General Approaches for Sybil Attack detection and prevention

1.) Central Authority

The detection and prevention of Sybil Attacks can be classified as Centralized and Decentralized.

For centralized, it uses a Central Authority, such as Certificate Authority (CA) for issuing

certificates to validate the entity. Each entity is uniquely identified by its unique digital signature

assigned to them by the certifying authority. Authentication is usually provided by asymmetric key

cryptography. However, this approach has larger overheads when applied to the large scale system

also it is not cost efficient.

2.) Received Signal Strength Indication (RSSI) based scheme

This scheme is based on the received signal strength of messages. The cooperation of

communication message and additional node makes this scheme successful but unreliable. In this

strategy, detector node is used to receive RSSI value and its identity from each node. The scheme

will sometimes generate false positive alarm making it unreliable.

3.) Resources Testing

The aim of resources testing is to determine if the number of identities possess fewer resources

than would be expected if they where independent. In this strategy, a verifier calculates the

resources, including energy, storage, capacity of the identities. If the node with the larger resources

than a starved node is found, it is considered as an attacker node. The verifier messages may flood

the network which makes this scheme unsuccessful. There is another 'radio resources testing'

scheme, where each node has one radio which can transmit and receive radio only at one channel.

4.) Incentive based scheme

Incentive based scheme is based on reward scheme where economic incentives are used and

with the wide range of application area. This protocol offers a reward to the adversaries if the

identities which are controlled by it are revealed. The target peer name is stated by an identity when

payment in exchange is received by it.

The above are some of the measures for detect and prevent the Sybil attacks. However, it should be allied with Qigong's design.