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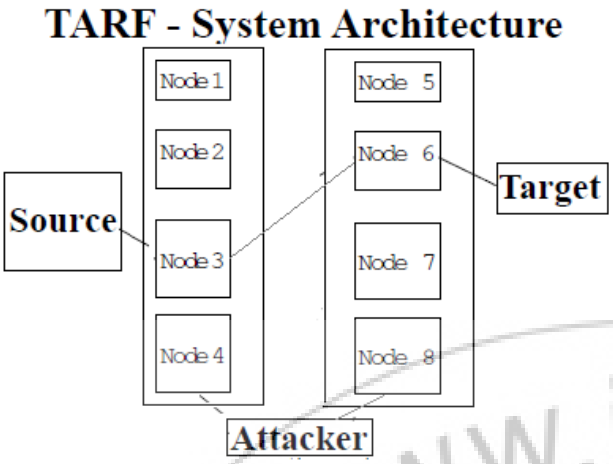

4. Formulas for selecting the next node from each level to send the data from source to Destination

1. **To calculate the trust percentage of each Node:**

For all **Nodes in Level1** do:
Trust_Percentage = Ack_received / Total_packet_sent

Forall**Nodes in Level2** do:
Trust_Percentage = Ack_received / Total_packet_sent

2. **To calculate Energy Percantage of each node:**

Forall**Nodes in Level1** do:
Energy_Percentage = 100 - Energy_Cost

Forall**Nodes in Level2** do:
Energy_Percentage = 100 - Energy_Cost

3. **To calculate Node Weight of each Node:**

Forall**Nodes in Level1** do:
Node_Weight = Trust_Percentage + Energy_Percentage

Forall**Nodes in Level2** do
Node_Weight = Trust_Percentage + Energy_Percentage

4. **Select the Node to transfer the data:**

Level1_Node = (Greatest_Node_Weight(Fromall **Nodes in Level1**)) && (Status = Active)

Level2_Node = (Greatest_Node_Weight(Fromall **Nodes in Level2**)) && (Status = Active)

Algorithm for TARP:
Step 1. Get all nodes in the Network.
Step 2. Group them into layers.
Step 3. Calculate the Node Weight of each node in all the Layers using formula.
For all **Nodes** in **Level1** do **Node Weight = Trust Percentage + Energy Percentage.**
Forall**Nodes** in **Level2** do
Node_Weight = Trust_Percentage + Energy_Percentage.
Step 3. Select one node from each as "next hop".
Level1_Node = (Greatest_Node_Weight(Fromall Nodes in Level1)) && (Status = Active)
Level2_Node = (Greatest_Node_Weight(Fromall Nodes in Level2)) && (Status = Active)
Step 4. Send the data from Source to Destination through Level1_Node and Level2_Node.

Snapshots

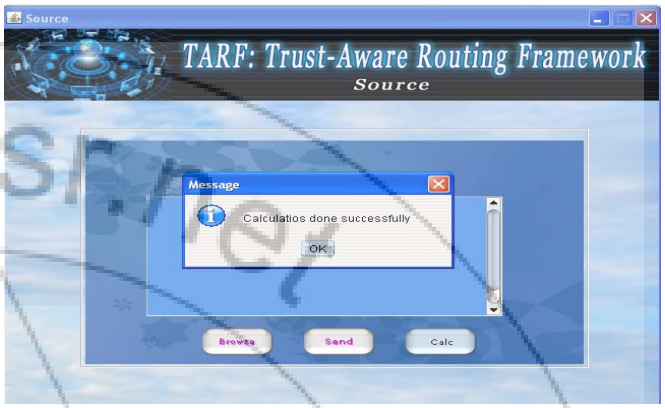

Figure : source node. When we click calc button trust and energy percent of all the nodes of level1 router will be calculated in the database.

Conclusion

We have designed and implemented TARF, a robust trust-aware routing framework for WSNs, to secure multi-hop routing in dynamic WSNs against harmful attackers exploiting the replay of routing information.TARF focuses on trustworthiness and energy efficiency, which are vital to the survival of a WSN in a hostile environment. With the idea of trust management, TARF enables a node to keep track of the trustworthiness of its neighbors and thus to select a reliable route.

Our main contributions are listed as follows. (1) Unlike previous efforts at secure routing for WSNs, TARF effectively protects WSNs from severe attacks through replaying routing information; it requires neither tight time synchronization nor known geographic information.

Researcher'sfuture work is to further evaluate TARF withlarge-scale WSNs deployed in wild environments and to study how to choose parameters involved for specific applications. They believe that the idea of TARF can also be applied to general ad hoc networks and peer-to-peer networks to fight against similar attacks.

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