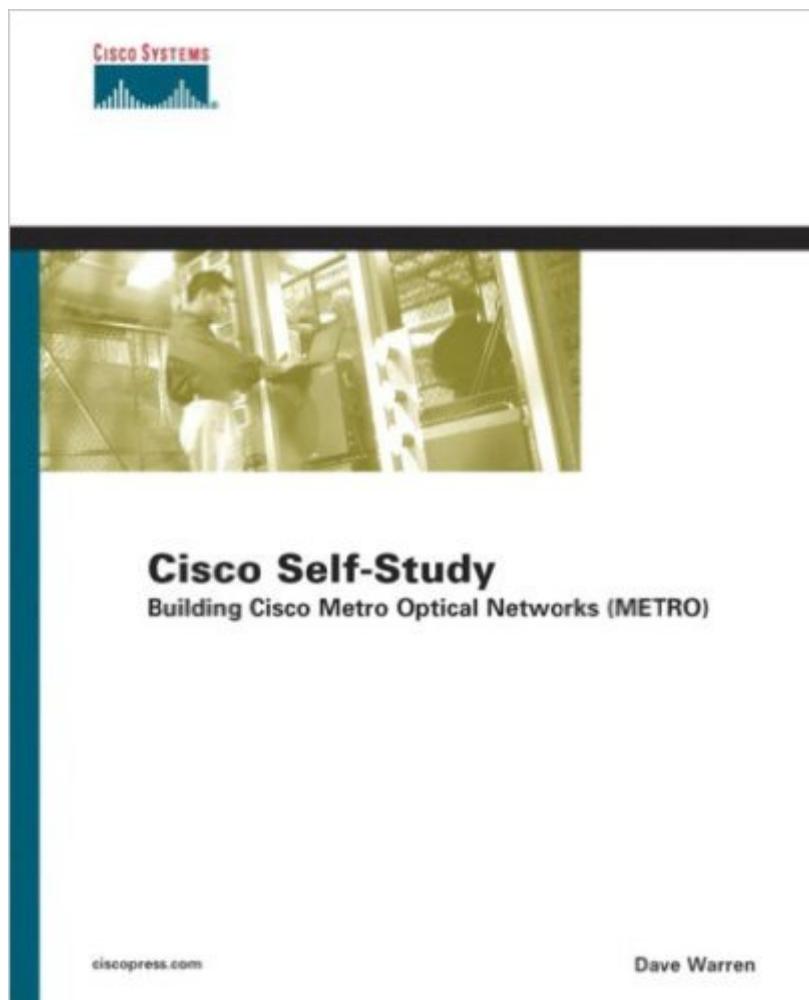


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# Cisco Self-Study: Building Cisco Metro Optical Networks (METRO)



## Synopsis

Plan, design, and configure high-speed fiber-optic networks Coverage includes: Configuring ONS 15454 and ONS 15327 platforms Architecture for building Metropolitan Ethernet Transparent LAN Services (TLS) Packet over SONET (PoS) network design, configuration, and verification Inner workings of dense wavelength division multiplexing (DWDM), including operability with the ONS 15216 product family Principles of Dynamic Packet Transport (DPT) SONET background, including structures, components, and network design Bonus case studies, which challenge you to select equipment and design a metro optical network Fiber-optic networking has several significant advantages over traditional wired and wireless networks: optical signals can travel much farther than electrical signals, are more secure, are resistant to electromagnetic interference, and have the potential to provide bandwidth in the terabits per second range (1000 Gbps). Service providers must satisfy the always-increasing networking demands of customers while keeping costs to a minimum. Optical networks must meet the challenge of supporting multiple types of transmissions including voice, video, and data traffic. Although time-division multiplexing (TDM) has provided a growth path for services, it is more constrained than IP + Optical strategies like the Cisco Dynamic Packet Transport (Resilient Packet Ring). The Cisco Systems® end-to-end IP + Optical networking strategy provides an intelligent converged network in which optical infrastructures can be used to their fullest potential. While most reference books focus on the theory involved in SONET and optical infrastructures, Cisco Self-Study: Building Cisco Metro Optical Networks (METRO) focuses on the practical application of planning and configuring optical networks that involve SONET, DWDM, Metropolitan Ethernet, Packet over SONET, and Dynamic Packet Transport (Resilient Packet Ring). Cisco Self-Study: Building Cisco Metro Optical Networks (METRO) is part of a recommended learning path from Cisco Systems that can include simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit [www.cisco.com/go/authorizedtraining](http://www.cisco.com/go/authorizedtraining). This volume is in the Certification Self-Study Series offered by Cisco Press. Books in this series provide officially developed training solutions to help networking professionals understand technology implementations and prepare for the Cisco Career Certifications examinations.

