Migrating Legacy
Applications
To Laravel
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Leyland
90 D 1007

Zend Framework
Topic

Symfony
Software

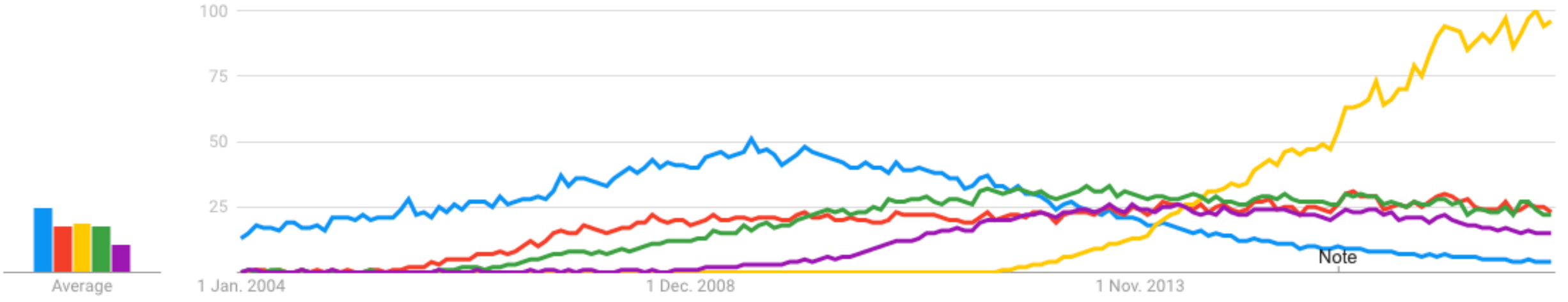
Laravel
Topic

CodeIgniter
Software

Yii
Topic

Worldwide | 2004 - present | All categories | Web Search

Interest over time



Laravel
Topic

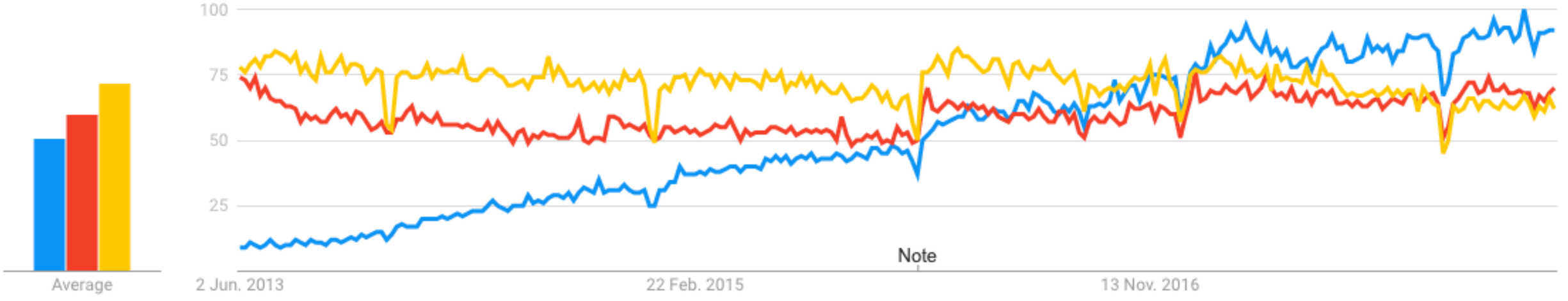
Django
Web framework

Ruby on Rails
Software

+ Add comparison

Worldwide | Past 5 years | All categories | Web Search

Interest over time



Migrating Legacy Applications to Laravel

