

# Netflow Analytics For Splunk Network Monitoring Analysis

Ten Strategies of a World-Class Cyber Security Operations Center conveys MITRE's accumulated expertise on enterprise-grade computer network defense. It covers ten key qualities of leading Cyber Security Operations Centers (CSOCs), ranging from their structure and organization, to processes that best enable smooth operations, to approaches that extract maximum value from key CSOC technology investments. This book offers perspective and context for key decision points in structuring a CSOC, such as what capabilities to offer, how to architect large-scale data collection and analysis, and how to prepare the CSOC team for agile, threat-based response. If you manage, work in, or are standing up a CSOC, this book is for you. It is also available on MITRE's website, [www.mitre.org](http://www.mitre.org).

**Security Operations Center Building, Operating, and Maintaining Your SOC** The complete, practical guide to planning, building, and operating an effective Security Operations Center (SOC) Security Operations Center is the complete guide to building, operating, and managing Security Operations Centers in any environment.

Drawing on experience with hundreds of customers ranging from Fortune 500 enterprises to large military organizations, three leading experts thoroughly review each SOC model, including virtual SOCs. You'll learn how to select the right strategic option for your organization, and then plan and execute the strategy

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you've chosen. Security Operations Center walks you through every phase required to establish and run an effective SOC, including all significant people, process, and technology capabilities. The authors assess SOC technologies, strategy, infrastructure, governance, planning, implementation, and more. They take a holistic approach considering various commercial and open-source tools found in modern SOCs. This best-practice guide is written for anybody interested in learning how to develop, manage, or improve a SOC. A background in network security, management, and operations will be helpful but is not required. It is also an indispensable resource for anyone preparing for the Cisco SCYBER exam.

- Review high-level issues, such as vulnerability and risk management, threat intelligence, digital investigation, and data collection/analysis
- Understand the technical components of a modern SOC
- Assess the current state of your SOC and identify areas of improvement
- Plan SOC strategy, mission, functions, and services
- Design and build out SOC infrastructure, from facilities and networks to systems, storage, and physical security
- Collect and successfully analyze security data
- Establish an effective vulnerability management practice
- Organize incident response teams and measure their performance
- Define an optimal governance and staffing model
- Develop a practical SOC handbook that people can actually use
- Prepare SOC to go live, with comprehensive transition plans
- React quickly and collaboratively to security incidents
- Implement best practice security operations, including continuous enhancement and improvement

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Handbook of Digital Forensics and Investigation builds on the success of the Handbook of Computer Crime Investigation, bringing together renowned experts in all areas of digital forensics and investigation to provide the consummate resource for practitioners in the field. It is also designed as an accompanying text to Digital Evidence and Computer Crime. This unique collection details how to conduct digital investigations in both criminal and civil contexts, and how to locate and utilize digital evidence on computers, networks, and embedded systems. Specifically, the Investigative Methodology section of the Handbook provides expert guidance in the three main areas of practice: Forensic Analysis, Electronic Discovery, and Intrusion Investigation. The Technology section is extended and updated to reflect the state of the art in each area of specialization. The main areas of focus in the Technology section are forensic analysis of Windows, Unix, Macintosh, and embedded systems (including cellular telephones and other mobile devices), and investigations involving networks (including enterprise environments and mobile telecommunications technology). This handbook is an essential technical reference and on-the-job guide that IT professionals, forensic practitioners, law enforcement, and attorneys will rely on when confronted with computer related crime and digital evidence of any kind. \*Provides methodologies proven in practice for conducting digital investigations of all kinds \*Demonstrates how to locate and interpret a wide variety of digital evidence, and how it can be useful in investigations \*Presents tools in the context of the investigative process, including EnCase,

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FTK, ProDiscover, foremost, XACT, Network Miner, Splunk, flow-tools, and many other specialized utilities and analysis platforms \*Case examples in every chapter give readers a practical understanding of the technical, logistical, and legal challenges that arise in real investigations

Using a well-conceived incident response plan in the aftermath of an online security breach enables your team to identify attackers and learn how they operate. But, only when you approach incident response with a cyber threat intelligence mindset will you truly understand the value of that information. With this practical guide, you'll learn the fundamentals of intelligence analysis, as well as the best ways to incorporate these techniques into your incident response process. Each method reinforces the other: threat intelligence supports and augments incident response, while incident response generates useful threat intelligence. This book helps incident managers, malware analysts, reverse engineers, digital forensics specialists, and intelligence analysts understand, implement, and benefit from this relationship. In three parts, this in-depth book includes:

- The fundamentals: get an introduction to cyber threat intelligence, the intelligence process, the incident-response process, and how they all work together
- Practical application: walk through the intelligence-driven incident response (IDIR) process using the F3EAD process—Find, Fix Finish, Exploit, Analyze, and Disseminate
- The way forward: explore big-picture aspects of IDIR that go beyond individual incident-response investigations, including intelligence team

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building

Uncover hidden patterns of data and respond with countermeasures Security professionals need all the tools at their disposal to increase their visibility in order to prevent security breaches and attacks. This careful guide explores two of the most powerful data analysis and visualization. You'll soon understand how to harness and wield data, from collection and storage to management and analysis as well as visualization and presentation. Using a hands-on approach with real-world examples, this book shows you how to gather feedback, measure the effectiveness of your security methods, and make better decisions. Everything in this book will have practical application for information security professionals. Helps IT and security professionals understand and use data, so they can thwart attacks and understand and visualize vulnerabilities in their networks Includes more than a dozen real-world examples and hands-on exercises that demonstrate how to analyze security data and intelligence and translate that information into visualizations that make plain how to prevent attacks Covers topics such as how to acquire and prepare security data, use simple statistical methods to detect malware, predict rogue behavior, correlate security events, and more Written by a team of well-known experts in the field of security and data analysis Lock down your networks, prevent hacks, and thwart malware by improving visibility into the environment, all through the power of data and Security Using Data Analysis, Visualization, and Dashboards.

This book constitutes the proceedings of the 13th

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International Conference on Network and System Security, NSS 2019, held in Sapporo, Japan, in December 2019. The 36 full papers and 7 short papers presented together with 4 invited papers in this book were carefully reviewed and selected from 89 initial submissions. The papers cover a wide range of topics in the field, including authentication, access control, availability, integrity, privacy, confidentiality, dependability and sustainability of computer networks and systems.

The book 'Data Intensive Computing Applications for Big Data' discusses the technical concepts of big data, data intensive computing through machine learning, soft computing and parallel computing paradigms. It brings together researchers to report their latest results or progress in the development of the above mentioned areas. Since there are few books on this specific subject, the editors aim to provide a common platform for researchers working in this area to exhibit their novel findings. The book is intended as a reference work for advanced undergraduates and graduate students, as well as multidisciplinary, interdisciplinary and transdisciplinary research workers and scientists on the subjects of big data and cloud/parallel and distributed computing, and explains didactically many of the core concepts of these approaches for practical applications. It is organized into 24 chapters providing a comprehensive overview of big data analysis using parallel computing and addresses the complete data science workflow in the cloud, as well as dealing with privacy issues and the challenges faced in a data-

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intensive cloud computing environment. The book explores both fundamental and high-level concepts, and will serve as a manual for those in the industry, while also helping beginners to understand the basic and advanced aspects of big data and cloud computing. “A lively account . . . combines the derring-do of old-fashioned spycraft with thoughtful meditations on the future of warfare and intelligence work. It deserves to be read.” —The Washington Post “Offer[s] an exceptionally deep glimpse into the CIA’s counterterrorism operations in the last decade of the twentieth century.” —Harper’s A legendary CIA spy and counterterrorism expert tells the spellbinding story of his high-risk, action-packed career Revelatory and groundbreaking, *The Art of Intelligence* will change the way people view the CIA, domestic and foreign intelligence, and international terrorism. Henry A. “Hank” Crumpton, a twenty-four-year veteran of the CIA’s Clandestine Service, offers a thrilling account that delivers profound lessons about what it means to serve as an honorable spy. From CIA recruiting missions in Africa to pioneering new programs like the UAV Predator, from running post-9/11 missions in Afghanistan to heading up all clandestine CIA operations in the United States, Crumpton chronicles his role—in the battlefield and in the Oval Office—in transforming the way America wages war and sheds light on issues of domestic espionage.