158705070607312003

## Book Information

Hardcover: 528 pages

Publisher: Cisco Press (September 5, 2003)

Language: English

ISBN-10: 1587050706

ISBN-13: 978-1587050701

Product Dimensions: 7.7 x 1.4 x 9.5 inches

Shipping Weight: 2.4 pounds

Average Customer Review: 4.8 out of 5 stars [See all reviews](#) (4 customer reviews)

Best Sellers Rank: #2,142,513 in Books (See Top 100 in Books) #22 in Books > Computers & Technology > Networking & Cloud Computing > Networks, Protocols & APIs > WAN #100 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Fiber Optics #894 in Books > Science & Math > Physics > Optics

## **Customer Reviews**

I recently read the book titled "Cisco Self-Study: Building Cisco Metro Optical Networks (METRO)" by Dave Warren and Dennis Hartmann. ISBN: 1587050706. This book has some pretty good information on the topic of Metro Optical Networks. The key word in this title is 'optical'. I think this book is very well organized to help the reader understand foundational concepts of Metro Area Optical Networking as well as grasping the application of the different technologies. The book accomplishes this by first laying down the foundation of a given topic then presenting a practical application of the technology. The application of the technology is geared more for Cisco Equipment, but nonetheless gives the reader a whole view on the topic. The first three chapters offer superb information on the foundational information regarding the applications that Metro Area Network supports. Being an enterprise type person I was able to grasp the concepts of Metro Optical rather easily. There are review questions at the end of each chapter that really helps to re-enforce the content of the chapter. It also helps to identify whether a particular concept was understood correctly and in the right context. This book is best suited for Service Provider design and implementation Engineers, but enterprise engineers will find this book equally intriguing, because of how it unlocks the mysteries of Metro Area Optical Networking. Consultant in the Metro Area Networking space will find this book to be worth its weight in gold. Not many folks take the time to understand the often-complex world of MAN and what Service Providers are offering, beyond the marketing pitch. One thing that would have been useful in this book would have been a glossary of terms.

"Cisco Self-Study: Building Cisco Metro Optical Networks (METRO)" by Dave Warren and Dennis Hartmann, ISBN: 1587050706, is an excellent Metro Optical book. This book covers all of the pertinent information on the topic of Metro Optical Networks. I felt this book was well organized to help the reader understand foundational concepts of Metro Area Optical Networking as well as grasping the application of the different technologies. Each section has a solid foundation, followed by detailed implementation examples. The first three chapters offer excellent information on the core information regarding the applications that a Metro Area Network supports. Chapters 8-12 cover the various technologies used in the Metro space. The review questions after each chapter really help to re-enforce the content of the chapter. The chapter on SONET is an outstanding overview of the topic, with just enough detail to be a good desktop reference. The authors did a good job of keeping subjects like framing overhead informational, without becoming boring. It does a good job explaining the section, line, and path layers without putting you to sleep. The differences between 1+1 and 1:1 protection are explained quite clearly, and this carries over to helping the reader in understanding UPSR and BLSR. Every major SONET topic is arranged to build the topics from the line up in a clear and concise way. This chapter is an invaluable resource. This book covers basic setup and configuration on the Cisco ONS 15454 and 15327 devices, as well as hardware installation for the equipment. There are screenshots of the Cisco Transport Controller application used to manage these devices. However, the pictures are somewhat grainy and hard to understand.

The book "Cisco Self-Study: Building Cisco Metro Optical Networks (METRO)" by Dave Warren and Dennis Hartmann is worth every penny of the price tag. A recent job change requires me to grasp an in-depth understanding of optical networking fast. I was looking for a book with a good overview of SONET and practical knowledge on the Cisco ONS boxes. In reading this book, I got much more than what I bargained for. The chapter on SONET alone was worth the bucks. It does a good job explaining the section, line, and path layers without giving you a headache. The breakdown on framing overheads gives you a good start when you need to troubleshoot an issue. The difference between 1+1 and 1:1 protection were often misunderstood, after reading the section the difference should be really clear. Which also helps in understanding UPSR and BLSR. The different types of alarms and the line of alarm indication signal (AIS) is now my desktop reference whenever there is a problem. In fact, I used it the other day to quickly identify an issue and took action accordingly. The overview and configuration of the ONS 15454 and 15327 product chapters provide a good start when you need to work with those products. I do find the need to read the manuals on Cisco's web site when I was actually trying to implement them on the field. Every network is different and the

optical product line is pretty extensive, no one book can cover it all. The screen shots were based on an older version of CTC, but the general layout is the same and you can still get a good feeling of the configuration steps. I do wish the book covers more ground on Metro Ethernet and DWDM. The chapters briefly explain the concepts behind the two technologies and basic configurations.

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