

**CONNECTIVITY ANALYSIS IN WIRELESS NETWORKS
WITH
CORRELATED MOBILITY AND CLUSTER SCALABILITY**

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ABSTRACT

- Since it was found that real mobility processes exhibit significant degree of correlation (correlated mobility) and nodes are often heterogeneously distributed in clustered networks (cluster scalability), there has been a great interest in studying their impact on network performance, such as throughput and delay.
- However, limited works have been done to investigate their impact jointly, which may due to the challenges in capturing both features under a unified network model. In this paper, we focus on their impact on asymptotic connectivity and propose correlated mobile k-hop clustered network model. Two connectivity metrics are considered. One is network connectivity with probability (w.p.).



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- The other is connectivity almost surely (a.s.), which requires a stronger condition than connectivity with probability. With mobility correlation and cluster scalability vary, we show that there are three distinct states for network connectivity, i.e., cluster-sparse, cluster-dense state, and clusterinferior dense state, respectively. We first prove the exact value of the critical transmission range for each state, respectively, and then further generalize the three states into a unified one, which we call it cluster mixed state.
- The critical transmission range for connectivity almost surely is $\sqrt{2}$ times the range for connectivity with probability. Our main contribution lies in how to group correlated nodes into independent ones in various settings, and reveals the interrelated relationship between correlated mobility and cluster scalability through state transitions.

EXISTING SYSTEM

- Most of the existing studies consider these three strategies in non-clustered (flat) networks. On the other hand, according to whether the nodes can move or not, previous works can also be generally classified into two categories.
- Stationary flat networks: In such networks, all nodes are randomly and independently distributed in a region and keep stationary.
- Mobile flat networks: Mobility has been found to increase the connectivity in ad hoc networks. In mobile networks, nodes can reach others during their movement.

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PROPOSED SYSTEM

- Number-of-neighbor-based strategy: In this strategy, for a graph and any two nodes, nearest neighbors are needed to achieve full connectivity in a multi-hop fashion in the networks with n randomly and independently distributed nodes.

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HARDWARE REQUIREMENTS

- Processor - Pentium-IV
- Speed - 1.1 Ghz
- RAM - 256MB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

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SOFTWARE REQUIREMENTS

- Tool - Network Simulator-2
- Operating system - LINUX
- Front end - OTCL (Object Oriented Tool Command Language)

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