

Preface

A cloud is often defined as a visible collection of particles of ice and water suspended in the air, usually at an elevation above the surface. It is generally a dim and obscure area in something otherwise clear and transparent. The clouds appearing in nature even though visible are abstract and virtual, i.e. we are unable to signify a definite boundary of a cloud. The cloud as defined in the field of computing is, however, very far away from this geographical definition and properties of a natural cloud. Though correlating a cloud with abstraction and virtualization, the existing cloud computing archetypes enfold as backend data or service stations providing bunched or specific services. In this book, we waver from the existing definition of clouds as outsourced services and define an approach to do justice to the geographical existence of clouds and its emulation in the technological domain. We aim to deviate from the traditional approaches of cloud computing and develop an entirely new way to build, deploy and scale technologies and devices of the future. Paradigms enabling convenient, on demand access to a shared pool of configurable resources that can be rapidly provisioned and released with minimal efforts and interactions constitutes our emblem of a Cloud environment. In this book we introduce the idea of cloud communications, wherein abstraction and virtualization currently limited to computing environment, is also embedded in the communications domain an archetype in published literature.

The rapid evolution of the technology used in telecommunication systems, consumer electronics, and specifically mobile devices has been remarkable in the last 20 years. Communication systems handle volumes of data generated by embedded devices, mobile users, enterprises, contextual information, network protocols, location information and such. It is a vast amount of information. For example, a global IP backbone generates over 20 billion records per day, amounting to over 1 Tera Bytes per day! Processing and analysing this “big data” and presenting insights in a timely fashion will become a reality with advanced analytics to understand the environment, to interpret events and to act on them. The existing communication systems are just designed as “dumb pipes” to carry information/data from destination to the source. This book is a positive development that helps unleash the intelligence in communications systems where networks are no longer

labelled “dumb pipes” but highly strategic and smart cognitive networks. The next quality of service leap which is fundamentally expected to come from improvements in network topologies, cooperative communication, virtualization and abstraction schemes, the amalgamation of cognitive symbiotic networks and evolving intelligent protocols, all of which is systematically addressed in developing the Green Symbiotic Cloud Communications (GSCC) architecture.

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Green Symbiotic Cloud Communications

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