Trust based Leader Selection Methodology for P-LeaSel: A Multicast Group Communication Model

Abstract

Multicast is an internetwork group communication service which reduces the transmission overheads. The data can be secured by encrypting it with a group key, shared among all group members [6]. Whenever members join/leave in a group communication, it is essential to preserve the forward and backward confidentiality by sending new keys for transmission. When members join/leave frequently, it gives rise to transmission overhead. Leasel is a multicast group communication model which addresses the problem of scalability due to the multicast transmission overheads. Being a de-centralized group model, a top ranking member of the sub-group is designated as a Leader and authorized to perform key generation and distribution. The identity as "Leader" is hidden to the sub group members. The P-Leasel model, instead of a single leader, identifies 'p' leaders and is alternated for every transaction. Any one leader from the 'p' leaders is authorized to perform key management. This study proposes a trust based leader selection methodology by analyzing trust in selecting Leaders for key generation and distribution. In addition to selecting Leaders based on the static trust computation, allowing the controllers to judge the trustworthiness of leaders dynamically, making better use of the received recommendations directly and indirectly. The simulation experiments show improvements in the security aspects which makes P-Leasel more secured multicast group communication model.
Trust based Leader Selection Methodology for P-LeaSel: A Multicast Group Communication Model

References

Index Terms

Computer Science

Communications

Keywords

LeaSel  P-LeaSel  Trust  Group Communication  Multicast Security.