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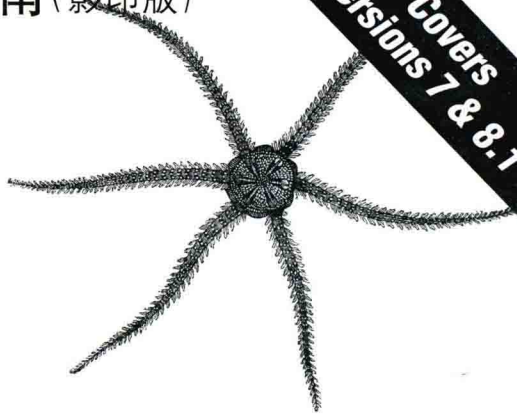

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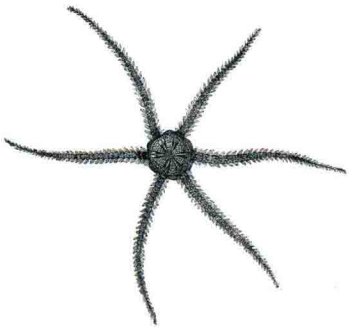

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Jon Mountjoy & Avinash Chugh 著

WebLogic™权威指南（影印版）

WebLogic™: The Definitive Guide

Jon Mountjoy & Avinash Chugh

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Preface

WebLogic™ Server is one of the leading J2EE-compliant application servers, produced by BEA Systems. It implements the full range of J2EE technologies, and provides many more additional features such as advanced management, clustering, and web services. It forms the core of the WebLogic Platform, and provides a stable framework for building scalable, highly available, and secure applications. You can gauge the extent of its acceptance by exploring the list of customers who have embraced WebLogic Server from all segments of the industry. A number of partners also are collaborating with BEA to build a diverse range of products that integrate with WebLogic Server and the WebLogic Platform. This information on customers and partners involved with WebLogic is available on BEA's web site, *http://www.bea.com/*. Clearly, WebLogic Server has established a strong presence in the market.

BEA is serious about WebLogic Server. It is one of the influential members on the various committees that decide on the future direction of the J2EE revolution. It has invested much financial and intellectual capital toward making WebLogic Server the leading Java™ application server in the industry. Its dev2dev web site and newsgroups bring together developers, architects, and experts from different domains, all collaborating to make WebLogic Server as popular as it is. Over the years, two factors have determined the growth of WebLogic Server. First, WebLogic has consistently maintained compliance with the J2EE standards. Second, BEA has always been committed to ensuring that WebLogic meets and exceeds the needs of its customers, and provides a feature set that delivers a viable platform for building enterprise solutions. The combination of both of these factors has contributed to the widespread popularity of WebLogic Server.

WebLogic continues to maintain its edge by offering robust implementation of current and upcoming J2EE technologies. It also offers a lot more, extending the base platform with features that let you build real enterprise solutions with cutting-edge technologies. A quick preview of some of its features will convince you that WebLogic is a force to contend with.

- Support for a wide range of platforms, including Windows 2000, XP, and 2003, Solaris, Red Hat and SuSE Linux, HP Tru64, HP-UX, IBM AIX, and other Unix flavors.
- A rich set of client options: HTTP clients, Java clients over RMI/IIOP and the native T3 protocol, and web service clients that support JAX-RPC or SOAP.
- A robust implementation of standard J2EE APIs, and support for the standard J2EE components such as servlets, JSP pages and custom tags, EJB and RMI objects, JMS producers and consumers, J2EE connectors, and more.
- An innovative strategy for deploying J2EE applications across multiple servers.
- The ability to interoperate with industry-strength HTTP servers, LDAP servers, relational DBMS products, messaging software, enterprise information systems, load balancers, firewalls, and more.
- An easy, flexible way to configure the different J2EE containers, and the ability to benefit from practical extensions and optimizations.
- Designed to operate in a distributed environment with extensive support for failover and load balancing through clustering.
- An intuitive framework for organizing the different WebLogic resources in a domain, with an emphasis on performance and scalability.
- A stable, production-ready JMS server that supports distributed JMS destinations, configurable delivery options, extended acknowledgment modes, and much more.
- A comprehensive suite of security features that help protect the various applications and resources deployed in your WebLogic environment.
- Rich support for XML features, including a streaming and XPath API.
- A distributed management infrastructure that can be configured dynamically through JMX, and integrated into a larger SNMP framework.
- A distributed logging framework and support for i18n and l10n.
- A rich implementation of web services for building standards-compliant web services over existing J2EE components, with features such as SOAP security and reliable SOAP messaging.
- An integral component of the WebLogic Platform, over which other technologies such as WebLogic Integration and WebLogic Portal are built.