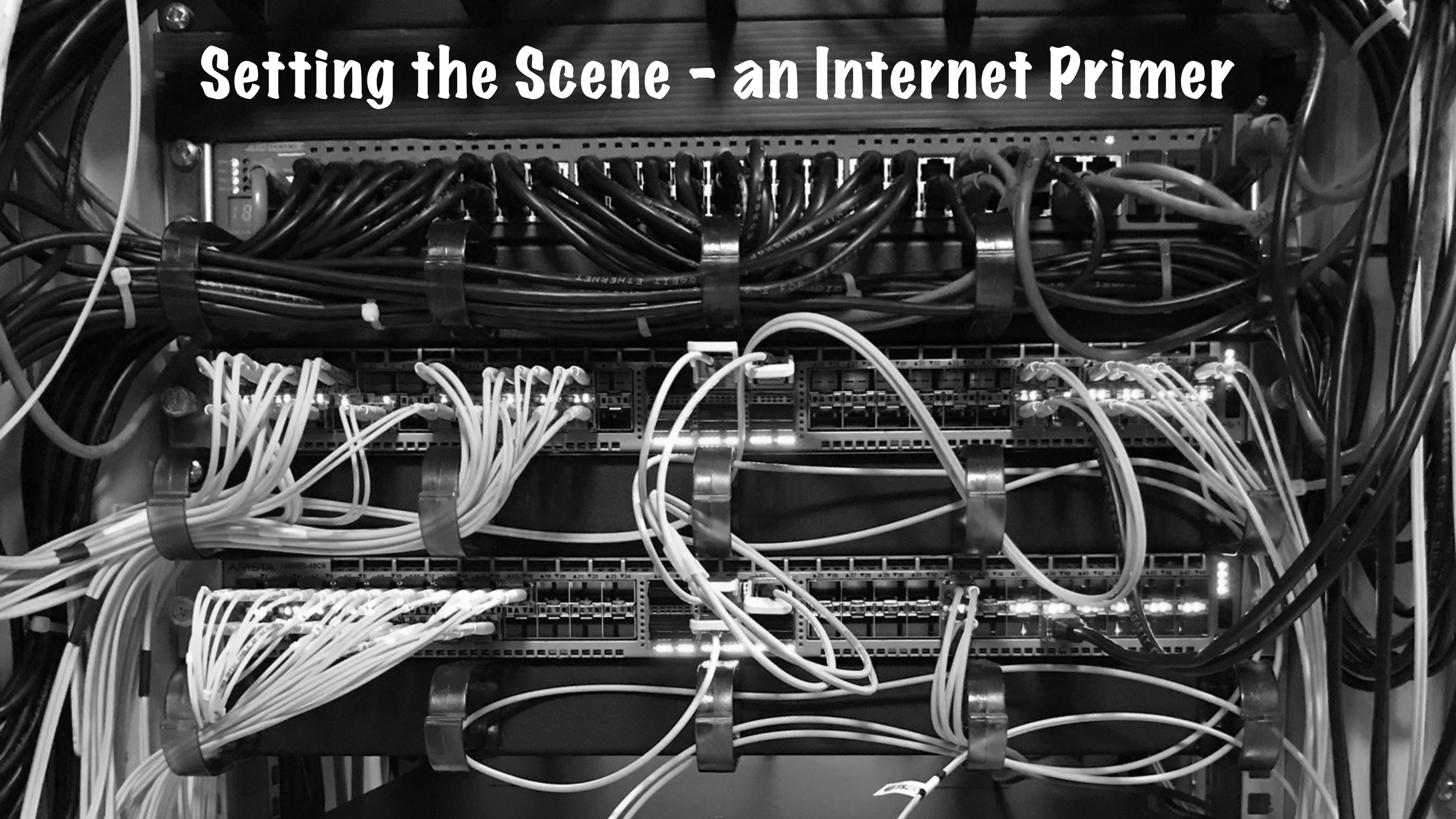
@barryo79
barryodonovan.com

Laravel Live UK

June 12th 2017
London, UK

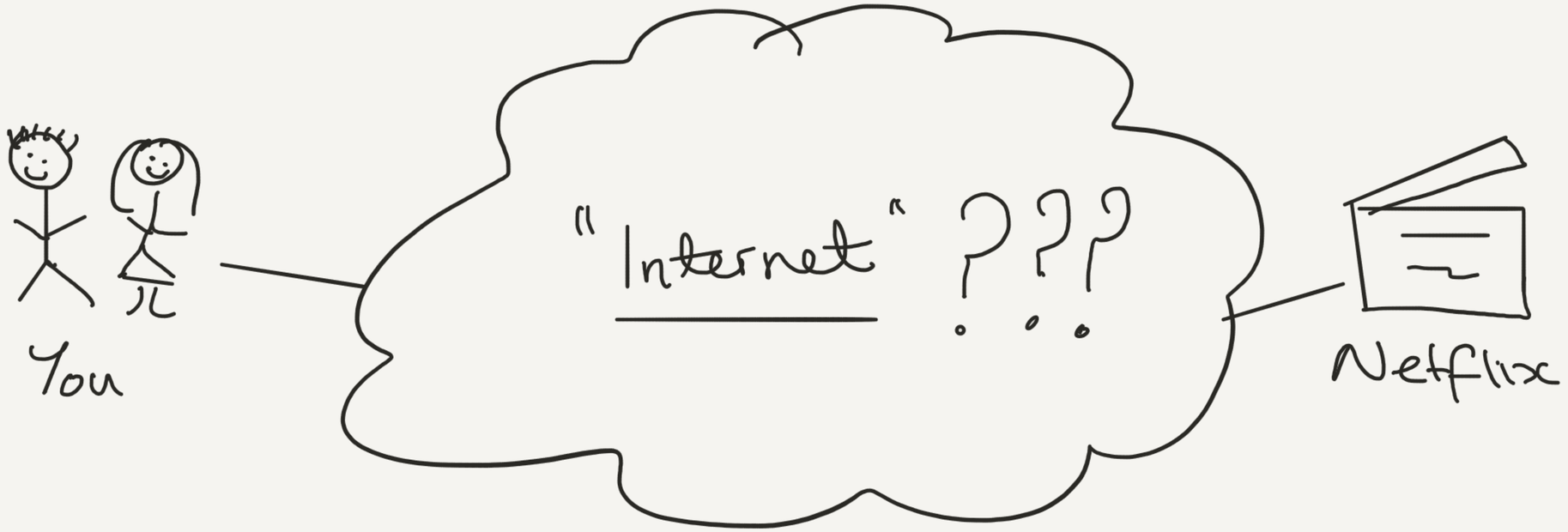
www.inex.ie www.islandbridgenetworks.ie

Setting the Scene - an Internet Primer

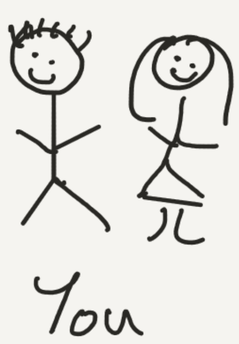


You

Netflix

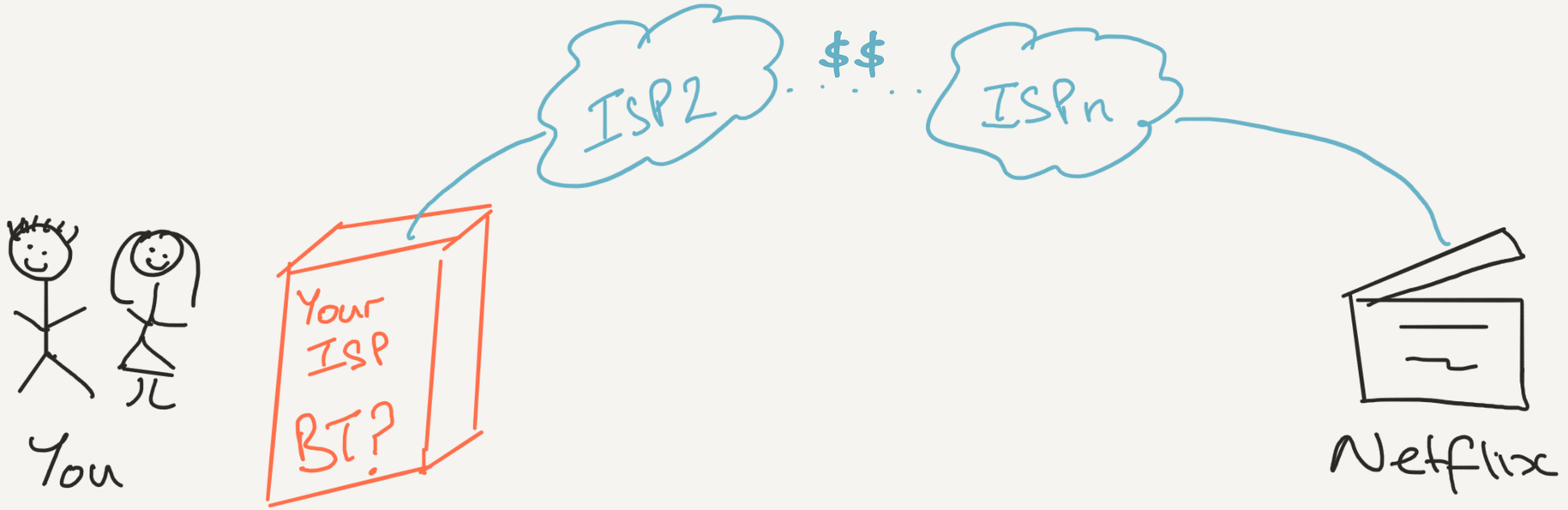

"Internet" ???
You
Netflix

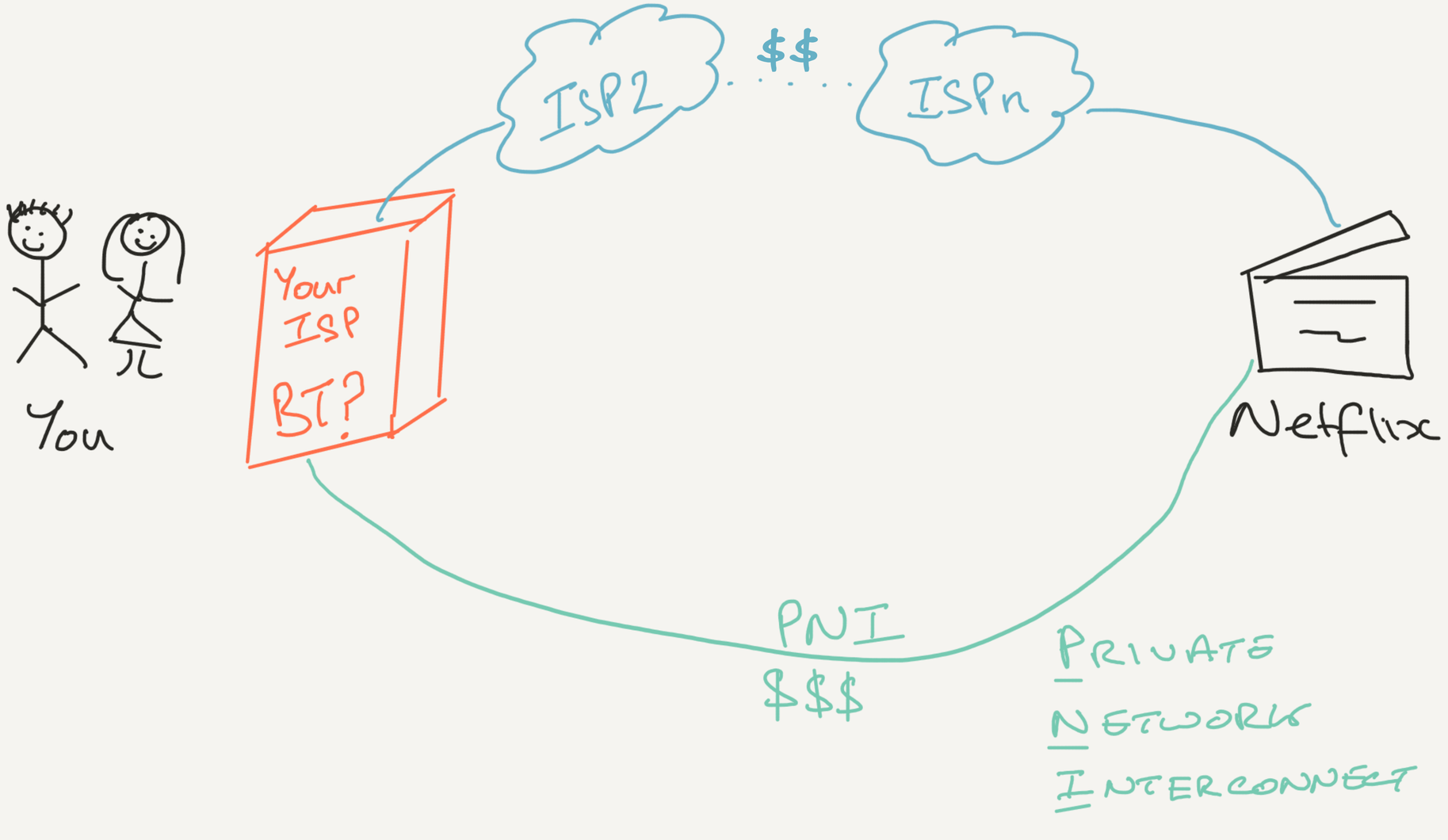
```
~ sudo mtr -nrc 1 8.8.8.8
Start: 2018-06-11T17:12:09+0100
HOST: barryo-mac1.local           Loss%   Snt   Last   Avg  Best  Wrst StDev
  1.|-- 10.182.100.1               0.0%     1   88.5  88.5  88.5  88.5   0.0
  2.|-- 46.182.8.2                 0.0%     1  110.6 110.6 110.6 110.6   0.0
  3.|-- 176.126.37.74               0.0%     1  101.9 101.9 101.9 101.9   0.0
  4.|-- 78.153.193.106              0.0%     1  113.2 113.2 113.2 113.2   0.0
  5.|-- 194.88.240.55               0.0%     1  100.3 100.3 100.3 100.3   0.0
  6.|-- 66.249.95.135               0.0%     1  126.3 126.3 126.3 126.3   0.0
  7.|-- 8.8.8.8                    0.0%     1  119.6 119.6 119.6 119.6   0.0
```

