Rails Local Development over HTTPS using a Self-Signed SSL Certificate

https://madeintandem.com/blog/rails-local-development-https-using-self-signed-ssl-certificate

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I found myself in a peculiar situation recently. I was integrating a Single Sign On workflow with Google as the IdP (read more about it here). After authenticating on Google, a callback url is provided to handle the response. Google requires that the connection be encrypted (read HTTPS). But, the standard Rails server boots without SSL in development mode. I needed to test the integration locally, so I needed to get my local server secured with SSL. Quite the conundrum!

Let's look at the server startup logs quickly…

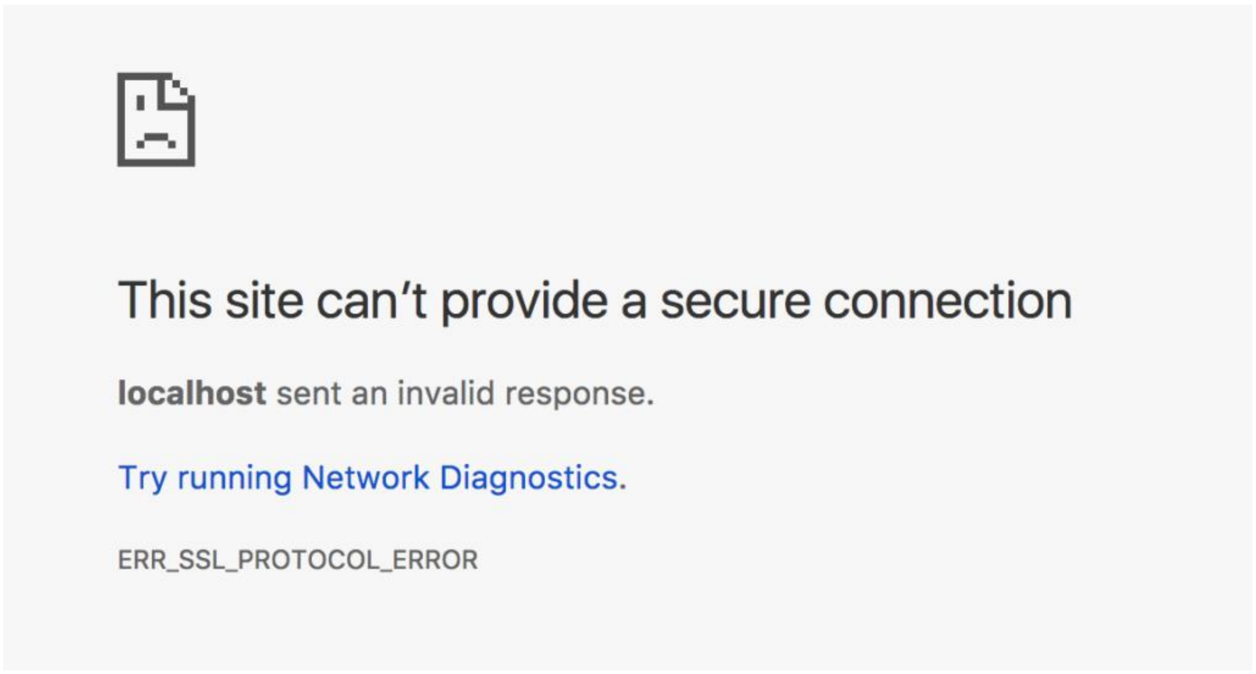
```
$> rails s
=> Booting Puma
=> Rails 5.1.3 application starting in development on
http://localhost:3000
=> Run `rails server -h` for more startup options
Puma starting in single mode...
* Version 3.9.1 (ruby 2.4.1-p111), codename: Private Caller
* Min threads: 5, max threads: 5
* Environment: development
* Listening on tcp://0.0.0.0:3000
Use Ctrl-C to stop
```

… and a basic request to `localhost:3000`

```
Started GET "/" for 127.0.0.1 at 2017-08-24 11:49:01 -0500
Processing by HomeController#index as HTML
  Rendering home/index.html.erb within layouts/application
  Rendered home/index.html.erb within layouts/application
(0.3ms)
Completed 200 OK in 15ms (Views: 13.5ms | ActiveRecord: 0.0ms)
```

Good stuff. Notice the output from Puma, specifically this line `Listening on tcp://0.0.0.0:3000`. We'll later compare this to the logs when we boot with SSL.

My first idea was to dig into the Rails configuration options. I added `config.force_ssl = true` to the bottom of my `development.rb` config file. After restarting the server and visiting `localhost:3000` with Chrome, the `https://` was automatically prepended to my url. Chrome was mad:


This site can't provide a secure connection

localhost sent an invalid response.

Try running Network Diagnostics.

ERR_SSL_PROTOCOL_ERROR

And the server was mad:

```
2017-08-24 11:55:39 -0500: HTTP parse error, malformed request
(): #<Puma::HttpParserError: Invalid HTTP format, parsing
fails.>
```

After some reading, I started looking into how to generate a self-signed SSL certificate for my localhost server. Turns out that **openssl** has a built in command for exactly this. This post was extremely helpful to understand the options. Here's how to generate the cert:

```
$> openssl req -x509 -sha256 -nodes -newkey rsa:2048 -days 365 -
keyout localhost.key -out localhost.crt
```

