IEEE 802.11
Wireless Access Methods and Physical Layer Specifications

Title: Theoretical Analysis of Group Randomly Addressed Polling

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Abstract

The exact theoretical analysis of GRAP has been presented in this paper. The results as simulations show advantages in throughput and delay performance of GRAP, especially in multicell coverage.

Introduction

GRAP (group randomly addressed polling) has been proposed [1] to the IEEE 802.11 for the consideration of MAC. We adopt a Markovian analysis to study the exact behavior of GRAP in single and multicell coverage. We assume a circular overlapping of token passing ring infrastructure to analyze the performance of GRAP in multicell. We consider a L=2, p=5 case while the detailed analysis can be found in [2]. We demonstrate the results as follows.

References

[1] K.C. Chen, "GRAP - A Proposed MAC Protocol for Wireless LANs", IEEE P802.11/92-131.

[2] K.C. Chen, C.H. Lee, "Group Randomly Addressed Polling For Wireless Data Networks", submitted for publications.
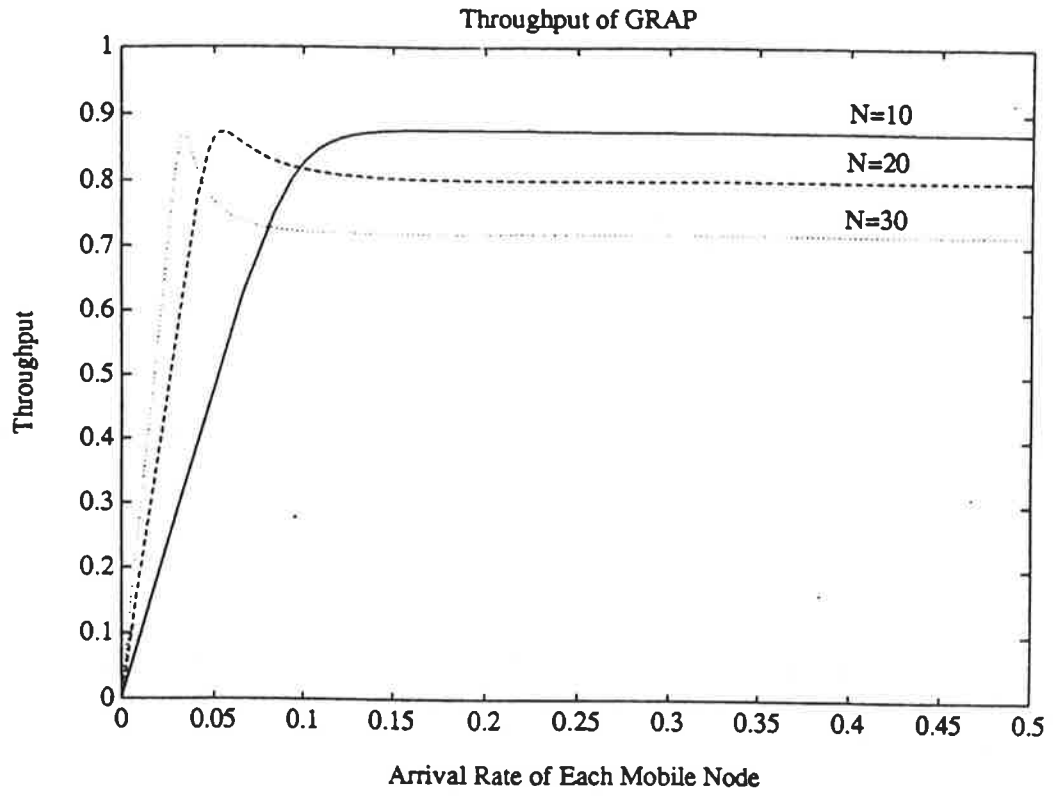
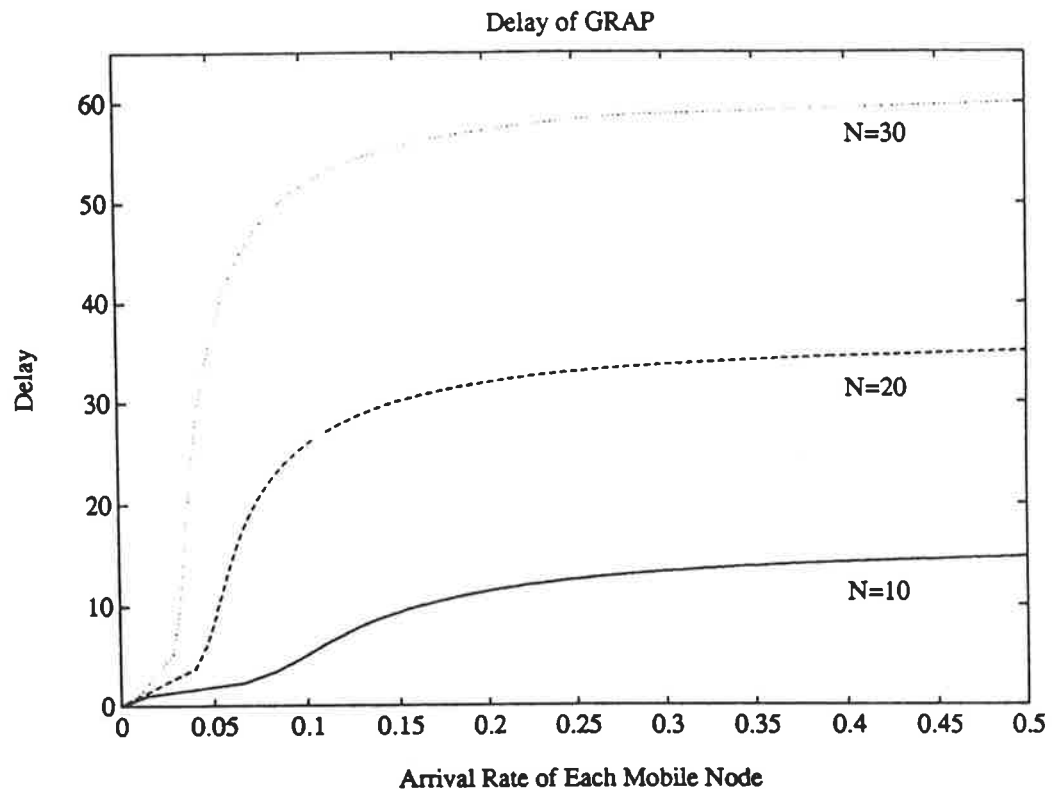Figure   The throughput of GRAP with various numbers of user

