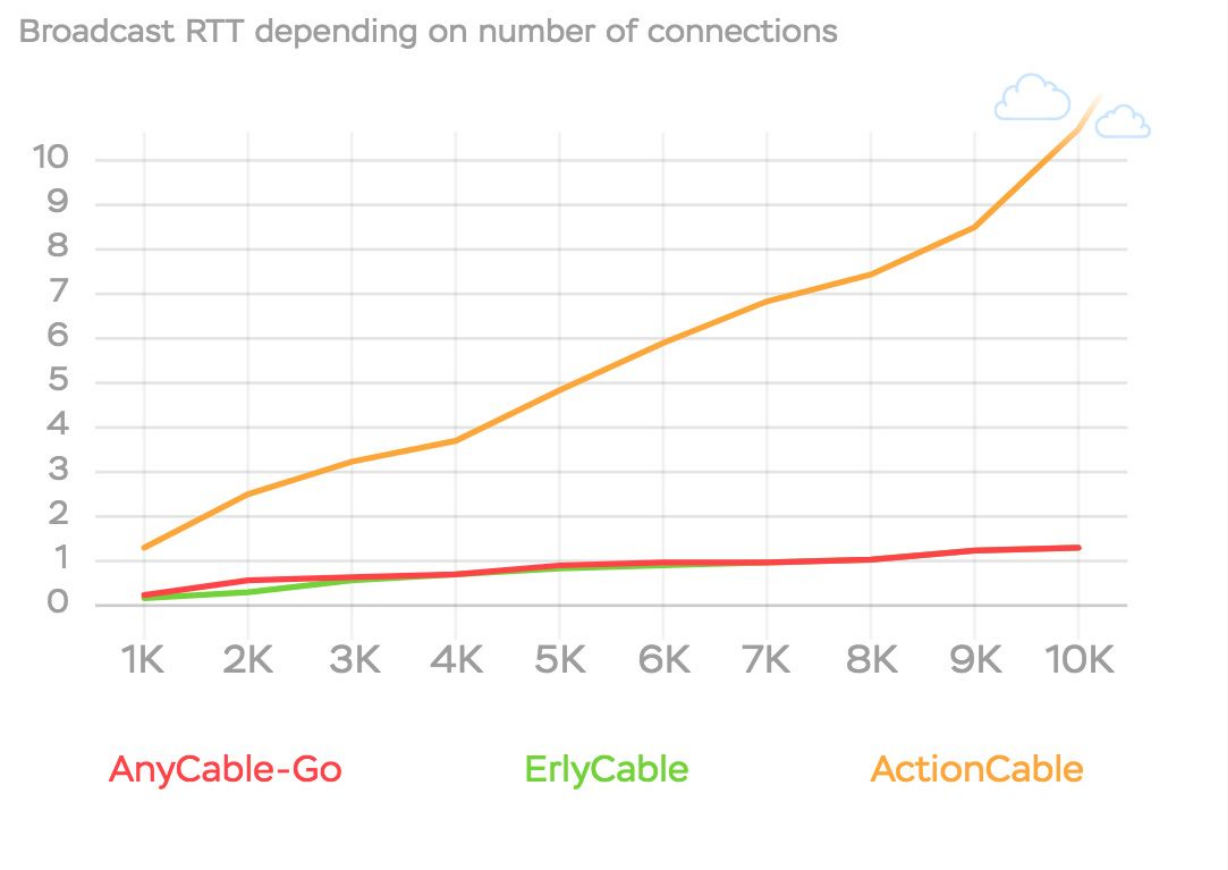


ActionCable

Why AnyCable? Reduced Memory Usage

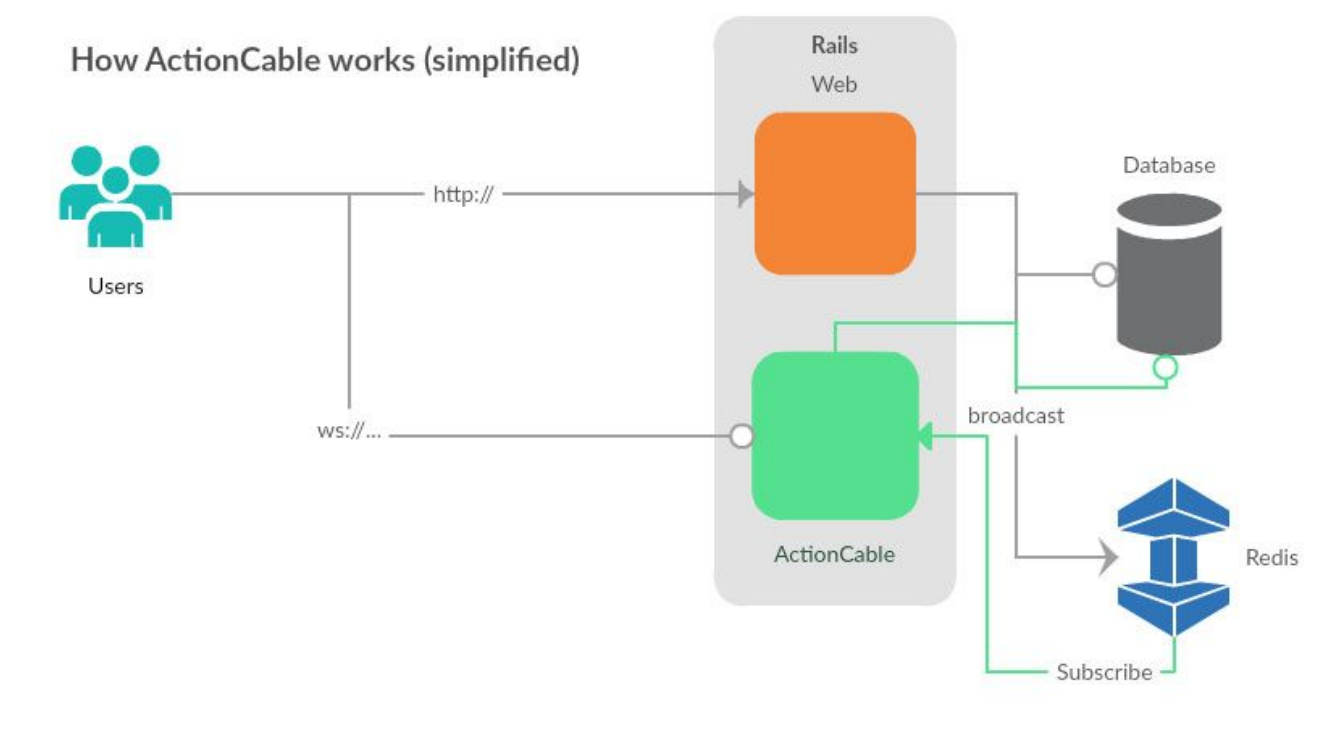


Why AnyCable? Drastically increased broadcasting performance



Source: https://anycable.io/

How ActionCable works?



Action Cable Server-side

```ruby
# app/channels/notifications_channel.rb
class NotificationsChannel < ApplicationCable::Channel
  def subscribed
    stream_from 'notifications_channel'
  end

  def unsubscribed
    # Any cleanup needed when channel is unsubscribed
  end
end
```

Setup channel

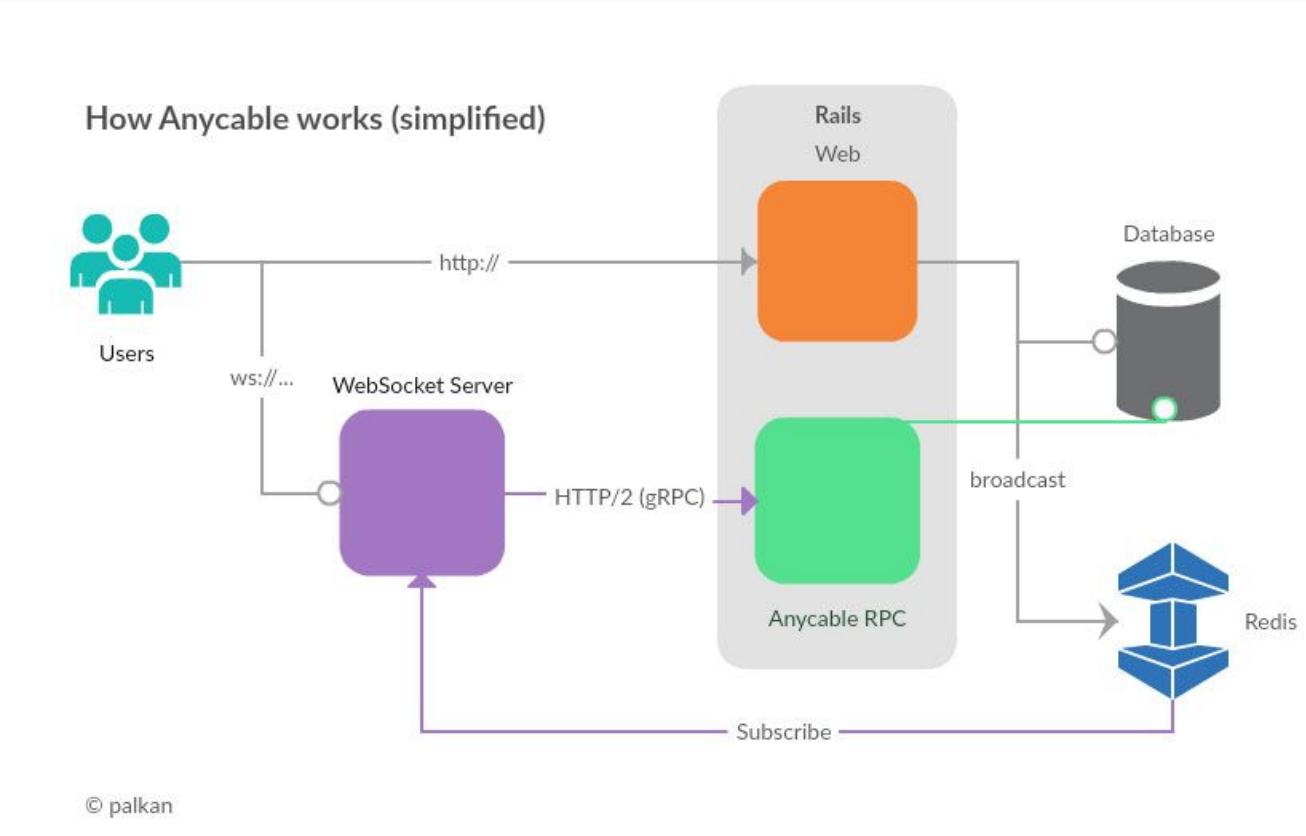
```ruby
# services/athena_team/notifications_service.rb
module AthenaTeam
  class NotificationService
    def call(message)
      ActionCable.server.broadcast 'notifications_channel', message: message
    end
  end
end
```

