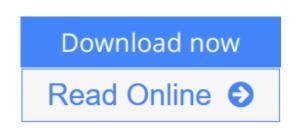


Optical Network Design and Planning (Optical Networks)

By Jane M. Simmons



Optical Network Design and Planning (Optical Networks) By Jane M. Simmons

This book takes a pragmatic approach to deploying state-of-the-art optical networking, while also covering recent research results. Algorithms and methodologies related to routing, regeneration, wavelength assignment, sub-rate traffic grooming, and protection are presented, with an emphasis on opticalbypass-enabled (or all-optical) networks. The second edition includes coverage of:

- Dynamic optical networking
- Multi-domain networks
- Flex-grid, gridless, and elastic optical networks
- New physical-layer technology (e.g., coherent detection) and its impact on network design
- ROADM architectures and features, including the colorless, directionless, contentionless and gridless properties
- Algorithms for cloud computing
- Software-Defined Networking
- Energy efficiency

Numerous case studies are presented using three reference networks (the topology files for the networks are provided on a web site, for further studies by the reader). Exercises and suggestions for further research have been added in the second edition, making the book suitable as the primary text for a graduate-level course.

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Editorial Review

Review

From the reviews: "This is ... nicely written tutorial book devoted to optical networking. ... I recommend it to specialists working in companies planning to switch to full optical networks.... Also, graduate students will benefit from using it... " (Piotr Cholda, ACM Computing Reviews, April, 2009)

Review

"This is my favorite book on optical network design and planning. It is written in an easy- to -follow approach that starts with basics such as optical network elements, routing, regeneration, wavelength assignment, grooming and ramps up to take on advanced and timely bundle of technology such as shared mesh protection, flexible optical network, and dynamic optical network with emphasis on software – defined networking." (Mazen Khaddam, Principal Lead Strategic Network Scientist & Architect, Cox Communications)

From the Back Cover

This book takes a pragmatic approach to designing state-of-the-art optical networks for backbone, regional, and metro-core networks. Algorithms and methodologies related to routing, regeneration, wavelength assignment, subrate-traffic grooming, and protection are presented, with an emphasis on optical-bypassenabled (or all-optical) networks. There are numerous case studies throughout the text to illustrate the concepts, using realistic networks and traffic sets. A full chapter of economic studies offers guidelines as to when and how optical-bypass technology should be deployed. There is also extensive coverage of recent research to provide insight into how optical networks are likely to evolve.

The second edition includes new chapters on dynamic optical networking and flexible/elastic optical networks. There is expanded coverage of new physical-layer technology and its impact on network design, along with enhanced coverage of ROADM architectures, including the colorless, directionless, contentionless, and gridless properties. It covers other hot topics such as software defined networking, energy efficiency, and multi-domain networks, as well as new architectural paradigms and algorithmic techniques. Numerous exercises have been added to probe the concepts in more detail and inspire directions for future research.

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