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Mastering Apache Spark-Mike Frampton 2015-09-30 Gain expertise in processing and storing data by using advanced techniques with Apache Spark About This Book Explore the integration of Apache Spark with third party applications such as H20, Databricks and Titan Evaluate how Cassandra and Hbase can be used for storage An advanced guide with a combination of instructions and practical examples to extend the most up to date Spark functionalities Who This Book Is For If you are a developer with some experience with Spark and want to strengthen your knowledge of how to get around in the world of Spark, then this book is ideal for you. Basic knowledge of Linux, Hadoop and Spark is assumed. Reasonable knowledge of Scala is expected. What You Will Learn Extend the tools available for processing and storage Examine clustering and classification using MLlib Discover Spark stream processing via Flume, HDFS Create a schema in Spark SQL, and learn how to schema can be populated with data Study Spark based graph processing using Spark GraphX Combine Spark with H20 and deep learning and learn why it is useful Evaluate how graph storage works with Apache Spark, Titan, HBase and Cassandra Use Apache Spark in the cloud with Databricks and AWS In Detail Apache Spark is an in-memory cluster based parallel processing system that provides a wide range of functionality like graph processing, machine learning, stream processing and SQL. It operates at unprecedented speeds, is easy to use and offers a rich set of data transformations. This book aims to take your limited knowledge of Spark to the next level by teaching you how to expand Spark functionality. The book commences with an overview of the Spark eco-system. You will learn how to use MLlib to create a fully working neural net for handwriting recognition. You will then discover how stream processing can be tuned for optimal performance and to ensure parallel processing. The book extends to show how to incorporate H20 for machine learning, Titan for graph based storage, Databricks for cloud-based Spark. Intermediate Scala based code examples are provided for Apache Spark module processing in a CentOS Linux and Databricks cloud environment. Style and approach This book is an extensive guide to Apache Spark modules and tools and shows how Spark's functionality can be extended for real-time processing and storage with worked examples.

Mastering Apache Spark 2.x-Romeo Kienzler 2017-07-26 Advanced analytics on your Big Data with latest Apache Spark 2.x About This Book An advanced guide with a combination of instructions and practical examples to extend the most up-to-date Spark functionalities. Extend your data processing capabilities to process huge chunk of data in minimum time using advanced concepts in Spark. Master the art of real-time processing with the help of Apache Spark 2.x Who This Book Is For If you are a developer with some experience with Spark and want to strengthen your knowledge of how to get around in the world of Spark, then this book is ideal for you. Basic knowledge of Linux, Hadoop and Spark is assumed. Reasonable knowledge of Scala is expected. What You Will Learn Examine Advanced Machine Learning and DeepLearning with MLlib, SparkML, SystemML, H2O and DeepLearning4J Study highly optimised unified batch and real-time data processing using SparkSQL and Structured Streaming Evaluate large-scale Graph Processing and Analysis using GraphX and GraphFrames Apply Apache Spark in Elastic deployments using Jupyter and Zeppelin Notebooks, Docker, Kubernetes and the IBM Cloud Understand internal details of cost based optimizers used in Catalyst, SystemML and GraphFrames Learn how specific parameter settings affect overall performance of an Apache Spark cluster Leverage Scala, R and python for your data science projects In Detail Apache Spark is an in-memory cluster-based parallel processing system that provides a wide range of functionalities such as graph processing, machine learning, stream processing, and SQL. This book aims to take your knowledge of Spark to the next level by teaching you how to expand Spark's functionality and implement your data flows and machine/deep learning programs on top of the platform. The book commences with an overview of the Spark ecosystem. It will introduce you to Project Tungsten and Catalyst, two of the major advancements of Apache Spark 2.x. You will understand how memory management and binary processing, cache-aware computation, and code generation are used to speed things up dramatically. The book extends to show how to incorporate H20, SystemML, and Deeplearning4j for machine learning, and Jupyter Notebooks and Kubernetes/Docker for cloud-based Spark. During the course of the book, you will learn about the latest enhancements to Apache Spark 2.x, such as interactive querying of live data and unifying DataFrames and Datasets. You will also learn about the updates on the APIs and how DataFrames and Datasets affect SQL, machine learning, graph processing, and streaming. You will learn to use Spark as a big data operating system, understand how to implement advanced analytics on the new APIs, and explore how easy it is to use day-to-day tasks. Style and approach This book is an extensive guide to Apache Spark modules and tools and shows how Spark's functionality can be extended for real-time processing and storage with worked examples.

Apache Spark 2: Data Processing and Real-Time Analytics-Romeo Kienzler 2018-12-21 Build efficient data flow and machine learning programs with this flexible, multi-functional open-source cluster-computing framework Key Features Master the art of real-time big data processing and machine learning Explore a wide range of use-cases to analyze large data Discover ways to optimize your work by using many features of Spark 2.x and Scala Book Description Apache Spark is an in-memory, cluster-based data processing system that provides a wide range of functionalities such as big data processing, analytics, machine learning, and more. With this Learning Path, you can take your knowledge of Apache Spark to the next level by learning how to expand Spark's functionality and building your own data flow and machine learning programs on this platform. You will work with the different modules in Apache Spark, such as interactive querying with Spark SQL, using DataFrames and datasets, implementing streaming analytics with Spark Streaming, and applying machine learning and deep learning techniques on Spark using MLlib and various external tools. By the end of this elaborately designed Learning Path, you will have all the knowledge you need to master Apache Spark, and build your own big data processing and analytics pipeline quickly and without any hassle. This Learning Path includes content from the following Packt products: Mastering Apache Spark 2.x by Romeo Kienzler Scala and Spark for Big Data Analytics by Md. Rezaul Karim, Sridhar Alla Apache Spark 2.x Machine Learning Cookbook by Siamak Amirghodsi, Meenakshi Rajendran, Broderick Hall, Shuen Mei Cookbook What you will learn Get to grips with all the features of Apache Spark 2.x Perform highly optimized real-time big data processing using Use ML and DL techniques with Spark MLlib and third-party tools Analyze structured and unstructured data using SparkSQL and GraphX Understand tuning, debugging, and monitoring of big data applications Build scalable and fault-tolerant streaming applications Develop scalable recommendation engines Who this book is for If you are an intermediate-level Spark developer looking to master the advanced capabilities and use-cases of Apache Spark 2.x, this Learning Path is ideal for you. Big data professionals who want to learn how to integrate and use the features of Apache Spark and build a strong big data pipeline will also find this Learning Path useful. To grasp the concepts explained in this Learning Path, you must know the fundamentals of Apache Spark and Scala.

