



# Pro RESTful APIs with Micronaut

Build Java-Based Microservices  
with REST, JSON, and XML

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*Second Edition*

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Sanjay Patni

Apress®

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Sanjay Patni  
Santa Clara, CA, USA

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Any source code or other supplementary material referenced by the author in this book is available to readers on the Github repository: <https://github.com/Apress/Pro-RESTful-APIs-with-Micronaut>. For more detailed information, please visit <http://www.apress.com/source-code>.

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# About the Author



**Sanjay Patni** is a results-focused technologist with extensive experience in aligning innovative technology solutions with business needs to optimize manual steps in the business processes and improving operational efficiency.

At Oracle, he has worked with the Fusion Apps Product development team, where he has identified opportunities for automation of programs related to Fusion Apps codeline management. This involved delivery of GA releases for patching, as well as codelines for ongoing demo, development, and testing. He conceptualized and developed self-service UX for codeline requests and auditing, reducing manual steps by 80%. He also rolled out 12 sprints of codeline creation, automating about 100+ manual steps involving integration with other subsystems using technologies like automation workflow and RESTful APIs.

Prior to joining Oracle, he spent 15+ years in the software industry, defining and delivering key initiatives across different industry sectors. His responsibilities included innovation, requirement, analysis, technical architecture, design, and agile software development of web-based enterprise products and solutions. He pioneered innovative usage of Java in building business applications and received an award from Sun Microsystems. This helped improve feedback for Java APIs for Enterprise in building business application software using Java. He has diverse experience in Application Architecture to include UX, Distributed Systems, Cloud and DevOps.

## ABOUT THE AUTHOR

He has worked as a visiting technical instructor or mentor and conducted classes or training on RESTful APIs design and integration.

He has a strong educational background in computer science with a master's from IIT, Roorkee, India.

# About the Technical Reviewer



**Massimo Nardone** has more than 22 years of experience in security, web and mobile development, cloud, and IT architecture. His true IT passions are security and Android.

He has been programming and teaching how to program with Android, Perl, PHP, Java, VB, Python, C/C++, and MySQL for more than 20 years.

He holds a master of science degree in computing science from the University of Salerno, Italy.

He has worked as a project manager, software engineer, research engineer, chief security architect, information security manager, PCI/SCADA auditor, and senior lead IT security/cloud/SCADA architect for many years.

His technical skills include security, Android, cloud, Java, MySQL, Drupal, Cobol, Perl, web and mobile development, MongoDB, D3, Joomla, Couchbase, C/C++, WebGL, Python, Pro Rails, Django CMS, Jekyll, Scratch, etc.

He currently works as Chief Information Security Officer (CISO) for Cargotec Oyj.

He worked as visiting lecturer and supervisor for exercises at the Networking Laboratory of the Helsinki University of Technology (Aalto University). He holds four international patents (PKI, SIP, SAML, and Proxy areas).

Massimo has reviewed more than 40 IT books for different publishing companies, and he is the coauthor of *Pro Android Games* (Apress, 2015).

# Introduction

Databases, websites, and business applications need to exchange data. This is accomplished by defining standard data formats such as Extensible Markup Language (XML) or JavaScript Object Notation (JSON), as well as transfer protocols or web services such as the Simple Object Access Protocol (SOAP) or the more popular Representational State Transfer (REST). Developers often have to design their own Application Programming Interfaces (APIs) to make applications work while integrating specific business logic around operating systems or servers. This book introduces these concepts with a focus on the RESTful APIs.

This book introduces the data exchange mechanism and common data formats. For web exchange, you will learn the HTTP protocol, including how to use XML. This book compares SOAP and REST and then covers the concepts of stateless transfer. It introduces software API design and best design practices. The second half of the book focuses on RESTful APIs design and implementations that follow the Micronaut and Java API for RESTful Web Services. You will learn how to build and consume Micronaut services using JSON and XML and integrate RESTful APIs with different data sources like relational databases and NoSQL databases through hands-on exercises. You will apply these best practices to complete a design review of publicly available APIs with a small-scale software system in order to design and implement RESTful APIs.

This book is intended for software developers who use data in projects. It is also useful for data professionals who need to understand the methods of data exchange and how to interact with business applications. Java programming experience is required for the exercises.



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