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A Hybrid Model for Secure Protocol Independent Multicast Sparse Mode and Dense Mode Protocols in a Group Network

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Abstract : Group communications over public infrastructure are prone to a lot of security issues. Existing network protocols like Protocol Independent Multicast Sparse Mode (PIM SM) and Protocol Independent Multicast Dense Mode (PIM DM) do not have inbuilt security features. Therefore, any user or node can easily access the group communication as long as the user can send join message to the source nodes, the source node then adds the user to the network group. In this research, a hybrid method of salting and hashing to encrypt information in the source and stub node was designed, and when stub nodes need to connect, they must have the appropriate key to join the group network. Object oriented analysis design (OOAD) was the methodology used, and the result shows that no extra controlled bandwidth overhead cost was added by encrypting and the hybrid model was more securing than the existing PIM SM, PIM DM and Zhang secure PIM SM.

Keywords : group communications, multicast, PIM SM, PIM DM, encryption
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