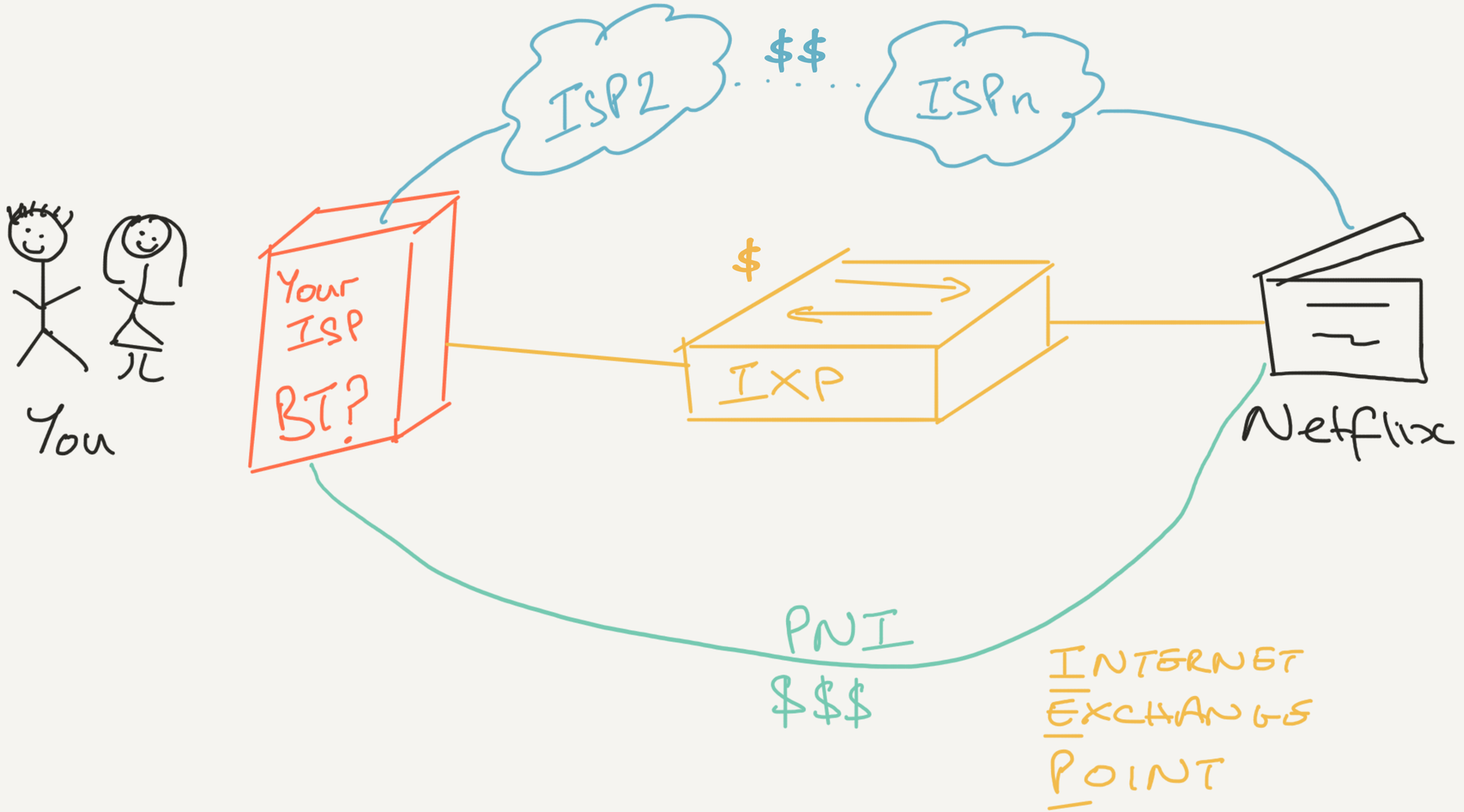

You

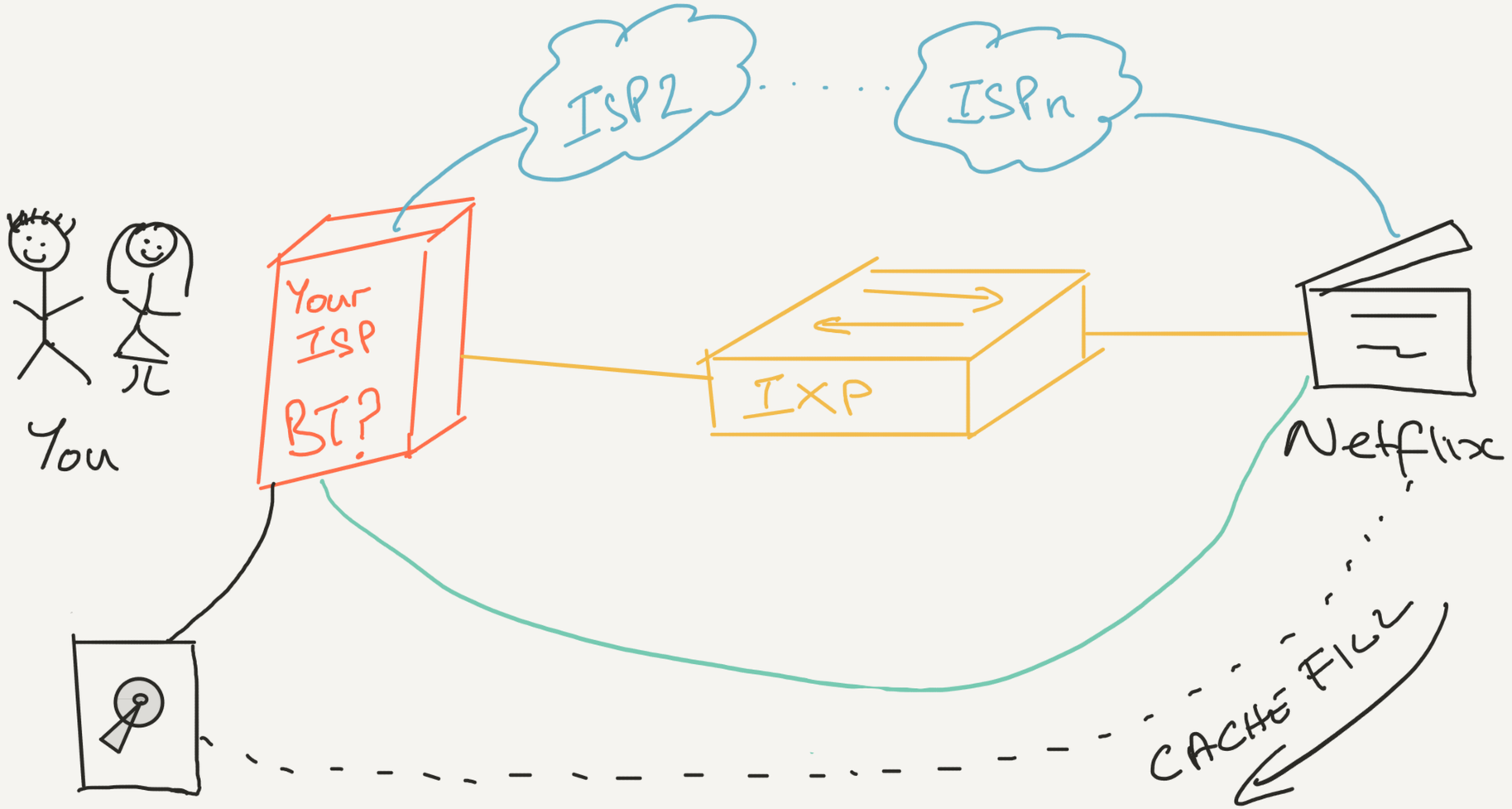
Your
ISP
BT?

