

Brought to you by:



Kubernetes Backup & Recovery

for
dummies
A Wiley Brand

Find out why Kubernetes
native backup is important

Learn how to protect your
Kubernetes application

Create automated Kubernetes
backup policies



Steve Kaelble

Kasten by Veeam
Special Edition

About Kasten by Veeam

Kasten is an independent Kubernetes Business Unit within Veeam, and the award-winning leader in Kubernetes Backup and Disaster Recovery. Kasten helps enterprises overcome Day 2 data management challenges to confidently run applications on Kubernetes. Kasten K10, a data management platform purpose-built for Kubernetes, provides enterprise operations teams an easy-to-use, scalable, and secure system for backup/restore, disaster recovery, and application mobility with unparalleled operational simplicity. To find out more, go to <https://www.kasten.io>.



Kubernetes Backup & Recovery

Kasten by Veeam® Special Edition

by Steve Kaelble

**for
dummies®**
A Wiley Brand

Kubernetes Backup & Recovery For Dummies®, Kasten by Veeam® Special Edition

Published by

John Wiley & Sons, Inc.

111 River St.

Hoboken, NJ 07030-5774

www.wiley.com

Copyright © 2021 by John Wiley & Sons, Inc., Hoboken, New Jersey

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the Publisher. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

Trademarks: Wiley, For Dummies, the Dummies Man logo, The Dummies Way, Dummies.com, Making Everything Easier, and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates in the United States and other countries, and may not be used without written permission. Inc. Veeam and the Veeam logo are trademarks or registered trademarks of Veeam Software. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc., is not associated with any product or vendor mentioned in this book.

LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: THE PUBLISHER AND THE AUTHOR MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS WORK AND SPECIFICALLY DISCLAIM ALL WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES OR PROMOTIONAL MATERIALS. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR EVERY SITUATION. THIS WORK IS SOLD WITH THE UNDERSTANDING THAT THE PUBLISHER IS NOT ENGAGED IN RENDERING LEGAL, ACCOUNTING, OR OTHER PROFESSIONAL SERVICES. IF PROFESSIONAL ASSISTANCE IS REQUIRED, THE SERVICES OF A COMPETENT PROFESSIONAL PERSON SHOULD BE SOUGHT. NEITHER THE PUBLISHER NOR THE AUTHOR SHALL BE LIABLE FOR DAMAGES ARISING HEREFROM. THE FACT THAT AN ORGANIZATION OR WEBSITE IS REFERRED TO IN THIS WORK AS A CITATION AND/OR A POTENTIAL SOURCE OF FURTHER INFORMATION DOES NOT MEAN THAT THE AUTHOR OR THE PUBLISHER ENDORSES THE INFORMATION THE ORGANIZATION OR WEBSITE MAY PROVIDE OR RECOMMENDATIONS IT MAY MAKE. FURTHER, READERS SHOULD BE AWARE THAT INTERNET WEBSITES LISTED IN THIS WORK MAY HAVE CHANGED OR DISAPPEARED BETWEEN WHEN THIS WORK WAS WRITTEN AND WHEN IT IS READ.

ISBN 978-1-119-81392-7 (pbk); ISBN 978-1-119-81393-4 (ebk)

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

For general information on our other products and services, or how to create a custom *For Dummies* book for your business or organization, please contact our Business Development Department in the U.S. at 877-409-4177, contact info@dummies.biz, or visit www.wiley.com/go/custompub. For information about licensing the *For Dummies* brand for products or services, contact BrandedRights&Licenses@Wiley.com.

Publisher's Acknowledgments

Some of the people who helped bring this book to market include the following:

Development Editor:

Rebecca Senninger

Acquisition Editor: Ashley Coffey

Editorial Manager: Rev Mengle

Business Development

Representative: Matt Cox

Production Editor:

Vivek Lakshmikanth

Table of Contents

INTRODUCTION	1
About the Book.....	1
Foolish Assumptions.....	2
Icons Used in This Book.....	2
Beyond the Book.....	2
CHAPTER 1: Understanding Kubernetes and Cloud-Native Apps	3
Tracking the Rise of Cloud-Native Applications.....	4
Running on Kubernetes.....	5
Seeing the Advantages	6
Exploring the Myths	7
CHAPTER 2: Building Native Data Protection for Kubernetes	9
Recognizing the Need	10
Dealing with Different Deployment Patterns.....	10
Shifting to the Left.....	12
Resolving Operator Challenges	13
Filling in the Gaps	14
Integrating the Ecosystems.....	15
CHAPTER 3: Following Best Practices for Kubernetes Backup	17
Capturing the Application	17
Tapping into the Architecture	18
Connecting the components	18
Scaling up.....	20
Planning for Recoverability	22
Focusing on Operations	23
Ensuring Security.....	26
Layering in protection	26
Living with multi-tenancy.....	28
Transforming Restore Support.....	29
Keeping up with change.....	29
Enabling portability.....	30

CHAPTER 4:	Attaining Cloud-Native Application Mobility.....	33
	Getting Going in the Cloud.....	33
	Blurring Lines.....	34
	Adding Clusters.....	35
CHAPTER 5:	Settling into the Cloud-Native Ecosystem.....	37
	Understanding the Data Management Ecosystem	38
	Integrating with Prometheus.....	39
	Learning through Auditing	39
	Tying into Network Policies and Security	39
	Advancing Logging	40
	Improving Observability	40
	Keeping Up with Kubernetes Release Cycles.....	40
CHAPTER 6:	Ten Key Takeaways about Kubernetes	
	Backup.....	43
	Understanding the Architecture.....	43
	Focusing on Operations	44
	Upping the Backup Game	44
	Staying Secure	45
	Changing the Speed of Improvement.....	46

Introduction

No one needs to tell you that the cloud is the place to be. Cloud-native adoption and usage is, well, skyrocketing (sorry, pun intended). Kubernetes is everywhere, well on its way to being the next enterprise platform of choice, the foundation for all kinds of applications, with very good reason. It's portable, it's agile, it's scalable, it's incredibly reliable, and it's a developer's dream.

What it's *not*, however, is the be all and end all for the protection of your data. In fact, some of the architectural magic that makes it great also happens to create new challenges in data management and protection. The protections it offers your applications don't automatically extend to your data, and you can't just retrofit legacy backup architectures into a cloud-native ecosystem.

You need a truly cloud-native backup solution, one that not just speaks the language of Kubernetes but lives on this new and exciting planet. And you need insight into the best practices that ensure a smooth evolution to cloud-native adoption and usage.

About the Book

Kubernetes Backup & Recovery For Dummies, Kasten by Veeam Special Edition is your guide to the solution. It lays the groundwork with details on how Kubernetes came into being. It lets you know exactly why your backup tomorrow can't work the same way it did yesterday.

Get through this book and you'll gain a better handle on implementing and operating backup of your Kubernetes apps. Among other things, you find application-centric approaches for recoverability and ensuring security, operating in a world of multi-tenancy, transforming restore support, and really making the most of cloud-native application mobility.

This book is packed with actionable steps for protecting your data in the evolving ecosystem while making life easier for developers and operators. And it has insights for how you can simultaneously celebrate a revolution without rocking the boat in the wrong way.