

Network Analysis, Architecture, and Design

SECOND EDITION

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BeamReach Networks



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Foreword

In the 5 years since Jim McCabe published the first edition of this work, we witnessed a pace of growth in Internet communications and network deployment that somehow managed to outpace *all* the growth of the prior two decades. The epicenter of this growth is, of course, the Internet. But like many good things, “too much, too quickly” can prove to be a bad thing.

One only needs to consider recent Internet history to appreciate why. Connecting to the Internet became such a business imperative and came about so quickly that society embraced a new time measure, Internet time. Although there’s nothing inherently bad about this per se, building *networks* in Internet time forced many organizations to deploy in haste and reaction mode. The result? Rather than networks designed to perform optimally, scale effectively, operate securely, and offer “five nines” availability, we have too many ad hoc networks, each lacking the characteristics of a well-conceived entity that can serve globally as a critical infrastructure.

Other factors contributed to the somewhat sorry state in which we find the Internet infrastructure mired. Recent technology advances—first switched then optical networking, broadband wireless communications, storage networking, and more—introduced as much chaos as innovation. Factor in the migration of private network backbones to virtual networks over a public Internet, the “always connected” *mandate* for today’s mobile workforce, and application paradigms with decidedly different quality-of-service metrics than those for which “best-effort delivery” networks were originally intended to support, and it’s no wonder we are where we are today.

How appropriate that someone like Jim McCabe, who’s experienced and contributed so much to the transformation of the Internet—from its research and military origins to its current status as a global, multiservices infrastructure—is sharing his collected wisdom, experience, and expertise to help us take measure and apply the sound principles of network analysis, architecture, and design to Internet working today. And how timely.

We are at a unique and unexpected moment in Internet history. A desultory economy has slowed the pace of innovation, spending, and hence network deployment. Harried network administrators and planners are quietly breathing a collective

sigh of relief. The most astute of this bunch recognize that such reprieves come rarely in a network deployment life cycle. With the insight garnered from years of building complex, state-of-the-art Internets, Jim McCabe's *Network Analysis, Architecture, and Design* provides a timely, comprehensive methodology that will prove invaluable to anyone saddled with new network deployment, or reengineering of a network that grew "organically" and is now out of control.

My first edition is dog-eared, highlighted, and annotated to the point where certain pages are unreadable. The spine is broken as a result of stuffing altogether too many sheets of paper with notes and network designs I developed using Jim's methodology.

After my first read of the second edition, I have no expectation that this copy will look any better for wear 5 years hence.

—David M. Piscitello, Core Competence Inc.