Apache Hadoop 3 Quick Start Guide-Hrishikesh Vijay Karambelkar 2018-10-31 A fast paced guide that will help you learn about Apache Hadoop 3 and its ecosystem Key Features Set up, configure and get started with Hadoop to get useful insights from large data sets Work with the different components of Hadoop such as MapReduce, HDFS and YARN Learn about the new features introduced in Hadoop 3 Book Description Apache Hadoop is a widely used distributed data platform. It enables large datasets to be efficiently processed instead of using one large computer to store and process the data. This book will get you started with the Hadoop ecosystem, and introduce you to the main technical topics, including MapReduce, YARN, and HDFS. The book begins with an overview of big data and Apache Hadoop. Then, you will set up a pseudo Hadoop development environment and a multi-node enterprise Hadoop cluster. You will see how the parallel programming paradigm, such as MapReduce, can solve many complex data processing problems. The book also covers the important aspects of the big data software development lifecycle, including quality assurance and control, performance, administration, and monitoring. You will then learn about the Hadoop ecosystem, and tools such as Kafka, Sqoop, Flume, Pig, Hive, and HBase. Finally, you will look at advanced topics, including real time streaming using Apache Storm, and data analytics using Apache Spark. By the end of the book, you will be well versed with different configurations of the Hadoop 3 cluster. What you will learn Store and analyze data at scale using HDFS, MapReduce and YARN Install and configure Hadoop 3 in different modes Use Yarn effectively to run different applications on Hadoop based platform Understand and monitor how Hadoop cluster is managed Consume streaming data using Storm, and then analyze it using Spark Explore Hadoop ecosystem components, such as Flume, Sqoop, HBase, and Kafka Who this book is for Aspiring Big Data professionals who want to learn the essentials of Hadoop 3 will find this book to be useful. Existing Hadoop users who want to get up to speed with the new features introduced in Hadoop 3 will also benefit from this book. Having knowledge of Java programming will be an added advantage.

Hadoop Real-World Solutions Cookbook-Tanmay Deshpande 2016-03-31 Over 90 hands-on recipes to help you learn and master the intricacies of Apache Hadoop 2.X, YARN, Hive, Pig, Oozie, Flume, Sqoop, Apache Spark, and Mahout About This Book Implement outstanding Machine Learning use cases on your own analytics models and processes. Solutions to common problems when working with the Hadoop ecosystem. Step-by-step implementation of end-to-end big data use cases. Who This Book Is For Readers who have a basic knowledge of big data systems and want to advance their knowledge with hands-on recipes. What You Will Learn Installing and maintaining Hadoop 2.X cluster and its ecosystem. Write advanced Map Reduce programs and understand design patterns. Advanced Data Analysis using the Hive, Pig, and Map Reduce programs. Import and export data from various sources using Sqoop and Flume. Data storage in various file formats such as Text, Sequential, Parquet, ORC, and RC Files. Machine learning principles with libraries such as Mahout Batch and Stream data processing using Apache Spark In Detail Big data is the current requirement. Most organizations produce huge amount of data every day. With the arrival of Hadoop-like tools, it has become easier for everyone to solve big data problems with great efficiency and at minimal cost. Grasping Machine Learning techniques will help you greatly in building predictive models and using this data to make the right decisions for your organization. Hadoop Real World Solutions Cookbook gives readers insights into learning and mastering big data via recipes. The book not only clarifies most big data tools in the market but also provides best practices for using them. The book provides recipes that are based on the latest versions of Apache Hadoop 2.X, YARN, Hive, Pig, Sqoop, Flume, Apache Spark, Mahout and many more such ecosystem tools. This real-world-solution cookbook is packed with handy recipes you can apply to your own everyday issues. Each chapter provides in-depth recipes that can be referenced easily. This book provides detailed practices on the latest technologies such as YARN and Apache Spark. Readers will be able to consider themselves as big data experts on completion of this book. This guide is an invaluable tutorial if you are planning to implement a big data warehouse for your business. Style and approach An easy-to-follow guide that walks you through world of big data. Each tool in the Hadoop ecosystem is explained in detail and the recipes are placed in such a manner that readers can implement them sequentially. Plenty of reference links are provided for advanced reading.

Big Data Analytics with Hadoop 3-Sridhar Alla 2018-05-31 Explore big data concepts, platforms, analytics, and their applications using the power of Hadoop 3 Key Features Learn Hadoop 3 to build effective big data analytics solutions on-premise and on cloud Integrate Hadoop with other big data tools such as R, Python, Apache Spark, and Apache Flink Exploit big data using Hadoop 3 with real-world examples Book Description Apache Hadoop is the most popular platform for big data processing, and can be combined with a host of other big data tools to build powerful analytics solutions. Big Data Analytics with Hadoop 3 shows you how to do just that, by providing insights into the software as well as its benefits with the help of practical examples. Once you have taken a tour of Hadoop 3's latest features, you will get an overview of HDFS, MapReduce, and YARN, and how they enable faster, more efficient big data processing. You will then move on to learning how to integrate Hadoop with the open source tools, such as Python and R, to analyze and visualize data and perform statistical computing on big data. As you get acquainted with all this, you will explore how to use Hadoop 3 with Apache Spark and Apache Flink for real-time data analytics and stream processing. In addition to this, you will understand how to use Hadoop to build analytics solutions on the cloud and an end-to-end pipeline to perform big data analysis using practical use cases. By the end of this book, you will be well-versed with the analytical capabilities of the Hadoop ecosystem. You will be able to build powerful solutions to perform big data analytics and get insight effortlessly. What you will learn Explore the new features of Hadoop 3 along with HDFS, YARN, and MapReduce Get well-versed with the analytical capabilities of Hadoop ecosystem using practical examples Integrate Hadoop with R and Python for more efficient big data processing Learn to use Hadoop with Apache Spark and Apache Flink for real-time data analytics Set up a Hadoop cluster on AWS cloud Perform big data analytics on AWS using Elastic Map Reduce Who this book is for Big Data Analytics with Hadoop 3 is for you if you are looking to build high-performance analytics solutions for your enterprise or business using Hadoop 3's powerful features. A basic understanding of the Java programming language is required.

