

Pro SQL Server Disaster Recovery



James Luetkehoelter

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This book is dedicated to Ken Henderson (1967–2008).

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About the Author

■ **JAMES LUETKEHOELTER** has been fascinated with data and information quality his entire life. After exploring a myriad of scholastic disciplines (starting in music, of all things), he finally got his degree in philosophy, focusing most on logic and epistemology (the study of knowledge). Out of college, he quickly was drawn into the database arena, where he has lived ever since. He has been a frequent speaker at SQL Server conferences in the United States and Europe.

James is the president of Spyglass LLC, a small data-centric consulting firm. In his spare time, he enjoys cataloging the various pronunciations of “Luetkehoelter.” He has well over 2,000 discrete variations documented.

About the Technical Reviewer

■ **STEVE JONES** is a founder and editor of SQLServerCentral.com, one of the largest SQL Server communities on the Internet. He writes regular articles and a daily editorial in addition to answering questions from people on all aspects of SQL Server. Steve is a Microsoft MVP, lives near Denver, and regularly attends the Professional Association for SQL Server (PASS) Community Summit as well as local user group meetings in his area.

Introduction

This is a very different technology book compared with others on the shelf next to it. Most technology writing is, well, technical—and at times, only technical. Technical reference information or books that introduce a new technology are important, but technical books usually focus only on the *how* of any technology.

This book focuses more on the *what* than the *how*.

Knowing *how* to do something provides little insight into knowing *what* to do. Knowing how to set the time on your DVD player does not tell you what time to actually set; the time you should set depends on what time zone you're in, whether your time zone observes daylight savings time, and so on. Technology is no different.

Knowing how to perform a backup/restore of a SQL Server database does not impart instructions on what to do with that knowledge. How often should a database be backed up? How about the transaction log? These questions differ depending on your specific business environment. Perhaps a single nightly backup is sufficient. Or perhaps a nightly backup is impossible due to the size of the database. Restore requirements might focus on minimizing downtime, or they might stress as close to zero data loss as possible. Knowing the *what* involved with any technology is the key to being successful as a technology professional.

Thus, I will endeavor to present you with less how and more what in this book. In the coming pages, I'll present you with my concept of what disaster recovery is, the tools available to SQL Server to deal with disaster recovery, and my process for disaster recovery planning and dealing with disaster scenarios. This book is heavy on my point of view and lighter on the technical specifics. If you're looking for technical specifics, Books Online (<http://msdn2.microsoft.com/en-us/library/ms130214.aspx>) will do nicely.

As you read, you may find yourself disagreeing with a recommendation I make or my technical description of some process. Excellent! If you disagree with me, that shows you're thinking about disaster recovery. I'm happy with you disagreeing with my book as long as you have your own approach to disaster recovery.

One other item about this book: the term *best practices* is deliberately absent. I speak at a number of SQL Server conferences, and I attend Microsoft Tech•Ed every year—in other words, I see lots of presentations. However, I seldom hear specific ideas about what to do with a particular technology, other than a slide or two talking about best practices. The truth of the matter is, there is no such thing as a best practice; every situation is different, and what can be a good idea in one environment can lead to bedlam in another.

Who This Book Is For

If you're a database administrator, either by choice or by necessity, understanding disaster recovery should be at the top of your to-do list. The problem is that disaster recovery is often either seen as a complicated, expensive process or it is minimized to the role of a basic backup/recovery plan. If disaster recovery isn't a part of your ongoing job as a process requiring continual improvement, read this book. If you lose sleep worrying about whether your database will fail, read this book.

How This Book Is Structured

This book is divided into three logical sections: the backup/recovery process, various disaster mitigation techniques, and practical tips for approaching disaster recovery within your own environment. The backup/recovery process is a necessary component to any disaster recovery plan. Disaster mitigation techniques, such as database mirroring, are powerful yet optional. Determining how backup/recovery and mitigation play in to your own disaster recovery plan (and how to create that plan) means the difference between a successful plan and losing your job.

Chapter 1 introduces my interpretation of disaster recovery. Although short, this chapter is extremely important, because it spells out the premises I work with throughout the rest of the book. Disaster recovery is not simply a backup/restore process, it is not simply high-availability techniques, and it is not a project to be completed. Disaster recovery is a daily job duty of a database administrator.

Chapter 2 focuses on truly understanding the database backup process. There are many misleading aspects to the backup process, so without a thorough understanding of just how a backup works, you run the risk of building the foundation of your disaster recovery plan on crumbling bricks.

Chapter 3 builds on Chapter 2 by exploring how to use database backups to restore a database. As with the backup process, you can often be misled while performing a restore. If you aren't familiar with the pitfalls ahead of you, a restore process could take much longer than you anticipated (and much longer than your manager wants).

Chapter 4 explores more complicated backup and recovery techniques using filegroups. As a database grows in size and functionality, it may be necessary to break up the backup process into smaller steps; a full nightly backup just may not be physically feasible. From a restore perspective, you may have data you'd like available before the entire database is restored. Filegroups are the key to both highly customized backups and piecemeal restores.

Chapter 5 shifts from a more technical discussion to the practical activity of creating a backup/recovery plan. Approaching backup without considering what the restore requirements might be (such as how much downtime and potential data loss is acceptable) is irresponsible. Backup and restore always go hand in hand, particularly when planning.

Chapter 6 begins the discussion of mitigation techniques, starting with log shipping. Up to this point in the book, I've talked about how to react to disasters with backup/recovery. You can use log shipping to create a standby database to minimize the impact of a number of disasters, including catastrophic environmental issues.

Chapter 7 continues with a technical discussion of database clustering, another mitigation technique. Also used to minimize the impact of a disaster, database clustering focuses specifically on server failure. Although limited in its usefulness, database clustering should be considered in any disaster recovery plan.

Chapter 8 focuses on database mirroring, which is basically a combination of log shipping and database clustering. By keeping an up-to-date standby database at a remote location, database mirroring can protect against a wide variety of possible disasters, from hardware issues to an actual tornado. Better yet, it can provide a consistent user experience by immediately redirecting clients to the standby database.

Chapter 9 briefly discusses database snapshots. An often-overlooked aspect of disaster recovery is user error, which is unpredictable and potentially devastating. You can use database snapshots as a mechanism to recover from a user error or potentially retrieve altered or deleted data.

Chapter 10 combines a technical discussion of some of the hardware implications you may face with practical approaches you can use to work through those hardware issues. Although this chapter is in no way intended to make you an expert at hardware, it should at least make you conversant enough to discuss potential problems with those who are experts.

Chapter 11 discusses how to approach disaster recovery planning. This completely nontechnical chapter discusses how to combine backup/recovery planning with disaster mitigation techniques to prepare a thorough disaster recovery plan. This chapter includes sample disaster scenarios and potential approaches that could prevent or minimize the impact of the disaster.

Chapter 12 discusses the nontechnical roadblocks you may face when undertaking disaster recovery planning—namely, working with others. The human variable is usually the biggest issue when it comes to disaster recovery planning. I discuss selling the concept to management and colleagues, as well as attaining success while working with problematic areas of the business, whatever they may be.

Contacting the Author

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