Figure   The delay of GRAP with various numbers of user

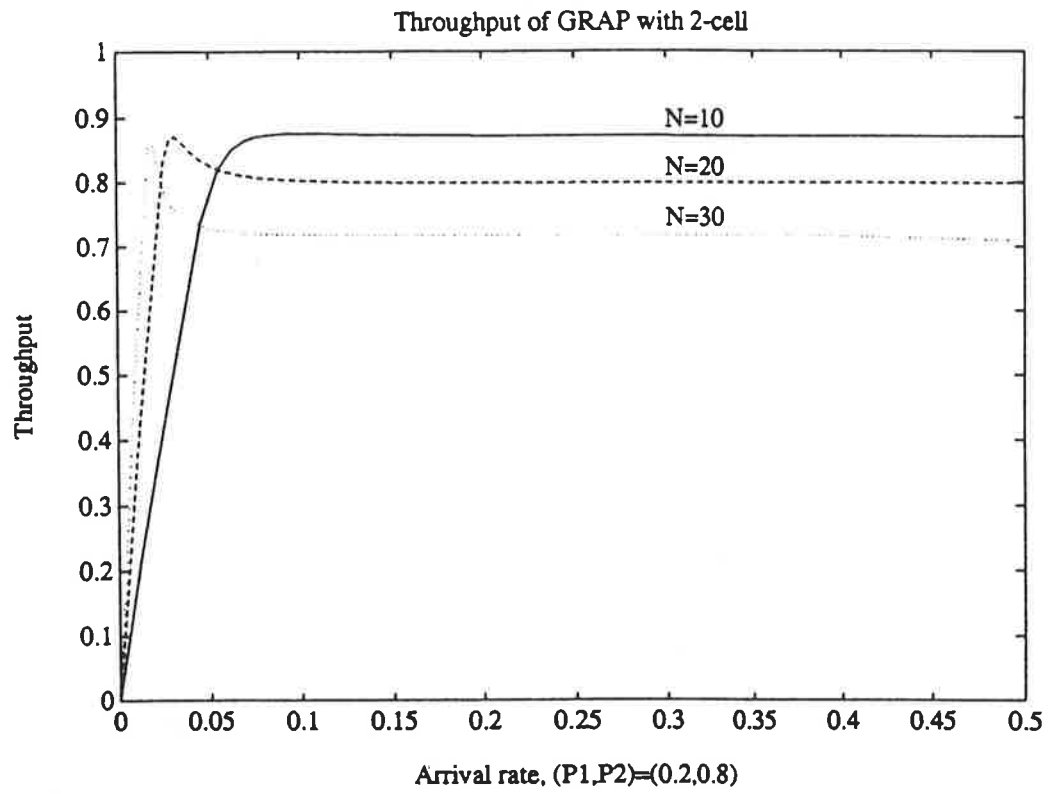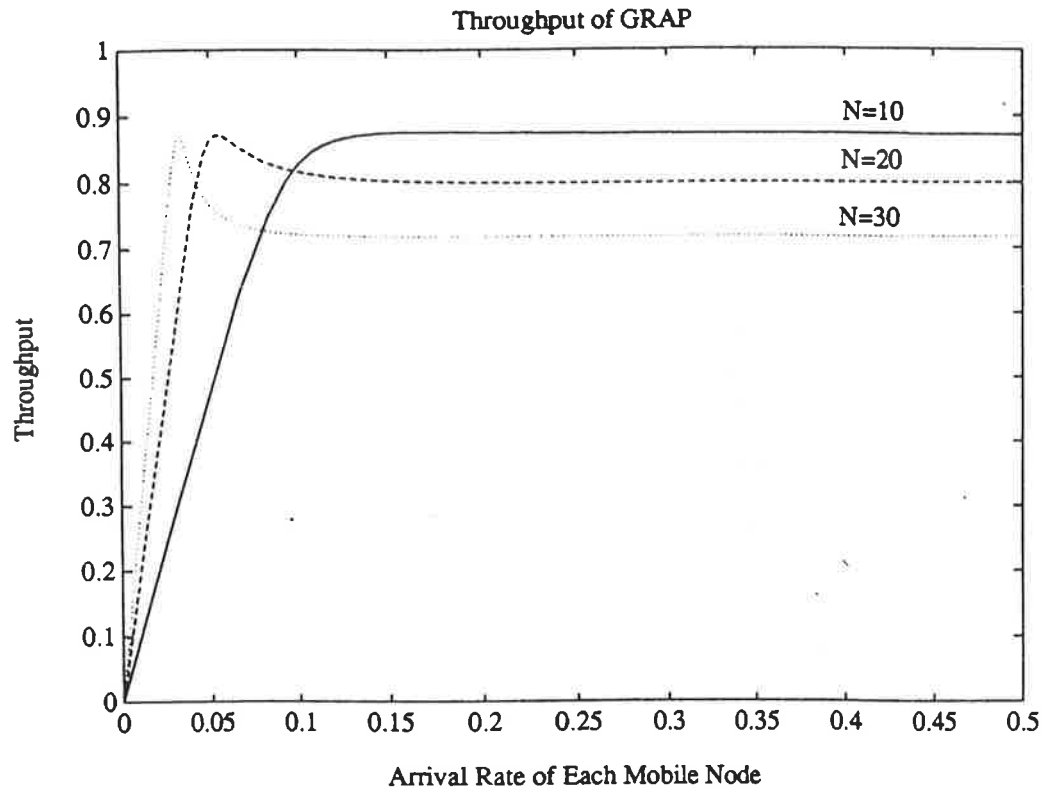Throughput of GRAP with 2-cell

