# Web enhancement report for Haukai Restaurant

Introduction

After designing and building the web application for Haukai Restaurant there were some additional requirements that needed to be added and some security and marketing strategies were needed before deploying the web application onto the internet. This report covers these aspects as well as an updated Return on Investment calculation.

1a Additional Requirements

Two additional requirements for our web app are the username-password .htaccess files, and the protected files containing staff contact details and roster details.  
These are both functional requirements as they pertain to actions performed by the user, rather than relate to the performance of the web app.  
The approach I have taken to implement these is to have the inks to each page (staff contact details and roster details). When a user chooses to click om either of these links, they will be prompted to put in a username and password.  
For the staff contact details, I would have this as a static web page that simply shows the staff information with links to the roster page and homepage.  
The roster page could be a dynamic page. We could implement the use of Google Calendar to show the days and hours that staff work.

1b Security considerations

The Parkerian Hexad model is an excellent starting point when considering security. For each attribute we will consider potential security breaches, the impact it would have on the business and potential countermeasures.

**Confidentiality**  
A potential confidentiality breach can have devastating effects on a business. Our web application contains personal information of customers and staff members, such as their phone numbers and addresses. If a confidentiality breach were to happen, our customers would lose faith in our ability to keep their private information secure and will be hesitant to want to use our services in the future.   
Potential countermeasures include:

* All personal information is stored securely, it is password protected and can only be accessed by appointed persons.
* Any backups are to be stored in a secure location, off site.

**Integrity**Integrity breaches can occur in multiple ways. Checking the data being input by the user before it is entered into the database is important. Using HTML5 validation is one way of doing this. We do not want to be storing unvalidated data, because this can leave us open to a security attack where, hackers/bots can fill our system with random junk that will render our current database useless. This is particularly concerning where prediction analysis is used to predict things like stocktake, causing an incorrect prediction and overstocking or understocking for the future.

**Availability**

A breach of availability can come from a denial of service attack. A DOS attack is when bots send many requests to your web server, which overloads it and effectively shuts it down. This can have monetary loss for your company if people are unable to access your online services.  
One way to countermeasure this is by using a content delivery network. CDN’s have servers geographically distributed that contain copies of your website. If your own server goes down, the CDN can deliver the copies of your website that they have stored, so users can still have access to your website. They could tell the user that it is not a live version of your site, but at least the users will still have access to your services.

**Authenticity**

Authenticity refers to the website being authentic and verified to be owned by you. A website that has not been authenticated can be flagged by browsers and can deter visitors by warning that your website ‘may not be secure’. This can be significant in a loss of traffic to your website and lower your chances of showing up in search engines.  
To prevent this, a digital certificate or SSL certificate should be purchased. The certificate secures the connection between the user and your web app by encrypting communications. This lessens the likelihood of an interception by malicious means. These certificates can be renewed regularly for a cost.

**Possession/control**

A possession breach can happen when hackers hijack your site, or information on your site and hold it to ransom. This can cost your company a lot of money to get access to this information or files back.   
A way to countermeasure this is by educating staff about phishing etc.

**Utility**

An example of a breach of utility (or usefulness) is if, say, someone had a laptop with important information on it, but could not remember the password to access this information. The information is then useless because it cannot be utilised. This can impact a business by wasting time and resources trying to get access back into the laptop.   
A possible way to countermeasure this is by having trustworthy and reliable people in control of, and have access to, important assets.

1c Hosting Providers

|  |  |  |
| --- | --- | --- |
|  | **OpenHost** | **WebHostingNZ** |
| UPTIME | 99.9% | 99.9% |
| CUSTOMER SUPPORT | 24/7 | 24/7/365 |
| SPACE | 25gb | 25gb |
| TRAFFIC LIMIT | 100gb | Doesn’t say |
| COSTS | $193.20 annual - $30 per ip address | $105.12 annual |
| FEATURES | * Host 1 website * Unlimited MySQL databases * Unlimited subdomains * Unlimited email accounts * Plesk Control panel * Free SSL with Let’sEncrypt * FTP access * File manager * Script auto-installer * Daily data back-ups * 24/7/365 server monitoring * NZ based servers * First year domain registration free | * Host 6 websites * 30 email addresses * 20 parked domains * 25 subdomains * 10 MySQL databases * Free setup * CloudFlare * PHPMyAdmin * Daily back ups * Unlimited Bandwidth * Auckland based servers * CloudLinux * Custom error pages |

The web hosting service I am recommending is WebHostingNZ. They are the cheaper option, while still offering the features that we need to successfully host our web app. Though Openhost offers a free SSL certificate, it is from Let’s Encrypt and may still be flagged by some browsers as insecure, so we would still need to purchase a better certificate.   
**note:** I couldn’t find any information as to how WebHostingNZ implement CloudFlare (it is a CDN) and how this counts as a ‘feature’. It could be free with the hosting service? If so, that would be an excellent feature. A phone call or email to WebHostingNZ would clear this up.

