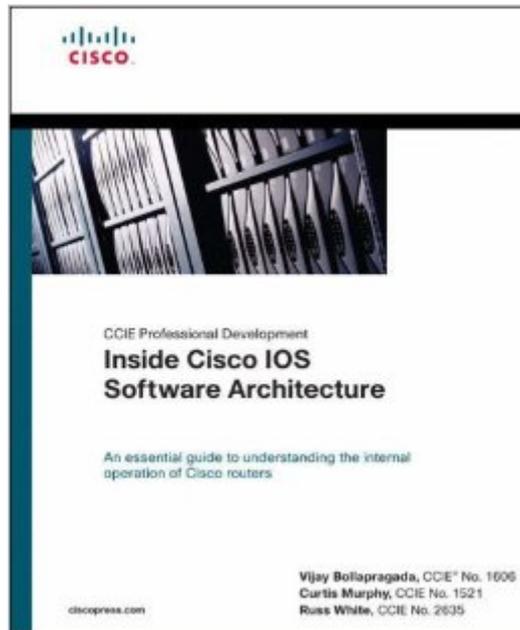# Inside Cisco IOS Software Architecture (CCIE Professional Development)

Synopsis

An essential guide to understanding the Cisco IOS architectureIn-depth coverage of Cisco's IOS Software architecture provides crucial information to:Prevent network problems and optimize performance through more efficient design and configurationIsolate and resolve network problems more quickly and easilyApply the appropriate packet switching method, such as process switching, fast switching, optimum switching, or Cisco Express Forwarding (CEF)Understand the hardware architecture, packet buffering, and packet switching processes for shared memory routers (Cisco 1600, 2500, 3600, 4000, 4500, and 4700 series)Understand the hardware architecture, packet buffering, and packet switching processes for the Cisco 7200 series routersUnderstand the hardware architecture, packet buffering, and packet switching processes for the Cisco 7500 series routersUnderstand the hardware architecture, packet buffering, and packet switching processes for the Cisco GSR 12000 series routersFurther your knowledge of how IOS Software implements Quality of Service (QoS) Inside Cisco IOS Software Architecture offers crucial and hard-to-find information on Cisco's Internetwork Operating System (IOS) Software. IOS Software provides the means by which networking professionals configure and manage Cisco networking devices. Beyond understanding the Cisco IOS command set, comprehending what happens inside Cisco routers will help you as a network designer or engineer to perform your job more effectively. By understanding the internal operations of IOS Software, you will be able to take architectural considerations into account when designing networks and isolate problems more easily when troubleshooting networks. Inside Cisco IOS Software Architecture provides essential information on the internal aspects of IOS Software at this level, and it is an invaluable resource for better understanding the intricacies of IOS Software and how it affects your network.Inide Cisco IOS Software Architecture begins with an overview of operating system concepts and the IOS Software infrastructure, including processes, memory management, CPU scheduling, packet buffers, and device drivers, as well as a discussion of packet switching architecture with detailed coverage of the various platform-independent switching methods, including process switching, fast switching, optimum switching, and Cisco Express Forwarding (CEF). The book then delves into the intricate details of the design and operation of platform-specific features, including the 1600, 2500, 4x00, 3600, 7200, 7500, and GSR Cisco routers. Finally, an overview of IOS Quality of Service (QoS) is provided, including descriptions of several QoS methods, such as priority queuing, custom queuing, weighted fair queuing, and modified deficit round robin.

Book Information

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Customer Reviews

After a short review of this text, I felt compelled to write a review for the benefit of others. The book provides an excellent overview of cisco IOS and, more specifically, core router architecture. It will remain in my library as a reference for hardware troubleshooting. Coverage of the GSR internals are enough to warrant the purchase of this book.Excellent job Russ, Curtis, and Vijay.

This book centers around buffer allocations and buffering problems. It will give you a better understanding of when different buffers are used. I think the title should have been "Cisco IOS Buffering, What you need to know".You definitely have to read between the lines to fill in what all is happening to the data as it flows through the router in different ways. I feel that it is rather limited in it's descriptions of the IOS SW Architecture so don't expect to come away with the full details on how IOS does its job.This is not a book for beginners.

Even though this book was written some time ago, it is still very useful in 2013. Why? CEF and Fast-Switching are still in all production networks. Almost all platforms still utilize particle buffers, interface buffers, public buffers, etc. The processes, memory and CPU scheduling has not changed much. If you want to be able to critically analyze your Cisco platforms with a firm understanding of the internal workings within the router, this is a fantastic book. Perhaps the greatest part of the book was the end - it ties everything together with applied QoS. The need for QoS becomes so apparent, since the operation of the router is no longer a mystery.After readings this book, you will be

competent in the understanding of the operation of the Cisco router...what happens when a packet arrives, where does it get stored, how does it get processed and WHY does this matter? (solutions) I am currently studying for the CCIE, and besides this being a fantastic book to add to you arsenal of Cisco tools, it can be a much needed change of reading material from the typical routing or switching protocols you have probably been reading enough about.I paid $8.00 for this "used". I feel like I robbed Cisco Press and the authors.

Book has a lot of good info but it's short on details. For example, the discussion on processes is informative but doesn elucidate on which process is which priority and what scenerios can prempt the priorties. You will have to look at the output of a router yourself to figure this out. Of course getting the same info from Cisco TAC is almost impossible! Good reference on the internal architecture of the the 7500 and 12000 series boxes. Overpriced for the quantity of info but worth-while addition to a reference library. NOT for newbies to Cisco platform.

Excellent book for anyone wanting to know exactly how Cisco IOS software (and router hardware) really works. Functionally complete explanation of the different switching methods that IOS employs, as well as an in-depth view of a few hardware architectures. For anyone who ever wanted (or needed) to know how Cisco implements queueing and shared memory, and how CEF/dCEF work their magic. Also includes a large poster-size flow chart in the back of the book illustrating the steps packets take from being received to being routed and sent back out for several different architectures.

There is a lot of good information in this book that I've never seen anywhere else, so I'm going to give it 4 stars...though, it should be called something like "How some Cisco routers switch packets and use buffers". It is far from a thorough treatment of IOS internals- but what is there is well written and valuable. I especially enjoyed the discussions about the algorithms and data structures used by the various fast switching methods.

The book contains lots of useful information about how IOS works, howeverthe material is dated and does not cover routing platforms after the2000-2001 timeframe.

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