Figure   Throughput with various numbers of users as M=2

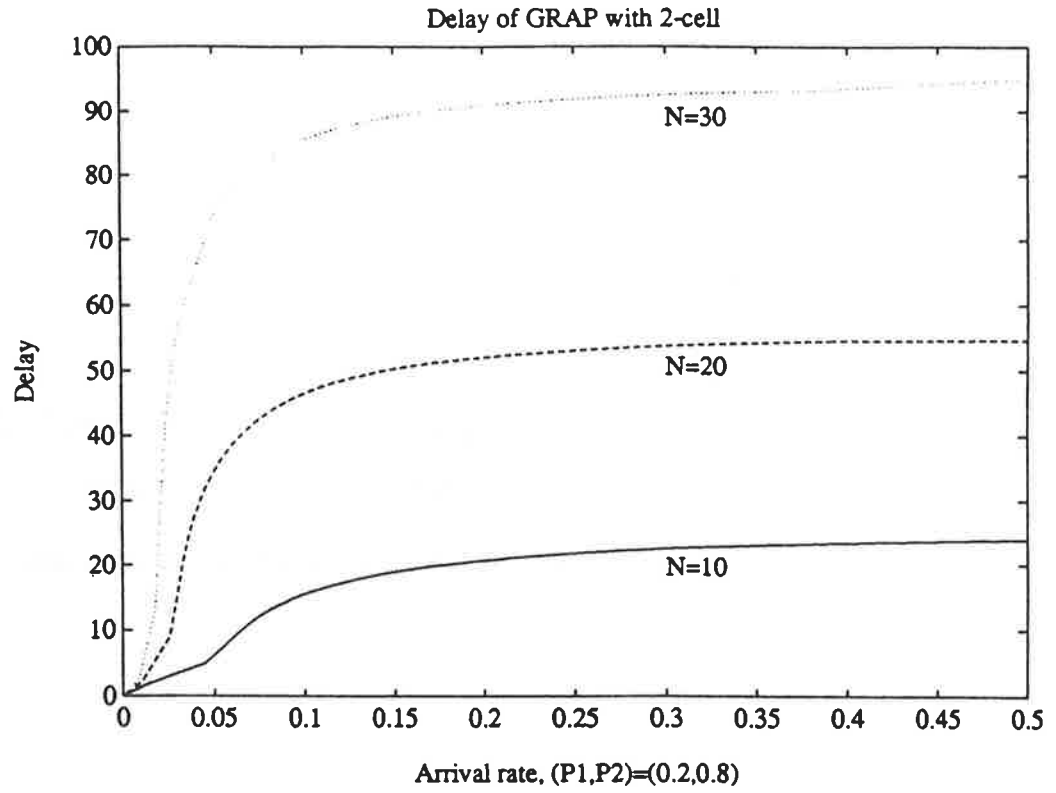Figure   The throughput of GRAP with various numbers of user

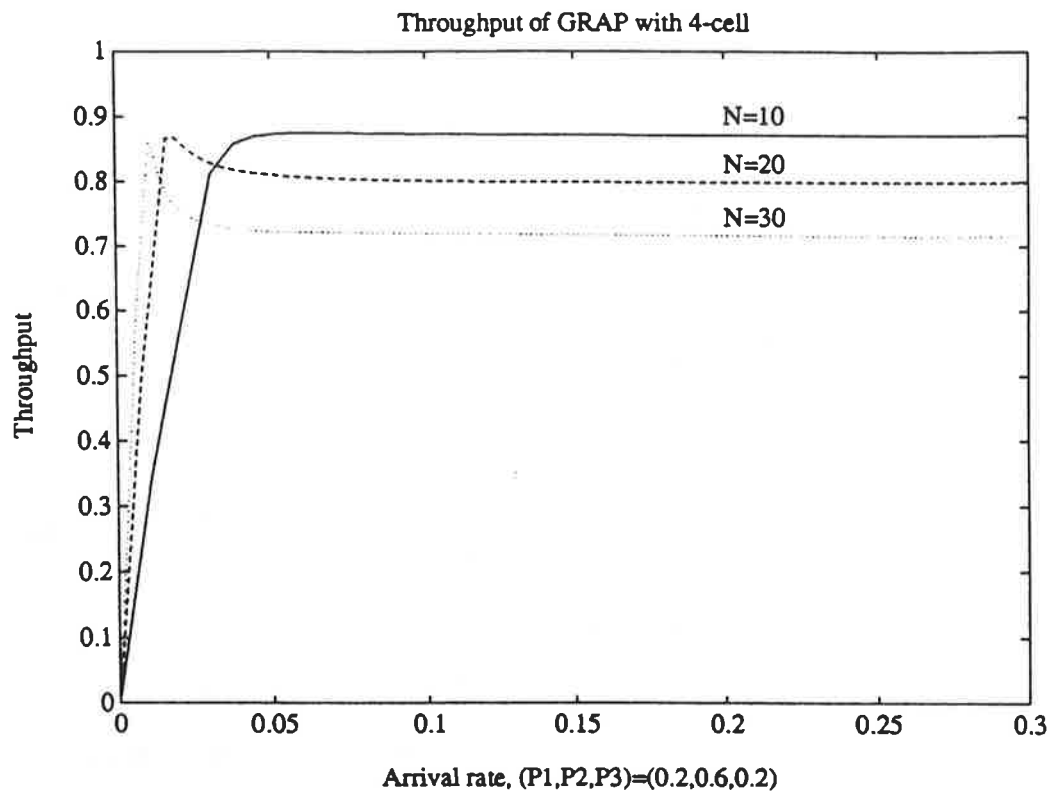Figure   Delay with various numbers of users as M=2

