Foreword

The fact that you’re holding this book in your hands means you either are discovering or have already discovered the world’s premier OLTP database. As the director of Informix development, I can’t tell you I’m unbiased, but I can say that I’m uniquely qualified to testify to the incredible innovation and level of excellence that goes into every aspect of this product. For the last 15 years, I’ve had the good fortune to work with some of the most talented engineers, support staff, writers, and field specialists in the world. The evolution of technology and hardware over recent decades has been exponential. SOA, Web 2.0, and the 3-D Internet have all become a reality. At every turn, this amazing group of architects and engineers has anticipated and addressed your business challenges (as well as leveraged the opportunities that evolution provides!). This book is a portal into Informix innovation and functionality—including the most recent enhancements and updates—with a clear and relevant perspective that reflects Carlton Doe’s many years of experience with IDS.

I’ve known Carlton 10 years. Over that time (and more), he’s contributed multiple excellent books on Informix. He has a unique combination of extensive Informix knowledge and experience along with the capability to articulate his understanding in writing and as an educator. This book is a great resource for both new and existing users. Carlton’s approach is informed by his personal experience and assumes the viewpoint of someone using the product in a typical end-to-end scenario: initialization and installation through administration, backup, and monitoring. The book also includes information about recently added Informix features—right up through the current IDS 11 releases.

From the beginning, Informix was built on a simple promise: to deliver industry-leading enterprise OLTP capabilities within an architecture that provides the absolute lowest total cost of ownership. Others may claim it—we deliver it! Our unique and proprietary architecture enables blazing performance, embeddability, and scalability, all with minimal administration overhead. Selecting the right database can give significant competitive advantage, and when the decision is based on technology, Informix is the choice of leaders. You may not realize how much of your world is already running on Informix. Informix runs your grocery or retail store, manages your online bank transactions, and processes your credit card authorizations. It handles lifesaving calls to 911. Catch a bus in Seattle, use your GPS to get around London, or book an airline flight—you’re using Informix. Almost every telco router in the world relies on Informix, as does the Konkan Railway system in India, large financial institutions in China, and, in New Zealand, the largest dairy exporter in the world. There are many, many other
applications I am not allowed to talk about. Because of its phenomenal availability and reliability, Informix is favored in mission-critical applications worldwide. Software vendors know that they can deploy their solutions on top of Informix without worrying who’s going to administer it or how they’ll keep the system up and running 24x7.

No one in the industry can match our breadth of solutions where customers achieve 99.999 percent availability and are able to easily scale out on low-cost commodity hardware. IDS 11 has elevated Informix to a new level of availability and scalability with active–active clusters sharing the same disk or managing workload on replicas located around the world. This functionality may sound complex, but it is designed and built into Informix from the ground up, with easy GUI administration, letting customers scale in minutes without complicated add-ons. It doesn’t matter what platform you run your business on. Informix is available on all the leading hardware vendors: Linux, Unix, Windows, Linux for zSeries, and even Mac OS X. Here at IBM, we’re leading the charge with Outside In Design and Agile Development, which expands our capability to respond on demand to business needs. Our incredible (and continually expanding) base of customers and business partners works directly with us on each release to help form the product direction. And a really cool thing: when you couple our visionary database technology and world-class developers with the powerhouse infrastructure, innovation, and momentum of a company like IBM, you’re looking at an infinite horizon for Informix.

In this book, Carlton Doe has done an amazing job—yet again—of encapsulating Informix technology in a highly consumable format. He has a gift for clearly describing Informix Dynamic Server in a way that’s accessible across the array of Informix enthusiasts. Enjoy this book. I hope the information within it will give you additional insight into the amazing work of the worldwide Informix community here at IBM.

Jerry Keesee
Director of Informix Development
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About This Book

Because you are reading this book, I can assume you are either a Database Administrator (DBA) or someone responsible for maintaining one or more Informix Dynamic Server (IDS) database environments—what I call a Dynamic Server Administrator (DSA). What I don’t know is whether you are new to IDS or, if you’re not, how much experience you have with it. Perhaps you’ve worked with the Unix ports of less-capable data servers but now find yourself having to install and administer IDS. In doing so, you find that it’s a whole new world. Or maybe this is the first time you’ve used an industrial-strength data server, having upgraded from some semi-featured, PC-oriented product. Now that you need some serious reliability, functionality, and speed, you’re installing Informix Dynamic Server and wondering what to do next. For you, too, it will be a new world.

If you’re like me, opening the box containing the IDS software distribution was both exciting and a little daunting. I was excited to get my hands on what is widely regarded as the fastest and best-architected data server on the market today. I wanted to try it out, kick the tires a little, see how well it performed. At the same time, I went to the Informix documentation site and was intimidated by the number and size of the manuals. A quick look revealed 32 books and nearly 9,000 pages—and that’s just for the core data server, without factoring in the manuals for additional options, such as DataBlades. Was this data server so complicated that it required this much explanation?

The answer to that question is both a yes and a no. Yes, Informix Dynamic Server is more sophisticated than other data servers on the market today and, as a result, has more options you can use. You do not, on the other hand, have to ingest the entire documentation set to run or tune the data server. The documentation is there to explain, often down to the bits-and-bytes level, what IDS does and why so you can be a better DBA or DSA. To its credit, the IDS documentation is fairly complete, easy to understand, and extensive when it comes to explaining and illustrating the concepts involved in setting up and administering databases and the environments in which they exist.