Apache Hadoop YARN-Arun C. Murthy 2013-11 "Apache Hadoop is helping drive the Big Data revolution. Now, its data processing has been completely overhauled: Apache Hadoop YARN provides resource management at data center scale and easier ways to create distributed applications that process petabytes of data. And now in Apache HadoopTM YARN, two Hadoop technical leaders show you how to develop new applications and adapt existing code to fully leverage these revolutionary advances." -- From the Amazon

Machine Learning-Jason Bell 2014-10-20 Dig deep into the data with a hands-on guide to machinelearning Machine Learning: Hands-On for Developers and TechnicalProfessionals provides hands-on instruction and fully-codedworking examples for the most common machine learning techniquesused by developers and technical professionals. The book contains abreakdown of each ML variant, explaining how it works and how it isused within certain industries, allowing readers to incorporate thepresented techniques into their own work as they follow along. Acore tenant of machine learning is a strong focus on datapreparation, and a full exploration of the various types oflearning algorithms illustrates how the proper tools can help anydeveloper extract information and insights from existing data. Thebook includes a full complement of Instructor's Materials tofacilitate use in the classroom, making this resource useful forstudents and as a professional reference. At its core, machine learning is a mathematical, algorithm-basedtechnology that forms the basis of historical data mining andmodern big data science. Scientific analysis of big data requires aworking knowledge of machine learning, which forms predictionsbased on known properties learned from training data. MachineLearning is an accessible, comprehensive guide for thenon-mathematician, providing clear guidance that allows readersto: Learn the languages of machine learning includingHadoop,Mahout, and Weka Understand decision trees, Bayesian networks, and artificialneural networks Implement Association Rule, Real Time, and Batch learning Develop a strategic plan for safe, effective, and efficientmachine learning By learning to construct a system that can learn from data,readers can increase their utility across industries. Machinelearning sits at the core of deep dive data analysis andvisualization, which is increasingly in demand as companiesdiscover the goldmine hiding in their existing data. For the techprofessional involved in data science, Machine Learning:Hands-On for Developers and Technical Professionals providesthe skills and techniques required to dig deeper.

Hadoop: The Definitive Guide-Tom White 2009-05-29 Hadoop: The Definitive Guide helps you harness the power of your data. Ideal for processing large datasets, the Apache Hadoop framework is an open source implementation of the MapReduce algorithm on which Google built its empire. This comprehensive resource demonstrates how to use Hadoop to build reliable, scalable, distributed systems: programmers will find details for analyzing large datasets, and administrators will learn how to set up and run Hadoop clusters. Complete with case studies that illustrate how Hadoop solves specific problems, this book helps you: Use the Hadoop Distributed File System (HDFS) for storing large datasets, and run distributed computations over those datasets using MapReduce Become familiar with Hadoop's data and I/O building blocks for compression, data integrity, serialization, and persistence Discover common pitfalls and advanced features for writing real-world MapReduce programs Design, build, and administer a dedicated cluster, or run Hadoop in the cloud Use Pig, a high-level query language for large-scale data processing Take advantage of HBase, Hadoop's database for structured and semi-structured data Learn ZooKeeper, a toolkit of coordination primitives for building distributed systems If you have lots of data -- whether it's gigabytes or petabytes -- Hadoop is the perfect solution. Hadoop: The Definitive Guide is the most thorough book available on the subject. "Now you have the opportunity to learn about Hadoop from a master-not only of the technology, but also of common sense and plain talk."-- Doug Cutting, Hadoop Founder, Yahoo!

Hadoop 2 Quick-Start Guide-Douglas Eadline 2015-10-28 Get Started Fast with Apache Hadoop® 2, YARN, and Today's Hadoop Ecosystem With Hadoop 2.x and YARN, Hadoop moves beyond MapReduce to become practical for virtually any type of data processing. Hadoop 2.x and the Data Lake concept represent a radical shift away from conventional approaches to data usage and storage. Hadoop 2.x installations offer unmatched scalability and breakthrough extensibility that supports new and existing Big Data analytics processing methods and models. Hadoop® 2 Quick-Start Guide is the first easy, accessible guide to Apache Hadoop 2.x, YARN, and the modern Hadoop ecosystem. Building on his unsurpassed experience teaching Hadoop and Big Data, author Douglas Eadline covers all the basics you need to know to install and use Hadoop 2 on personal computers or servers, and to navigate the powerful technologies that complement it. Eadline concisely introduces and explains every key Hadoop 2 concept, tool, and service, illustrating each with a simple "beginning-to-end" example and identifying trustworthy, up-to-date resources for learning more. This guide is ideal if you want to learn about Hadoop 2 without getting mired in technical details. Douglas Eadline will bring you up to speed quickly, whether you're a user, admin, devops specialist, programmer, architect, analyst, or data scientist. Coverage Includes Understanding what Hadoop 2 and YARN do, and how they improve on Hadoop 1 with MapReduce Understanding Hadoop-based Data Lakes versus RDBMS Data Warehouses Installing Hadoop 2 and core services on Linux machines, virtualized sandboxes, or clusters Exploring the Hadoop Distributed File System (HDFS) Understanding the essentials of MapReduce and YARN application programming Simplifying programming and data movement with Apache Pig, Hive, Sqoop, Flume, Oozie, and HBase Observing application progress, controlling jobs, and managing workflows Managing Hadoop efficiently with Apache Ambari–including recipes for HDFS to NFSv3 gateway, HDFS snapshots, and YARN configuration Learning basic Hadoop 2 troubleshooting, and installing Apache Hue and Apache Spark

