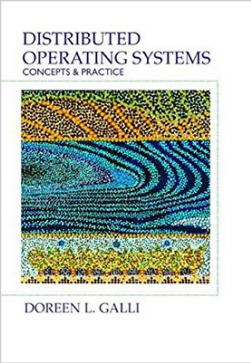

Distributed Operating Systems: Concepts and Practice

By Doreen L. Galli Ph.D.

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This book explores the concepts and practice in distributed computing, and is designed to be useful in helping practitioners and corporate training keep up with software technology that pertains to a majority of all computers and their applications. A two-part approach presents the basic foundation for distributed computing and then expands on these topics to cover advanced distributed operating systems. It describes in detail every major aspect of the topics, and includes relevant examples of real operating systems to reinforce concepts and illustrate decisions that must be made by distributed system designers. Chapters include information on interprocess communication, memory management, concurrency control, and object-based operating systems. More advance material covers distributed process management, file systems, synchronization, and security. For developers and managers active in the client/server technology industry who want to update and enhance their knowledge base.

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Distributed Operating Systems: Concepts and Practice By Doreen L. Galli Ph.D. Bibliography

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Editorial Review

From the Inside Flap
Preface

This book examines concepts and practice in distributed computing. It is designed to be useful not only for students but for practitioners and corporate training as well. Over the past decade, computer systems have become increasingly more advanced. Most computers are connected to some type of network on a regular basis. The installation of LANs at smaller businesses is even becoming commonplace. LANs are also being installed in custom homes at an ever-increasing rate. Software technology must keep up and so must our future and current practitioners! At the current pace, it is only a matter of time before a working knowledge of distributed systems is mandatory for all computer scientists, because this technology pertains to a majority of all computers and their applications. INTENDED AUDIENCE While the study of standard operating systems concepts is extremely important for computer science undergraduates, there is a significant and ever-increasing demand to extend this knowledge in the graduate and fourth-year undergraduate curriculum as well as for the practitioner out in industry. Therefore, there is a great need to study distributed operating systems concepts as well as practical solutions and approaches. This book is intended to meet this need for both students and practitioners. OBJECTIVE

The objective of this book is to describe in detail each major aspect of distributed operating systems from a conceptual and practical viewpoint. Thus, it includes relevant examples of real operating systems to reinforce the concepts and to illustrate the decisions that must be made by distributed system designers. Operating systems such as Amoeba, Clouds and Chorus (the base technology for JavaOS) are utilized as examples throughout the book. In addition, the case study on Windows 2000 provides an example of a real commercial solution. Technologies such as CORBA, DCOM, NFS, LDAP, X.500, Kerberos, RSA, DES, SSH, and NTP are also included to demonstrate real-life solutions to various aspects of distributed computing. In addition, a simple client/server application is included in the appendix that demonstrate key distributed computing programming concepts such as the use of INET sockets, pthreads, and synchronization via mutex operations.

In summary, this book focuses on the concepts, theory and practice in distributed systems. It is designed to be useful for practitioners, fourth year undergraduate as well as graduate level students and assumes that the reader has taken a basic operating system course. It is hoped that this book will prove to be invaluable not only for those already active in industry who wish to update and enhance one's knowledge base but also for future reference for those who have used it as a course text. ORGANIZATION AND PEDAGOGICAL FEATURES

This book is divided into two parts. The first part, Chapter 1-6, presents the base foundation for distributed computing. The second part, Chapter 7-11, expands on these topics and delves more heavily into advanced distributed operating system topics. The pedagogical features included in this book are the following.

Detail Boxes to further enhance understanding. These boxes contain information such as complex algorithms and more in depth examples. More than 150 figures and tables to help illustrate concepts. A case study of Windows 2000 to demonstrate a real life commercial solutions. Project oriented exercises (those with italicized numbers) to provide "hands on" experience. Exercises that build upon concepts covered in earlier chapters. Reference pointers to relevant sources including:
A. overview sources for further in-depth study,

B. research papers, and
C. 'core' web & ftp sites. A simplified distributed application program to demonstrate key distributing programming concepts. Comprehensive glossary of terms (boldfaced words appear in the glossary) to provide a centralized location for key definitions. Complete list of acronyms to aid readability and provide a centralized location for easy reference. Chapter summaries. Comprehensive index, primary references in bold. Book website located at prenhall/galli. SUGGESTIONS FOR INSTRUCTORS

This book is designed to provide maximum flexibility to instructors and has pedagogical features inherent within the text to allow you to customize the coverage to best meet the needs of your class and your institution's mission statement. In preparing this book, the only assumption made is that a basic introductory to operating systems course has been taken by the reader. Select topics that may be included in an introductory operating system course but are sometimes omitted, covered lightly, often not grasped or may have been forgotten but nonetheless are key to distributed operating systems, are included where appropriate. This material need not be presented in the classroom but is included in the book so that you can be assured that the students have the basis necessary for the more advanced distributed topics. Below are suggestions on how this book may be used for those requiring additional practical emphasis as well as for those desiring additional research emphasis. A graduate course desiring to add both types of emphasis may wish to use suggestions from both categories. Additional information may be available at the author's Prentice Hall website, prenhall/galli. Adding Practical Emphasis

