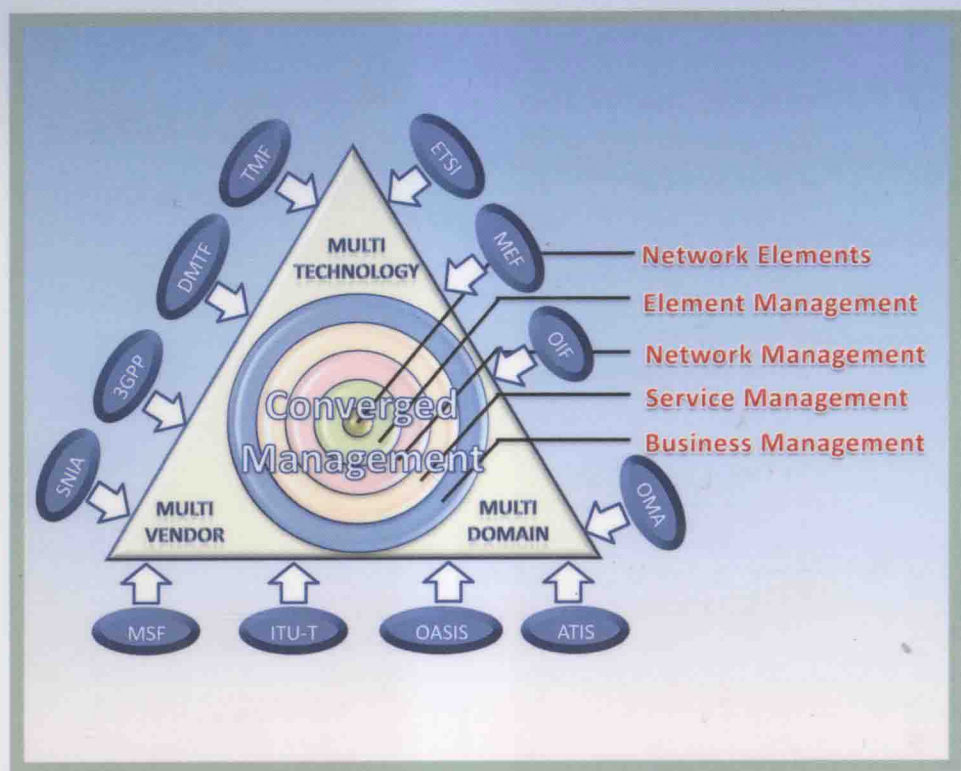


FUNDAMENTALS OF EMS, NMS, AND OSS/BSS



JITHESH SATHYAN

Fundamentals of EMS, NMS, and OSS/BSS

JITHESH



ATHYAN



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
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AN AUERBACH BOOK

Auerbach Publications
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

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Printed in the United States of America on acid-free paper
10 9 8 7 6 5 4 3 2 1

International Standard Book Number: 978-1-4200-8573-0 (Hardback)

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Library of Congress Cataloging-in-Publication Data

Sathyan, Jithesh.

Fundamentals of EMS, NMS, and OSS/BSS / author, Jithesh Sathyan.
p. cm.

Includes bibliographical references and index.

ISBN 978-1-4200-8573-0 (hardcover : alk. paper)

1. Computer networks--Management. 2. Support services (Management)--Data processing. I. Title.

TK5105.5.S14 2010

004.6--dc22

2010017682

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Foreword

In the telecommunications industry, the rapidly evolving technologies and their changes make it very difficult to develop efficient support systems. In the past, different vertical networks addressing different needs and distinctive networks with definite management strategy were the easiest approaches taken by operators. However, in a world where operators need to find ways to differentiate their offerings and keep the margins healthy, the above “stovepipe” approach is no longer sufficient and could hamper good business practice.

With advances in technology, the communications network and its management are becoming more complex as well as more dynamic and fluid in nature. As with any other field of study involving the term *management*, the world of telecommunications management also tends to be opaque and filled with jargon and terminology. It is a field that would benefit immensely from literature that demystifies and simplifies all its various aspects.

