Abstract

This dissertation addresses the current interoperability limitations of end-to-network protocols such as explicit congestion control protocols, with the present IP security extensions, the IPsec. The current stack layout, with the IPsec appearing immediately after the IP network layer restricts the use of such congestion control protocols since the necessary information to the middle nodes would appear inaccessible.

In this project, is made a discussion over design considerations and implementation details on altering IPsec in order to accommodate explicit congestion control protocols such as XCP, eXplicit Control Protocol, without loss of functionality, thereby allowing congestion control to be performed securely in environments characterized by an erosion of trust.

The proposed implementation in based on the Information Sciences Institute’s XPC release and in the open source and highly acclaimed operating system, the FreeBSD.