

SENG 299: SOFTWARE ARCHITECTURE & DESIGN  
LAB 5: INTRODUCTION TO SERVER DEPLOYMENT  
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Due: June 19th, 2016

## Purpose

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The purpose of this lab is to get students familiar to the environment of deploying their web application.

## Overview

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Here is a described list of concepts that were explained in lab:

1. **VPN:** Virtual Public Network (VPN) allows a private network to be accessed remotely through the Internet. Users can send and retrieve data remotely once they are connected to the network just as they could if they were directly connected. In most cases, VPNs are widely used for security. A VPN is a method for encrypting communication on an untrusted public network. Remotely, users are required to connect to the network (with a VPN), sign in with their credentials, and then all exchanged information will be encrypted and secured. Using a VPN causes the user's original IP address to be replaced by the one from the VPN. As demonstrated in this lab, a user cannot access any content inside the server if they are not connected to the network.
2. **Deployment Testing:** After server deployment, testing is required for quality assurance and to ensure functionality is working properly. Testing includes: modifying data in the database, modifying folders/files and seeing the effects on the live server, tracking system performance, and accessing the server from different locations. In any software system, testing plays a vital role in the software development cycle. Without testing, a user (or customer) can be quickly dissatisfied and dismiss using the application if errors occur. As demonstrated in lab, usability tests (adding and deleting multiple activities/projects on different browser types in different locations) can be an effective way to determine if the application is working as needed.

## Lab Exercise

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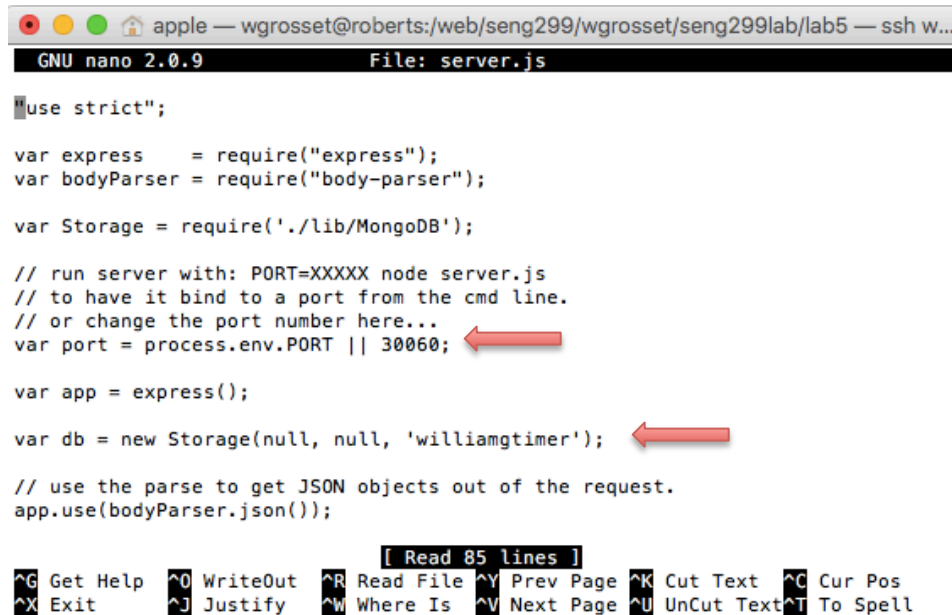
### PART 1:

In this lab exercise, students were asked to use their previous timer application that was made in last week's lab and deploy it to the `Roberts.seng.uvic.ca` server. To do this, students followed a deployment guide requiring them to be connected to the Engineering network to deploy their web application.

Initially, I downloaded a VPN (Tunnelblick) on my Mac to be able to access the private network remotely. I then logged in with my NetLink credentials and accessed the server via SSH (Secure Socket Shell). After navigating to the appropriate directory (`web/seng299/wgrosset`), I was required to install the newest NodeJS version to use the "n" utility.

Once I was in the Engineering network and desired directory, I cloned the Git repository (e.g. `git clone https://github.com/sdiemert/seng299lab`). Then, I installed any required dependencies for the application by running the command: `install npm`.