Throughput of GRAP with 4-cell

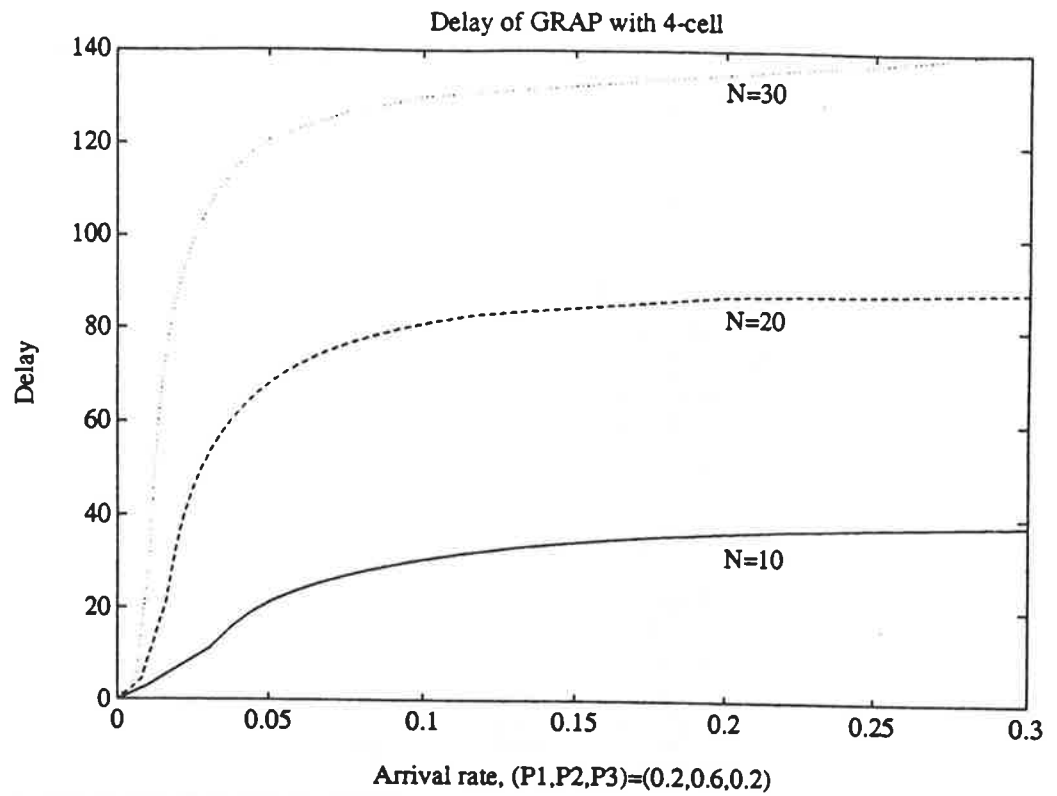Figure   Throughput with various numbers of users as M=4

Delay of GRAP with 4-cell

Figure   Delay with various numbers of users as M=4