
Abstract

Mobile wireless networks are more vulnerable to cyber attack and more difficult to defend than conventional wired networks. The need to conserve resources in wireless networks encourages the use of multicast protocols for group communication, which introduces additional security concerns. In discussing security and survivability issues in mobile wireless networks, we focus here on group communication as applied to multimedia conferencing. We point out the need for rate-adaptation techniques to simultaneously support multiple receivers that each experience different network conditions. The security properties associated with a number of approaches to rate adaptation are compared. We also identify several security issues for reliable group communication, providing examples of denial-of-service attacks and describing appropriate security measures to guard against such attacks. We examine the costs of these security measures in terms of network capacity and computation. Finally, we introduce a survivability approach called dynamically deployed protocols, in which the effects of an information attack are mitigated by dynamically switching to a new protocol to evade the attack. We suggest that the dynamic protocol deployment can be achieved effectively by transmission of in-line mobile code.