Finally, WebLogic Server also comes bundled with an IDE, WebLogic Workshop. This IDE provides a fast route to implementing J2EE and web service components, featuring automatic code generation and graphical component composition.

With these kinds of ingredients, we believe WebLogic Server has realized the perfect recipe to deal with other competing J2EE application servers. As you read on, we're certain you, too, will be convinced.

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Who Should Read This Book?

J2EE is a mature platform for building enterprise-scale applications. This book caters to developers who are presently working on the WebLogic platform, and those J2EE programmers who are considering doing so in the future. If you are a programmer responsible for developing J2EE applications on WebLogic, an administrator who needs to manage the entire logical and physical setup for your application, or an architect responsible for evaluating which technologies, tools, and products should be used, this book is for you!

Let's clarify how we believe this book can help the different groups within our target audience:

Developers

For the most part, we assume that developers reading this book are familiar with the J2EE platform. Developers should turn to other books, online resources, and published specifications for learning the intricate details of each J2EE technology. With the help of this book, you can then take that knowledge to the next level by putting that theory into practice when using WebLogic Server. Our aim is to guide you through the world of WebLogic and show how you can apply your J2EE expertise to build and manage applications on WebLogic. We reveal how WebLogic implements the various J2EE features, demonstrate how WebLogic enhances these services in interesting and useful ways, and explain how your applications can benefit from these features.

Administrators

Any group of users that is responsible for managing a WebLogic-based setup will find that this book has all the material needed to build a fundamental understanding of creating, managing, and maintaining WebLogic domains and services. This includes users who need to interact with the system in some nonprogrammatic way—for instance, the application assemblers, the deployers, and the tool providers. We explain how to manage the runtime WebLogic environment, discuss the performance implications and trade-offs, and examine the different design and security constraints.

System architects

A system architect needs to have a good understanding of the overall capabilities of the application server if he is to design effective solutions. For instance, he must be aware of the different system architectures supported by WebLogic, the overall organization of a WebLogic domain and supporting network infrastructure, how WebLogic resources cooperate in a clustered environment, what additional features and services are offered, and how to extract optimal performance from the application setup. He needs to be able to extrapolate the possibilities, but also understand the limitations and trade-offs of adopting a WebLogic-based solution. Our book attempts to provide a 360-degree view of WebLogic. We not only highlight its features and strengths, but also point out any shortcomings and issues of which you need to be aware.

We expect our target audience to have an understanding of the J2EE platform.

Developers, at the very least, should have some previous experience with programming servlets, creating JSP pages, using the JDBC API, and building EJBs. We encourage those who don't to read other books from the O'Reilly catalogue that cover the entire gamut of J2EE technologies. The various J2EE specifications published by Sun Microsystems also serve as a useful reference. This book aims to build on that J2EE know-how, and guides you through the different J2EE technologies and enterprise services supported by WebLogic.

For system administrators, this book serves as a complete guide for managing a WebLogic environment. We expect that you will have had past experience with administering an enterprise application, perhaps on a different platform using other technologies.

