SYN Flood Attack Prevention using Particle Swarm Optimization in Cloud Computing Environment

Abstract

Security issues in Cloud Computing is growing as it continues to offer innovative business model and collaboration capabilities for organizations to boost productivity. There are numerous security issues for cloud computing as it encompasses many technologies including networks, virtualization, resource scheduling, load balancing, concurrency control and memory management. A Cloud infrastructure that comprises the vulnerability of Denial of Service (DoS) attacks denies legitimate users from accessing information or services. A DoS attack can be launched in the transport layer using the very old, but still effective, SYN Flood technique. In a SYN flood attack the attacker sends a flood of TCP SYN requests that gets the server busy without actually completing the three-way handshake procedure used in the setup of TCP sessions. This paper presents a Particle Swarm Optimization (PSO) based approach to enhance the defence mechanism of the system against such attacks. The theoretical analysis and simulations show that the proposed optimization model analyses the situation of under attack server and based on the intensity of the attack situation, it provides the best solution to the server. The server can tune itself dynamically to the optimized solution which increases its...
chance against SYN Flood attacks.

References


Index Terms

Computer Science  Distributed Systems

Keywords

SYN Flood Attack, DoS attacks, Cloud Computing, PSO Algorithm