Broadcast message

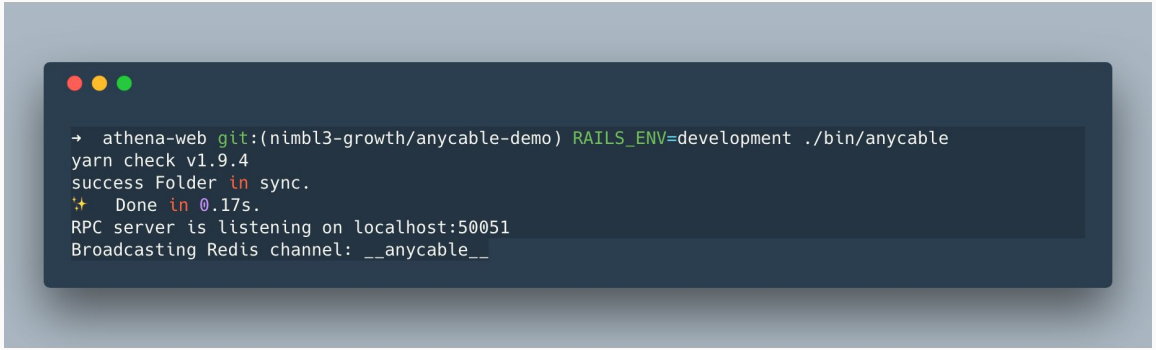
Action Cable Client-side

```
<script>
import cable from "actioncable";

export default {
  props: {
    flash: Object
  },

  computed: {
    notifications: function() {
      return this.$store.state.notification.notifications
    }
  },

  mounted() {
    Object.keys(this.flash).length !== 0 && this.$store.commit('notification/add', this.flash)
    let consumer;
    const store = this.$store;

    function createChannel(...args) {
      if (!consumer) {
        consumer = cable.createConsumer();
      }

      return consumer.subscriptions.create(...args);
    }

    createChannel("NotificationsChannel", {
      connected: function() {
        // Called when the subscription is ready for use on the server
        console.log("Hello from notifications: connected!");
      },
      received({ message }) {
        store.commit('notification/add', { message })
      }
    });
  }
}
</script>
```

What about Anycable?



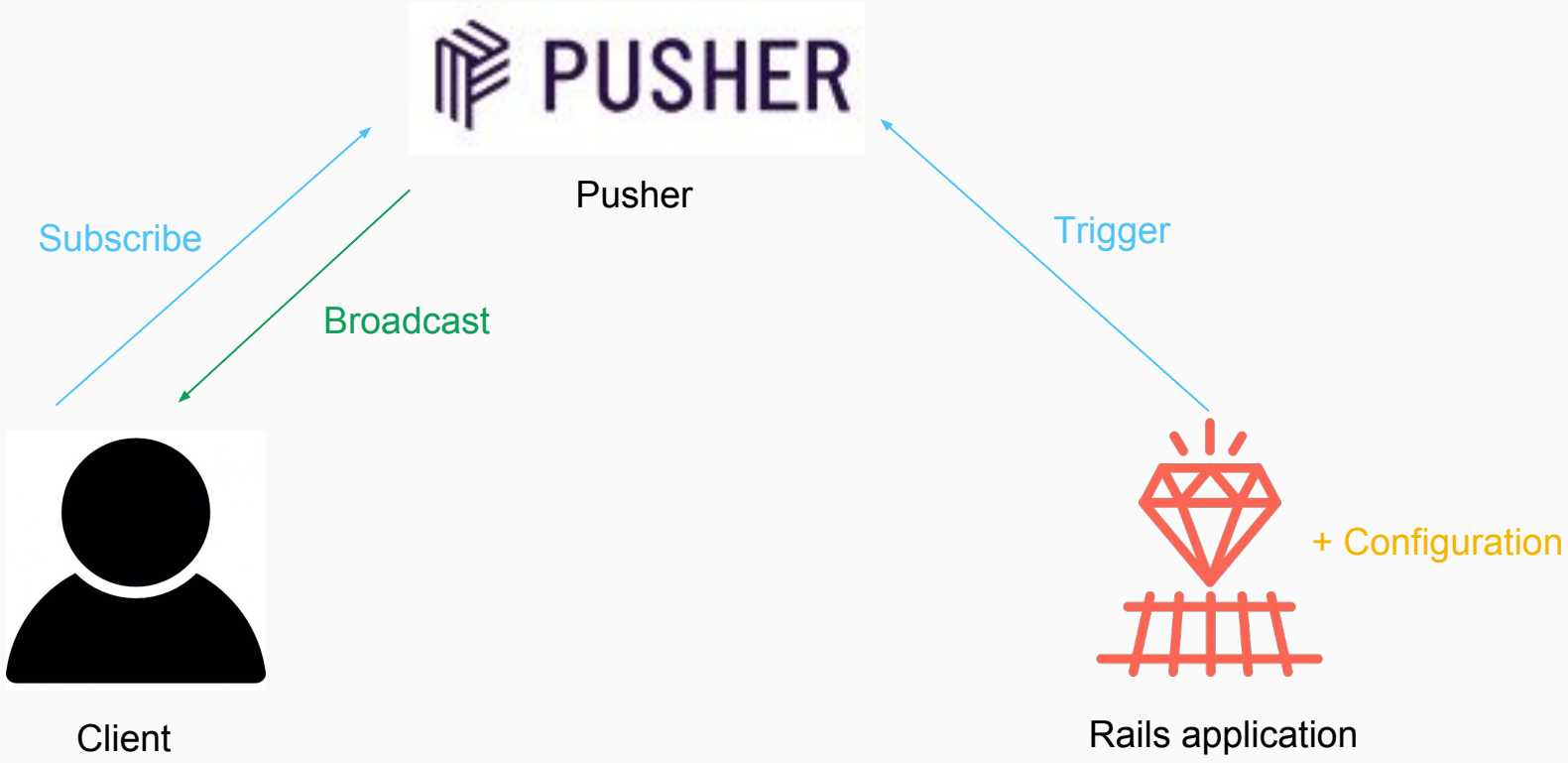
Anycable implementations: same code, extra actions.