1d Marketing strategy

An effective marketing strategy will help with developing an online presence.  
A great place to start is with a memorable, yet simple domain name.  
Some possible options are:

* haukairestaurant.co.nz
* haukai.co.nz
* haukairestaurant.kiwi.nz
* haukairestaurant.maori.nz

The first and second options would be the easier ones for potential customers to guess, and the others are similar, but with different endings. They do go with the impression of Haukai Restaurant, in that they represent New Zealand.  
To improve our search engine optimisation, relevant search keywords can be put into our metatags. Two keywords that would be relevant are “Bay of Plenty restaurant” and “Maori food”.  
Submitting our web application to search engines will improve our search engine rankings.

To submit to Google:  
We first need to create a sitemap, then either add it to the robots.txt file in the web folders directory or we can submit directly to the Search Console feature.  
Google recommends ‘pinging’ them whenever the web app is updated by using the following HTTP GET request:

<http://www.google.com/ping?sitemap=(webaddress)>

Bing search engine now requires clients to sign up to Webmasters before allowing submission of URLs. There is a cost involved with this and is the ‘pay-per-click’ rate. Google also has this PPC rate. This could be well worth the extra cost.  
Microsoft Advertising (Bing) explains on their website different ways to help market your web app. There is the auction (as Google has too) where you bid for advertising based on a search keyword. Depending on how much you are willing to bid will determine what position your ad will have on the search result pages.   
Both Bing and Google offer $100 auction credit on sign-up to their PPC advertising services. The average cost per click in the US is $1-$2, but his is dependant on the popularity of the keyword.

SSL certificates

The following table compares two providers of SSL certificates, the features they offer, and cost involved.

|  |  |
| --- | --- |
| **FreeParking.co.nz**  Positive Standard SSL | **GoDaddy**  Deluxe SSL |
| 3 domains | Unlimited re-issues |
| Unlimited re-issues | Unlimited servers |
| Unlimited physical resources | 24/7 customer support |
| Add domains at $30 each |  |
| Cost: from $169 annual | Cost: from $109.99 annual |

GoDaddy is the cheaper option here. The price is cheaper than Freeparking.co.nz, while still offering almost the same features. GoDaddy is a well-known company for webhosting and marketing too.   
After looking at reviews for both, GoDaddy seems to be the more consistent option. FreeParking.co.nz costs seem to increase as time goes on and can become very expensive in previous client’s experience.

1f Content Delivery Networks  
Content Delivery Networks are a great tool for allowing faster loading times of web app and aids in protection from denial of service attacks. Two providers I looked at were MetaCDN and CloudFlare. The table below reflects features and differences in similar packages.

|  |  |
| --- | --- |
| **CloudFlare** | **MetaCDN** |
| DDOS attack mitigation | Automatic failover |
| Global content CDN | Unused credits rollover |
| Support via email | Advanced website acceleration |
| Lossless image optimization | Individual and batch file upload |
| Cache analytics | 100% uptime |
| 100% uptime | Multiple active CDN providers |
| Easy PCI compliance | Performance based routing |
| Cost: $200 monthly | Cost $50 monthly |

For our web app, I would recommend metaCDN. The cost is considerably cheaper, yet offering all the features we need for our web app. The cost of $50 month is not fixed. We only pay for the traffic coming and going, and for the user data storage. This makes for easy scalability.  
CloudFlare does offer cheaper options, but they do not recommend those for businesses, rather personal websites/blogs etc. The business package (in the table above) is the recommended package for small businesses such as the Haukai Restaurant.

1g Updated Return on Investment calculation

Here we are calculating an estimated Return on Investment (ROI) to justify the creation of our web app over 2 years.

Calculating the value of the investment:

Potential of $500 increase per day (10 new customers each spending $50)

A saving of $20.20 per day for staff member not having to spend that time taking phone orders.

$520.20 x 365 (operating 7 days a week) = $189,873.00

Cost of investment: MetaCDN for 2 years: $1200

GoDaddy SSL cert for 2 years: $175.98

Keyword auction budget estimate: $200

Web hosting with WebhostingNZ = $386.40

Total cost = $1962.38

ROI = gain on investment – cost of investment

Cost of investment

$189,873 - $1962.38 = $95.76

$1962.38

2b The following screenshot shows the CssTree Validator extension:

A screenshot of a computer screen

Description automatically generated

The next screenshot shows the issues highlighted by this tool:

A screenshot of a computer screen

Description automatically generated

2c: I removed the float: center; to be rid of this error. Clearly center is the default float value and does not need to be written as a rule.

Question 2, d: I installed the Can I use extension and highlighted a css rule. I used the keyboard configuration ctrl + shift + I to use the tool. The following screenshot shows the message I get with all rules I tested. I researched this message and apparently, it’s because there is no problem case and the developer is working on using a better message to convey:

A screenshot of a computer screen

Description automatically generated

This is the only message I get when using the extension.

Google Analytics

I have added the Google analytics script into every page for this website. Below is the screenshot for the dashboard:

