IIIT-Hyderabad
Virtual Lab Image Issue
19 June 2016

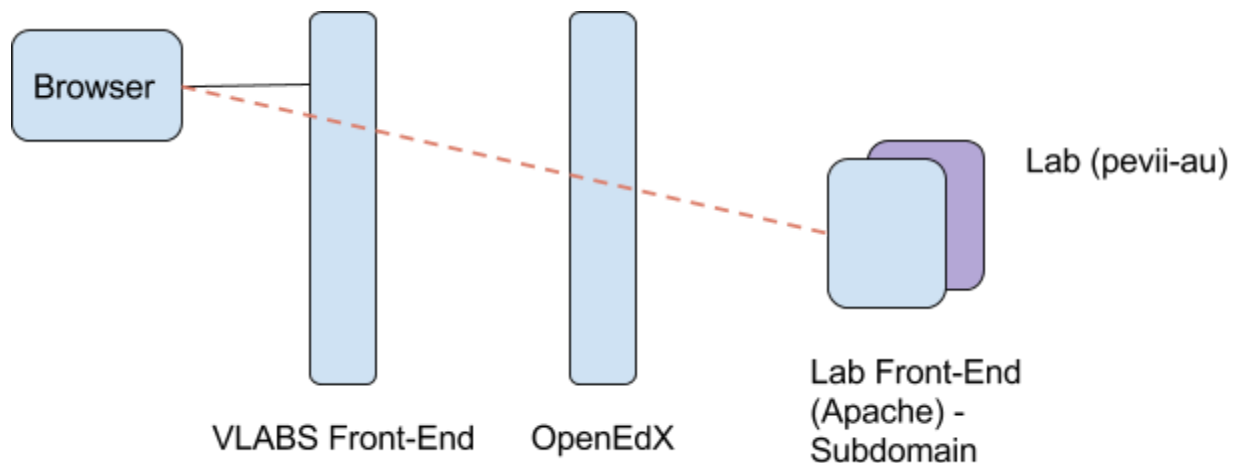**Problem Statement:** None of the images load in the Optimal Foraging experiment.

Ashay and I spent 3 hours on to identity the issue and suggested some temporary fix. However,

Recommendations:
I would like to submit my observation for later implementations.

Every course, Lab, experiment etc. has its own subdomain.
For example, http://pevii-au.virtual-labs.ac.in/

I would like to first bring out 2 issues with architectural, design impact that we may address or record for future enhancements.

1) There are direct calls from Browser to Lab Assets.
2) It is also observed use of IFrames.

I will be focusing on the **1)** above in this document.

When we observed the network activity from the browser, the calls have a mix of **http, https.** Going forward, we should consider uniform and secure access protocols (https).

Avoid calls to LAB assets directly. This is main issue of images not rerendering.
A simple and pass through layer of abstraction is needed to access ANY Lab resource. It is tough but there is no shortcut. Without this (Lab Access Layer), the overall system MAY become insecure, unmaintainable, unscalable.

Please see the figure below.

OpenEdX

Browser

Lab Front-End
(Apache) -
Subdomain

Lab
(pevii-au)

VLABS Front-End   Lab Access Layer
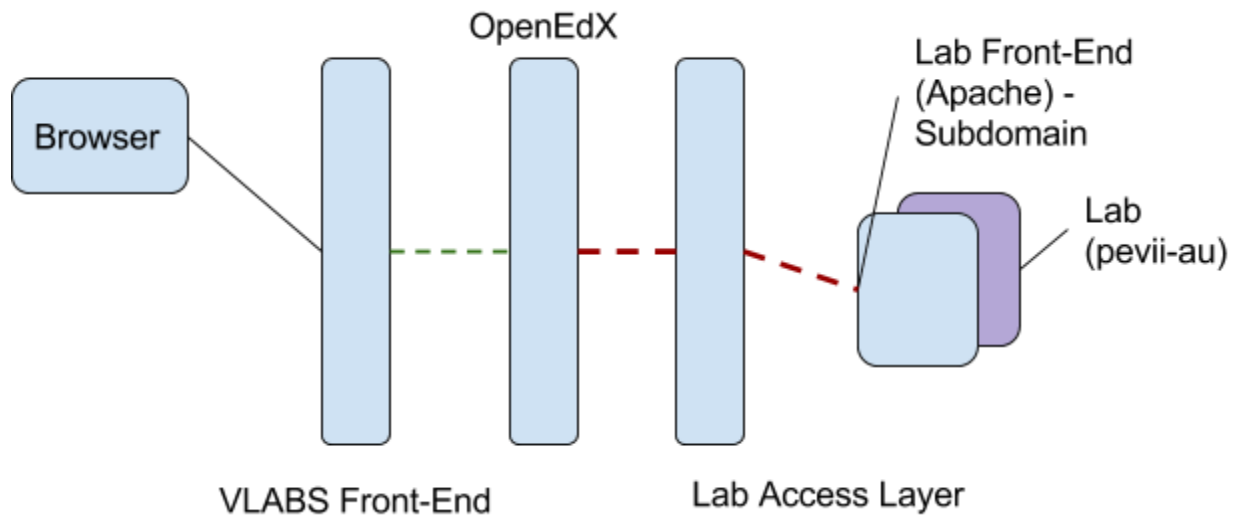
Advantages:
In this case, the calls are made to "controlled assets" of the LABs. The system helps introducing "**controlled practices**" of exposing LAB services to VLABS.
Termination of SSL / use of protocols (HTTP/HTTPS) happens at VALBS Front-End. Without this, every Lab MUST terminate SSL.
Load balancing MAY be introduced at the VALBS Front-End to access LABS through Lab Access Layer.

The Lab Access Layer MAY have controllers, routers, caches, metric collections etc.

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