



Ministry of Higher Education and Scientific Research

University of Babylon

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Information Networks Department

Study: (morning)



تصميم وتنفيذ الشبكة الافتراضية الخاصة لأمن بروتوكول الإنترنت: دراسة حالة في جامعة بابل

Design and Implementation of an IPsec Virtual Private Network: A Case Study at the University of Babylon

مشروع التخرج هو احد متطلبات الحصول على درجة البكالوريوس في تخصص شبكات المعلومات في تكنولوجيا المعلومات.

A Graduate Project Submitted to the Department of Information Networks of the College of Information Technology, University of Babylon, in Partial Fulfillment of the Requirements for the Bachelor's degree in Information Networks of Information Technology.

أسم الطالب الثلاثي واللقب

حوراء حسن مزهر الأنباري

بإشراف أ.د. الحارث عبد الكريم عبد الله

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ABSTRACT

Network connectivity is crucial in the educational sector to handle sensitive tasks and maintain the operational efficiency of the university. Security issues arise when employees access internal networks from unprotected external locations. To address this problem, a project was implemented to ensure secure interaction between the branches of the University of Babylon and was implemented specifically between the Presidency Branch and the College of Information Technology. An IPsec VPN tunnel was used, using Security Association (SA) creation, shared keys, ESP, SHA1 for authentication, and 3DES for encryption. Key exchange was also performed using IKE. Configuration results are tested and validated to ensure system security. This study describes the planning and implementation of an IPsec VPN tunnel connecting the presidential branch to university branches. The needs and difficulties in establishing reliable and secure communication between the two sites are described in the project. The design includes configuring IPsec protocols and security policies as well as selecting the appropriate hardware and software components. The VPN tunnel is deployed and tested during the implementation process to ensure its performance and operation. The results show that the Presidency branch and the other branch were able to successfully establish a secure communication channel, allowing secure data transfer and access to resources. Additionally, it has implemented remote access VPN To facilitate safe, remote access for university staff to the central library at the University of Babylon