Professional Hadoop Solutions-Boris Lublinsky 2013-09-12 The go-to guidebook for deploying Big Data solutions with Hadoop Today's enterprise architects need to understand how the Hadoopframeworks and APIs fit together, and how they can be integrated todeliver real-world solutions. This book is a practical, detailedguide to building and implementing those solutions, with code-levelinstruction in the popular Wrox tradition. It covers storing datawith HDFS and Hbase, processing data with MapReduce, and automatingdata processing with Oozie. Hadoop security, running Hadoop withAmazon Web Services, best practices, and automating Hadoopprocesses in real time are also covered in depth. With in-depth code examples in Java and XML and the latest onrecent additions to the Hadoop ecosystem, this complete resourcealso covers the use of APIs, exposing their inner workings andallowing architects and developers to better leverage and customizethem. The ultimate guide for developers, designers, and architectswho need to build and deploy Hadoop applications Covers storing and processing data with various technologies,automating data processing, Hadoop security, and deliveringreal-time solutions Includes detailed, real-world examples and code-levelguidelines Explains when, why, and how to use these tools effectively Written by a team of Hadoop experts in theprogrammer-to-programmer Wrox style Professional Hadoop Solutions is the reference enterprisearchitects and developers need to maximize the power of Hadoop.

Hadoop MapReduce v2 Cookbook - Second Edition-Thilina Gunarathne 2015-02-25 If you are a Big Data enthusiast and wish to use Hadoop v2 to solve your problems, then this book is for you. This book is for Java programmers with little to moderate knowledge of Hadoop MapReduce. This is also a one-stop reference for developers and system admins who want to quickly get up to speed with using Hadoop v2. It would be helpful to have a basic knowledge of software development using Java and a basic working knowledge of Linux.

Spark in Action, Second Edition-Jean-Georges Perrin 2020-06-02 Summary The Spark distributed data processing platform provides an easy-to-implement tool for ingesting, streaming, and processing data from any source. In Spark in Action, Second Edition, you'll learn to take advantage of Spark's core features and incredible processing speed, with applications including real-time computation, delayed evaluation, and machine learning. Spark skills are a hot commodity in enterprises worldwide, and with Spark's powerful and flexible Java APIs, you can reap all the benefits without first learning Scala or Hadoop. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Analyzing enterprise data starts by reading, filtering, and merging files and streams from many sources. The Spark data processing engine handles this varied volume like a champ, delivering speeds 100 times faster than Hadoop systems. Thanks to SQL support, an intuitive interface, and a straightforward multilanguage API, you can use Spark without learning a complex new ecosystem. About the book Spark in Action, Second Edition, teaches you to create end-to-end analytics applications. In this entirely new book, you'll learn from interesting Java-based examples, including a complete data pipeline for processing NASA satellite data. And you'll discover Java, Python, and Scala code samples hosted on GitHub that you can explore and adapt, plus appendixes that give you a cheat sheet for installing tools and understanding Spark-specific terms. What's inside Writing Spark applications in Java Spark application architecture Ingestion through files, databases, streaming, and Elasticsearch Querying distributed datasets with Spark SQL About the reader This book does not assume previous experience with Spark, Scala, or Hadoop. About the author Jean-Georges Perrin is an experienced data and software architect. He is France's first IBM Champion and has been honored for 12 consecutive years. Table of Contents PART 1 - THE THEORY CRIPPLED BY AWESOME EXAMPLES 1 So, what is Spark, anyway? 2 Architecture and flow 3 The majestic role of the dataframe 4 Fundamentally lazy 5 Building a simple app for deployment 6 Deploying your simple app PART 2 - INGESTION 7 Ingestion from files 8 Ingestion from databases 9 Advanced ingestion: finding data sources and building your own 10 Ingestion through structured streaming PART 3 - TRANSFORMING YOUR DATA 11 Working with SQL 12 Transforming your data 13 Transforming entire documents 14 Extending transformations with user-defined functions 15 Aggregating your data PART 4 - GOING FURTHER 16 Cache and checkpoint: Enhancing Spark's performances 17 Exporting data and building full data pipelines 18 Exploring deployment

Apache Flume: Distributed Log Collection for Hadoop - Second Edition-Steve Hoffman 2015-02-25 If you are a Hadoop programmer who wants to learn about Flume to be able to move datasets into Hadoop in a timely and replicable manner, then this book is ideal for you. No prior knowledge about Apache Flume is necessary, but a basic understanding of Hadoop and the Hadoop File System (HDFS) is assumed.

Apache Hive Essentials-Dayong Du 2015-02-26 If you are a data analyst, developer, or simply someone who wants to use Hive to explore and analyze data in Hadoop, this is the book for you. Whether you are new to big data or an expert, with this book, you will be able to master both the basic and the advanced features of Hive. Since Hive is an SQL-like language, some previous experience with the SQL language and databases is useful to have a better understanding of this book.

Hadoop Operations-Eric Sammer 2012-09-26 If you've been asked to maintain large and complex Hadoop clusters, this book is a must. Demand for operations-specific material has skyrocketed now that Hadoop is becoming the de facto standard for truly large-scale data processing in the data center. Eric Sammer, Principal Solution Architect at Cloudera, shows you the particulars of running Hadoop in production, from planning, installing, and configuring the system to providing ongoing maintenance. Rather than run through all possible scenarios, this pragmatic operations guide calls out what works, as demonstrated in critical deployments. Get a high-level overview of HDFS and MapReduce: why they exist and how they work Plan a Hadoop deployment, from hardware and OS selection to network requirements Learn setup and configuration details with a list of critical properties Manage resources by sharing a cluster across multiple groups Get a runbook of the most common cluster maintenance tasks Monitor Hadoop clusters—and learn troubleshooting with the help of real-world war stories Use basic tools and techniques to handle backup and catastrophic failure

Hadoop MapReduce Cookbook-Srinath Perera 2013-01-01 Individual self-contained code recipes. Solve specific problems using individual recipes, or work through the book to develop your capabilities. If you are a big data enthusiast and striving to use Hadoop to solve your problems, this book is for you. Aimed at Java programmers with some knowledge of Hadoop MapReduce, this is also a comprehensive reference for developers and system admins who want to get up to speed using Hadoop. Hbase Administration Cookbook-Yifeng Jiang 2012-08-16 As part of Packt's cookbook series, each recipe offers a practical, step-by-step solution to common problems found in HBase administration. This book is for HBase administrators, developers, and will even help Hadoop administrators. You are not required to have HBase experience, but are expected to have a basic understanding of Hadoop and MapReduce.

