Graded Unit project

Silicon Croft Website

# Development

## Implementing the planned solution

### Identification of hardware and software platform

#### Server Selection

For our server hosting solution we will compare a few options below:

* Webhosting UK are a UK-based host who provide both Linux and Windows hosting for a reasonable price, they also provide 24/7 technical support, daily offsite backups and 1-click installation of popular CMS’s such as WordPress, Drupal and Joomla (Webhosting UK **??**/05/2022).
* Wordpress.com provide free hosting of a wordpress site with the option to upgrade to a paid version when necessary. The free version is quite limited as it doesn’t allow plugins to be used, it puts adverts on your website which you do not receive revenue from and that cannot be removed, only provides up to 1GB of storage so would limit the amount of content that can be placed on the website, and is obviously limited to using WordPress as the CMS, however, as we have no budget our options are quite limited (WordPress.com **??**/05/2022).
* The University of the Highlands and Islands have allocated a virtual server for this project that is pre-installed with Redhat Linux, PHP, MariaDB and WordPress but I have been told I can change the CMS and configuration as I see fit.

From the options above we will be using the virtual server provided by the UHI as it has no hard limitations on the CMS we can use, plugins and data storage. It is also free which is a very limiting factor for the project as we have no budget and most other hosting options either have no free hosting available or the free hosting they do have is very limited and has other conditions attached such as requiring ads to be displayed on the created website.

#### Operating System Selection

##### Microsoft Windows Server 2022:

* Since Windows Server is owned and maintained by Microsoft and is not an open-source project you will get customer support with your purchase and so solving issues related to the operating system could be much easier and faster.
* A standard licence costs $1069 where if you chose an open-source solution it would be free (Microsoft 2021).
* Hardware Requirements (Microsoft 16/08/2021).
  + 1.4 GHz x64 processor (Microsoft recommends using a tool called Coreinfo to check that the CPU has all required capabilities: CMPXCHG16b, LAHF/SAHF, PrefetchW, etc)
  + 512 MB RAM (2GB for Desktop Experience installation)
  + 32GB backing storage (absolute minimum more is recommended)
  + Minimum 1 Gigabit ethernet adapter.

##### Red Hat Linux:

* ? Ubuntu is one of the most widely used Linux distributions and has been around a long time and as such it has regular updates and a strong developer community producing regular updates and security fixes.
* ? It’s completely free! However, they do offer a Subscription service if you wish to get help and support.
* Hardware Requirements (Red Hat 2022)
  + ?1 GHz or better
  + ?1 GB RAM
  + ?2.5GB Backing storage

##### OpenSUSE:

* OpenSUSE is a Linux distribution specifically aimed at “makers, sysadmins and developers” as well as normal desktop users.
* It’s completely free! OpenSUSE provide a “Premium IT Support” service for a Subscription fee similarly to Ubuntu.
* Hardware Requirements (OpenSUSE contributors 2021)
  + 2GHz dual core processor or better.
  + 2GB RAM (more recommended).
  + Over 40GB backing storage recommended.

??I believe that OpenSUSE would be the best Operating System to use out of the options I have presented as it is free but still allows a subscription for technical support to be picked up later if required and it is primarily designed for makers, sysadmins, and developers and this suits our use case very well. It does have the highest Hardware requirements, but these requirements are still extremely low by modern standards.

#### Web Server Selection

##### Microsoft IIS:

* A

##### Nginx

* A

##### Apache

* A

#### Server-Side Scripting Language

Because all of the Content Management Systems we are considering use PHP as their backend that is what we will be using, it is also the language I am most familiar with so it makes sense in that way as well.

#### Database

Client two requires a server-side scripting language and a database. I would suggest using MariaDB as the database as it is created by the original developers of MySQL, guarantees to stay open source, and contains some advanced features not found in other database servers (MariaDB 2021)

#### Content Management System

Atlas Co has asked for a content management system to be used as their intranet. There are several content management systems available however some of them do not allow self-hosting and don’t export properly (Wix 2021, SquareSpace 21/09/2021) so are not appropriate for this use case such as Square Space and Wix. The 2 leading systems based on market share that allow self-hosting are WordPress and Joomla, however, there is another solution called Drupal that claim an 11% market share as of writing in the 10,000 most popular websites (BuiltWith 15/05/2022). Out of these I would suggest WordPress due to its vastly greater usage over the internet (BuiltWith 31/10/2021) which will make diagnosing issues much easier and faster as it is a lot more likely your issue has been encountered and resolved in the past. Another advantage that comes with heavily used open-source software is that it often has a strong development team behind it and receives security fixes quickly (apache@GitHub 29/10/2021).

#### CMS Theme

https://wordpress.com/theme/shoreditch

#### CMS Plugins

https://en-gb.wordpress.org/plugins/newsletter-optin-box/

### Installation and configuration of server software

#### Operating System

#### Web Server

#### Database

#### Server-Side Scripting Language

#### Content Management System

#### CMS Theme

#### CMS Plugins

### Implementation of the prototype website

#### Planning (19/05/2022)

#### Implementation

### Testing

#### Testing Plan

#### Testing Data

### Retrospective

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