the worst-case number of channels required to accommodate all possible configurations of N calls in a cell cluster, and the set of cell states that can be accommodated with M channels. We first measure two extreme policies, fixed channel allocation and maximum packing, under these metrics. We then prove a new lower bound, under the first metric, on any channel assignment policy. Next, we introduce three intermediate channel assignment policies, based on commonly used ideas of channel ordering, hybrid assignment, and partitioning. Finally, these policies are used to demonstrate the tradeoff between the performance and the complexity of a channel allocation policy.

Optimal Transmission Ranges for Mobile Communication in Linear Multihop Packet Radio Networks
R. Mathar and J. Mattfeldt
ACM/URSI/Baltzer Wireless Networks, Vol. 2, No. 4

The analysis of multihop radio transmission for randomly distributed terminals in the plane has drawn a lot of attention in the literature. Several routing strategies have been investigated concerning throughput and normalized expected progress. Because of mathematically intractable problems all analyses use simulation studies as part of the derivation. This paper presents a one-dimensional model to investigate the performance of multihop networks. This model seems to be more adequate for applications in road traffic information systems. Three routing strategies 'most forward with fixed transmission range', 'positively most forward with fixed transmission range', and 'positively most forward with variable transmission range' are analyzed on the basis of a complete mathematical description. The effect of directional antennas is also considered. The results are presented in closed formulae which are evaluated numerically and depicted in corresponding diagrams. It turns out that adjusted transmission ranges enlarge network performance. Furthermore, some interesting differences to the usual two-dimensional random model occur.

Mobility Management in Integrated Wireless-ATM Networks
B. Rajagopalan
Mobile Networks and Applications, Vol. 1, No. 3

There is an emerging interest in integrating mobile wireless communication with Broadband ISDN based on the ATM technology. Many issues arise when such integration is attempted. This paper addresses the problem of mobility management, i.e., that of tracking the current ATM addresses of mobile terminals and sustaining active ATM connections as mobiles move. The paper presents some architectural options for integrating wireless access to ATM networks and highlights an architecture based on interworking devices to provide transparent mobility support in existing ATM networks. Location management and handoff solutions for this architecture are then presented. Also, how procedures for multiprotocol transport over ATM networks may be adopted to perform location management is described.

BOOK REVIEW

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Broadband Integrated Networks
Mischa Schwartz, Prentice Hall, 1996.

M. Schwartz's new book provides a prime introduction to the cell level behavior and modeling of ATM networks. The main fields discussed in the book are:

- Broadband Services and ATM
- Admission and Access Control in Broadband Networks
- ATM Switches
- End-to-End Traffic Bounds and Effective Capacity
- Feedback Congestion Control in Broadband Networks

The book greatly helps the newcomer in understanding the cell level behavior of ATM networks and shows the basics of modeling this behavior.

The preface says: "The author has, of course, demonstrated a certain personal bias in selecting models with which he is familiar, or which he has personally found interesting and useful." At this point it needs to be mentioned that although the book is claimed to provide a general quantitative introduction to ATM networking, its scope is limited to a fraction of it: the cell (packet) level modeling. At least two other important layers of quantitative description are not addressed:

- Call level teletraffic modeling (e.g. call blocking probabilities in B-ISDN)
- Network level logical infrastructure (e.g. the system of virtual paths).

The book is easy to read, and I would classify its style as "discussive". This is the style, quite typical in the network performance literature, which does not formally separate the statement from the reasoning, that is, there are no formal theorems with precisely stated conditions, they develop together with the proofs in a continuous flux of text. The opinions are divided on this style issue: some people find the discussive style easier to read, especially if it is for introductory purposes. Others, typically the more mathematically oriented, prefer if the results are structured into theorems, making it easier to quickly find what is really claimed and under what conditions, while the proof can be skipped for the first reading. It is a matter of personal preference.

A particularly interesting part of the book is the chapter on end-to-end QoS bounds, that overviews both deterministic and stochastic bounds. To the reviewer's knowledge, these results have not been collected in this way anywhere else in the literature.

In summary, Mischa Schwartz's book is a good introduction to understanding and modeling the cell level behavior of ATM networks.