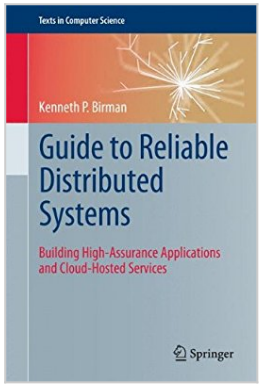

Guide to Reliable Distributed Systems: Building High-Assurance Applications and Cloud-Hosted Services (Texts in Computer Science)

By Kenneth P Birman

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This book describes the key concepts, principles and implementation options for creating high-assurance cloud computing solutions. The guide starts with a broad technical overview and basic introduction to cloud computing, looking at the overall architecture of the cloud, client systems, the modern Internet and cloud computing data centers. It then delves into the core challenges of showing how reliability and fault-tolerance can be abstracted, how the resulting questions can be solved, and how the solutions can be leveraged to create a wide range of practical cloud applications. The author's style is practical, and the guide should be readily understandable without any special background. Concrete examples are often drawn from real-world settings to illustrate key insights. Appendices show how the most important reliability models can be formalized, describe the API of the Isis^2 platform, and offer more than 80 problems at varying levels of difficulty.

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Guide to Reliable Distributed Systems: Building High-Assurance Applications and Cloud-Hosted Services (Texts in Computer Science) By Kenneth P Birman Bibliography

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Editorial Review

From the Author
As an instructor who teaches courses on cloud computing and high-assurance distributed systems, I became frustrated that none of the existing textbooks seemed suitable for covering that kind of material at the introductory graduate (or advanced undergraduate) level. Accordingly, back in 1996, I wrote such a text. Over time I've revised it repeatedly and finally undertook a major rewrite during 2011.

You'll find materials online at Cornell from the spring 2012 offering of our CS5412 "Cloud Computing" class, and are welcome to use them. This will eventually include my comprehensive slide set for the full set of 24 lectures, as well as homework assignments and other materials.

I would also encourage you to have a look at the new Isis2 platform, for building highly assured distributed applications and running them on a large-scale, including in modern cloud systems. Isis2 is a real labor of love for me; I invested much of the past few years designing and implementing it (entirely on my own, I should add!) I plan to support it and maintain it as a free open-source platform and have included material about Isis2 into the new book.

From the Back Cover

This *Guide to Reliable Distributed Systems* describes the key concepts, principles and implementation options for creating high-assurance cloud computing solutions. In combination with the Isis^2 software platform, the text offers a practical path to success in this vital emerging area. Opening with a broad technical overview, the guide then delves into the core challenges of how reliability and fault-tolerance can be abstracted, how the resulting questions can be solved, and how the solutions can be leveraged to create a wide range of practical cloud applications. Readily understandable without any special background, the guide offers concrete examples drawn from real-world settings to illustrate key insights.

Topics and features:

- Examines cloud computing reliability from the perspectives of the client and of the network, and describes the significant components of cloud data centers
- Presents a practical focus aimed at building "mission-critical" networked applications that keep working even when things go wrong
- Covers CORBA, Web Services, group communication, transactions, peer-to-peer systems, time-critical protocols, scalability and security
- Discusses fundamental mechanisms in detail, with an emphasis on the idea of "consistent behavior" in systems that replicate critical components for availability
- Reviews a wide array of major cloud computing components, including BitTorrent, Dynamo, Chubby, BigTable, Zookeeper, and others
- Includes more than 80 problems ranging from simple tests to challenging topics suitable for semester-long projects

With its well-focused approach and clarity of presentation, the guide represents a unique resource in the contemporary cloud-computing arena. Anyone seeking a solid background in distributed computing, cloud computing, or the modern Internet will find the book an essential and practical learning tool.

About the Author

Dr. Kenneth P. Birman is an ACM Fellow and Professor of Computer Science at Cornell University. He received the 2009 IEEE Tsukomo Kanai Award for his fundamental and practical contributions to distributed computing, fault tolerance, reliability and distributed systems management, and has authored nearly 200 journal and conference papers in the area. Examples of settings in which his work has been applied include the communications infrastructure of the NYSE, the Swiss Stock Exchange, the US Navy's AEGIS warship, the French air-traffic control system, and a wide range of cutting edge cloud-computing products.

Users Review

From reader reviews:

Christopher Rayes:

Reading a guide tends to be new life style on this era globalization. With looking at you can get a lot of information which will give you benefit in your life. With book everyone in this world can certainly share their idea. Guides can also inspire a lot of people. A great deal of author can inspire their particular reader with their story or their experience. Not only the storyplot that share in the textbooks. But also they write about advantage about something that you need example. How to get the good score toefl, or how to teach your sons or daughters, there are many kinds of book that you can get now. The authors on earth always try to improve their skill in writing, they also doing some research before they write for their book. One of them is this Guide to Reliable Distributed Systems: Building High-Assurance Applications and Cloud-Hosted Services (Texts in Computer Science).

Saul Robinson:

The particular book Guide to Reliable Distributed Systems: Building High-Assurance Applications and Cloud-Hosted Services (Texts in Computer Science) has a lot details on it. So when you check out this book you can get a lot of gain. The book was compiled by the very famous author. Mcdougal makes some research prior to write this book. This particular book very easy to read you can obtain the point easily after perusing this book.

Francis Griffin:

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