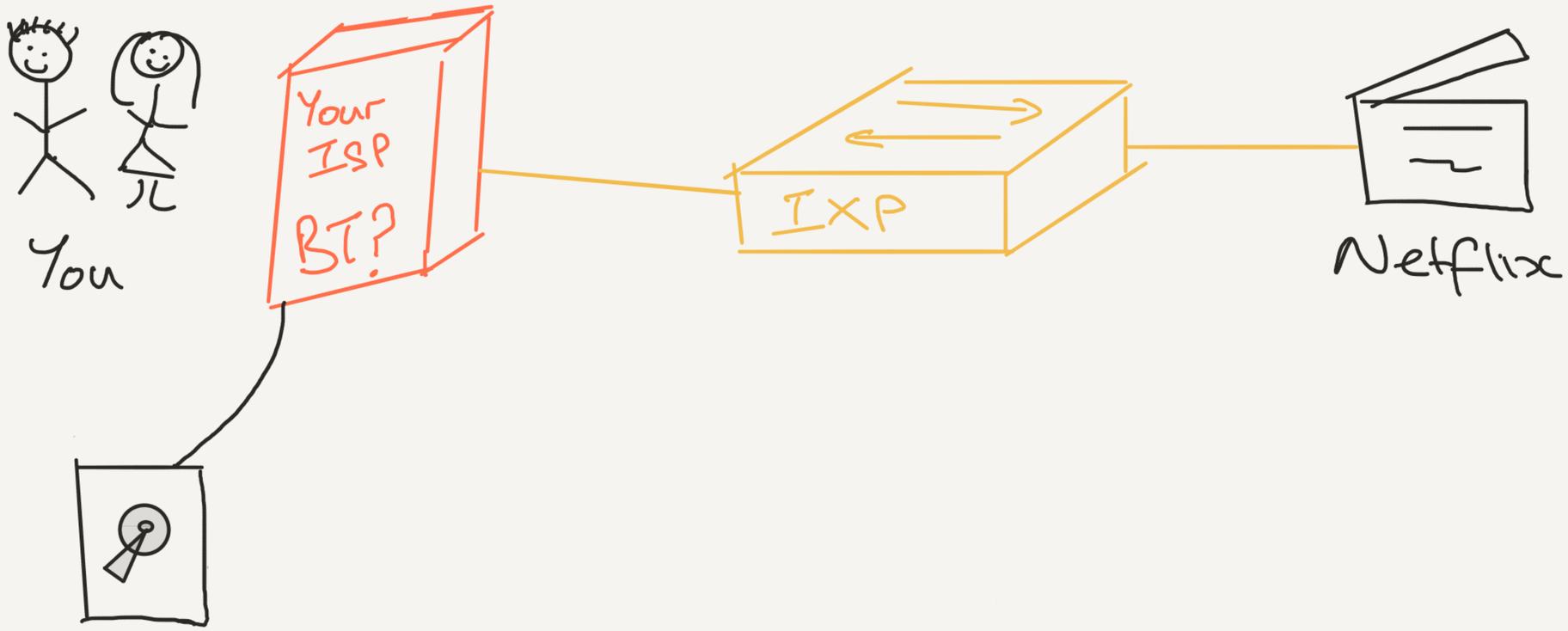
Netflix

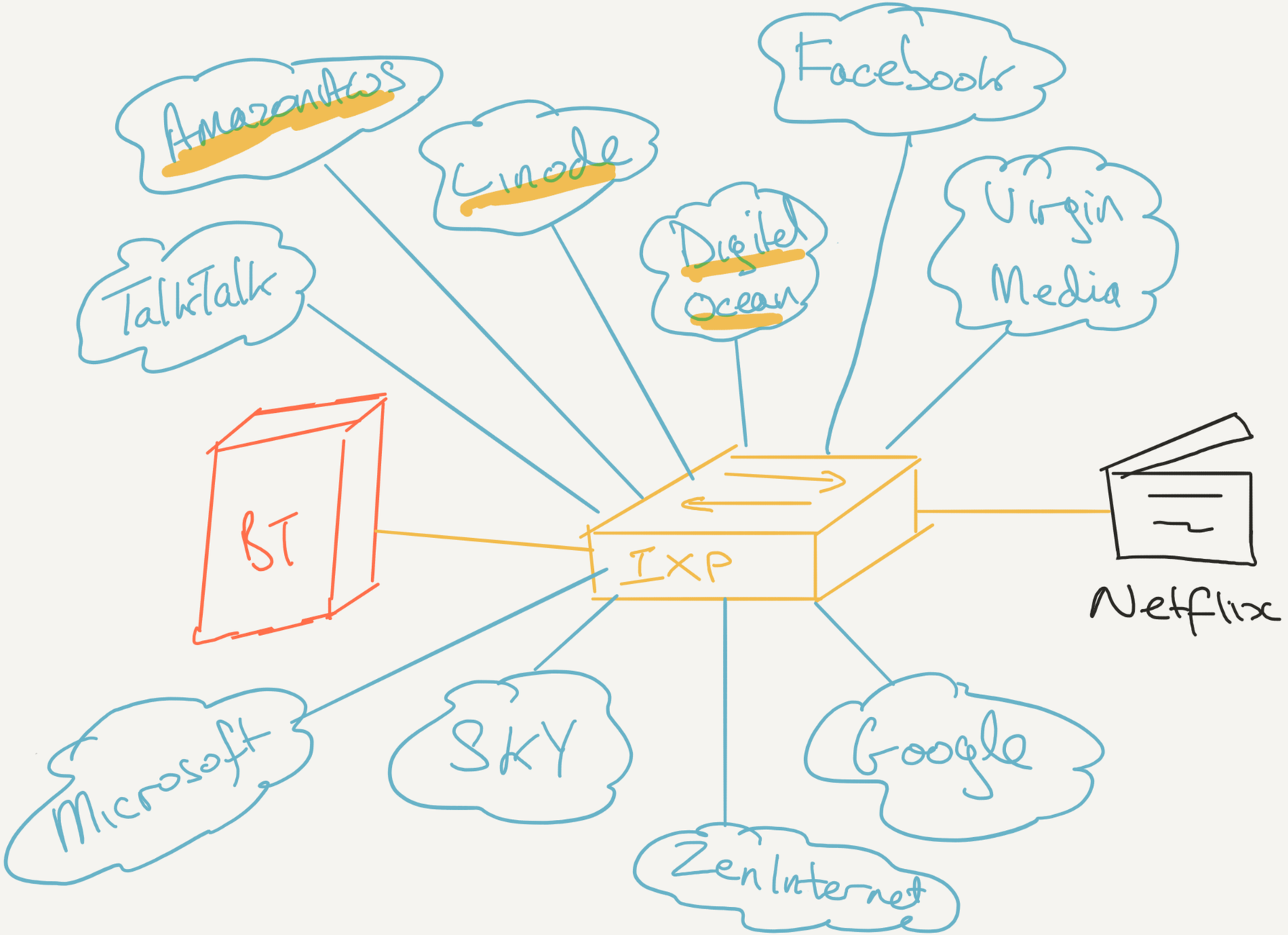

ISP2
$$
ISPn
Your ISP
BT?
You
Netflix

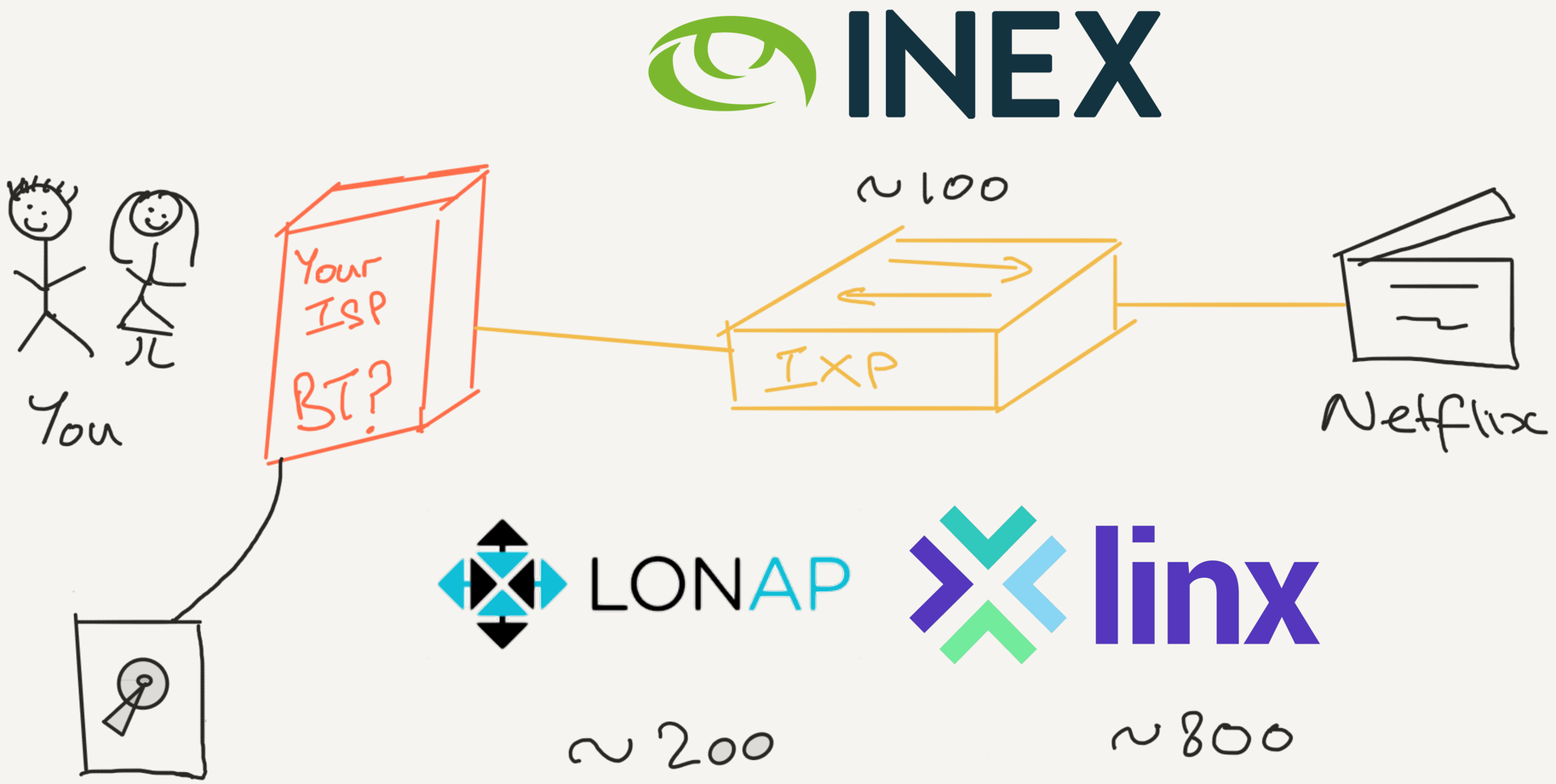

ISP2
$$
ISPn
Your ISP
BT?
You
Netflix
PNI
$$$
PRIVATE
NETWORK
INTERCONNECT


ISP2
$$
ISPn
Your ISP
BT?
$
IXP
Netflix
You
PNI
$$$
INTERNET EXCHANGE POINT


ISP2
ISPn
Your ISP
BT?
IXP
Netflix
You
CACHE FILL


You
Your ISP
BT?
IXP
Netflix


Amazon AWS
Linode
Facebook
TalkTalk
Digital Ocean
Virgin Media
BT
IXP
Netflix
Microsoft
SKY
Google
Zen Internet


INEX
~100
You
Your ISP
BT?
IXP
Netflix
LONAP
~200
linx
~800

```
~ sudo mtr -nrc 1 8.8.8.8
Start: 2018-06-11T17:12:09+0100
HOST: barryo-mac1.local           Loss%   Snt   Last   Avg  Best  Wrst StDev
  1.|-- 10.182.100.1               0.0%     1   88.5  88.5  88.5  88.5   0.0
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  3.|-- 176.126.37.74               0.0%     1  101.9 101.9 101.9 101.9   0.0
  4.|-- 78.152.193.106              0.0%     1  113.2 113.2 113.2 113.2   0.0
  5.|-- 194.88.240.55               0.0%     1  100.3 100.3 100.3 100.3   0.0
  6.|-- 66.249.95.125               0.0%     1  126.3 126.3 126.3 126.3   0.0
  7.|-- 8.8.8.8                    0.0%     1  119.6 119.6 119.6 119.6   0.0
```

IXP Manager (by INEX)

- FOSS tool for running IXPs
- V1 dates from late 90's (no framework, some PEAR libraries)
- V2 from 2008 (ZF1, Doctrine1, Smarty); V3 2012 with Doctrine2
- V4 from 2015 (ZF1 -> Laravel, Doctrine2, Foil (like Plates))
- Sponsors include ISOC, Netflix, other IXs -> full time developer
- Details at https://www.ixpmanager.org/

In use at over 60 IXPs around the world.
And here in London at LONAP (also IXLeeds, IX Liverpool).