Before running the application, I had to change the port number and database name to avoid conflict of other student applications. To do this, I ran the nano command in the terminal to modify the `server.js` file (see Figure 1.0).



```
apple — wgrossset@roberts:/web/seng299/wgrossset/seng299lab/lab5 — ssh w...
GNU nano 2.0.9 File: server.js

"use strict";

var express = require("express");
var bodyParser = require("body-parser");

var Storage = require('./lib/MongoDB');

/* run server with: PORT=XXXXX node server.js
/* to have it bind to a port from the cmd line.
/* or change the port number here...
var port = process.env.PORT || 30060;

var app = express();

var db = new Storage(null, null, 'williamgtimer');

/* use the parse to get JSON objects out of the request.
app.use(bodyParser.json());

[ Read 85 lines ]
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

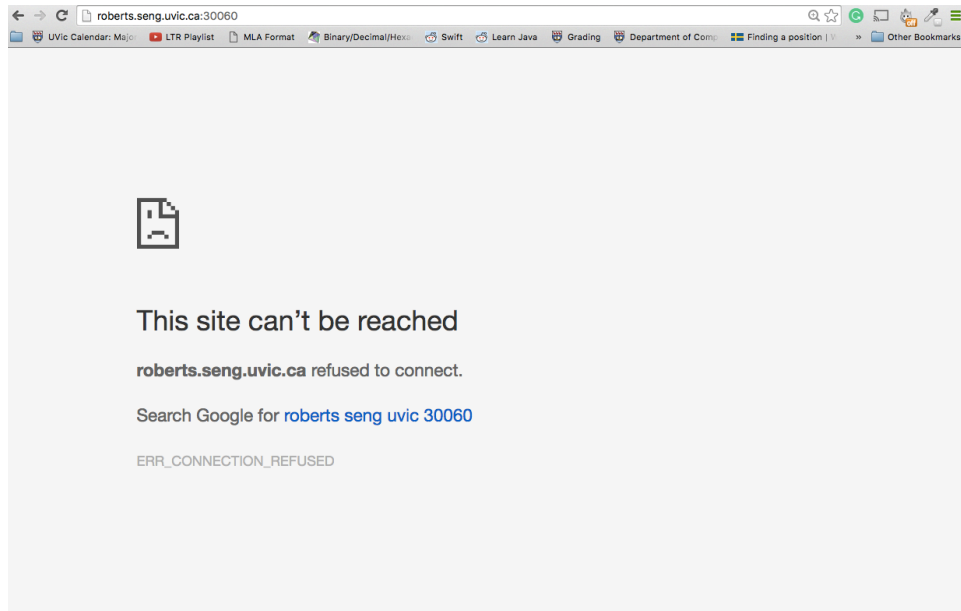
**Figure 1.0.** Modifying port value and database name in `server.js` file.

After this modification, I was able to successfully run the server using the command:  
`../node_modules/n/bin/n use latest server.js`.

## PART 2:

After successful deployment, testing the application in different locations was required. The following section answers the questions from the lab exercise:

1. Can you access the application from within the hardwired UVic Engineering network (lab machines)?  
Yes. The lab computers are hardwired to the UVic Engineering network which allows direct access.
2. Can you access the application from within the UVic network **inside** of the ELW/ECS buildings?  
No. The UVic Wi-Fi (or any other Wi-Fi) is not the same as being directly logged into the Engineering network. As shown in Figure 2.0, users cannot access the page.



**Figure 2.0.** Timeout error accessing page outside of Engineering network.

3. Can you access the application from anywhere at UVic **outside** of the ELW/ECS buildings?  
See question 2.
4. Can you access the application from a location off campus **without** VPN access?  
See question 2.
5. Can you access the application from a location **with** VPN access to the Engineering network?  
Yes. Using a VPN (i.e Tunnelblick) allows direct access to the Engineering network (see “Overview 1” for explanation), as long as the user has a Netlink username and password to log in.

### Constraints

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A constraint that I encountered was to be able to do the lab exercise on my laptop. This required me to download a VPN initially (due to my computer not being a part of the engineering network). After following the OS X guide for using a VPN (using Tunnelblick), I was able to remotely connect to the network successfully and SSH into the server.

Another constraint that I encountered was being able to modify the file that I initially cloned to the `Roberts.seng.uvic.ca` server. However, as explained in Part 1 of the Lab Exercise, I solved this through some research online and used the Linux/OSX command: `nano`. Another way I could have solved this is to download the Git repository locally, change the port number and database name in a text editor, and then copied the file directly into the server using: `cp` or `mv`.

## Conclusion

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In this lab, I learned how to properly use a VPN (on my laptop) to access the Engineering network from any remote location. Also, I learned how to correctly deploy and test my timer web application. From this experience, my project team and I now understand how to access the Engineering network to deploy our Go web application when implemented.