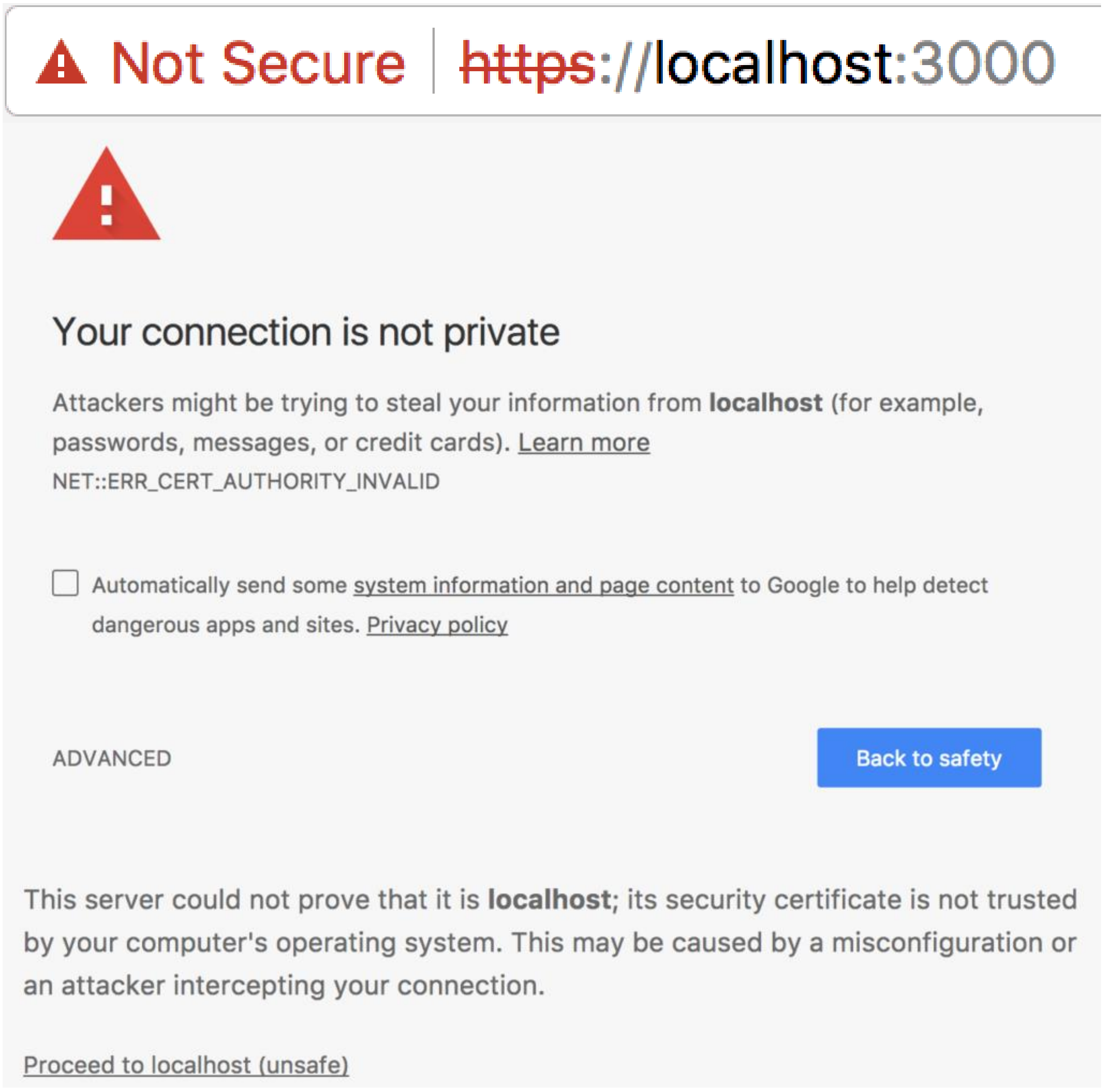
You'll be prompted with some information on country code, email, etc. but you can skip all of the questions. This command will create two new files in the current directory `localhost.key` and `localhost.crt`. Put those wherever you want.

What do we do with these files? I found out from the Rails server docs that the `-b` options binds the server to a specific IP. Restarting the server with a binding:

```
$> rails s -b
'ssl://localhost:3000?key=path/to/file/localhost.key&cert=path/t
o/file/localhost.crt'
=> Booting Puma
=> Rails 5.1.3 application starting in development on
http://ssl://localhost:3000?key=localhost.key&cert=localhost.crt
:3000
=> Run `rails server -h` for more startup options
Puma starting in single mode...
* Version 3.9.1 (ruby 2.4.1-p111), codename: Private Caller
* Min threads: 5, max threads: 5
* Environment: development
* Listening on
ssl://localhost:3000?key=localhost.key&cert=localhost.crt
Use Ctrl-C to stop
```

Notice the line `Listening on ssl://localhost:3000?key=localhost.key&cert=localhost.crt`. It appears that our local server is now secured with over HTTPS!

Visiting `https://localhost:3000`


Not Secure | ~~https~~://localhost:3000

Your connection is not private

Attackers might be trying to steal your information from **localhost** (for example, passwords, messages, or credit cards). Learn more

NET::ERR_CERT_AUTHORITY_INVALID

☐ Automatically send some system information and page content to Google to help detect dangerous apps and sites. Privacy policy

ADVANCED

Back to safety

This server could not prove that it is **localhost**; its security certificate is not trusted by your computer's operating system. This may be caused by a misconfiguration or an attacker intercepting your connection.

Proceed to localhost (unsafe)

Lots of **red** but almost there! The final step was to simply click *ADVANCED* and to tell Chrome to trust the server by clicking *Proceed to localhost (unsafe)*.

Rails provides so many nice configuration options to make the development experience similar to the production experience. Running the server locally over HTTPS was a unique challenge.