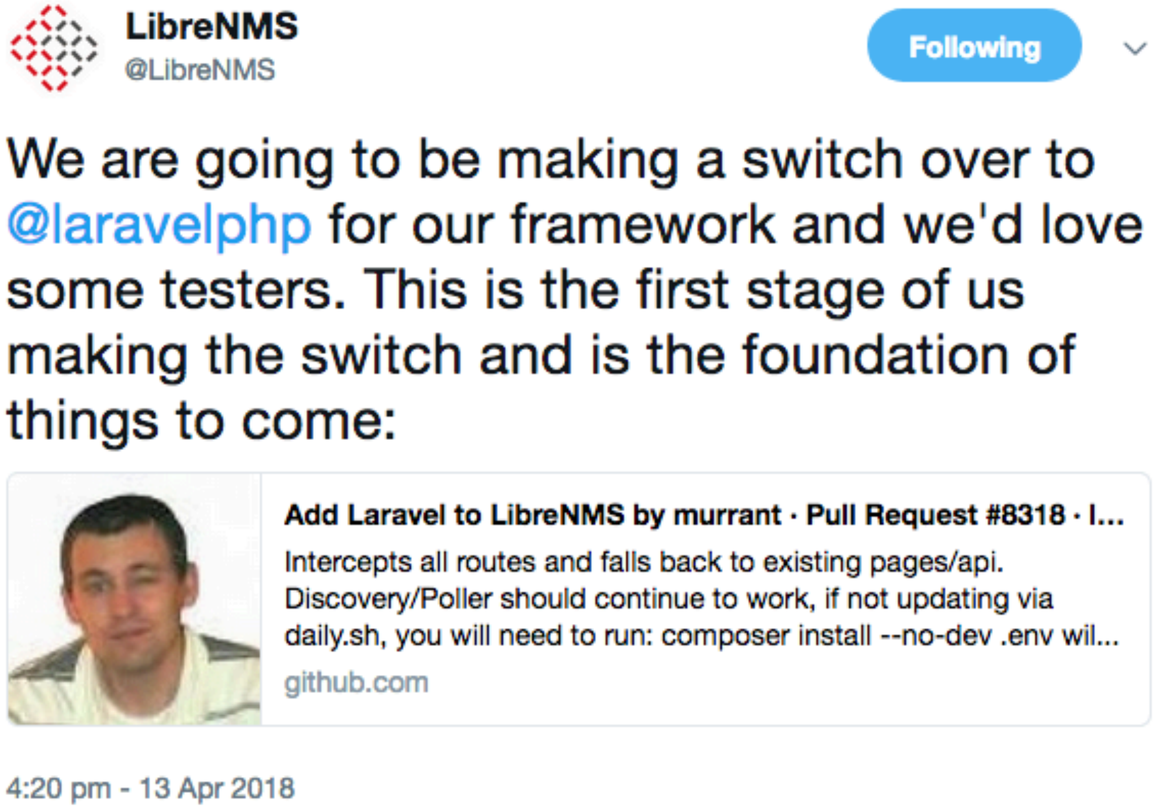
Making the Case to Change Framework

And the Approach

Arguments for Change

1. Prevent developer apathy

2. You'll have to eventually. Putting it off costs more!
3. Build with modern techniques and services
4. Reference other applications that have migrated
5. More as we move through the presentation...



LibreNMS is a fully featured network management system in use by thousands of networks around the world.

km An Teach Doite
13 LEGACY APP
An Lionan km
LARAVEL

Prerequisites

1. Your legacy application is using composer
    - Or can migrate to it and use auto-loaders (classmap, psr-0/4)
2. Your application has a single point of entry (index.php)
    - Can work around with (secure) $_REQUEST examination
3. Your application exists in a subdirectory such as public/

Best advice would be to complete these before proceeding.

Let's Migrate - Recap

1. Application: IXP Manager
2. Audience: Open Source / Self Install
3. No flag day - side by side
4. Framework Order: Laravel first

Side by Side - Install Laravel (1)

Add Laravel files to your application

- git clone the latest Laravel to a separate directory
- move files over to your application
- resolve conflicts - level of difficulty: framework dependant
  - ZF / CodeIgniter / Symfony all look okay-ish

Side by Side - Install Laravel (2)

```
git clone https://github.com/laravel/laravel.git
cd laravel

mv app/ artisan bootstrap/ config/ database/ package.json    \
  phpunit.xml resources/ routes/ server.php storage/ tests/  \
  webpack.mix.js    ../legacyapp

mv public/js/app.js ../legacyapp/public/js
mv public/css/app.css ../legacyapp/public/css

(ignored: public/index.php (for now), readme.md, CHANGELOG.md)
```

Side by Side - Install Laravel (3)

Update composer.json (and run: composer update)

```
"require": {
    …,
    "fideloper/proxy": "^4.0",
    "laravel/tinker": "^1.0",
    "laravel/framework": “5.6.*"
},
```

Side by Side - Install Laravel (4)

Swap your legacy project's index.php for Laravel"s

- Be mindful of any non-framework code you may have added
  - (e.g. request timers)
- Note the framework start-up and handoff lines

Side by Side - Install Laravel (5)

Switch to your framework from Laravel as either:

- a 404 handler
- a default route

Side by Side - 404 Handler

app/Exceptions/Handler.php

```php
use Symfony\Component\HttpKernel\Exception\NotFoundHttpException;
// Render an exception into a HTTP response
public function render( $request, Exception $e ) {
  // Legacy Framework Fallback
  if( $e instanceof NotFoundHttpException ) {
    // hand off to legacy framework (old contents of index.php)
    // …
    die();
  }
  // …
```

IXP Manager: https://github.com/inex/IXP-Manager/blob/v4.7.3/app/Exceptions/Handler.php

Side by Side - Default Route (1)

routes/web.php

```
// Legacy Framework Routes
Route::any( "/{path?}", "LegacyController@index" )
    ->where( "path", ".*" );
```

LibreNMS uses this method: https://github.com/librenms/librenms/blob/master/app/Http/Controllers/LegacyController.php

Side by Side - Default Route (2)

app/Http/Controllers/LegacyController.php

```php
namespace App\Http\Controllers;

class LegacyController extends Controller {

    public function index($path = "") {
        ob_start();
        include base_path("html/legacy_index.php");
        return response( ob_get_clean() );
    }
}
```

Legacy Framework as a Provider (1)

app/Providers/ZendFrameworkServiceProvider.php

```
class ZendFrameworkServiceProvider extends ServiceProvider {
  protected $defer = true;

  public function register() {
    $this->app->singleton( “ZendFramework”, function ($app) {

      require_once “Zend/Application.php”;
      $zf = new Zend_Application(
          $app->environment(), $this->createOptions()
      );
      return $zf->bootstrap();

    });
  }
}
```

IXP Manager: https://github.com/inex/IXP-Manager/blob/v4.7.3/app/Providers/ZendFrameworkServiceProvider.php

Legacy Framework as a Provider (2)

Revisiting: app/Exceptions/Handler.php

```
// Render an exception into a HTTP response
public function render( $request, Exception $e ) {
  // Legacy Framework Fallback
  if( $e instanceof NotFoundHttpException ) {
    // hand off to legacy framework (old contents of index.php)
    App::make("ZendFramework")->run();
    die();
  }
}
```

The Migration

Controller by Controller.

(and views as necessary).

(and models as necessary).

