JANUARY 2017 • VOLUME 9, NUMBER 1

NaSPA
Network and Systems Professionals Association

technical® SUPPORT

Supporting Enterprise Networks and Operating Environments

THE AUERBACH PUBLISHER'S ISSUE – PROTECTING YOUR GREATEST ASSETS

Contents

3 **Message from the President**

Articles

4 **Business Resumption Planning**
By Ed Devlin, Cole Emerson, Leo Wrobel, and Mark Desman

8 **Big Data...Storage, Sharing, and Security**
Edited by Fei Hu

12 **The 7 Qualities of Highly Secure Software**
By Mano Paul

15 **Anti-Spam Techniques Based on Artificial Immune System**
By Dr. Ying Tan

17 **Big Data...A Business and Legal Guide**
By James R. Kalyvas and Michael R. Overly

NaSPA
Network and Systems Professionals Association

Join NaSPA now!

Call for Authors

Technical Support Magazine brings you an eclectic collection of articles, of interest to Information Technology professionals of all types. Do you have valuable insights and ideas that can be shared with NaSPA members? Fresh, timely ideas are important to our members, even if youhave never published before. Our editorial staff is here to help and welcomes your submission. It's never too late to start. Contact editor@NaSPA.online for more information or to submit your article for review for possible inclusion in a future edition of *Technical Support*.

The mission of NaSPA, a non-profit corporation, is to advance the technical management and career development abilities of its Members.

NaSPA fosters a greater respect for network, mainframe, information technology, telecommunications, business continuity, and other professions, while it improves employment prospects and educational opportunities for thousands of practitioners worldwide.

Inspiring advancement of technology professions since 1986.

The information and articles in this magazine have not been subjected to any formal testing by NaSPA, Inc. or Network and Systems Professionals Association. The implementation, use and/or selection of software, hardware, or procedures presented within this publication and the results obtained from such selection or implementation, is the responsibility of the reader.

Articles and information will be presented as technically correct as possible, to the best knowledge of the author and editors. If the reader intends to make use of any of the information presented in this publication, please verify and test any and all procedures selected. Technical inaccuracies may arise from printing errors, new developments in the industry and/or changes or enhancements to components, either hardware or software.

The opinions expressed by the authors who contribute to *NaSPA Technical Support* are their own and do not necessarily reflect the official policy of NaSPA, Inc. Articles may be submitted by members of NaSPA, Inc. The articles should be within the scope of host-based, distributed platforms, network communications and data base, and should be a subject of interest to the members and based on the author's experience. Please call or write for more information. Upon publication, all letters, stories and articles become the property of NaSPA, Inc. and may be distributed to, and used by, all of its members.

NaSPA, Inc. is a not-for-profit, independent corporation and is not owned in whole or in part by any manufacturer of software or hardware. All corporate computing professionals are welcome to join NaSPA, Inc. For information on joining NaSPA and for membership rates, see www.NaSPA.com.

Notice: You have received this email because you are a member of NaSPA http://www.NaSPA.com, the Network and Systems Professionals Association, Inc., or a subscriber to *Technical Support* magazine. NaSPA believes this publication to be of value to you and your career. If you wish to opt-out and not receive this magazine in the future or would like to change your delivery address, please send an email with your request to editor@NaSPA.online.

All product names and visual representations published in this magazine are the trademarks/registered trademarks of their respective manufacturers.

P.O. BOX 1681, RED OAK, TX 75154.

Message from the President

This month's *NaSPA Technical Support* magazine features articles from NaSPA's longtime partner, Auerbach Publishers/CRC Press. This valued sponsor is a publishing house for I.T. Professionals that has been around for over half a century. Auerbach has generously contributed from its extensive library of content to *NaSPA Technical Support* over the years as well as offering NaSPA members a significant member discount on a wide variety of books you can find on the website. We say thank you to Auerbach for all their support by offering our members a double helping of fine Auerbach content in this month's edition, focusing on protecting one's assets, data storage, controlling Spam and more. We hope you enjoy these articles and take advantage of your NaSPA discount to learn more.

And while we are passing out kudos, let's honor some new NaSPA LIFETIME MEMBERS:
Shawn Legrand, John Papproth, and Teddy Santiago

Lifetime Members belong to an elite group that has gone above and beyond the call of duty in their support of NaSPA. They receive a free iPad engraved with their name as a small token of appreciation as well as a special certificate. There is still time to sign on or upgrade your membership, especially if you want a tax-deductible contribution this year.

We are looking forward to our Editorial Calendar for NaSPA Technical Support for 2017. We have received requests for new content related to Mainframe Computing, "the Cloud" and Business Resumption/Disaster Recovery Planning. If you are qualified to write about these topics we would love to hear from you. The same holds true if you wish to introduce a new topic or make other suggestions. Email me directly at president@naspa.com. If your article is accepted you will receive a free Full Voting Membership in NaSPA, a free ¼ page ad for your employer, and the notoriety that comes with being a published author in a 30+ year old publication.

Our thanks also to some new NaSPA sponsors coming on board in early 2017! We won't spoil the surprise just yet but will tell you it will involve more member discounts and benefits! Tell your friends about NaSPA so they don't miss out!

With 2016 coming to a close, all of us here at NaSPA want to say thank you to all our members for their support, whether to this magazine, by advertising, or from their generous donations. We couldn't do what we do without you. Spread the word, NaSPA is back and aims to be even better in 2017!

Wishing all of you a Happy and Prosperous New Year!

Leo A. Wrobel, President

technical® Supporting Enterprise Networks and Operating Environments SUPPORT

JANUARY 2017 *Volume 9, Number 1*

Published exclusively for NaSPA, Inc.
Network and Systems Professionals Association

www.NaSPA.com

NaSPA Board of Advisors

Chairman	Leo A. Wrobel
Secretary	Sharon M. Wrobel
Treasurer	David P. Mowery
Chairman Emeritus	Scott Sherer
Advisors	Sharon M. Wrobel David P. Mowery Bill Elder

e-mail addressses available on www.NaSPA.com

Technical Support™ Magazine

Editor-in-Chief	Sharon M. Wrobel sharon@NaSPA.com
Associate Editors	Jim Justen jmjusten@NaSPA.com
Graphic Designer	Michelle Lipa michelle@NaSPA.com
List Rental and Website	Sheila Kwiatek sheila@NaSPA.com
Advertising Sales	(888) 215-0997

Notice: You have received this magazine because you are a member of NaSPA, the Network and Systems Professionals Association, Inc., or you are a NaSPA subscriber. NaSPA believes this publication to be of value to you and your career. If you wish to opt-out and not receive this magazine in the future or would like to change your delivery address, please send an email with your request to editor@naspa.online

©2016 NaSPA. All Rights Reserved.

NaSPA
Network and Systems Professionals Association

Business Resumption Planning

By Ed Devlin, Cole Emerson, Leo Wrobel and Mark Desman

Traditionally, resumption planning focused on the recovery of computer systems. But experience has shown that the ability to recover computer systems does not necessarily guarantee the survival of an organization following a disaster. Quick recovery of operations is useful only if the business units themselves are able to function — to communicate with customers and vendors, to receive and enter orders, to produce goods and services, and to collect revenue. The only way to ensure this is to plan for the resumption of all of the critical components of the business enterprise — its business operations, including personal computers and networks, the data center, and voice and data communications services. Business Resumption Planning is designed to provide a practical, hands-on guide for developing a comprehensive business recovery plan and crisis management plan.

The book consists of four modules:

- Part I: Business operations recovery
- Part II: Data center recovery
- Part III: Voice and data communications recovery
- Part IV: Crisis management

Each module provides a step-by-step approach for developing the recovery plan. Supporting checklists, questionnaires, procedures, and forms used in developing the recovery plan are provided on paper and on the accompanying CD-ROM. Each of the modules can be read and used independently of the others. For example, if your company has already established a data center recovery plan, you may want to establish a plan for communications recovery. In that case, you can turn directly to Part III of this book and begin the process of developing the communications plan; all of the procedures, checklists, and forms you will need are provided in Part III. Of course, if your company has no recovery plan in place, you can begin with any of the four modules. (In practice, however, it makes most sense to proceed in sequential order, beginning with Part I. This is because information gathered in planning for business operations recovery can be useful when planning for data center and communications recovery.) Business Resumption Planning is not only useful for developing recovery plans; it is also an invaluable source for evaluating the completeness of existing plans. For example, if your organization has already established a data center recovery plan, you might use Part II to ensure that the existing recovery plan is complete and follows the proven techniques described here. Given the step-by-step approach used in this book, it is easy to adapt specific procedures and forms to an existing plan and to the needs of specific organizations. Now that you have an idea of what this book can do for you, let's look at why you need to plan for disasters.