Run Anycable RPC server

Start Anycable-go websocket server

How Pusher works?



Pusher Server-side

```ruby
# config/initializers/pusher.rb
require 'pusher'

Pusher.app_id = ENV.fetch('PUSHER_ID')
Pusher.key = ENV.fetch('PUSHER_KEY')
Pusher.secret = ENV.fetch('PUSHER_SECRET')
Pusher.cluster = 'ap1'
Pusher.logger = Rails.logger
Pusher.encrypted = true
```

Setup Pusher

```ruby
# services/athena_team/pusher_service.rb
module AthenaTeam
  class PusherService
    def call(message)
      Pusher.trigger('pivotal-notification', 'story-changed', message: message)
    end
  end
end
```

Trigger event with message

Pusher Client-side

```
<script>
import Pusher from 'pusher-js';

export default {
  props: {
    flash: Object
  },

  computed: {
    notifications: function() {
      return this.$store.state.notification.notifications
    }
  },

  mounted() {
    Object.keys(this.flash).length !== 0 && this.$store.commit('notification/add', this.flash)
    const pusher = new Pusher('aef5oekvdla925431aa1b', {
      cluster: 'ap1',
      encrypted: true
    });

    const store = this.$store;

    const channel = pusher.subscribe('pivotal-notification');
    channel.bind('story-changed', function (data) {
      store.commit('notification/add', { message: data.message })
    });
  }
}
</script>
```

Early Benchmark Results

```
./bin/thor --amount 100 ws://localhost:3000/cable
```

