Task 1: Research & Design Document

Glossary and Terms

Web Hosting: An online service that makes your website content accessible on the internet(Domantas G., 2025) [1].
Through Web hosting, MCAST can provide access to its web server and its resources so it can be accessed online.

Web Server: Web hosting is an online service that allows you to publish your website files on the internet(Rahul Awati, 2024) [2].
The MCAST website uses a web server to store and deliver its website files over the internet to users.

IP Address: IP address, also known as an Internet Protocol, is a sequence of numbers that are unique and assigned to every device that is connected to the Internet(What is an IP Address? (2024). Geeksforgeeks) [3].
The IP Address for the MCAST website is used as a unique identifier, which points to the Web Server.

Domain Name: Is the address of the site that you enter on your browser to reach the website you're looking for(Brian, 2025) [4].
The mcast.edu.mt domain is used as a user-friendly way to locate and access the website.

DNS: The Domain Name System (also known as DNS) maps the name of the website to its respective IP address(What is DNS? . cloudfare) [5].
In MCAST's case, when a user enters **mcast.edu.mt,** the DNS routes it to the corresponding IP Addresses.

HTTP/HTTPS: Hypertext Transfer Protocol (HTTP) and Hypertext Transfer Protocol Secure (HTTPS) are the primary protocols used specifically to send data between web browsers and websites(Difference Between HTTP and HTTPS? (2025). Geeksforgeeks) [6].
MCAST makes use of HTTPS to encrypt traffic going to its website, thus making the site secure.

SSL/TLS: The Secure Sockets Layer (SSL) and Transport Layer Security (TLS) are cryptographic protocols that allow for secure communication between the

browser and a website's server(What is SSL/TLS: An In-Depth Guide (2023). ssl support team) [7].

In the MCAST website, SSL and TLS are used to keep the website secure and authenticated.

Internet Services

The DNS was the first service identified during my investigation. This enables users to access websites using recognisable domain names (i.e., mcast.edu.mt) rather than numerical IP Addresses (i.e., 192.16.2.1), which helps facilitate navigation (What is DNS? . cloudfare.com)[5].

An improvement that should be implemented by MCAST is DNS caching, which reduces loading time on the website(geeksforgeeks, 2025)[9]. DNS can also help indicate Anomalies like irregular behaviours like spoofing, which may cause security threats to the MCAST website(Irfan Shakeel, 2016)[10].

Additionally, I found components which were being fetched from a Content Delivery Network (CDN). A CDN can consist of one or more servers that may be distributed worldwide to optimise the delivery of digital content (geeksforgeeks, 2025)**[8]**. The main function of a CDN is to secure, stabilize, and speed up the transfer of digital assets from websites such as images and videos to multiple users from around the world[8]. Such examples in the MCAST website include the images, assets, Google Fonts, and Google Maps.

CDN enhances user experience and administrative efficiency by reducing buffering time to improve user reliability, decrease downtime of the website during high traffic spikes. (James Andrew, 2024)**[11]**. Towards administrators, the CDN provides them with great stability during high traffic periods on the website. This prevents downtime and crashing of the MCAST website. (Lightyear Hosting, 2024)**[12]**.

Potentially, the MCAST website could make use of additional CDN servers for caching of specific images, fonts, and code. Caching allows the content of the website to be loaded faster and reduces strain on the actual main hosting server**[9]**.

References

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