The following are a few suggestions for adding practical emphasis to a course utilizing this text. Have the students, either individually or as a group complete one or more of the `Project Exercises', those indicated by an italicized exercise number at the end of relevant chapters. Additional practical experience may be achieved if their design and implementation is orally presented to the class. Cover all Detail Boxes related to real-life implementations. Spend class time covering the Windows 2000 Case study. Create an individual or group project working with the distributed features of Windows 2000. Have the students expand or change the Surgical Scheduling Program. This may be as simple as changing the type of interprocess communication employed or as complex as creating another program utilizing the same distributed concepts. Adding Research Emphasis

The following are a few suggestions for adding a research emphasis to a course utilizing this book.

Have the students, either individually or as a group, prepare a paper on a topic relevant to distributed operating systems. Reference papers cited at the end of each chapter should serve as good starting points. These projects may include an oral presentation. Present lecture material from the relevant RFCs or research papers cited at the end of each chapter that are available on the web and include it the list of required reading for the students. Have the students seek the relevant RFCs or research papers cited at the end of each chapter that are available on the web and prepare a summary. Select a subset of the reference papers cited at the end of each chapter and create a spiral bound accompaniment to be used in conjunction throughout the course with the book. A large number of bookstores at research institutions have the ability to perform the copyright clearing necessary for this purpose.

From the Back Cover

Doreen Galli uses her considerable academic and professional experience to bring together the worlds of theory and practice providing leading edge solutions to tomorrow's challenges. *Distributed Operating Systems: Concepts and Practice* offers a good balance of real world examples and the underlying theory of distributed computing. The flexible design makes it usable for students, practitioners and corporate training.

This book describes in detail each major aspect of distributed operating systems from a conceptual and

practical viewpoint. The operating systems of Amoeba, Clouds, and Chorus™ (the base technology for JavaOS™) are utilized as examples throughout the text; while the technologies of Windows 2000™, CORBA™, DCOM™, NFS, LDAP, X.500, Kerberos, RSA™, DES, SSH, and NTP demonstrate real life solutions. A simple client/server application is included in the appendix to demonstrate key distributed computing programming concepts. This book proves invaluable as a course text or as a reference book for those who wish to update and enhance their knowledge base. A Companion Website provides supplemental information.

- A broad range of distributed computing issues and concepts: Kernels, IPC, memory management, object-based operating systems, distributed file systems (with NFS and X.500), transaction management, process management, distributed synchronization, and distributed security
- A major case study of Windows 2000 to demonstrate a real life commercial solution
- Detail Boxes contain in-depth examples such as complex algorithms
- Project-oriented exercises providing hands-on-experience
- Relevant sources including 'core' Web and ftp sites, as well as research papers
- Easy reference with complete list of acronyms and glossary to aid readability

About the Author

As one of the emerging experts in distributed computing and system integration, ***DOREEN L. GALLI, Ph.D., currently working within the telecommunications industry in Atlanta, Georgia. Besides her industry contributions to IBM Center for Advanced Studies, Premiere Technologies and the successful deployment for the Centennial Olympic Games, Dr. Galli has been recognized by Who's Who Among America's Teachers. As an Associate Professor of Computer Science, she has taught many courses on advanced system and network technologies. She received her Ph.D. degree from the University of Waterloo.***

Users Review

From reader reviews:

Timothy Rowe:

This Distributed Operating Systems: Concepts and Practice book is simply not ordinary book, you have it then the world is in your hands. The benefit you get by reading this book is actually information inside this e-book incredible fresh, you will get info which is getting deeper a person read a lot of information you will get. This kind of Distributed Operating Systems: Concepts and Practice without we know teach the one who reading it become critical in contemplating and analyzing. Don't be worry Distributed Operating Systems: Concepts and Practice can bring if you are and not make your handbag space or bookshelves' become full because you can have it within your lovely laptop even telephone. This Distributed Operating Systems: Concepts and Practice having excellent arrangement in word along with layout, so you will not truly feel uninterested in reading.

Morgan Lytle:

A lot of people always spent their free time to vacation or even go to the outside with them household or their friend. Are you aware? Many a lot of people spent they will free time just watching TV, or playing

video games all day long. In order to try to find a new activity that is look different you can read any book. It is really fun for you. If you enjoy the book that you simply read you can spent all day every day to reading a publication. The book Distributed Operating Systems: Concepts and Practice it doesn't matter what good to read. There are a lot of individuals who recommended this book. These folks were enjoying reading this book. When you did not have enough space to deliver this book you can buy the particular e-book. You can m0ore easily to read this book from the smart phone. The price is not to fund but this book provides high quality.

Melissa Peterson:

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Brian Hill:

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