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
- views - duplication of menus, route changes
- models - chances are you're not using Eloquent
- tracking progress

Parallel Configurations (1)

- internal one-off business application
  - you can probably live with it?
- many installations / FOSS
  - you need to sort this out early
  - use your service provider to inject Laravel configuration into your legacy app

Parallel Configurations (2)

- Zend Framework: application/configs/application.ini
- turns out Zend_Application() can take an array for config

Legacy Framework as a Provider (1)

app/Providers/ZendFrameworkServiceProvider.php

```
class ZendFrameworkServiceProvider extends ServiceProvider {
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      );
      return $zf->bootstrap();

    });
  }
}
```

Parallel Configurations (3)

- Zend Framework: application/configs/application.ini
- turns out Zend_Application() can take an array for config
- our ZendFrameworkServiceProvider builds the array from Laravel configuration

IXP Manager: https://github.com/inex/IXP-Manager/blob/v4.7.3/app/Providers/ZendFrameworkServiceProvider.php

Parallel Configurations (4)

Zend Framework example - application/configs/application.ini

```
;; Put your email relay host here

resources.mailer.smtphost = "127.0.0.1"

resources.mailer.username = "joebloggs"

resources.mailer.password = "soopersecret"

resources.mailer.port = 25
```

Parallel Configurations (5)

Laravel example - config/mail.php

```
return [
    'host'      => env( 'MAIL_HOST', 'localhost' ),
    'port'      => env( 'MAIL_PORT', 25 ),
    'username' => env('MAIL_USERNAME'),
    'password' => env('MAIL_PASSWORD'),
    // …
]
```

Parallel Configurations (6)

ZendFrameworkServiceProvider example

```
private function createOptions(): array {
    // …
    $options["resources"]["mailer"]["smtphost"] = config("mail.host");
    $options["resources"]["mailer"]["username"] = config("mail.username");
    $options["resources"]["mailer"]["password"] = config("mail.password");
    $options["resources"]["mailer"]["port"]     = config("mail.port");
    // …
    return $options;
}
```

Parallel Configurations (7)

- Zend Framework: application/configs/application.ini
- turns out Zend_Application() can take an array for config
- our ZendFrameworkServiceProvider builds the array from Laravel configuration
- now just one source of configuration

IXP Manager: https://github.com/inex/IXP-Manager/blob/v4.7.3/app/Providers/ZendFrameworkServiceProvider.php

Aside: When dotenv Isn't Enough

```
return [
    // …
    'trunks' => call_user_func( function() {
        if( file_exists( config_path() . '/grapher_trunks.php' ) ) {
            return include( config_path() . '/grapher_trunks.php' );
        }
        return null;
    }),

    // …
];

// in Git as config/grapher_trunks.php.dist
```

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
- views - duplication of menus, route changes
- models - chances are you're not using Eloquent
- tracking progress

Session Management (1)

App\Http\Kernel

-> middleware

-> Illuminate\Session\Middleware\StartSession

```
// If a session driver has been configured, we will need to start the session here
// so that the data is ready for an application. Note that the Laravel sessions
// do not make use of PHP "native" sessions in any way since they are crappy.
```

Session Management (2)

- Laravel uses own cookie based session management
    - Therefore no conflicts with other Frameworks
- This is really convenient for side by side migrations
- Match session lifetimes between frameworks
    - Do this via config('session.lifetime') and config('session.expire_on_close')

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
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- tracking progress

User Authentication (1)

- Frameworks handle this using sessions
- Laravel has its own session management system
- Objective: when logging into one framework, also log the user into the other framework
- And do the same for logouts

User Authentication (2)

- When to migrate authentication?
- We're leaving it until the end

User Authentication (3)

routes/web.php

```
$auth = Zend_Auth::getInstance();

if( php_sapi_name() !== "cli" ) {

    if( $auth->hasIdentity() && Auth::guest() ) {
        // log the user in for Laravel
        Auth::login( App\User::findOrFail( $auth->getId() ) );
    } else if( !$auth->hasIdentity() ) {
        Auth::logout();
    }

}
```

User Authentication (4)

Migration Opportunities

- Laravel Socialite (OAuth)
  - For IXP Manager we plan PeeringDB OAuth
- 2-factor authentication
- "Login As" Functionality (viacreative/sudo-su)
- Upgrade to Bcrypt / Argon2

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
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Migrating Views (1)

- I've ~~used~~ suffered through Smarty for a decade
- I don't tend to do frontend/backend separation
  - Blade is really nice - and getting better
  - I'm not saying do not use Blade!

Migrating Views (2)

- PHP Templating Options: Plates[1] and Foil[2]
- Features as expected: Laravel compatibility, template layouts and inheritance, extensible, ...
- Skinning

1. http://platesphp.com/
2. https://github.com/FoilPHP/Foil

Migrating Views (3)

- Side by side considerations:
  - You'll have two layouts, two menu templates, etc. Need to update both of these!
  - Do not forget to update routes / links
    - You could keep them the same
    - But you'll probably modernise them

Migrating Views (4)

Opportunities:

- Front end spruce up - for us: Bootstrap 2 -> Bootstrap 3
- Improve layout / UX based on years(?) of experience
- Introduce i18n / l10n ?

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
- views - duplication of menus, route changes
- models - chances are you're not using Eloquent
- tracking progress

Migrating Models

- For IXP Manager it was easy: Doctrine2
  - https://www.laraveldoctrine.org/
- If migrating to Eloquent:
  - Be careful not to introduce schema / consistency issues between frameworks

Other Side by Side Considerations

- parallel configurations - one for each framework
- session management
- user authentication
- views - duplication of menus, route changes
- models - chances are you're not using Eloquent
- tracking progress

Tracking Progress

```
~/dev/ixp-inex/application/controllers  release-v3  ls
AdminController.php                     IrrdbConfigController.php       RouterCliController.php
ApiKeyController.php                    IxpController.php               RsPrefixesController.php
AuthController.php                      LocationController.php          SearchController.php
CabinetController.php                   LoginHistoryController.php      SmokepingCliController.php
CliController.php                       MacAddressCliController.php     SmokepingController.php
ConsoleServerConnectionController.php   MacAddressController.php        StaticController.php
ContactController.php                   MailingListCliController.php    StatisticsCliController.php
ContactGroupController.php              MeetingController.php           StatisticsController.php
CustKitController.php                   MeetingItemController.php       SwitchCliController.php
CustomerController.php                  MrtgController.php              SwitchController.php
CustomerNotesController.php             NagiosCliController.php         SwitchPortController.php
DashboardController.php                 NetInfoController.php           UserController.php
DatabaseMigrationCliController.php      OuiCliController.php            UtilsController.php
ErrorController.php                     PeeringManagerController.php    VendorController.php
IndexController.php                     PeeringMatrixController.php     VirtualInterfaceController.php
InfrastructureController.php            PhysicalInterfaceController.php VlanCliController.php
Ipv4AddressController.php               ProfileController.php           VlanController.php
Ipv6AddressController.php               PublicController.php            VlanInterfaceController.php
IrrdbCliController.php                  PublicMeetingController.php     WeatherMapController.php
```

```
~/dev/ixp-inex/application/controllers  master ●  ls
AuthController.php          DashboardController.php     PeeringMatrixController.php
ContactController.php       ErrorController.php         UserController.php
ContactGroupController.php  PeeringManagerController.php
```

@barryo79
barryodonovan.com

https://joind.in/talk/0ebdc (zero)
@ComePeerWithMe / @IXPManager

Questions?

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- Richard Woffenden, “The Criminal Courts of Justice, Dublin”, CC BY 2.0, modified, https://flic.kr/p/pYzPRM