In the network security module, we examined many points about cyber security in network systems and designs, focusing on network security vulnerabilities and approaches and applying the cyber kill chain model to a case study. We also discussed vulnerability assessment, breach Analysis and mitigation, logging forensics and future trends, and the great debate: the Future of the Internet.

* **Network security, vulnerabilities, approaches, and future Trends:**

Network security is essential for safeguarding data and systems from unauthorized access, cyberattacks, and threats. Understanding vulnerabilities and adopting practical approaches are critical to maintaining a secure network environment.

* **Advanced Persistent Threat (APTs): applying the Cyber Kill chain Model:**

Advanced persistent threats (APTs) are sophisticated, stealthy attacks typically orchestrated by skilled adversaries with specific targets in mind. The cyber kill chain model, a crucial tool in our arsenal, effectively breaks down the stages of an APT attack, from surveillance to exfiltration. This framework aids organizations in detecting, analyzing, and responding to such threats. Case studies applying this model provide insights into real-world APT incidents and how to counteract them.

* **Vulnerability Assessments:**

Vulnerability assessments play a pivotal role in network security. They involve identifying weaknesses and potential entry points in networks and systems. This process is instrumental in prioritizing security efforts by assessing risks and implementing necessary patches and updates to mitigate vulnerabilities.

* **Breach Analysis and Mitigation:**

Thorough analysis is crucial to understanding the nature and impact of a security breach. Breach analysis involves identifying the breach's source, determining what data or systems were compromised, and implementing mitigation strategies to prevent similar violations in the Future.

* **Logging forensics and Future trends:**

Effective logging and monitoring network activities provide valuable incident response and forensic analysis data. Detailed logs enable organizations to reconstruct events, identify intrusions, and strengthen security postures. Future trends in logging and forensics include advancements in real-time monitoring, threat intelligence integration, and automated response systems driven by machine learning.

* **The Great Debate: The Future of the Internet:**

The Future of the Internet is subject to ongoing debates and discussions encompassing various aspects, including privacy, regulation, governance, and technological advancements. Key considerations include the impact of emerging technologies on internet infrastructure, security, and user privacy. The debate involves government, industry, academia, and civil society stakeholders aiming to shape a secure, inclusive, and sustainable future Internet ecosystem.

In summary, network security requires a multifaceted approach involving proactive vulnerability assessments, practical breach analysis and mitigation, robust logging and forensic capabilities, and active engagement in shaping the Future of the Internet. Embracing evolving technologies and addressing complex challenges are essential for ensuring the security and resilience of networks in an increasingly interconnected world.

**Assignment Topic:**

In this module, I evaluated the Joomla website (https://pamperedpets.org.uk ). Joomla is a free and open-source content management system (CMS) written in PHP and backed by a MySQL database. It allows users to create, manage, and publish web content easily. Joomla features include user management, content organization, SEO capabilities, multilingual support, and a wide range of extensions for added functionality. Its user-friendly interface and strong community support make it a popular choice for building websites of various types and sizes. As we mentioned in the report, there is a versatile solution for content management systems (CMS), flexibility, robust content management, strong user management, and multilingual support. As well as the CMS methodology, such as requirement analysis and content modeling. The security challenges:

|  |  |
| --- | --- |
| Common Threats to Joomla Security | Security Recommendations |
| SQL injections  Cross-site scripting  Brute force attacks  Insecure file permissions  Malware  Unpatched vulnerabilities  Unverified third-party extensions  Weak passwords  Weak server configurations | Keep Joomla Updated  Use Secure Passwords  Implement 2-Factor Authentication  Use a Security Extension  Use Secure Hosting  Restrict File Permissions  Disable File Editing  Disable PHP File Upload  Install a Firewall  Enable HTTPS  Limit login attempts |

We also research GDPR and ISO 27001 and whether the defense has beaten both of them. The General Data Protection Regulation (GDPR) is a comprehensive data protection law that applies to organizations handling the personal data of individuals in the European Union (EU) and the European Economic Area (EEA). ISO 27001 is an international information security management system (ISMS) standard. It outlines requirements for organizations to establish, maintain, and improve their information security practices.

The GDPR is a data protection law applicable to organizations handling EU/EEA resident’s data, emphasizing privacy rights and compliance. ISO 27001 defines requirements for Information Security Management Systems (ISMS) to manage security risks effectively. Organizations can use ISO 27001 to establish an ISMS that aligns with GDPR requirements related to information security. ISO 27001 supports GDPR compliance by ensuring robust security practices and controls. I have lots of useful information for my work, and it can help me improve. As I am working on ISO 27001, I have gained lots of valuable information and learned new information. As well as the Joomla, it can help me in my home business.

2 greatest risks | Third party and cybersecurity risk. https://nordicitsecurity.com/two-risks-third-party-and-cybersecurity-risk/

Sohini, Author at Cyber Security Blog - Page 3 of 3. https://www.valencynetworks.com/blogs/author/sohini/page/3/