Mastering Hadoop 3-Chanchal Singh 2019-02-28 A comprehensive guide to mastering the most advanced Hadoop 3 concepts Key Features Get to grips with the newly introduced features and capabilities of Hadoop 3 Crunch and process data using MapReduce, YARN, and a host of tools within the Hadoop ecosystem Sharpen your Hadoop skills with real-world case studies and code Book Description Apache Hadoop is one of the most popular big data solutions for distributed storage and for processing large chunks of data. With Hadoop 3, Apache promises to provide a high-performance, more fault-tolerant, and highly efficient big data processing platform, with a focus on improved scalability and increased efficiency. With this guide, you'll understand advanced concepts of the Hadoop ecosystem tool. You'll learn how Hadoop works internally, study advanced concepts of different ecosystem tools, discover solutions to real-world use cases, and understand how to secure your cluster. It will then walk you through HDFS, YARN, MapReduce, and Hadoop 3 concepts. You'll be able to address common challenges like using Kafka efficiently, designing low latency, reliable message delivery Kafka systems, and handling high data volumes. As you advance, you'll discover how to address major challenges when building an enterprise-grade messaging system, and how to use different stream processing systems along with Kafka to fulfil your enterprise goals. By the end of this book, you'll have a complete understanding of how components in the Hadoop ecosystem are effectively integrated to implement a fast and reliable data pipeline, and you'll be equipped to tackle a range of real-world problems in data pipelines. What you will learn Gain an in-depth understanding of distributed computing using Hadoop 3 Develop enterprise-grade applications using Apache Spark, Flink, and more Build scalable and high-performance Hadoop data pipelines with security, monitoring, and data governance Explore batch data processing patterns and how to model data in Hadoop Master best practices for enterprises using, or planning to use, Hadoop 3 as a data platform Understand security aspects of Hadoop, including authorization and authentication Who this book is for If you want to become a big data professional by mastering the advanced concepts of Hadoop, this book is for you. You'll also find this book useful if you're a Hadoop professional looking to strengthen your knowledge of the Hadoop ecosystem. Fundamental knowledge of the Java programming language and basics of Hadoop is necessary to get started with this book.

Hadoop Operations and Cluster Management Cookbook-Shumin Guo 2013-01-01 Solve specific problems using individual self-contained code recipes, or work through the book to develop your capabilities. This book is packed with easy-to-follow code and commands used for illustration, which makes your learning curve easy and quick.If you are a Hadoop cluster system administrator with Unix/Linux system management experience and you are looking to get a good grounding in how to set up and manage a Hadoop cluster, then this book is for you. It's assumed that you will have some experience in Unix/Linux command line already, as well as being familiar with network communication basics.

Practical Hadoop Ecosystem-Deepak Vohra 2016-09-30 Learn how to use the Apache Hadoop projects, including MapReduce, HDFS, Apache Hive, Apache HBase, Apache Kafka, Apache Mahout, and Apache Solr. From setting up the environment to running sample applications each chapter in this book is a practical tutorial on using an Apache Hadoop ecosystem project. While several books on Apache Hadoop are available, most are based on the main projects, MapReduce and HDFS, and none discusses the other Apache Hadoop ecosystem projects and how they all work together as a cohesive big data development platform. What You Will Learn: Set up the environment in Linux for Hadoop projects using Cloudera Hadoop Distribution CDH 5 Run a MapReduce job Store data with Apache Hive, and Apache HBase Index data in HDFS with Apache Solr Develop a Kafka messaging system Stream Logs to HDFS with Apache Flume Transfer data from MySQL database to Hive, HDFS, and HBase with Sqoop Create a table over Apache Solr Develop a Mahout User Recommender System Who This Book Is For: Apache Hadoop developers. Pre-requisite knowledge of Linux and some knowledge of Hadoop is required.

Data Algorithms-Mahmoud Parsian 2015-07-13 If you are ready to dive into the MapReduce framework for processing large datasets, this practical book takes you step by step through the algorithms and tools you need to build distributed MapReduce applications with Apache Hadoop or Apache Spark. Each chapter provides a recipe for solving a massive computational problem, such as building a recommendation system. You'll learn how to implement the appropriate MapReduce solution with code that you can use in your projects. Dr. Mahmoud Parsian covers basic design patterns, optimization techniques, and data mining and machine learning solutions for problems in bioinformatics, genomics, statistics, and social network analysis. This book also includes an overview of MapReduce, Hadoop, and Spark. Topics include: Market basket analysis for a large set of transactions Data mining algorithms (K-means, KNN, and Naive Bayes) Using huge genomic data to sequence DNA and RNA Naive Bayes theorem and Markov chains for data and market prediction Recommendation algorithms and pairwise document similarity Linear regression, Cox regression, and Pearson correlation Allelic frequency and mining DNA Social network analysis (recommendation systems, counting triangles, sentiment analysis)

Instant Apache Sqoop-Ankit Jain 2013-01-01 Filled with practical, step-by-step instructions and clear explanations for the most important and useful tasks. Instant Apache Sqoop is full of step-by-step instructions and practical examples along with challenges to test and improve your knowledge.This book is great for developers who are looking to get a good grounding in how to effectively and efficiently move data between RDBMS and the Hadoop ecosystem. It's assumed that you will have some experience in Hadoop already as well as some familiarity with HBase and Hive.