Book Structure

In this book, I try to take the dry technical details in the documentation and put them into the context of daily life. I cover topics in what I think is their logical order of occurrence when working with a database environment. First, you design the environment; then you build and populate it. You create backups on a regular basis and monitor and tune as
necessary. There are other responsibilities and functions, but these are the most important. I used this approach to build the subjects discussed in each chapter.

This book isn’t intended to cover every single feature or mechanism of Informix Dynamic Server. Instead, it is designed to help you through the process of starting up and running database environments. You’ll find it covers all the important and most commonly used features you will need on a regular basis. A future book, Administering Informix Dynamic Server, Advanced Topics, will address more advanced topics, including replication, high availability, distributed transactions, and other subjects that require a more extensive explanation. I think you should know about and be able to use those features, too, so I encourage you to get that book as well.

### Intended Audience

This book is written at a high to medium level in terms of technical detail and is focused toward those who either are new to Informix Dynamic Server or are converting from earlier versions. I have purposely avoided the bits-and-bytes stuff as much as possible. For that level of understanding, consult the IBM Informix Dynamic Server Administrator’s Guide and the other reference material in the IDS documentation library.

Even though much of what I cover here is explained somewhere in the manuals, do not assume this book is intended to replace the formal documentation. Nor should you think of this book as simply an overview of what the formal documentation provides. The recommendations and guidance given here are the result of years of personal experience with Informix Dynamic Server. You won’t find this hands-on experience reflected in the formal documentation.

I do make one major assumption in writing this book: that you have a good understanding of the relational database model and the concepts of tables, columns, and other components of relational databases. To this foundation, you will be able to add the knowledge and experience you’ll gain using the object-oriented features of IDS.

### Book Summary

**Chapter 1 – Introduction to Informix Dynamic Server**

Chapter 1 covers the general design of the IDS data server. Terms and keywords used extensively throughout the rest of the book are also introduced and defined here.
Chapter 2 – An Introduction to Extensibility

This chapter explores the object-relational features and capabilities of Informix Dynamic Server.

Chapter 3 – Preparing for Initialization

In this chapter, I cover many of the topics you need to address from a design perspective when planning for the implementation of an IDS environment. For the most part, the discussion is general in scope because there are few hard and fast rules to follow when building a database environment. Where rules do exist, they are stated. At the close of the chapter, I explain the required environment variables, files, and other objects as well as how to set them up.

Chapter 4 – Installing and Initializing IDS

This chapter covers all the steps and configuration parameters for creating an IDS database environment or instance, with specific recommendations given for the most critical configuration parameters. At the end, I introduce the system-level databases that manage and control an IDS environment. This chapter is very detail-oriented, as opposed to the earlier, more concept-oriented chapters.

Chapter 5 – Basic Administrative Tasks

In this chapter, I explain most of the general day-to-day, or occasional, instance-oriented administrative tasks. These include adding or dropping disk space, starting up or shutting down the instance, and killing user sessions in the instance. The major graphical administration tools are introduced as an alternative to performing many of these tasks using the command line.

Chapter 6 – Building a Database Environment

In this chapter, I trade my DSA’s hat for that of a DBA and cover building and populating databases in IDS instances. The chapter explains features such as table and index partitioning, constraints, logging, database and table population utilities, and a collection of IDS-specific SQL statements that are interesting to know about and use.
Chapter 7 – Backing Up and Restoring

One of the least glamorous, but still important, functions of operating a database environment is backing up what’s on disk to tape. In this chapter, I cover a couple of backup strategies and their relative strengths and weaknesses. I explain how Informix Dynamic Server can execute moment-in-time backup and restore operations with the database environment online and fully functioning. The chapter also covers the process of executing backup and restore operations using the \texttt{ontape} utility, as well as the \texttt{ON-Bar} utility suite with the Informix Storage Manager (ISM), in great detail.

Chapter 8 – Monitoring the Instance

Throughout the book, discussions make reference to, and include illustrations of, output generated by the various IDS monitoring commands. In the final chapter, I focus exclusively on those commands and some of the more commonly monitored activities of a database environment. I concentrate primarily on IDS’s command-line utilities as well as the functionality available in the new OpenAdmin Tool for IDS (OAT).

Conventions Used in This Book

In preparing this book, I used the following conventions:

- Each chapter begins with a general list of topics to be covered.
- Each chapter ends by briefly summarizing the most important points you should remember and then introducing the topics to be discussed in the next chapter.
- Reserved words in source code examples are not capitalized. I find that loading source code with capitalized words produces code that is more difficult to read and makes it hard to find important points of interest that the developer might have wanted me to easily see. Personally, I limit capitalized words to source code comments, when I want to call attention to an important word or instruction. This is an easier and less time-consuming way to highlight such information than building some sort of window box.
- You occasionally will see the slash (\) character used as a continuation marker in code examples that had to be broken into multiple lines to accommodate the width of the book page. In reality, you would execute these operations as one unbroken instruction string.
Throughout the book, additional notes or points of special information are called out through the following notation:

Warnings or other important messages are called out using this notation: