

Preface

Table of contents

1 About the Book.....	2
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1. About the Book

Grid technologies and the associated applications are currently of unprecedented interest and importance to a variety of communities. This book aims to outline and describe all of the components that are currently needed to create a Grid infrastructure that can support a range of wide-area distributed applications. In this book we take a pragmatic approach to presenting the material; we attempt not only to describe a particular component, but also give practical examples of how that software may be used in context. We also intend to ensure that the companion Web site has extensive material that can be used by not only novices, but experienced practitioners too, to learn or gather technical material that can help in the process of understanding and using various Grid components and tools.

PURPOSE AND READERSHIP

The purpose of this book is not to convince the reader that one framework, technology or specification is better than another; rather its purpose is to expose the reader to a wide variety of what we call core technologies so that they can determine which is best for their own use.

This book is intended for postgraduate students and researchers from various fields who are interested in learning about the core technologies that make up the Grid today. The material being developed for the companion Web site will supplement the book's content. We intend that the book along with Web content will provide sufficient material to allow a complete self-study course of all the components addressed.

The book takes a bottom-up approach, addressing lower-level components first, then mid-level frameworks and systems and then finally higher-level concepts, concluding by outlining a number of representative Grid applications that provide examples of how the aforementioned frameworks and components are used in practice.

We cover the core technologies currently in Grid environments to a sufficient depth that readers will be prepared to take on research papers and other related literature. In fact, there is often sufficient depth that a reader may use the book as a reference of how to get started with a particular Grid component.

The subject material should be accessible to postgraduates and researchers who have a limited knowledge about the Grid, but technically have some knowledge about distributed systems, and experience in programming with C or Java.

ORGANIZATION OF THE BOOK

The organization of the book is shown in [Figure](#). We have organized the book into four general parts, which reflect the bottom-up view that we use to address the topics covered. We know that certain topics have been discussed under different parts, but we feel that this should assist the reader label topics more easily and hopefully help them get to grips with the content more easily.

The first section, "system infrastructure", contains the chapters that discuss and outline the current architecture, services and instantiations of the Grid. These chapters provide the underpinning information that the proceeding chapters build on. The second section, "basic services" contains the chapters that describe Grid security and monitoring. Both these chapters explain services that do not actually need to exist to have a Grid environment, but without security and monitoring services it is impossible to have a secure, robust and reliable environment that can be used by higher level services and applications. The third section, we have labelled "Job management and User interaction". At this level users have potentially direct access to tools and utilities that can change their working

environment (in the case of a Portal), or manage and schedule their jobs (in the case of workflow and scheduling systems).

Finally, the last section of the book is called "Applications"; here we discuss a number of representative Grid-based applications that highlight the technologies and components discussed in the earlier chapters of the book.

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