Largely Scalable Wireless Network Formation Architectures for Internet of Things

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***Abstract*—As number of mobile devices increases with Internet of Things (IoT) capability and power consumption is important in multi hop communication, there is need of considering network formation architectures inIoT networks.In this work power levels of nodes, urgency of messages to be transmitted are not taken into consideration, a general approach considered with all nodes with same power levels and no priority for messages to be sent.Another assumption is all nodes are on the same 2D plane. Multi hop wireless network architectures studied and scalable, best performing architecture which is hypercubic network architecture is highlighted for IoT networks. Especially for large number of nodes needs to be considered hypercubic architecture performs much better than mesh, tree and ring kind of architectures in terms of dilation and number of connections. The simulation results are based on a simulator developed on C++ program. The results are showed that Hypercubic architecture with logarithmic dilation is much better than other network types. Cube Connected Cycles (CCC)based network architecture (which is derivative of Hypercube) can be preferred, especially when a constant degree is needed, in communication technologies such as Bluetooth. As a future work, a network architecture study can be made which takes energy levels and urgency of messages to be sent.**

***IndexTerms*—Internet, wireless, network, architectures, hypercube.**

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