Defining Disaster

It is impossible to describe all of the events that might be considered disasters, but in the context of this book a disaster is any incident that causes an extended disruption of business functions. The first thoughts that come to most minds are as fire, hurricane, flood, and earthquake — catastrophic acts of nature. This isn't surprising, given the unprecedented number of disasters

Business Resumption Planning is not only useful for developing recovery plans; it is also an invaluable source for evaluating the completeness of existing plans.

the world has suffered in the past decade. The U.S., for example, has experienced three major earthquakes, several major hurricanes, and a massive flood that covered a large section of the Midwest. Hundreds of people were injured or killed in these natural disasters, tens of thousands lost their homes, and thousands of businesses were disrupted. Business and property losses

were in the billions of dollars. Despite the widespread association of disasters with natural disasters, most recovery specialists have expanded the definition to include any event that disrupts business operations. Given the variability in causes of disasters, recovery planners should not attempt to focus on specific types of disasters; rather, they should broaden their view to include any type of event that might disrupt business activity.

WHY PLAN?

Business survival is the primary rationale for planning. Avoidance of financial loss and embarrassment as well as ethical and legal obligations to employees, customers, and shareholders all support the need for planning. Without effective planning, the organization is forced to react to a disaster without an understanding of its recovery priorities, the time and resources needed to reestablish business functions, and sources of products and services needed during recovery. The delays caused by such lack of planning may be financially fatal. For example, such technical resources as hot sites and communications services require long lead times to acquire and configure. Indeed, history shows that most companies that suffer a disaster causing an extended disruption of information processing do not survive more than two years after the disaster.

THE NEED FOR FOCUS

Even with the most comprehensive plans for all major disruptions, the company can still be surprised. Therefore, experts recommend that organizations plan for the worst-case event rather than for specific types of disasters. The theory, proven many times, is that the company that is ready to respond to the worst disaster will also be able to handle lesser disruptions. If the planning team anticipates, plans for, and documents the recovery requirements and the company is prepared to meet most of those requirements at the time of a disaster, the recovery will succeed. In addition, the recovery planner must plan within the scope of his or her control. It is always better to have an effective plan for one site than to be in the midst of planning for the entire world and not survive a single-site disaster. Ensuring that the highest-risk location is ready to respond and recover from an incident is always the more effective approach.

HIDDEN BENEFITS

As noted, the primary benefit of a recovery plan is ensuring the organization's survival in the event of a disaster. Yet other, less obvious benefits are frequently overlooked. For example, in some cases a recovery plan may be a prerequisite for obtaining a business contract; conversely, lack of a plan may disqualify a company from consideration. An effective recovery plan can also provide a competitive edge. Companies that have been able to recover quickly from regional disasters are often able to increase their share of the market because competitors are unable to conduct business. For example, one company reported that it was able to book $30 million in sales following the 1988 Hinsdale central office fire during a period when its competitors were unable to recover. In developing a comprehensive plan, the recovery planner must learn how the business functions and how information, goods, and services move inside and outside the organization. This may create opportunities for identifying potential cost reductions and improved operating efficiencies. The planner may also find opportunities for cost savings in business interruption insurance coverage and in company directors' and officers' insurance. Insurance professionals indicate that companies with resumption plans should save at least 10 percent on the cost of insurance premiums. The planning process also forces a review of vital records management. One company was able to eliminate more than 110 tons of paper records, which in turn reduced the potential costs of restoring these records following a disaster.

CRISIS MANAGEMENT PLANNING

Crisis management planning is an integral part of a business resumption plan. For years, crisis management professionals have been differentiating between the concepts presented in business resumption planning and the concepts used in crisis management. Crisis management planning describes a methodology used by executives to respond to and manage a crisis. The objective is to gain control of the situation quickly so a company can efficiently manage the crisis and minimize its negative impacts. The crisis management plan is also used in a disaster. The business resumption plan identifies how the business units affected by the disaster go about resuming business operations. During that time, the business units receive support from members of the executive management and crisis management teams. The concepts presented in Chapter II-4, the "Recovery Headquarters Team Section of the DCRP," concentrate on support provided after a disaster. If a disaster struck a computer center, causing injuries to employees, damage to the equipment, or damage to the building, the IT department would need support from a team of executives with specific expertise. This team's support was, in essence, crisis management support. Those concepts presented limited crisis management actions to support IT, and IT

would receive this limited support during the resumption of business after a disaster. The crisis management section explores in more detail the concepts of crisis management planning. Crisis management planning involves a number of crises other than a physical disaster.

- It identifies a number of types of crises. Many of these crises threaten to affect a company just as seriously as a physical disaster.
- It shows how problems in the pre-crisis stage, which are not visible outside the company, are managed to ensure that they do not become an acute crisis.
- It also shows how the crisis management team should manage a crisis once it is in the acute-crisis stage.
- It suggests how the crisis management team should manage the crisis after it has moved to the post-crisis stage.
- It indicates how to select the crisis management team.

HOW TO USE THE BOOK AND CD-ROM

Each part of this book is designed to provide a complete step-by-step approach to developing a plan for its respective area. Therefore, the chapters within each part should be read in sequential order. Although there are differences in methodology among the four parts, they do share a basic developmental framework:

- Obtaining senior management commitment and sponsorship of the planning project.
- Organizing the project and assembling the teams responsible for planning recovery.
- Identifying recovery priorities, assumptions, and strategies.
- Gathering information to be included in the recovery plan.
- Developing detailed recovery procedures to be followed by the recovery teams in the event of a disaster.
- Establishing a program for testing and maintaining the recovery plan and for training recovery team members.

Differences among the four planning areas reflect the unique requirements of these areas as well as the practical experience of the authors in developing plans for clients.

In addition to providing step-by-step instructions on how to create the business resumption plan for each area, supporting checklists, questionnaires, procedures, and forms used in developing the recovery plan (collectively referred to as workpapers in this book) are provided on paper and on the accompanying CDROM. On the CD-ROM, each workpaper is provided as a separate Microsoft Word file. The file name matches the number of the workpaper referenced in the book. The electronic files are designed so that you can easily customize the workpapers to meet the recovery planning requirements of your organization. Wherever possible, the files are formatted using Microsoft Word default settings; the base font is Courier, 10 characters per inch. Every attempt has been made to ensure that the page layout of the screen version of each workpaper matches the corresponding printed version in the book. The owner of this publication is permitted to make either paper or electronic copies of the workpapers without having to obtain permission from the publisher.

ABOUT THE AUTHORS

NaSPA Member, Edward S. Devlin *is a leading consultant, author, instructor, and speaker in the field of Business Continuity and Business Resumption Planning. Ed is often called "The Father of Disaster Recovery Planning," and he has recently been honored by being chosen an inaugural member of Contingency Planning & Management magazine's Hall of Fame. He is a CBCP (Certified Business Contingency Planner) and holds an honorary certification from the FCBI. Ed is the Principal for Edward S. Devlin & Associates and can be reached at (610) 436-5786.*

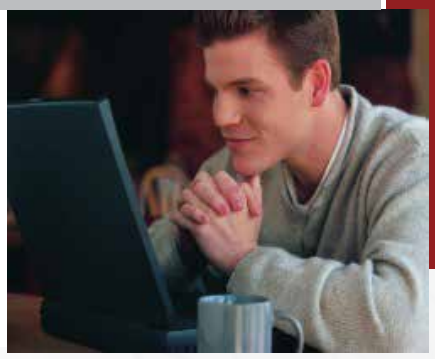
NaSPA Member, Cole H. Emerson *is president of Cole Emerson & Associates. A recognized leader in the field of business resumption planning, he has assisted companies throughout the world in recovery planning. Emerson has written and spoken at numerous domestic and international conferences. He is a founder of the Information Systems Security Association and a charter member of the Disaster Recovery Institute certification board. He can be reached at (916) 729-6055.*

Leo A. Wrobel, Jr.*, president of NaSPA., has more than 35 years of experience in emerging network technology, disaster recovery planning, and technical training. An active author and lecturer, he has published 12 books and over 1200 trade articles on a wide variety of technical subjects.*

NaSPA Member, Mark B. Desman *has been a practitioner in information security and contingency planning for the past 19 years. His background includes being one of the first information security managers for American Savings of California as well as CalFed Bank (now NationsBank) and Gibraltar Savings in Southern California. Most recently, he was manager of information security, contingency planning, and the technical help desk for a multistate bank holding company in New England. Currently, Mr. Desman is Manager of Information Security at Micron Technology, Inc.*

Update: Look for the update to this book: Business Resumption Planning Second Edition available on the CRC website.

© 2016 by Taylor & Francis Group, LLC CRC Press is an imprint of Taylor & Francis Group, an Informa business. NaSPA extends its sincere thanks for this company's longstanding support. We encourage you to browse their library and use your NaSPA discount on these fine books. Details on the NaSPA website at www.naspa.com.



The Perfect Employer or Employee is Just a Click Away!

Job Seekers

- Convenient One-Stop Format
- Manage Your Job Search
- *Thousands* of Job Postings
- Post an Anonymous Resume
- Arrange Email Job Alerts
- Nationwide Exposure!
- Search by State or Job Title
- Much More - All FREE

Employers

- Convenient One-Stop Format
- Quickly Post Job Openings
- Reach Qualified IT Candidates
- Manage IT Recruiting Efforts
- Really, *Really* Inexpensive!
- Save Recruiting Fees
- Combine with Magazine or Web Site Ads *Inexpensively*
- From Only $190.00!

Recruit Qualified Professionals or Find Your Next Job on the

NaSPA

Network and Systems Professionals Association

Job Site

careers.NaSPA.com

Big Data...*Storage, Sharing, and Security*

Edited by Fei Hu

Big Data is one of the hottest topics today because of the large-scale data generation and distribution in computing products. It is tightly integrated with other cutting-edge networking technologies, including cloud computing, social networks, Internet of things, and sensor networks.

Characteristics of Big Data may be summarized as four Vs, that is,

- volume (great volume),
- variety (various modalities),
- velocity (rapid generation), and
- value (huge value but very low density).

Many countries are paying high attention to this area. As an example, in the United States in March 2012, the Obama Administration announced a US $200 million investment to launch the "Big Data Research and Development Plan," which was a second major scientific and technological development initiative after the "Information Highway" initiative in 1993. Because Big Data is a relatively new field, there are many challenging issues to be addressed today:

(1) Storage — How do we aggregate heterogeneous types of data from numerous sources, and then use fast database management technology to store the Big Data?

(2) Sharing — How do we use cloud computing to share the Big Data among large groups of people?

(3) Security — How do we protect the privacy of Big Data during the network sharing?

Big Data is one of the hottest topics today because of the large-scale data generation and distribution in computing products.

This book covers the above 3S designs, through the detailed description of the concepts and implementations. This book is unlike any other similar books. Because Big Data is such a new field, there are very few books covering its implementation. Although a few similar books are already published, they are mostly about the basic concepts and society impacts. They are thus not suitable for R&D people. Instead, this book will discuss Big Data management from an R&D perspective.

Targeted Audiences:

(1) Industry — company engineers can use this book as a reference for the design of Big Data processing and protection. There are many practical design principles covered in the chapters.

(2) Academia — researchers can gain much knowledge on the latest research topics in this area. Graduate students can resolve many issues by reading the chapters.

They will gain a good understanding of the status and trend of Big Data management.

Book Architecture: The book consists of two sections:

Section I. Big Data management: In this se ction we cover the following important topics:

Spatial management: In many applications and scientific studies, there is a growing need to manage spatial entities and their topological, geometric, or geographic properties. Analyzing such large amounts of spatial data to derive values and guide decision making has become essential to business success and scientific progress.

Data transfer: A content delivery network with large data centers located around the world requires Big Data transfer for data migration, updates, and backups. As cloud computing becomes common, the capacity of the

data centers and both the intranetwork and internetwork of those data centers increase.

Data processing: Dealing with "Big Data" problems requires a radical change in the philosophy of the organization of information processing. Primarily, the Big Data approach has to modify the underlying computational model to manage uncertainty in the access to information items in a huge nebulous environment.

Section II. Big Data Security: Security is a critical aspect after Big Data is integrated with cloud computing. We will provide technical details on the following aspects:

Security: To achieve a secure, available, and reliable Big Data cloud-based service, we not only present the state-of-the-art of Big Data cloud-based services, but also a novel architecture to manage reliability, availability, and performance for accessing Big Data services running on the cloud.

Privacy: We will examine privacy issues in the context of Big Data and potential data mining of that data. Issues are analyzed based on the emerging unique characterizations associated with Big Data: the Big Data Lake, "thing" data, the quantified self, repurposed data, and the generation of knowledge from unstructured communication data, that is, Twitter Tweets. Each of those sets of emerging issues is analyzed in detail for their potential impact on privacy.

Accountability: Accountability of user data access on a specific application helps in monitoring, controlling, and assessing data usage by the user for the application. Data loss is the main source of leaking information that may possibly compromise the privacy of individual and/or organization. Therefore, the naive question is, "how can data leakages be controlled and detected?" The simple answer to this would be audit logs and effective measures of data usage.

The chapters have detailed technical descriptions of the models, algorithms, and implementations of Big Data management and security aspects. There are also accurate descriptions on the state-of-the-art and future development trends of Big Data applications. Each chapter also includes references for readers' further studies. Thank you for reading this book. We believe that it will help you with the scientific research and engineering design of Big Data systems. We welcome your feedback.

Fei Hu University of Alabama, Tuscaloosa, Alabama

ABOUT THE AUTHOR

NaSPA Member, Dr. Fei Hu *is currently a professor in the Department of Electrical and Computer Engineering at the University of Alabama, Tuscaloosa, Alabama. He earned his PhD degrees at Tongji University (Shanghai, China) in the field of signal processing (in 1999), and at Clarkson University (New York) in electrical and computer engineering (in 2002). He has published over 200 journal/conference papers and books. Dr. Hu's research has been supported by the U.S. National Science Foundation, Cisco, Sprint, and other sources. His research expertise can be summarized as 3S: Security, Signals, Sensors: (1) Security—This deals with overcoming different cyber attacks in a complex wireless or wired network. His current research is focused on cyberphysical system security and medical security issues. (2) Signals—This mainly refers to intelligent signal processing, that is, using machine learning algorithms to process sensing signals in a smart way to extract patterns (i.e., pattern recognition). (3) Sensors—This includes microsensor design and wireless sensor networking issues.*

© 2016 by Taylor & Francis Group, LLC CRC Press is an imprint of Taylor & Francis Group, an Informa business. NaSPA extends its sincere thanks for this company's longstanding support. We encourage you to browse their library and use your NaSPA discount on these fine books. Details on the NaSPA website at www.naspa.com.

SNEAK PREVIEW OF JOB POSTINGS

Members! Here is Your Special "Sneak Preview" of Upcoming New Jobs, posting soon on the NaSPA Job Site

The following is a sample of the awesome jobs posted by employers in just the last 30 days on the NaSPA Job Site. NaSPA sincerely appreciates all the people who think of NaSPA first when they are looking for the ideal Information Technology candidate. They find the best people, and help NaSPA at the same time. These jobs have not hit our site yet so now you can have a "sneak preview" ahead of other applicants by Site right now and see what else is new!

Job Name **Business Analytics SAP Consultant**
Position Title **Business Analytics SAP Consultant**
Location(s) **Raleigh, North Carolina, United States**
Description Business Analytics – SAP Consultant (Raleigh, NC and unanticipated locations throughout the US) – Help businesses and organizations simplify data manipulation using SAP BusinessObjects and other SAP business intelligence solutions allowing the end users to find, access, analyze, navigate, and share data across the organization. Travel required to unanticipated locations throughout the US. Resumes to: HR Manager, DynPro, Inc., 7412 Chapel Hill Rd, Raleigh, NC – 27607 or apply online www.dynpro.com. Reference "Business Analytics – SAP Consultant" when applying.

Job Name **IT Manager**
Position Title **IT Manager**
Location(s) **Mineapolis, Minnesota, United States**
Description IT Manager: develop, manage, coordinate, implement, analyze & evaluate all IT, software & web development projects; supervise engineering team/work; give directions to integrate biz & tech strategies; maintain up-to-date IT tech; Desiring God Ministries, Minneapolis, MN; Req. MS in Computer Science; 2yr exp as Software Developer using Ruby & Rails; skills in SQL & Unix; demonstrated knwlg in software project mgmt, object-oriented design, software architectural design & relational database design; F/T (M-F, 8-5); $117,042/yr; Mail@ Recruitment & Employment Office, Desiring God Ministries, Attn: Job Ref#: Des52264, PO Box 56625, Atlanta, GA 30343

Job Name **US SUPPORT MANAGER**
Position Title **US SUPPORT MANAGER**
Location(s) **New York, New York, United States**
Description US SUPPORT MANAGER (New York, NY) wanted by developer of proprietary publishing S/W platform to oversee tech support function, incl S/W customization, support, & training. Must have 5 yrs exp in S/W dev, support or App Specialist related role in publishing industry and knowledge of Methode platform. Travel to various, unanticipated locations periodically req'd. Send resume and cover letter to Steve Ball at steve.ball@eidosmedia.com at EidosMedia, Inc. No calls please.

Job Name **Quality Assurance Lead**
Position Title **Quality Assurance Lead**
Location(s) **Raleigh, North Carolina, United States**
Description Quality Assurance Lead (Raleigh, NC & unanticipated locations throughout the US) Duties: Lead offshore Quality Assurance Team. Test Plan preparation and ensuring good test coverage. Perform thorough functional testing, manual testing, regression testing, performance, browser capability, smoke testing using Selenium, QTP, JMeter, Load Runner, Jira, Mercury QC, Microsoft SQL Server, etc. Travel required to unanticipated locations throughout the US. Submit resumes to: Spectraforce Technologies, Inc. 500 W. Peace Street, Raleigh, NC 27603, Attn: Perin Marcus, HR Director or via email to perin.marcus@spectraforce.com. Must reference "Quality Assurance Lead" when applying.

Job Name **Senior Java Developer**
Position Title **Senior Java Developer**
Location(s) **Raleigh, North Carolina, United States**
Description Senior Java Developer (Raleigh, NC & unanticipated locations throughout the US) Duties: Development, design and implementation of Java applications using various programming languages and technologies including Java, Oracle DB, J2EE, Spring, Hibernate, JAX-WS (Java API for XML Web Service), Java Sever Faces (JSF), Jquery, Shell/Batch Scripts, Maven, Jenkins, JBoss EAP and PL SQL. Travel required to unanticipated locations throughout the US. Submit resumes to: Spectraforce Technologies, Inc. 500 W. Peace Street, Raleigh, NC 27603, Attn: Perin Marcus, HR Director or via email to perin.marcus@spectraforce.com. Must reference "Senior Java Developer" when applying.

Job Name **IT: multiple positions**
Position Title **IT: multiple positions**
Location(s) **Cupertino, California, United States**
Description IT: multiple positions in Cupertino, CA. Travel/reloc to various unantic U.S. locations reqd for all positions. Systems Analysts II: Develop software components using Java, Oracle, Mac OS X technologies, Unix, PL/SQL, Cocoa. Programmer Analysts: Gather Functional requirements; Prepare program specifications & enter program codes into computer system; Work with Oracle, SQL, PL/SQL, Mac OS X technologies, UNIX, Java. Send resume to: EXILANT Technologies Private Limited, 20195 Stevens Creek Blvd, Ste 220, Cupertino, CA 95014. APPLICANTS MUST DESIGNATE TITLE BEING APPLIED FOR.

Job Name **Sr. QA Engr. & Tester**
Position Title **Sr. QA Engr. & Tester**
Location(s) **Beaverton, Oregon, United States**
Description Mavensoft Technologies, LLC. has an opening for Sr. QA Engr. & Tester in Beaverton, OR. (Design & dev test plans & test cases based on client reqs. & specs) Req. MS/foreign equiv. in CS, CA, CIS, Eng (any) or rel. fields. Pay: $71,802.00 per year Medical Insurance and PTO. M-F 8am – 5pm. Mail resume to: Recruitment and Employment Office, MAVENSOFT TECHNOLOGIES, LLC., Attn: Job Ref #: MAV59152, P.O. Box 56625, Atlanta, GA 30343.

Job Name **53084**
Position Title **SYSTEMS ENGINEER:**
Location(s) **Boynton Beach, Florida, United States**
Description SYSTEMS ENGINEER: Design/develop solutions to complex applications, system administration, network issues. Perform systems management/integration functions. BA degree + 1 yr exp req, Mountain Group Inc, Boynton Bch, FL. Fax resume to 954-678-3030.

Job Name **Sr. Software Developer**
Position Title **Sr. Software Developer**
Location(s) **Atlanta, Georgia, United States**
Description Codesoft International, Inc. seeks Sr. Software Developer to be responsible for requirement gathering, analysis, design and development of computer applications. (8am-5pm, Mon-Fri) in Atlanta, GA (Travel is not required but must be willing to relocate to unanticipated cities across the country per contract demand). Master's degree in Computer Science, Engineering or a related field plus 2 years of experience. In lieu of the above, we will also accept a Bachelor's degree plus 5 years of progressively responsible post-baccalaureate experience. Foreign degree equivalent is acceptable. Will accept experience as Software Engineer, Programmer Analyst or related positions. We will also accept any suitable combination of education, training or experience. Experience to include C#, VB.NET, ASP.NET, WCF, REST, SQL, DB2 and Visual Studio. Offered Wage $93,766/year. Mail resume to: Recruitment and Employment Office, CODESOFT

INTERNATIONAL, INC., Attn: Job Ref #: COD46538, P.O. Box 56625, Atlanta, GA 30343.
Leading provider of direct marketing solutions for enterprises and franchises requires a Lead Software Developer to establish and lead coding standards and guidelines, designing and coding of enterprise level Java/.NET apps using Core Java, J2EE, ASP.Net, Visual Studio, Hibernate, Struts, Velocity, AJAX / JSON, Oracle, SQL, Spring, Multi-threading, JSON, SOA / WebServices and Linux / CentOS and Agile Methodologies. Manage software design life-cycle, design and build prototype apps wrk closely with mgmt and other systems team leads. Req'd: a Master's degree or equiv. in Comp. Sci./Applications, IT, IS, Engg. (Computer/Electrical/Electronics & Communications) or a rltd field and 3 years of experience in programming, s/w dvlpmnt and testing role(s), or alternatively, employer will accept a Bachelor's degree or foreign equiv. in one of the same or a rltd field plus 5 years of progressive experience in programming, s/w dvlpmnt and testing role(s). Mail resume and cover letter Attn: HR to Xpressdocs Partners Ltd. 4901 N. Beach St., Fort Worth, TX 76137

Job Name **Senior Software Developers**
Position Title **Senior Software Developers**
Location(s) **Duluth, Georgia, United States**
Description Senior Software Developers req'd to design, dvlp s/w apps using at least 5 of the following: Java/J2EE, C, C++, C#.Net, SQL, Perl, Shell Scripting, UNIX, Ajax, Solaris, Shell scripting, XML, Python or Oracle. Must have a Master's degree or foreign equiv. in Comp. Sci./Comp. Apps, IT, IS, Engg (CE/EE/Elect. & Commun.) or rltd field plus 3 yrs of exp in s/w dvlpmnt and testing role(s), or a BS degree or foreign equiv. in one of the same or rltd fields plus 5 yrs of progressively responsible exp. in s/w dvlpmnt and testing role(s). Employer's HQ is in Duluth, GA, however, periodic relocation and/or travel to various unanticipated work/job sites across the U.S. will be required. No Telecommuting permitted. Mail Resumes Attn: HR to Revolution Global Consulting Srvcs LLC, 11555 Medlock Bridge Rd. Suite 100, Duluth GA 30097.

Job Name **Software Project Lead**
Position Title **Software Project Lead**
Location(s) **Agoura Hills, California, United States**
Description Motor Vehicle Software Corporation seeks a qualified Software Project Lead in Agoura Hills, CA to research & document reqs for DMVdesk app. For job reqs & to apply, see www.mvscusa.com/careers.

Job Name **Systems Analyst**
Position Title **Systems Analyst**
Location(s) **Alpharetta, Georgia, United States**
Description Systems Analyst, Alpharetta, GA & other client locations: Gather requirements to understand the manual process. Figure out CLI or API commands to automate restoration of VMDKs & File system. Design & implement solution to automate provisioning of NetBackup Master Server, client servers & restore data using customer tapes. Design OO flows & create python scripts in SA to automate restoration process. Install & Configure CSA 4.10 & OO 10.10 Clusters. Design & implement DBAAS to deploy Oracle & SQL databases. Integrate CSA, OO DMA & SA. Design & implement OO workflow to get next available hostname from UCMDB handling 9999 entries. Create CSA Service Designs, Offerings & Catalogs. Implement IAAS & PAAS. Duties entail working with VMware, OO, SA, NBU, Commvault, CSA, DMA, UCMDB, Service Manager, vSphere, BPM, SiS, OMW, BSM, Cloud Packs, Active Directory, C, C++, Java, JavaScript, Power CLI, PowerShell, Shell, Python, Perl, Batch Script, Expect, NetBackup, CommVault, & SharePoint. MS (BS+5Yrs of experience) in CS, CIS, MIS, Engineering (any field), or related with one year of experience. Travel required for other client locations within the U.S. Mail resumes Georgia IT, Inc, 5490 McGinnis Village Place, Alpharetta, GA 30005 or email uthay@georgiait.com.

Job Name **Software Engineer**
Position Title **Software Engineer**
Location(s) **Irving, Texas, United States**
Description Mach B Technologies, Inc. seeks a Software Engineer at Irving, TX to Involve in requirements analysis, design, development, documentation and test plan designing. Prepare Technical Specs by using Class Diagrams and other UML Techniques. Develop the User Interface, Business Logic and Data Access components. Develop web forms, derived controls and Web Services. Design databases by creating Data Flow Diagrams and ER Diagrams. Create and maintain databases. Skills and Tools required: Knowledge of Python and Angular Framework, Understanding of Web Services. Master Degree and 2 years of exp. Required. Apply to Mach B Technologies, Inc. at 1200 W Walnut Hill Lane, Ste. 2050, Irving, TX 75038

Job Name **52995**
Position Title **Software Engineering Manager, Analytical Product Engineering**
Location(s) **New York, New York, United States**
Description Software Engineering Manager, Analytical Product Engineering, FactSet Research Systems, Inc., New York, New York : Manages a team of software engineers or projects w/in Analytical Product Engineering. Min Reqs: BA, or higher, or for equiv, in CS or rel. tech. field & 2 years software engine. industry exper. working w/: Windows, Linux, VMS, iOS, C, C++, Bash, STL, Boost, HTML, CSS, Javascript, JSON, Eclipse & Profiling tools. Must have exper. w/ Object Oriented Programming, Multi-threaded Programming & Parallel & Distributed Systems. Must have exper. developing & supporting new applications, calculation engines, & underlying infrastructure for portfolio construction, portfolio analysis, portfolio reporting, quantitative model building, risk analysis, & fixed income analysis. Must have proven knowledge of front-end application development, diagnosis & resolution of client bugs & issues, implementation of financial models, & loading of client & third-party data. Qualified applicants should mail resumes to Melissa Ciccone, HR, FactSet Research Systems, Inc., One Sansome Street, San Francisco, CA 94104 with reference to Job Code: FSSWM9.

Job Name **Progammer Analyst**
Position Title **Progammer Analyst**
Location(s) **Alfred, New York, United States**
Description About Alfred State College:
Nestled in a beautiful valley in the Southern Tier of New York, Alfred State has a long tradition of drawing the best faculty and staff from every field. This College of Technology offers outstanding opportunities in more than 70 majors, where project-based learning, sustainability, and civic engagement are cornerstones of the curricula. When students work on real-world problems, they learn how to think, not what to think, and they learn how to be involved in their community. That is why Alfred State graduates have a 99 percent employment and transfer rate.
Our faculty is dedicated to teaching and the academic success of our students. Alfred State seeks educators who are student-centered and engage in the life of the College. Our tenure process emphasizes teaching and university service with a more flexible approach to scholarship and professional growth. For faculty interested in research, the college maintains a teacher-scholar program to support research including applied research that complements our emphasis in experiential learning, civic engagement and sustainability.
Applicants interested in positions may access the Annual Security and Fire Safety Report for the College at http://www.alfredstate.edu/student-services/annual-security-and-fire-safety-report. Crime statistics are reported in accordance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act. Applicants may request a hard copy of the report by contacting the SUNY Alfred State College University Police Department at 607-587-3999.
All applicants must upload a cover letter and resume.

CLICK HERE FOR MORE

The 7 Qualities of Highly Secure Software

By Mano Paul

Internationally recognized, respected leadership authority, family expert, teacher, and renowned author, Dr. Stephen Covey is no stranger to those in the business world. His #1 bestseller, The 7 Habits of Highly Effective People, is rightfully recognized as one of the most influential business books of the twentieth century with more than twenty million copies sold in thirty-eight languages. I wondered what it would be like if I met Dr. Covey and asked him to write a book on software security that is prevalent or emerging today. Interestingly, what I believe he would write is that there is a striking parallel between The 7 Habits of Highly Effective People and The 7 Qualities of Highly Secure Software. Using anecdotes and analogies from Aesop's fables, athletics, architecture, biology, nursery rhymes, video games, etc., I have attempted to take what would otherwise be deemed complex and dry and highlighted the qualities of highly secure software in an informative and interesting way. This book is about the seven qualities of highly secure software; and once you understand what these qualities are, you will notice that those who design, develop, and deploy highly secure software are also highly effective in their personal and professional lives. Each chapter in my CRC Press book of the same title book describes one of the seven highly secure software qualities, and the synopsis of each chapter is given here.

Quality #1: Security Is Built In, Not Bolted On

Habit #1 of highly effective people is to "Be Proactive." Quality #1 of highly secure software is that security controls are built in from the initial stages of its design, through development to deployment, and not bolted on at a later stage in the software development life cycle (SDLC). The cost of fixing software defects (including security defects) discovered after it has been released is estimated to be significantly greater than if discovered earlier in the SDLC. This chapter in my book starts out by dispelling common security myths and covers the reasons and value of being proactive; incorporating security from the initial phases of your SDLC, instead of bolting it on at a later phase.

Quality #2: Functionality Maps to a Security Plan

Habit #2 of highly effective people is to "Begin with the End in Mind." Quality #2 of highly secure software is that the functionality of the software maps to a security plan. This means that a plan needs to exist in the first place, a plan not just for the functionality of your software but one for security as well. This chapter covers the elements of an effective security plan for software, beginning with the end in mind, and also covers the mechanisms to construct and track your software security controls on how they map to the plan.

Quality #3: Includes Foundational Assurance Elements

Habit #3 of highly effective people is to "Put First Things First." Quality #3 of highly secure software is that your software includes certain foundational elements of protection. This means that the software is built on a strong foundation and is secure by design, in development, and in deployment. This chapter covers putting first things first; addressing the foundational assurance elements of confidentiality, integrity, availability, authentication, authorization, and auditing; and the importance of data protection.

This means that a plan needs to exist in the first place, a plan not just for the functionality of your software but one for security as well.

Quality #4: Is Balanced

Habit #4 of highly effective people is to "Think Win–Win." Quality #4 of highly secure software is that it is balanced: balancing risks and investment to return, functionality with assurance, threats with controls. This chapter

explores what it takes to create a win–win situation with a balanced approach to security in the software being designed, developed, and deployed.

Quality #5: Incorporates Security Requirements

Habit #5 of highly effective people is to "Seek First to Understand, Then to Be Understood." Quality #5 of highly secure software is that it incorporates security requirements adequately. Requirements may be externally imposed or internally mandated, and regulatory, private, or compliant in nature. This chapter starts by covering the types of requirements that need to be incorporated into the software from a security perspective and then discusses different techniques to elicit security requirements from these sources. It ends by discussing the importance of tracking these requirements as an effective step to seek first to understand and then to be understood.

Quality #6: Is Developed Collaboratively

Habit #6 of highly effective people is to "Synergize." Quality #6 of highly secure software is that it is collaboratively developed. It is important to take into account the perspectives of the different stakeholders. These stakeholders include the client, security, management, development, legal, privacy team, auditors, and vendors as well. Development team members can act as liaisons to the security organization. This chapter discusses the need for synergy between the various stakeholders as they collaborate in building highly secure software.

Quality #7: Is Adaptable

Habit #7 of highly effective people is to "Sharpen the Saw." Quality #7 of highly secure software is that it is adaptable: adaptable to changing technologies, threats, and the talent pool. This means that the software's ability to withstand attack is continuously being improved to ensure that software developed today is secure not only after its release but that it is designed to address new and emerging threats. This chapter starts out by describing the law of resiliency degradation and then discusses what software adaptability is. It concludes by highlighting the fact that secure software requires security savvy people and highlights the importance of awareness, training, and education to keep the saw sharpened. I trust that this book will be useful in your efforts to help your company build highly secure software.

I hope you found these tips interesting and that you enjoy reading my book as much as I enjoyed writing it.

Mano Paul

CSSLP, CISSP, AMBCI, MCAD,
MCSD, CompTIA Network+, ECSA

ABOUT THE AUTHOR

NaSPA Member, Manoranjan (Mano) Paul *is the software assurance advisor for (ISC)2, the global leader in information security education and certification, representing and advising the organization on software assurance strategy, training, education, and certification. He is also a member of the Application Security Advisory Board. He is the winner of the inaugural Information Security Leadership Awards (ISLA) as a practitioner in the Americas region. His information security and software assurance experience includes designing and developing security programs from compliance-to-coding, security in the SDLC, writing secure code, risk management, security strategy, and security awareness training and education. Paul started his career as a shark researcher in the Bimini Biological Field Station, Bahamas. His educational pursuit took him to the University of Oklahoma where he received his degree in business administration in management information systems (MIS) with various accolades and a coveted 4.0 GPA. Following his entrepreneurial acumen, he founded and serves as the CEO and president of Express Certifications, a professional certification assessment and training company that developed studISCope, (ISC)2's official self-assessment offering for their certifications. Express Certifications is also the self-assessment testing company behind the U.S. Department of Defense certification education program as mandated by the 8570.1 Directive. He also founded SecuRisk Solutions, a company that specializes in security product development and consulting. Before Express Certifications and SecuRisk Solutions, Paul played several roles from software developer, quality assurance engineer, logistics manager, technical architect, IT strategist, and security engineer/program manager/strategist at Dell, Inc. Paul is the author of the Official Guide to the CSSLP (Certified Secure Software Lifecycle Professional) and is a contributing author to the Information Security Management Handbook, and has contributed security-related material several times to the Microsoft Solutions Developer Network (MSDN). He has served as vice president, industry representative, and an appointed faculty member of the Capitol of Texas Information System Security Association (ISSA) chapter and vice president of the Cloud Security Alliance (CSA), Austin Chapter. He has been featured at various domestic and international security conferences and is an invited speaker and panelist, delivering talks, training, and keynotes at conferences such as the SANS, OWASP, ASIS, CSI, Gartner Catalyst, and SC World Congress. Paul holds the following professional certifications: CSSLP, CISSP, AMBCI, MCSD, MCAD, CompTIA Network+, and ECSA certification. Paul is married to the most wonderful and self-sacrificing person in this world, Sangeetha Johnson, and their greatest fulfillment comes from spending time with their sons, Reuben A. Paul and Ittai A. Paul.*

Auerbach Publications
The Final Word in Enterprise Computing and Networking

Success in business requires training and discipline and hard work. But if you're not frightened by these things, the opportunities are just as great today as they ever were.

~ David Rockefeller

Start a NaSPA Chapter Today!

- Help Your Company with Recruitment and Networking
- Hook Up with People Who Need Your Skills
- Stay Aware of New Products and Strategies
- Exposure for Your Products and Services
- Have FUN at Your Meetings

www.NaSPA.com

The mission of NaSPA, a non-profit corporation, is to advance the technical management and career development abilities of its Members. NaSPA fosters a greater respect for network, mainframe, information technology, telecommunications, business continuity, and other professions, while it improves employment prospects and educational opportunities for thousands of practitioners worldwide.

Inspiring advancement of technology professions since 1986

NaSPA

Network and Systems Professionals Association

Anti-Spam Techniques Based on Artificial Immune System

By Dr. Ying Tan

With the rapid development of the Internet and mobile Internet, e-mails and instant messages have become the most common and convenient media for our daily communication. However, spam, usually defined as unsolicited commercial or bulk e-mails, has been considered as an increasingly serious challenge to the infrastructure of the Internet and has severely affected people's normal communication both at the workplace and in personal life. According to the statistics from the International Telecommunication Union (ITU), about 70% to 85% of the present e-mails on the Internet are spam. Numerous spam e-mails not only occupy valuable communications bandwidth and storage space but also threaten the security of networking computer systems when used as a carrier of viruses and malicious codes.

Simple approaches such as munging, listing, aliasing, and challenging can be easily implemented, but they are prone to be deceived by the tricks of spammers. Intelligent approaches have been playing an increasingly important role in anti-spam in recent years due to their self-learning ability and good performance. However, a single anti-spam shield with one technique alone can be easily intruded in practice. Consequently, hybrid approaches, combining two or more techniques, are proposed to improve overall performance that can overcome the limitations of a single technique. Among the varieties of anti-spam techniques, the artificial immune system (AIS), inspired by the biological immune system (BIS), shows its excellence in performance and is increasingly becoming one of the most important methods to filter spam.

There Detecting and tackling spam is highly time consuming, which decreases productivity tremendously. Many solutions have been put forth to filter spam off; they can be grouped into three categories: simple approaches, intelligent approaches, and hybrid approaches.

The BIS is a dynamically adjusting system that is characterized by the abilities of learning, memory, recognition, and cognition, which make it good at recognizing and removing antigens effectively for the purpose of protecting an organism. Generally, the AIS is an adaptive system inspired by theoretical immunology and observed immune functions, principles, and models for problem solving and is a dynamic, adaptive, robust, and distributed learning system. AIS has been developed mimicking BIS's mechanisms and functions and is now widely used in time-varying unknown environments for anomaly detection, fault detection, pattern recognition, optimization, learning, spam filtering, and so on. AIS features are just what an information security system such as a spam filtering system needs, while the functions of BIS and information security system are very similar to some extent. Therefore, biological immune principles provide effective solutions to computer security issues. The development of AIS-based information security systems, especially AIS-based anti-spam systems, is increasingly receiving extensive attention.

The application of immune principles and mechanisms can protect our computer and Internet network environments greatly. Filtering spam from e-mail traffic is essentially a typical pattern recognition problem. To address the problem, many approaches have been proposed. In most cases, spam filtering involves three stages: term selection, feature extraction, and classifier design. My CRC Press book presents these stages in detail. Specifically, for term selection, my book presents a term space partition (TSP) approach AND then a novel feature construction approach based on TSP, for the purpose of establishing a mechanism to make terms play more sufficient and rational roles in e-mail categorization. As for feature construction, this book emphasizes on AIS-based feature construction

methods that contain several feature construction approaches based on a variety of immune concentrations.

As for classifier design, this book shows that the mechanisms of danger theory are effective in combining classifiers. Finally, online implementation strategies of an immune-based intelligent e-mail server are developed under the Linux operating system environment.

My book consists of 13 chapters. Chapters 1 and 2 briefly introduce anti-spam techniques and artificial immune systems, respectively. From Chapters 3 through 9, immune-inspired feature extraction methods from a variety of immune principles are elaborated, which include the feature extraction or construction approaches based on term space partition, global concentration, local concentration, multi-resolution concentration, adaptive concentration selection, variable length concentration, and parameter optimization of concentrations. Chapters 10 and 11 address two kinds of classifiers based on immune danger theory: immune danger theory–based ensemble method and immune danger zone principle–based dynamic learning method. Finally, Chapters 12 and 13 describe immune-based dynamic updating algorithm and AIS-based spam filtering systems and their implementation. All the material in this book is the result of our research work and the academic papers published by me and my guided PhD and master's students over the past decade. This book gives a panoramic image of spam filtering based on artificial immune system, which applies immune principles to feature attraction, classifier combination, and classifier updating, as well as online implementation for the purpose of demonstrating the rationality of AIS methods for spam filtering. In addition, the author presents AIS-based anti-spam techniques using a didactic approach with detailed material and shows their excellent performance through a number of experiments and comparisons with the state-of-the-art anti-spam techniques. Furthermore, a collection of references and resources can be found in the website of Computational Intelligence Laboratory of Peking University: http://www.cil.pku.edu.cn/resources/ and http://www.cil.pku.edu.cn/publications/. Nevertheless, there is still a long way to go for us to apply immune-based antispam techniques to real-world mail filtering systems for their advancement. The aim of this book is to provide a single source for all our models and algorithms of anti-spam based on artificial immune systems proposed in the past decade, which are scattered in a variety of academic journal papers and international conference papers, for academia, researchers, and practitioners interested in AIS-based solutions to spam filtering. This book is intended for those who wish to learn about state-of-the-art AISbased anti-spam techniques. In order to understand the contents of this book comprehensively, readers should have some fundamental knowledge in computer architecture and software, computer security and spam filtering, artificial intelligence, computational intelligence, pattern recognition, and machine learning. A few errors, typos, and inconsistencies may remain in this book due to my limited specialty knowledge and capability. Critical comments and valuable suggestions are always welcome. All comments and suggestions can be sent to ytan@pku.edu.cn. Finally, I express my heartfelt thanks to all who have helped and will help in improving the quality of this book.

Ying Tan Beijing, China

ABOUT THE AUTHOR

NaSPA Member, Dr. Ying Tan *is a full professor and PhD advisor in the School of Electronics Engineering and Computer Science at Peking University, and director of Computational Intelligence Laboratory at Peking University, Haidian, Beijing, China (CIL@PKU: http://www.cil.pku.edu.cn). He received his BEng from the Electronic Engineering Institute, MSc from Xidian University, Xi'an, Shaanxi, China, and PhD from Southeast University, Dhaka, Bangladesh, in 1985, 1988, and 1997, respectively. His research interests include computational intelligence, swarm intelligence, data mining, machine learning, intelligent information processing for information security, fireworks algorithm, etc. He has published more than 280 papers, authored/coauthored 6 books and more than 10 book chapters, and holds 3 invention patents. He serves as the editor-in-chief of International Journal of Computational Intelligence and Pattern Recognition (IJCIPR), an associate editor of IEEE Transactions on Cybernetics (Cyb) and IEEE Transactions on Neural Networks and Learning Systems (TNNLS), etc. He also served as an editor of Springer's Lecture Notes on Computer Science (LNCS) for more than 15 volumes and as guest editor of several refereed journals, including Information Science, Softcomputing, Neurocomputing, IEEE/ACM Transactions on Computational Biology and Bioinformatics, Natural Computing, etc. He is the general chair of the ICSI-CCI 2015 joint conference, was the founding general chair of the series International Conference on Swarm Intelligence (ICSI 2010–2014), program committee co-chair of IEEE WCCI'2014, etc. He is a senior member of the IEEE.*

SecurityRecruiter.com
P.O. Box 398
WOODLAND PARK, CO 80866
PHONE: 719-686-8810
PHONE: 877-417-6830

Big Data...

A Business and Legal Guide

By James R. Kalyvas and Michael R. Overly

"Big Data" is discussed with increasing importance and urgency every day in boardrooms and in other strategic and operational meetings at organizations across the globe. My book starts where the many excellent books and articles on Big Data end — we accept that Big Data will materially change the way businesses and organizations make decisions.

Our purpose is to help executives, managers, and counsel to better understand the interrelationships between Big Data and the laws, regulations, and contracting practices that may have an impact on the use of Big Data. In each chapter of the book, we discuss an area of law that will affect the way your business or organization uses Big Data. We also provide recommendations regarding steps your organization can take to maximize its ability to take advantage of the many opportunities presented by Big Data without creating unforeseen risks and liability to your organization.

There is an even less-common understanding among executives, managers, and counsel not involved with technology on a day-to-day basis about how Big Data works.

This book is not a warning against the use of Big Data. To the contrary, we view Big Data as having the most significant impact on how decisions are made in organizations since the advent of the spreadsheet. Instead, this book is designed to

(1) help you think more broadly about the implications of the use of Big Data and

(2) assist organizations in establishing procedures to ensure or validate that legal considerations are part of their efforts to harness the power of Big Data.

We have also observed that executives, managers, and counsel may have very different understandings of what Big Data is as compared to the technologists and data scientists in their organizations. The propensity for these different understandings is magnified by the lack of a single accepted definition of Big Data. There is an even less-common understanding among executives, managers, and counsel not involved with technology on a day-to-day basis about how Big Data works. To help address this gap in understanding of Big Data, in Chapter 1 we discuss the definition of Big Data we used in this book, as well as several other popular definitions for comparison. We also provide a Big Data primer, in plain English (from a nontechnical perspective), discussing the characteristics that distinguish Big Data from traditional database models.

Why We Wrote This Book

Chapters 2 through 11 each take on a specific topic and provide guidance on questions such as

- Can we use Big Data to collect information about our competitors and use it in our pricing decisions without violating antitrust laws?
- Given a single security or privacy breach may subject a business to enforcement actions from a wide range of regulators—not to mention possible claims for damages by customers, business partners, shareholders, and others — how can my organization better understand its information security and privacy compliance obligations?
- How can you mitigate security and privacy risks in your organization?
- How can you include health information as part of your Big Data without violating the patchwork of federal and state laws governing the disclosure and use of health data?
- Can my organization anonymize health information so we can use it with fewer restrictions?
- Can my organization minimize its legal risks by maintaining a clear record of the business purposes of its Big Data analytic efforts?

- How is licensing a database in the context of Big Data different from traditional database licenses, and what are the key licensing considerations?
- Does our insurance provide appropriate coverage for Big Data risks?
- How can we legally leverage Big Data in our hiring decisions?
- Is there a way to meet our discovery hold and electronic discovery obligations in the era of Big Data without breaking the bank?

A final note on how to use this book. The chapters are designed to flow in a logical order, enabling the reader to develop an understanding of how to think about legal issues in connection with Big Data even if a particular law or topic is not specifically addressed. Readers looking for guidance on a particular topic can also refer directly to the relevant chapter. Each chapter stands on its own with regard to its subject matter. Caution should be used in selectively reading chapters as key recommendations and mitigation strategies may be missed.

ABOUT THE AUTHORS

NaSPA Member, James R. Kalyvas *is a partner with Foley & Lardner LLP and a member of the firm's national Management Committee. He is the firm's chief strategy officer, chair of the firm's Technology Transactions and Outsourcing Practice, and a member of the Technology and Health Care Industry Teams. Mr. Kalyvas advises companies, public entities, and associations on all matters involving the use of information technology, including structuring technology initiatives (e.g., outsourcing, ERP, CRM); vendor selection (RFP strategies, development, and response review); negotiations; technology implementation (professional service agreements, SOWs, and SLAs); and enterprise management of technology assets. Mr. Kalyvas specializes in structuring and negotiating outsourcing transactions, enterprise resource planning initiatives, and unique business partnering relationships. He has incorporated his experience in handling billions of dollars of technology transactions into the development of several proprietary tools relating to the effective management of the technology selection, negotiation, implementation, and management processes. Mr. Kalyvas has been Peer Review Rated as AV® Preeminent™, the highest performance rating in Martindale–Hubbell's peer review rating system and in 2010–2013, the Legal 500 recognized him for his technology work, specifically in the areas of outsourcing and transactions. In addition, Mr. Kalyvas was recognized in Chambers USA for his technology transactions and outsourcing work (2012 and 2013), and the International Association of Outsourcing Professionals recognized Foley & Lardner on its 2013 "World's Best Outsourcing Advisor" list. Mr. Kalyvas has authored articles and books relating to software licensing and the negotiation of information systems. He coauthored the publication Software Agreements Line by Line (Aspatore Books, 2004) and Negotiating Telecommunications Agreements Line by Line (Aspatore Books, 2005). Together with colleagues in his practice, Mr. Kalyvas coauthored the whitepaper "Cloud Computing: A Practical Framework for Managing Cloud Computing Risk."*

NaSPA Member Michael R. Overly *is a partner in the Technology Transactions and Outsourcing Practice Group in Foley & Lardner's Los Angeles office. As an attorney and former electrical engineer, his practice focuses on counseling Downloaded by [108.206.185.233] at 11:36 30 November 2016 xxii • About the Authors clients regarding technology licensing, intellectual property development, information security, and electronic commerce. Mr. Overly is one of the few practicing lawyers who has satisfied the rigorous requirements necessary to obtain the Certified Information Systems Auditor (CISA), Certified Information Systems Security Professional (CISSP), Information Systems Security Management Professional (ISSMP), Certified in Risk and Information Systems Controls (CRISC), and Certified Information Privacy Professional (CIPP) certifications. He is a member of the Computer Security Institute and the Information Systems Security Association. Mr. Overly is a frequent writer and speaker in many areas, including negotiating and drafting technology transactions and the legal issues of technology in the workplace, email, and electronic evidence. He has written numerous articles and books on these subjects and is a frequent commentator in the national press (e.g., The New York Times, Chicago Tribune, Los Angeles Times, Wall Street Journal, ABCNEWS.com, CNN, and MSNBC). In addition to conducting training seminars in the United States, Norway, Japan, and Malaysia, Mr. Overly has testified before the US Congress regarding online issues. Among others, he is the author of the best-selling e-policy: How to Develop Computer, Email, and Internet Guidelines to Protect Your Company and Its Assets (AMACOM, 1998), Overly on Electronic Evidence (West Publishing, 2002), The Open Source Handbook (Pike & Fischer, 2003), Document Retention in the Electronic Workplace (Pike & Fischer, 2001), and Licensing Line by Line (Aspatore Press, 2004).*

© 2016 by Taylor & Francis Group, LLC CRC Press is an imprint of Taylor & Francis Group, an Informa business. NaSPA extends its sincere thanks for this company's longstanding support. We encourage you to browse their library and use your NaSPA discount on these fine books. Details on the NaSPA website at www.naspa.com.