Hadoop: The Definitive Guide-Tom White 2012-05-10 Ready to unlock the power of your data? With this comprehensive guide, you'll learn how to build and maintain reliable, scalable, distributed systems with Apache Hadoop. This book is ideal for programmers looking to analyze datasets of any size, and for administrators who want to set up and run Hadoop clusters. You'll find illuminating case studies that demonstrate how Hadoop is used to solve specific problems. This third edition covers recent changes to Hadoop, including material on the new MapReduce API, as well as MapReduce 2 and its more flexible execution model (YARN). Store large datasets with the Hadoop Distributed File System (HDFS) Run distributed computations with MapReduce Use Hadoop's data and I/O building blocks for compression, data integrity, serialization (including Avro), and persistence Discover common pitfalls and advanced features for writing real-world MapReduce programs Design, build, and administer a dedicated Hadoop cluster—or run Hadoop in the cloud Load data from relational databases into HDFS, using Sqoop Perform large-scale data processing with the Pig query language Analyze datasets with Hive, Hadoop's data warehousing system Take advantage of HBase for structured and semi-structured data, and ZooKeeper for building distributed systems

Sams Teach Yourself Hadoop in 24 Hours-Jeffrey Aven 2017

Learning Spark-Jules S. Damji 2020-07-16 Data is bigger, arrives faster, and comes in a variety of formats—and it all needs to be processed at scale for analytics or machine learning. But how can you process such varied workloads efficiently? Enter Apache Spark. Updated to Spark 3.0, this second edition shows data engineers and data scientists why structure and unification in Spark matters. Specifically, this book explains how to perform simple and complex data analytics and employ machine learning algorithms. Through step-by-step walk-throughs, code snippets, and notebooks, you'll be able to: Learn Python, SQL, Scala, or Java high-level Structured APIs Understand Spark operations and SQL Engine Inspect, tune, and debug Spark operations with Spark configurations and Spark UI Connect to data sources: JSON, Parquet, CSV, Avro, ORC, Hive, S3, or Kafka Perform analytics on batch and streaming data using Structured Streaming Build reliable data pipelines with open source Delta Lake and Spark Develop machine learning pipelines with MLlib and productionize models using MLflow

IBM Data Engine for Hadoop and Spark-Dino Quintero 2016-08-24 This IBM® Redbooks® publication provides topics to help the technical community take advantage of the resilience, scalability, and performance of the IBM Power SystemsTM platform to implement or integrate an IBM Data Engine for Hadoop and Spark solution for analytics solutions to access, manage, and analyze data sets to improve business outcomes. This book documents topics to demonstrate and take advantage of the analytics strengths of the IBM POWER8® platform, the IBM analytics software portfolio, and selected third-party tools to help solve customer's data analytic workload requirements. This book describes how to plan, prepare, install, integrate, manage, and show how to use the IBM Data Engine for Hadoop and Spark solution to run analytic workloads on IBM POWER8. In addition, this publication delivers documentation to complement available IBM analytics solutions to help your data analytic needs. This publication strengthens the position of IBM analytics and big data solutions with a well-defined and documented deployment model within an IBM POWER8 virtualized environment so that customers have a planned foundation for security, scaling, capacity, resilience, and optimization for analytics solutions and support on IBM Power Systems. Digital Libraries: For Cultural Heritage, Knowledge Dissemination, and Future Creation-Chunxiao Xing 2011-10-12 This book constitutes the refereed proceedings of the 13th International Conference on Asia-Pacific Digital Libraries, ICADL 2011, held in Beijing, China, in October 2011. The 33 revised full papers, 8 short papers and 9 poster papers presented were carefully reviewed and selected from 136 submissions. The topics covered are digital archives and preservation; information mining and extraction; metadata; catalogue; distributed repositories and cloud computing; social network and personalized service; mobile services and electronic publishing; multimedia digital libraries; information retrieval; and tools and systems for digital library.

Scala for Machine Learning-Patrick R. Nicolas 2015-12-18 Are you curious about AI? All you need is a good understanding of the Scala programming language, a basic knowledge of statistics, a keen interest in Big Data processing, and this book!

Expert Hadoop 2 Administration-Sam R. Alapati 2016-11-29 This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. The Comprehensive, Up-to-Date Apache Hadoop Administration Handbook and Reference "Sam Alapati has worked with production Hadoop clusters for six years. His unique depth of experience has enabled him to write the go-to resource for all administrators looking to spec, size, expand, and secure production Hadoop clusters of any size." —Paul Dix, Series Editor In Expert Hadoop® Administration, leading Hadoop administrator Sam R. Alapati brings together authoritative knowledge for creating, configuring, securing, managing, and optimizing production Hadoop clusters in any environment. Drawing on his experience with large-scale Hadoop administration, Alapati integrates action-oriented advice with carefully researched explanations of both problems and solutions. He covers an unmatched range of topics and offers an unparalleled collection of realistic examples. Alapati demystifies complex Hadoop environments, helping you understand exactly what happens behind the scenes when you administer your cluster. You'll gain unprecedented insight as you walk through building clusters from scratch and configuring high availability, performance, security, encryption, and other key attributes. The high-value administration skills you learn here will be indispensable no matter what Hadoop distribution you use or what Hadoop applications you run. Understand Hadoop's architecture from an administrator's standpoint Create simple and fully distributed clusters Run MapReduce and Spark applications in a Hadoop cluster Manage and protect Hadoop data and high availability Work with HDFS commands, file permissions, and storage management Move data, and use YARN to allocate resources and schedule jobs Manage job workflows with Oozie and Hue Secure, monitor, log, and optimize Hadoop Benchmark and troubleshoot Hadoop