We use Thor ⚡ as benchmark for 100 connections

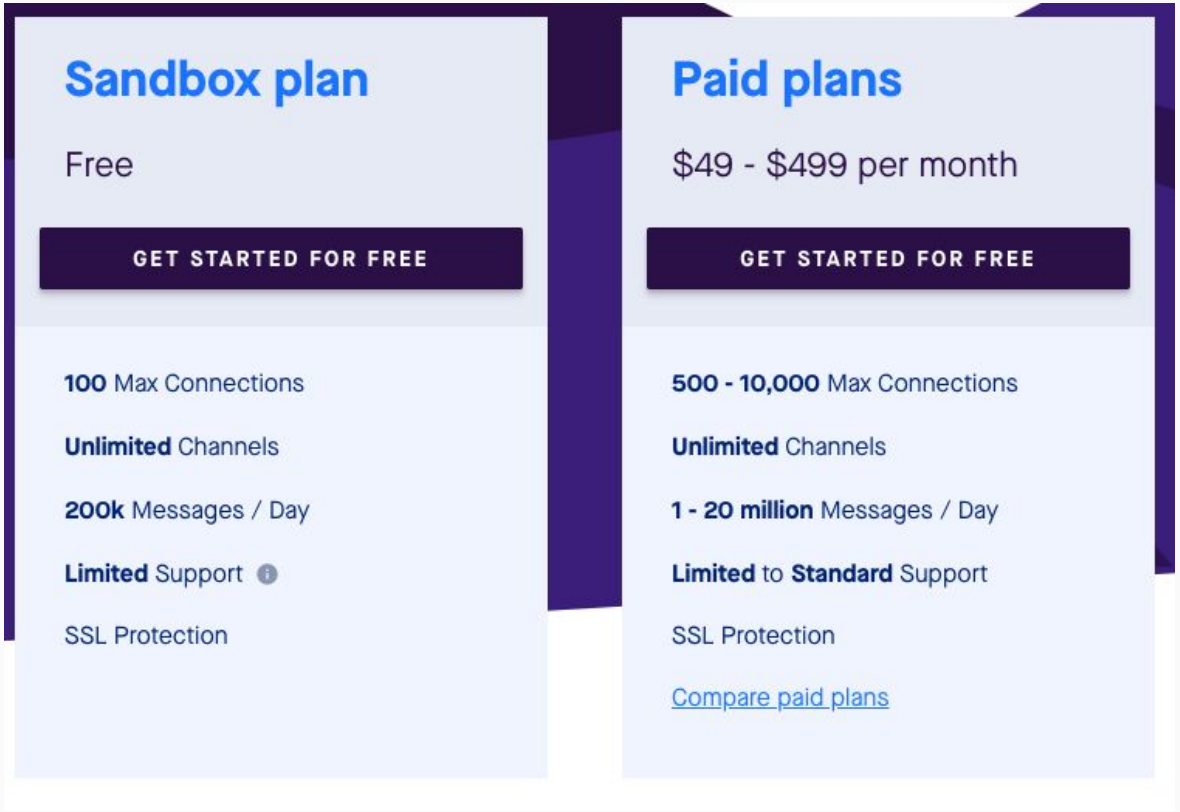
```
Online                  5288 milliseconds
Time taken              5291 milliseconds
Connected               100
Disconnected            0
Failed                  0
Total transferred       123.44kB
Total received          19.53kB

Durations (ms):

                        min     mean     stddev  median max
Handshaking             57      368         493     308 5015
Latency                 0       1             2       1 10

Percentile (ms):

                         50%     66%     75%     80%     90%     95%     98%     98%     100%
Handshaking              308     372     458     517     576     599     603     5015    5015
Latency                  1       1       1       1       3       5       5       10      10
```

ActionCable

```
Online                  465 milliseconds
Time taken              1344 milliseconds
Connected               100
Disconnected            0
Failed                  0
Total transferred       123.77kB
Total received          14.76kB

Durations (ms):

                        min     mean     stddev  median max
Handshaking             53      173         50      197 231
Latency                 0       3           10        0 72

Percentile (ms):

                         50%     66%     75%     80%     90%     95%     98%     98%     100%
Handshaking              197     201     215     217     224     229     231     231     231
Latency                  0       1       1       1       4       11      47      72      72
```

Anycable

Pusher


Sandbox plan
Free
GET STARTED FOR FREE
100 Max Connections
Unlimited Channels
200k Messages / Day
Limited Support
SSL Protection
Paid plans
$49 - $499 per month
GET STARTED FOR FREE
500 - 10,000 Max Connections
Unlimited Channels
1 - 20 million Messages / Day
Limited to Standard Support
SSL Protection
Compare paid plans

Pros and Cons

Pros

ActionCable

- Easy to implement
- Rails convention

AnyCable

- Scalable
- Plug n play*

Pusher

- Easy to implement
- Great free tier pricing

Cons

ActionCable

- Not scalable**

AnyCable

- Additional dependencies

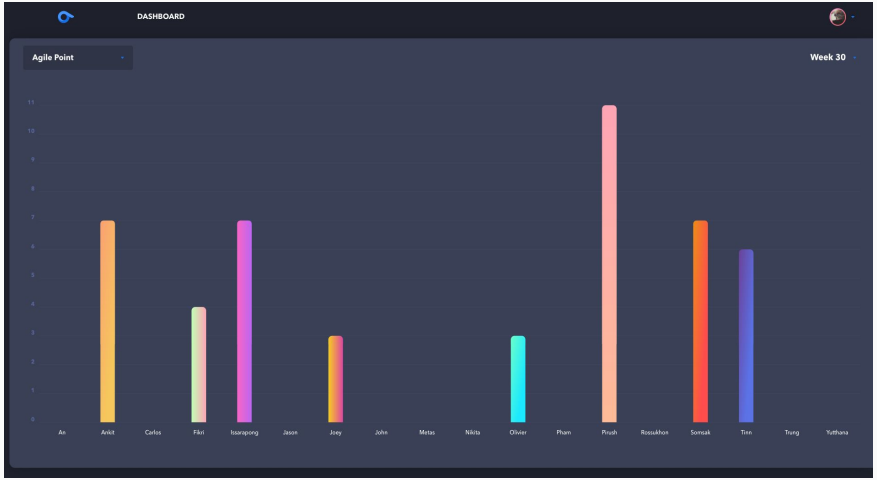
Pusher

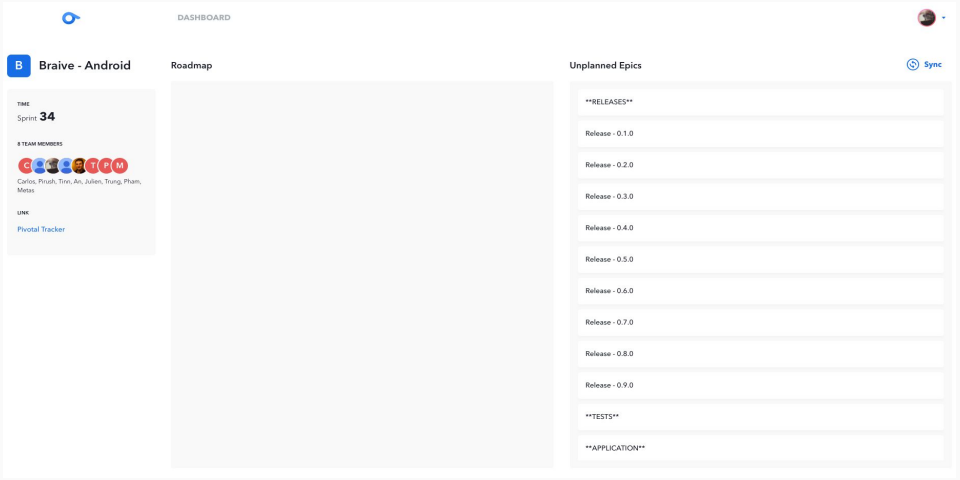
- Expensive when you're building the next Whatsapp
- Closed source, vendor lock-in.

* There might be some code change for user authentication
** Might be fixed in the far future: Rails 6 + Ruby 3

Next Steps

- Deployment process.
- Benchmark on production environment.
- Implement more real-time feature
  - Agile point graph in team dashboard.
  - Drag and drop in client page.





It’s too early to tell
which one is the best.

Thanks!

Contact Nimbl3

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