For Java architects, this book reveals how other WebLogic enterprise services can enrich your solutions with exciting possibilities. It also advances your understanding of how to achieve the best performance out of your application architecture. We expect you will have had some previous experience in building and designing multi-tier system architectures, and some level of awareness of the capabilities of the J2EE technology stack.

Organization

The first chapter provides a quick tour of WebLogic Server. It offers an overview of the J2EE and other enterprise features supported by WebLogic. We explore the fundamental WebLogic resources such as domains, servers, and clusters. We also look at essential administration tasks such as starting and stopping the server. The remaining chapters in the book can be grouped into three categories: those that deal with J2EE, those that deal with WebLogic management, and finally, those that focus on WebLogic's own enterprise APIs.

WebLogic and J2EE

The first part of the book examines WebLogic's rich support for the various J2EE services. WebLogic is a fully compliant J2EE application server, and it provides a mature environment for building robust, server-side, component-based applications.

Chapters 2 and 3 give in-depth coverage of how to build web applications on WebLogic. We examine how to configure servlets and JSP pages on WebLogic Server. We look at how to incorporate custom JSP tags and filters into your web applications, and we explain how to package and deploy your web applications on WebLogic. We also learn about WebLogic-specific custom tags and filters, and how to create tag libraries from prebuilt EJBs. We look at how to configure the behavior of the servlet engine (web container) using the XML deployment descriptors for a

web application. We discuss how WebLogic manages server-side HTTP sessions in a clustered environment, how to restrict access to specific web resources, and how to use commercial web servers to proxy requests to WebLogic Server. Moreover, we explore the many ways WebLogic lets you configure its HTTP server.

Chapter 4 explains how resources are published over WebLogic's JNDI service. We examine how WebLogic's JNDI operates in a clustered environment. Later, we look at how to build RMI applications, and explore the various optimizations intrinsic to WebLogic's RMI. Finally, we learn how RMI objects can be accessible to both T3 and IIOP clients. Chapter 5 looks at WebLogic's support for JDBC connection pools and how data sources enable you to access these pools. Chapter 6 examines the use of distributed transactions in WebLogic. Chapter 7 looks at how to use JCA-compliant resource adapters to enable WebLogic applications to connect to proprietary enterprise stores. Chapter 8 provides an in-depth look at creating JMS applications and using WebLogic-specific features such as quotas, flow control, timed delivery options, XML-formatted messages, and bridging with other JMS providers. Chapter 9 succinctly covers how to configure JavaMail on WebLogic, thereby allowing deployed applications to send and receive electronic mail.

The next two chapters investigate WebLogic's support for Enterprise JavaBeans™ (EJBs). In Chapter 10, we learn about the various EJB types and how to package and deploy EJB components. We also describe the behavior of WebLogic's EJB container and the various ways you can influence the runtime behavior of your EJBs. We demonstrate how you can adjust the size of the free pool of EJBs and the in-memory EJB cache. We also look at the various optimizations for EJBs, such as network and transactional collocation, optimistic concurrency strategy, and read-only entity beans that can rely on a multicast invalidation framework. Most importantly, we explore how WebLogic incorporates load-balancing and failover support for EJBs deployed in a clustered environment.

Chapter 11 explains how to create container-managed persistence (CMP) entity beans, while concurrently introducing the features of WebLogic's CMP engine. Later, we look at how to implement container-managed relationships (CMR) between entity beans. We also examine the EJB-Query Language (EJB QL) syntax, and learn about the WebLogic-specific extensions to EJB QL.

Managing the WebLogic Environment

The middle portion of the book examines the post-development aspects of WebLogic applications. We look at how to package and deploy your applications, configure and optimize the runtime WebLogic environment, and deal with security issues. Chapter 12 explains how to package J2EE applications using available WebLogic tools. We also learn about WebLogic's classloader hierarchy and its impact on your deployment. Finally, we discuss the new two-phase deployment strategy in WebLogic Server, and the usefulness of application staging. Chapter 13

looks at how to manage the different resources and services that live in a WebLogic domain spread across multiple machines. It also covers monitoring the health of servers in the domain, configuring network resources, and planning for additional capacity.