Learning Apache Kafka - Second Edition-Nishant Garg 2015-02-26 This book is for readers who want to know more about Apache Kafka at a hands-on level; the key audience is those with software development experience but no prior exposure to Apache Kafka or similar technologies. It is also useful for enterprise application developers and big data enthusiasts who have worked with other publisher-subscriber-based systems and want to explore Apache Kafka as a futuristic solution. Oracle Big Data Handbook-Tom Plunkett 2013-10-06 Transform Big Data into Insight "In this book, some of Oracle's best engineers and architects explain how you can make use of big data. They'll tell you how you can integrate your existing Oracle solutions with big data systems, using each where appropriate and moving data between them as needed." —Doug Cutting, creator of Apache Hadoop Cowritten by members of Oracle's Big Data team, Oracle Big Data Handbook provides complete coverage of Oracle's comprehensive, integrated set of products for acquiring, organizing, analyzing, and leveraging unstructured data. The book discusses the strategies and technologies essential for a successful big data implementation, including Apache Hadoop, Oracle Big Data Appliance, Oracle Big Data Connectors, Oracle NoSQL Database, Oracle Endeca, Oracle Advanced Analytics, and Oracle's open source R offerings. Best practices for migrating from legacy systems and integrating existing data warehousing and analytics solutions into an enterprise big data infrastructure are also included in this Oracle Press guide. Understand the value of a comprehensive big data strategy Maximize the distributed processing power of the Apache Hadoop platform Discover the advantages of using Oracle Big Data Appliance as an engineered system for Hadoop and Oracle NoSQL Database Configure, deploy, and monitor Hadoop and Oracle

Big Data Appliance Integrate your existing data warehousing and analytics infrastructure into a big data architecture Share data among Hadoop and relational databases using Oracle Big Data Connectors Understand how Oracle NoSQL Database integrates into the Oracle Big Data architecture Deliver faster time to value using in-database analytics Analyze data with Oracle Advanced Analytics (Oracle R Enterprise and Oracle Data Mining), Oracle R Distribution, ROracle, and Oracle R Connector for Hadoop Analyze disparate data with Oracle Endeca Information Discovery Plan and implement a big data governance strategy and develop an architecture and roadmap

Big Data Forensics – Learning Hadoop Investigations-Joe Sremack 2015-09-24 Perform forensic investigations on Hadoop clusters with cutting-edge tools and techniques About This Book Identify, collect, and analyze Hadoop evidence forensically Learn about Hadoop's internals and Big Data file storage concepts A step-by-step guide to help you perform forensic analysis using freely available tools Who This Book Is For This book is meant for statisticians and forensic analysts with basic knowledge of digital forensics. They do not need to know Big Data Forensics. If you are an IT professional, law enforcement professional, legal professional, or a student interested in Big Data and forensics, this book is the perfect hands-on guide for learning how to conduct Hadoop forensic investigations. Each topic and step in the forensic process is described in accessible language. What You Will Learn Understand Hadoop internals and file storage Collect and analyze Hadoop forensic evidence Perform complex forensic analysis for fraud and other investigations Use state-of-the-art forensic tools Conduct interviews to identify Hadoop evidence Create compelling presentations of your forensic findings Understand how Big Data clusters operate Apply advanced forensic techniques in an investigation, including file carving, statistical analysis, and more In Detail Big Data forensics is an important type of digital investigation that involves the identification, collection, and analysis of large-scale Big Data systems. Hadoop is one of the most popular Big Data solutions, and forensically investigating a Hadoop cluster requires specialized tools and techniques. With the explosion of Big Data, forensic investigators need to be prepared to analyze the petabytes of data stored in Hadoop clusters. Understanding Hadoop's operational structure and performing forensic analysis with court-accepted tools and best practices Will help you conduct a successful investigation. Discover how to perform a complete forensic investigation of large-scale Hadoop clusters using the same tools and techniques employed by forensic experts. This book begins by taking you through the process of forensic investigation and the pitfalls to avoid. It will walk you through Hadoop's internals and architecture, and you will discover what types of information Hadoop stores and how to access that data. You will learn to identify Big Data evidence using techniques to survey a live system and interview witnesses. After setting up your own Hadoop system, you will collect evidence using techniques such as forensic imaging and application-based extractions. You will analyze Hadoop evidence using advanced tools and techniques to uncover events and statistical information. Finally, data visualization and evidence presentation techniques are covered to help you properly communicate your findings to any audience. Style and approach This book is a complete guide that follows every step of the forensic analysis process in detail. You will be guided through each key topic and step necessary to perform an investigation. Hands-on exercises are presented throughout the book, and technical reference guides and sample documents are included for real-world use.

Frank Kane's Taming Big Data with Apache Spark and Python-Frank Kane 2017-06-30 Frank Kane's hands-on Spark training course, based on his bestselling Taming Big Data with Apache Spark and Python video, now available in a book. Understand and analyze large data sets using Spark on a single system or on a cluster. About This Book Understand how Spark can be distributed across computing clusters Develop and run Spark jobs efficiently using Python A hands-on tutorial by Frank Kane with over 15 real-world examples teaching you Big Data processing with Spark Who This Book Is For If you are a data scientist or data analyst who wants to learn Big Data processing using Apache Spark and Python, this book is for you. If you have some programming experience in Python, and want to learn how to process large amounts of data using Apache Spark, Frank Kane's Taming Big Data with Apache Spark and Python will also help you. What You Will Learn Find out how you can identify Big Data problems as Spark problems Install and run Apache Spark on your computer or on a cluster Analyze large data sets across many CPUs using Spark's Resilient Distributed Datasets Implement machine learning on Spark using the MLlib library Process continuous streams of data in real time using the Spark streaming module Perform complex network analysis using Spark's GraphX library Use Amazon's Elastic MapReduce service to run your Spark jobs on a cluster In Detail Frank Kane's Taming Big Data with Apache Spark and Python is your companion to learning Apache Spark in a hands-on manner. Frank will start you off by teaching you how to set up Spark on a single system or on a cluster, and you'll soon move on to analyzing large data sets using Spark RDD, and developing and running effective Spark jobs quickly using Python. Apache Spark has emerged as the next big thing in the Big Data domain – quickly rising from an ascending technology to an established superstar in just a matter of years. Spark allows you to quickly extract actionable insights from large amounts of data, on a real-time basis, making it an essential tool in many modern businesses. Frank has packed this book with over 15 interactive, fun-filled examples relevant to the real world, and he will empower you to understand the Spark ecosystem and implement production-grade real-time Spark projects with ease. Style and approach Frank Kane's Taming Big Data with Apache Spark and Python is a hands-on tutorial with over 15 real-world examples carefully explained by Frank in a step-by-step manner. The examples vary in complexity, and you can move through them at your own pace.