Fundamentals of EMS, NMS, and OSS/BSS has excellent coverage of the basics of telecom management, from legacy management systems to the next generation systems. In this book, Jithesh introduces the principles of EMS, NMS, and OSS/BSS and goes in-depth on implementation guidelines including the most common design patterns in use. This book makes two important contributions. First, it shows the roles that EMS, NMS, and OSS/BSS can play in the telecom environment with complex real-time systems. Second, it provides a very realistic view of use cases and implementation examples illustrating how the aspects covered in the first three sections of the book can be put into practice.

With his experience in delivering telecom projects, Jithesh has explained element management systems (EMS), network management systems (NMS), and operation/business support systems (OSS/BSS) through concepts, functionality descriptions, applicable protocols, and implementation guidelines. Each section touches upon definitions and models, explaining the complex concepts without losing simplicity or introducing technical jargon, and finally directing the user to further reading material to enable a better, more detailed understanding.

I am honored to have had the opportunity to work directly with Jithesh in architectural design efforts for the telecom support systems and I am sure this

book will be a valuable asset for academicians and professionals. It is with great pleasure that I introduce this book. I wish Jithesh all the success in this and future endeavors.

Manesh Sadasivan

*Principal Architect, Product Engineering
Infosys Technologies Limited (www.infosys.com)*

Preface

The communication service industry is moving toward a converged world where services like data, voice, and value-added services are available anytime and anywhere. The services are “always on,” without the hassle of waiting or moving between locations to be connected or for continuity in services. The facilities offer easy and effortless communications, based on mobility and personalized services that increase quality of life and lead to more customer satisfaction. Service providers will have much more effective channels to reach the customer base with new services and applications. With changes in services and underlying networks, the ease in managing the operations becomes critically important. The major challenge is changing business logic and appropriate support systems for service delivery, assurance, and billing. Even after much maturity of IMS technology, there has been a lag in the adoption of this service because of the absence of a well-defined OSS/BSS stack that could manage the IMS and proper billing system to get business value to service providers to move to IMS. This makes operations support systems a topic of considerable interest in today’s ICT industry.

Operations support systems (OSS) as a whole includes the systems used to support the daily operations of the service provider. These include business support systems (BSS) such as billing and customer management, service operations such as service provisioning and management, element management, and network management applications. In the layered management approach, BSS corresponds to business management and OSS corresponds to service management, while the network level operation support is done using a network management system and individual resources are managed with an element management system. The same terminology is used in the title of the book to explain the different layers of telecom management that are covered in this book.

Fundamentals of EMS, NMS, and OSS/BSS completely covers on the basics of telecom resource and service management. This book is designed to teach all you need to understand to get a good theoretical base on telecom management. The book has four sections: Element Management System, Network Management System, Operation/Business Support Systems, and Implementation Guidelines. The first section covers element management system in detail. Initial efforts in

managing elements to the latest management standards are covered in this part. The second section deals with the basics of network management; legacy systems, management protocols, standards, and popular products are all handled in this part. The third section deals with OSS/BSS, covering the process, applications, and interfaces in the service/business management layers in detail. The final section gives the reader implementation guidelines to start developing telecom management solutions.

This book is dedicated to my beloved wife for her patience and consistent support that helped me a lot in completing this book. I would like to thank the product engineering team at Infosys for giving me numerous engagements in EMS, NMS, and OSS/BSS space with a variety of telecom clients in multiple countries that went a long way in giving me the knowledge to write this book. Writing this book has been a very good experience and I hope you enjoy reading it as much as I enjoyed writing it.

Jithesh Sathyan
Technical Architect
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About the Author

Jithesh Sathyan is a technical architect at Infosys Technologies Limited (NASDAQ: INFY). He is the sole inventor of the first granted patent of Infosys at the U.S. Patent and Trademark Office. He has to his credit multiple international papers in the telecom domain, specifically on EMS, NMS, and OSS/BSS. He is a gold medalist in electronics and communication engineering.

The author has been working on multiple projects involving design and development of telecom management solutions for a variety of telecom clients in OEM and service provider space. He has multiple filed patents in the telecom domain. Jithesh has published several white papers in standardizing forums, such as TeleManagement Forum that specializes in defining standards on telecom management. He is an active member of many telecom management standardizing forums. He has also contributed a chapter entitled “Role of OSS/BSS in Success of IMS” in *IMS Handbook: Concepts, Technologies, and Services* published by CRC Press.

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