development. We believe the book to serve as a reference for larger audience such as systems architects, practitioners, developers, new researchers, and graduate-level students. This book also comes with an associated Web site (hosted at http://www.manjrasoft.com/CloudBook/) containing pointers to advanced on-line resources.

ORGANIZATION OF THE BOOK

This book contains chapters authored by several leading experts in the field of cloud computing. The book is presented in a coordinated and integrated manner starting with the fundamentals and followed by the technologies that implement them.

The content of the book is organized into six parts:

I. Foundations
II. Infrastructure as a Service (IaaS)
III. Platform and Software as a Service (PaaS/SaaS)
IV. Monitoring and Management
V. Applications
VI. Governance and Case Studies

Part I presents fundamental concepts of cloud computing, charting their evolution from mainframe, cluster, grid, and utility computing. Delivery models such as Infrastructure as a Service, Platform as a Service, and Software as a Service are detailed, as well as deployment models such as Public, Private, and Hybrid Clouds. It also presents models for migrating applications to cloud environments.

Part II covers Infrastructure as a Service (IaaS), from enabling technologies such as virtual machines and virtualized storage, to sophisticated mechanisms for securely storing data in the cloud and managing virtual clusters.

Part III introduces Platform and Software as a Service (PaaS/IaaS), detailing the delivery of cloud hosted software and applications. The design and operation of sophisticated, auto-scaling applications and environments are explored.

Part IV presents monitoring and management mechanisms for cloud computing, which becomes critical as cloud environments become more complex and interoperable. Architectures for federating cloud computing resources are explored, as well as service level agreement (SLA) management and performance prediction.

Part V details some novel applications that have been made possible by the rapid emergence of cloud computing resources. Best practices for architecting cloud applications are covered, describing how to harness the power of loosely coupled cloud resources. The design and execution of applications that leverage

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