Introducing Microsoft Azure HDInsight-Avkash Chauhan 2014-06-12 Microsoft Azure HDInsight is Microsoft's 100 percent compliant distribution of Apache Hadoop on Microsoft Azure. This means that standard Hadoop concepts and technologies apply, so learning the Hadoop stack helps you learn the HDInsight service. At the time of this writing, HDInsight (version 3.0) uses Hadoop version 2.2 and Hortonworks Data Platform 2.0. In Introducing Microsoft Azure HDInsight, we cover what big data really means, how you can use it to your advantage in your company or organization, and one of the services you can use to do that quickly-specifically, Microsoft's HDInsight service. We start with an overview of big data and Hadoop, but we don't emphasize only concepts in this book–we want you to jump in and get your hands dirty working with HDInsight in a practical way. To help you learn and even implement HDInsight right away, we focus on a specific use case that applies to almost any organization and demonstrate a process that you can follow along with. We also help you learn more. In the last chapter, we look ahead at the future of HDInsight and give you recommendations for self-learning so that you can dive deeper into important concepts and round out your education on working with big data.

Harness the Power of Big Data The IBM Big Data Platform-Paul Zikopoulos 2012-10-18 Boost your Big Data IQ! Gain insight into how to govern and consume IBM's unique in-motion and at-rest Big Data analytic capabilities Big Data represents a new era of computing—an inflection point of opportunity where data in any format may be explored and utilized for breakthrough insights—whether that data is in-place, in-motion, or at-rest. IBM is uniquely positioned to help clients navigate this transformation. This book reveals how IBM is infusing open source Big Data technologies with IBM innovation that manifest in a platform capable of "changing the game." The four defining characteristics of Big Data—volume, variety, velocity, and veracity—are discussed. You'll understand how IBM is fully committed to Hadoop and integrating it into the enterprise. Hear about how organizations are taking inventories of their existing Big Data assets, with search capabilities that help organizations discover what they could already know, and extend their reach into new data territories for unprecedented model accuracy and discovery. In this book you will also learn not just about the technologies that make up the IBM Big Data platform, but when to leverage its purpose-built engines for analytics on data in-motion and data at-rest. And you'll gain an understanding of how and when to govern Big Data, and how IBM's industry-leading InfoSphere integration and governance portfolio helps you understand, govern, and effectively utilize Big Data. Industry use cases are also included in this practical guide.

Learning Spark-Holden Karau 2015-01-28 This book introduces Apache Spark, the open source cluster computing system that makes data analytics fast to write and fast to run. You'll learn how to express parallel jobs with just a few lines of code, and cover applications from simple batch jobs to stream processing and machine learning.--

Learning Hadoop 2-Garry Turkington 2015-02-13 If you are a system or application developer interested in learning how to solve practical problems using the Hadoop framework, then this book is ideal for you. You are expected to be familiar with the Unix/Linux command-line interface and have some experience with the Java programming language. Familiarity with Hadoop would be a plus.

MySQL 8 for Big Data-Shabbir Challawala 2017-10-20 Uncover the power of MySQL 8 for Big Data About This Book Combine the powers of MySQL and Hadoop to build a solid Big Data solution for your organization Integrate MySQL with different NoSQL APIs and Big Data tools such as Apache Sqoop A comprehensive guide with practical examples on building a high performance Big Data pipeline with MySQL Who This Book Is For This book is intended for MySQL database administrators and Big Data professionals looking to integrate MySQL 8 and Hadoop to implement a high performance Big Data solution. Some previous experience with MySQL will be helpful, although the book will highlight the newer features introduced in MySQL 8. What You Will Learn Explore the features of MySQL 8 and how they can be leveraged to handle Big Data Unlock the new features of MySQL 8 for managing structured and unstructured Big Data Integrate MySQL 8 and Hadoop for efficient data processing Perform aggregation using MySQL 8 for optimum data utilization Explore different kinds of join and union in MySQL 8 to process Big Data efficiently Accelerate Big Data processing with Memcached Integrate MySQL with the NoSQL API Implement replication to build highly available solutions for Big Data In Detail With organizations handling large amounts of data on a regular basis, MySQL has become a popular solution to handle this structured Big Data. In this book, you will see how DBAs can use MySQL 8 to handle billions of records, and load and retrieve data with performance comparable or superior to commercial DB solutions with higher costs. Many organizations today depend on MySQL for their websites and a Big Data solution for their data archiving, storage, and analysis needs. However, integrating them can be challenging. This book will show you how to implement a successful Big Data strategy with Apache Hadoop and MySQL 8. It will cover real-time use case scenario to explain integration and achieve Big Data solutions using technologies such as Apache Hadoop, Apache Sqoop, and MySQL Applier. Also, the book includes case studies on Apache Sqoop and real-time event processing. By the end of this book, you will know how to efficiently use MySQL 8 to manage data for your Big Data applications. Style and approach Step by Step guide filled with real-world practical examples.

Big Data, Big Analytics-Michael Minelli 2012-12-27 Unique prospective on the big data analytics phenomenon for both business and IT professionals The availability of Big Data, low-cost commodity hardware and new information management and analytics software has produced a unique moment in the history of business. The convergence of these trends means that we have the capabilities required to analyze astonishing data sets quickly and cost-effectively for the first time in history. These capabilities are neither theoretical nor trivial. They represent a genuine leap forward and a clear opportunity to realize enormous gains in terms of efficiency, productivity, revenue and profitability. The Age of Big Data is here, and these are truly revolutionary times. This timely book looks at cutting-edge companies supporting an exciting new generation of business analytics. Learn more about the trends in big data and how they are impacting the business world (Risk, Marketing, Healthcare, Financial Services, etc.) Explains this new technology and how companies can use them effectively to gather the data that they need and glean critical insights Explores relevant topics such as data privacy, data visualization, unstructured data, crowd sourcing data scientists, cloud computing for big data, and much more.