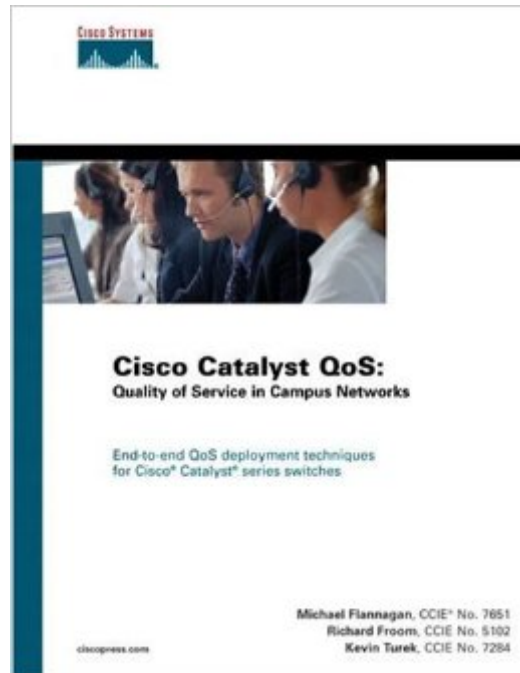


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# Cisco Catalyst(R) QoS: Quality Of Service In Campus Networks



## Synopsis

End-to-end QoS deployment techniques for Cisco Catalyst series switches Examine various QoS components, including congestion management, congestion avoidance, shaping, policing/admission control, signaling, link efficiency mechanisms, and classification and marking Map specified class of service (CoS) values to various queues and maintain CoS values through the use of 802.1q tagging on the Cisco Catalyst 2900XL, 3500XL and Catalyst 4000 and 2948G/2980G CatOS Family of Switches Learn about classification and rewrite capabilities and queue scheduling on the Cisco Catalyst 5000 Implement ACLs, ACPs, ACEs, and low-latency queuing on the Cisco Catalyst 2950 and 3550 Family of Switches Understand classification, policying, and scheduling capabilities of the Catalyst 4000 and 4500 IOS Family of Switches Configure QoS in both Hybrid and Native mode on the Catalyst 6500 Family of Switches Utilize Layer 3 QoS to classify varying levels of service with the Catalyst 6500 MSFC and Flexwan Understand how to apply QoS in campus network designs by examining end-to-end case studies Quality of service (QoS) is the set of techniques designed to manage network resources. QoS refers to the capability of a network to provide better service to selected network traffic over various LAN and WAN technologies. The primary goal of QoS is to provide flow priority, including dedicated bandwidth, controlled jitter and latency (required by some interactive and delay-sensitive traffic), and improved loss characteristics. While QoS has become an essential technology for those organizations rolling out a new generation of network applications such as real-time voice communications and high-quality video delivery, most of the literature available on this foundation technology for current and future business applications focuses on IP QoS. Equally important is the application of QoS in the campus LAN environment, which is primarily responsible for delivering traffic to the desktop. Cisco Catalyst QoS is the first book to concentrate exclusively on the application of QoS in the campus environment. This practical guide provides you with insight into the operation of QoS on the most popular and widely deployed LAN devices: the Cisco Catalyst family of switches. Leveraging the authors' extensive expertise at Cisco in the support of Cisco Catalyst switches and QoS deployment, the book presents QoS from the campus LAN perspective. It explains why QoS is essential in this environment in order to achieve a more deterministic behavior for traffic when implementing voice, video, or other delay-sensitive applications. Through architectural overviews, configuration examples, real-world deployment case studies, and summaries of common pitfalls, you will understand how QoS operates, the different components involved in making QoS possible, and how QoS can be implemented on the various Cisco Catalyst platforms to enable truly successful end-to-end QoS applications. This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals

valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

## Book Information

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## Customer Reviews

Vital Statistics: I am reviewing Cisco Catalyst QOS: Quality of Service in Campus Networks (ISBN: 1-58705-120-6). The book is 400 pages in length and is divided into 2 sections, Fundamental QOS Concepts and Advanced QOS Concepts. It includes coverage of QOS functionality on 2900, 3500, 4000 & 6500 series Cisco Catalyst Switches. The book states that it is intended for network engineers who work with Catalysts and seek a deeper understanding of QOS. Add CCNP level switch understanding to that list, at the very least. The book's authors are Mike Flannagan, Richard Froom, and Kevin Turek, all CCIE-level engineers who work directly for Cisco in Research Triangle Park. Notice the presence of "authors", "engineers" and "research" in one sentence... a fearful combination to say the least. Buckle up, kids, it's gonna be a bumpy ride.