Chapter 14 provides an understanding of WebLogic's support for clustering, with a strong emphasis on its load-balancing and failover capabilities. It examines how various J2EE resources behave in a clustered environment. It also analyzes the performance and design implications of adopting different clustered solutions for your application's architecture. Chapter 15 explains the implications of tuning various performance-related configuration settings, and how to improve the performance of the JVM, the applications deployed to WebLogic, and the server itself. Chapter 16 provides all the details necessary to configure WebLogic's SSL support, and create your own programs that use WebLogic's SSL support. Chapter 17 explores the many services implemented under the hood of WebLogic's default security realm. It explains the behavior of WebLogic's security providers, its authentication framework, and declarative security for various J2EE components.

WebLogic Enterprise APIs

In the last section of the book, we examine important enterprise WebLogic services that would attract many more developers and administrators. Chapter 18 looks at WebLogic's support for XML, including XML Registries, application-scoped XML parsers, event-driven parsing using the Streaming API, and other miscellaneous extensions. Chapter 19 describes how to create WebLogic web services over existing J2EE components. It explains how you can build JAX-RPC clients that interact with deployed web services, generate the necessary support for custom types, and set up a chain of handlers that can intercept SOAP request messages and SOAP response messages. It also describes how you can secure WebLogic web services and write clients that can invoke these protected web services. Finally, it explains how to publish and then inquire about web services advertised over the local UDDI registry.

Chapter 20 provides an overview of WebLogic's JMX services and how you can use managed beans (MBeans) to programmatically administer and/or monitor WebLogic resources. Chapter 21 covers WebLogic's support for internationalization and logging. Chapter 22 looks at how administrators can integrate WebLogic into an SNMP-compliant management infrastructure. It provides an overview of the SNMP agent model and how you can implement an SNMP view of the WebLogic Server.

Online Documentation

BEA's documentation on WebLogic Server is available at *http://edocs.bea.com/*, and can also be downloaded in HTML or PDF formats. BEA's dev2dev Online (*http://dev2dev.bea.com*) is another good source of tools, utilities, articles, and white papers.

BEA also maintains a newsgroup site on the WebLogic Platform, *nntp://newsgroups.bea.com/*, which provides the ideal forum for discussions and support, and the opportunity for closer interaction between WebLogic developers, architects, administrators, and experts.

All of these resources, as well as related books, have contributed to the material covered in this book. The most significant source for our book has been BEA's online documentation.

BEA also produces helpful white papers. Tom Barnes's white paper, "JMS Performance Guide," deserves a special mention because it helped clarify a number of issues related to WebLogic's JMS implementation.

Conventions Used in This Book

We use the following formatting conventions in this book:

Italic
: Used for filenames, pathnames, hostnames, domain names, URLs, email addresses, script names, folder names, and new terms where they are defined.

`Constant width`
: Used for code examples, program fragments, and console output. It is also used for Java keywords, names of Java classes, variables, and methods, SQL table and column names, XML elements and tags, and for shell commands and scripting variables.

`Constant width italic`
: Used to indicate text that is replaceable. For example, in *`BeanName`*`PK`, the *`BeanName`* may be replaced with a particular bean name.

`Constant width bold`
: Used for emphasis in some code examples.

The term "WebLogic" is often used to refer to WebLogic Server, which is BEA's J2EE-compliant application server. This must not be confused with the "WebLogic Platform," which refers to a host of BEA technologies built around the core WebLogic Server product.

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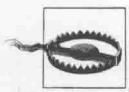

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Avinash would like to thank his family and friends for their support and understanding, not just throughout the time he has been involved with this book, but also in helping him to get through his father's death. He would have liked his dad to just hold the final manuscript, even if the contents inside wouldn't have made much sense to him.

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