

CTF Leaderboard and Management Solution in 3-Tier Cloud Architecture

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Abstract: *Capture the Flag (CTF) competitions have gained immense popularity as a tool for learning and showcasing cybersecurity skills. These competitions often involve participants solving complex security challenges in areas such as cryptography, reverse engineering, web exploitation, and digital forensics. However, managing large-scale CTF events requires a robust infrastructure capable of handling vast amounts of participant data, ensuring fair and transparent scoring, and providing a seamless experience even during high-traffic periods. Scalability is essential to accommodate a growing number of participants, while reliability ensures that the platform remains functional and accessible under varying loads. Additionally, security is a critical consideration, especially given the nature of the challenges and the sensitive information involved. This paper explores a 3-tier cloud architecture approach to developing a comprehensive CTF leaderboard and management solution. The proposed system emphasizes scalability, reliability, and secure management of CTF activities, ensuring a smooth and fair experience for all users, regardless of the scale or duration of the event.*

Keywords: Amazon Web Service (AWS), Elastic Compute Cloud (EC2), Elastic Load Balancing, Amazon RDS, Amazon CloudFront CDN, Amazon ElastiCache Caching Service, Amazon Shield DDoS Protection