My Reading Experience: I set out to read this book as an attempt to get an understanding of QOS for my CCIE studies. Oops, Rich didn't read the fine print. This book isn't really so much a book about QOS concepts in general as it is an implementation guide for utilizing QOS on a Catalyst network. Works out okay for me, though, because my company runs 4000 and 6500 series Catalysts and the information will prove quite useful as we roll out QOS. For my CCIE studies, however, I will still need to pick up a book that is somewhat more general, like maybe the Cisco DQOS Exam Certification Guide or Cisco IOS 12.0 Quality of Service. Luckily for me, the book spends the first 2 chapters teaching the underlying

QOS concepts for the features that are discussed in the remainder of the book. After the first 2 chapters, the Fundamentals section is finished up with a 2-chapter overview of the QOS support on the various Catalyst platforms. Part 2 of the book presents QOS implementation on the various Catalyst platforms. I believe the intention of the authors was for the reader to only read the specific chapters in part 2 that pertained to the specific equipment they'd be using. I say this because the chapters repeat a lot of the same information. From the standpoint of this being an implementation guide, it's good that each chapter stands on its own and you don't have to read the entire book to get an understanding of QOS as it applies to your particular Catalyst platform. The thing that makes this book unique, and the thing which I liked most about it, is the in-depth coverage of the Catalyst 6500 series. There is a chapter dedicated to 6500 by itself, which shows both hybrid and native commands for all the QOS functions. There is also a chapter that focuses on the 6500 MSFC and Flexwan modules. The last time I checked, there was exactly one book that I knew of that had any info about the 6500, Cisco LAN Switching (CCIE Professional Development series). Since my network uses 6509's with MSFC2 and FlexWAN cards, I found those chapters to be extremely useful and will be using them to implement QOS. If I seem wishy-washy about this title, it's because I am. My recommendation depends upon what you want to accomplish. If you want to learn QOS concepts, I'd recommend reading something else, like the Cisco DQOS Exam Certification Guide. If you're actually implementing QOS in a Catalyst network, I'd recommend this book. The writing is just a little too dry and the examples are a little too abstract. I would have liked to have seen more real-world examples in plain English. Using my 5-ping rating scale, I'll give Cisco Catalyst QOS three pings - two for the beginning of the book, and one for the 6500 coverage!!..!

"Cisco Catalyst QoS" by Flannagan, Froom, and Turek is one of a few books by Cisco dedicated to one platform and one feature of that platform. As a long-time CCIE candidate, I have found this book very useful in complementing my studies of the Catalyst 3500. But this book does much more than simply discuss the 3500. In particular, items I found important: \* The book starts out by giving an in-depth review of how QoS is applied to the Catalysts. For example, the excellent diagram on page 13 shows how different entities may all employ QoS services (CAC, FRTS, cRTP, etc..)\* Next, the book moves through the different QoS components - from scheduling, to token bucket mechanisms, traffic-shaping and policing.\* The beauty of the book is shown around page 150 - the CoS to DSCP map. This is a sparsely documented area of QoS, and the only reference outside of Cisco (that I've found) which succinctly explains the layer 2 to layer 3 mappings for Catalyst IOS.\* The book's 2nd part is dedicated to "Advanced QoS Concepts" (as if the concepts explored in the first 120 pages

were not advanced enough!). This includes chapters on QoS for the beast of Catalysts - 6500s and 4000 Catalysts. I have not found many typos in this book, but one typo that made me do a double take is on page 125, 1st paragraph - "The match-all option is a logical OR operation" The match-all operation is a logical ALL operation (match-any is logical OR operation). If I had to pick a 'Top 10' list of Cisco Press books, this would probably make the cut. The book discusses subject areas just not duplicated in other books. And, as the 3500 switch is part of the CCIE lab as of the writing of the book, it is a very useful tool for advanced configuration understanding. I give this book 5 pings out of 5:!!!!

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