NaSPA
Network and Systems Professionals Association

NaSPA Corporate Membership

Consider a Corporate Membership in NaSPA

What are the benefits for the NaSPA Corporate Member? In a word, the benefits can be extraordinary:

- Liberal Use of Email Communications and Magazine Ads
- NaSPA Web Banners That Identify You as an Elite NaSPA Corporate Member
- Press Releases and New Product Announcements to Our Members
- Feature Articles in Technical Support Magazine by Your Employees
- Press Releases, Employment, and Recruitment Ads on Our Website
- Up to Ten Complimentary NaSPA Memberships
- Access to a 30-year old NaSPA Software Library and Repository
- Direct Access to NaSPA policymakers
- Access to NaSPA Social Media Such as Our LinkedIn Site
- Discounts on Booth Space at the NaSTEC Convention
- The Instant Credibility and Worldwide Exposure That Comes From Working With One of America's Oldest Technology Organizations

Learn More, Call Us at 888/215-0997!

Consider the many benefits of associating with one of the most trusted names in Information Technology. Won't you please consider a Corporate Membership in NaSPA?

Visit www.NaSPA.com for details.

Well Done!

But Don't Stop Here

Get Involved!

Membership in the Network and Systems Professionals Association is FREE for Students and Faculty*

- *Technical Support* Magazine
- Expansive On-Line Research Libraries
- Job Placement and Hiring Site
- Discounts on Technical Books and Publications
- FREE NaSPA Thrift Benefits Prescription Card
- Other Discounts on Services You Use Every Day!

Get Published!

Call for Original Articles and Technical Papers

NaSPA has provided award winning publications like *Technical Support Magazine* to professionals worldwide since 1986. Whether you are a student or faculty member, we invite you to submit a 1000-1500 word article or research paper for publication. The topic must be germane to IT, mainframe, data center, telecommunications, cloud applications, systems programming, or other relevant topics. NaSPA members are given extra consideration in final acceptance. Submit your article or research paper to editor@naspa.online and take that first step in making a name for yourself through NaSPA's award-winning publications.

Join Today!

NaSPA
Network and Systems Professionals Association

Contribute Today!

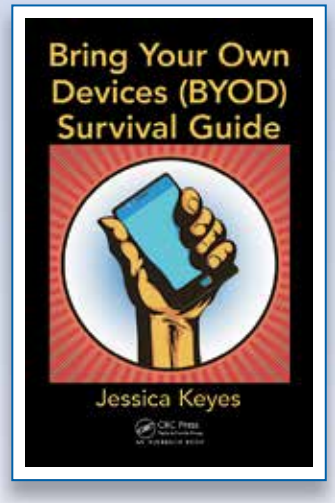
* Limited Time offer, some restrictions apply. © 2016 Network and Systems Professionals Association, Inc. www.naspa.com.

ENJOY SPECIAL SAVINGS ON THE BOOKS YOU NEED TO

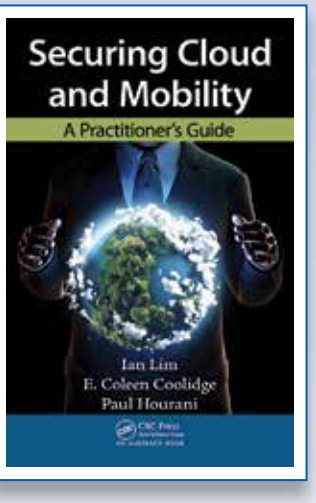
SAVE 25%

Ensure Agile, Resilient, and Energy-Efficient Networks and Systems

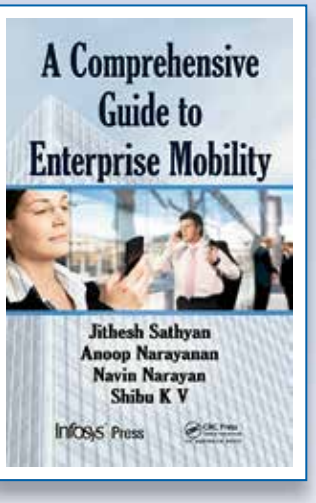
ISBN: 978-1-4665-0340-3



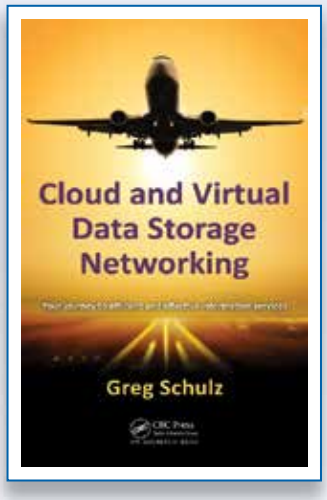
ISBN: 978-1-4665-6503-6



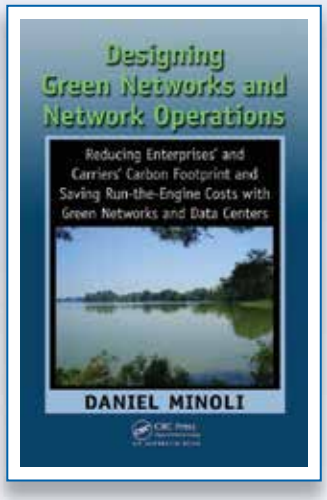
ISBN: 978-1-4398-5055-8



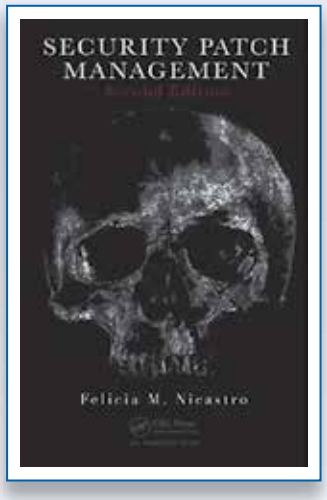
ISBN: 978-1-4398-6735-8



ISBN: 978-1-4398-5173-9



ISBN: 978-1-4398-1638-7



ISBN: 978-1-4398-2499-3

ISBN: 978-1-4398-3487-9

Sign Up for Our Free Newsletters and Connect with CRC Press IT Books on Facebook, Twitter, and LinkedIn to Keep the Discounts Coming!

INFORMATION SECURITY TODAY
The final word in information systems security

IT Today
In-depth... insightful... for today's technology leaders

IT Performance Improvement
Improving organizational performance through IT

WWW.CRCPRESS.COM

CRC Press
Taylor & Francis Group

Order online and enter discount code **GWN13** to **SAVE 25%**, plus *FREE Standard Shipping*

Fed Your Job Prospects Lately?

Since 1986, NaSPA (the Network and Systems Professionals Association) has been the premier not for profit advocate to technology and professionals worldwide. For 30 years professionals have coursed through NaSPA training programs, subscribed to its award winning publications, attended its conferences and trade shows, and enjoyed the many other benefits of NaSPA membership. Now you can find one of the most useful EMPLOYMENT SITES in the industry, proudly sponsored by one of the most trusted names in technology.

Nourish Your Organization, or Your Career, with the NaSPA Job Site!

Whether you are looking for the perfect employment candidate, or are an I.T. Professional looking to advance a career, you owe it to yourself to have a look. It's all in one place you can *truly trust*. Visit our EMPLOYMENT SITE at **careers.NaSPA.com**.

NaSPA

Network and Systems Professionals Association

P.O. BOX 1681 • Red Oak, TX 75154 • 888.215.0997 • www.naspa.com