Any good attacker will tell you that expensive security monitoring and prevention tools aren’t enough to keep you secure. This practical book demonstrates a data-centric approach to distilling complex security monitoring, incident

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response, and threat analysis ideas into their most basic elements. You'll learn how to develop your own threat intelligence and incident detection strategy, rather than depend on security tools alone. Written by members of Cisco's Computer Security Incident Response Team, this book shows IT and information security professionals how to create an InfoSec playbook by developing strategy, technique, and architecture. Learn incident response fundamentals—and the importance of getting back to basics Understand threats you face and what you should be protecting Collect, mine, organize, and analyze as many relevant data sources as possible Build your own playbook of repeatable methods for security monitoring and response Learn how to put your plan into action and keep it running smoothly Select the right monitoring and detection tools for your environment Develop queries to help you sort through data and create valuable reports Know what actions to take during the incident response phase

Dissecting the dark side of the Internet with its infectious worms, botnets, rootkits, and Trojan horse programs (known as malware) is a treacherous condition for any forensic investigator or analyst. Written by information security experts with real-world investigative experience, *Malware Forensics Field Guide for Windows Systems* is a "tool" with checklists for specific tasks, case studies of difficult situations, and expert analyst tips. \*A condensed hand-held guide complete with on-the-job tasks and checklists \*Specific for Windows-based systems, the largest running OS in the world \*Authors are world-renowned leaders in investigating and analyzing malicious code

Networked computers are ubiquitous, and are subject to attack, misuse, and abuse. One method to counteracting this cyber threat is to provide security analysts with better tools to discover patterns, detect anomalies, identify correlations, and

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communicate their findings. Visualization for computer security (VizSec) researchers and developers are doing just that. VizSec is about putting robust information visualization tools into the hands of human analysts to take advantage of the power of the human perceptual and cognitive processes in solving computer security problems. This volume collects the papers presented at the 4th International Workshop on Computer Security - VizSec 2007.

Traditional intrusion detection and logfile analysis are no longer enough to protect today's complex networks. In the updated second edition of this practical guide, security researcher Michael Collins shows InfoSec personnel the latest techniques and tools for collecting and analyzing network traffic datasets. You'll understand how your network is used, and what actions are necessary to harden and defend the systems within it. In three sections, this book examines the process of collecting and organizing data, various tools for analysis, and several different analytic scenarios and techniques. New chapters focus on active monitoring and traffic manipulation, insider threat detection, data mining, regression and machine learning, and other topics. You'll learn how to: Use sensors to collect network, service, host, and active domain data Work with the SiLK toolset, Python, and other tools and techniques for manipulating data you collect Detect unusual phenomena through exploratory data analysis (EDA), using visualization and mathematical techniques Analyze text data, traffic behavior, and communications mistakes Identify significant structures in your network with graph analysis Examine insider threat data and acquire threat intelligence Map your network and identify significant hosts within it Work with operations to develop defenses and analysis techniques Summary Securing DevOps explores how the techniques of DevOps and security should be applied together to make

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cloud services safer. This introductory book reviews the latest practices used in securing web applications and their infrastructure and teaches you techniques to integrate security directly into your product. You'll also learn the core concepts of DevOps, such as continuous integration, continuous delivery, and infrastructure as a service. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

About the Technology An application running in the cloud can benefit from incredible efficiencies, but they come with unique security threats too. A DevOps team's highest priority is understanding those risks and hardening the system against them.

About the Book Securing DevOps teaches you the essential techniques to secure your cloud services. Using compelling case studies, it shows you how to build security into automated testing, continuous delivery, and other core DevOps processes. This experience-rich book is filled with mission-critical strategies to protect web applications against attacks, deter fraud attempts, and make your services safer when operating at scale. You'll also learn to identify, assess, and secure the unique vulnerabilities posed by cloud deployments and automation tools commonly used in modern infrastructures.

What's inside An approach to continuous security Implementing test-driven security in DevOps Security techniques for cloud services Watching for fraud and responding to incidents Security testing and risk assessment

About the Reader Readers should be comfortable with Linux and standard DevOps practices like CI, CD, and unit testing.

About the Author Julien Vehent is a security architect and DevOps advocate. He leads the Firefox Operations Security team at Mozilla, and is responsible for the security of Firefox's high-traffic cloud services and public websites.

Table of Contents Securing DevOps PART 1 - Case study: applying layers of security to a simple DevOps pipeline Building a

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barebones DevOps pipeline Security layer 1: protecting web applications Security layer 2: protecting cloud infrastructures Security layer 3: securing communications Security layer 4: securing the delivery pipeline PART 2 - Watching for anomalies and protecting services against attacks Collecting and storing logs Analyzing logs for fraud and attacks Detecting intrusions The Caribbean breach: a case study in incident response PART 3 - Maturing DevOps security Assessing risks Testing security Continuous security Implement a robust SIEM system Effectively manage the security information and events produced by your network with help from this authoritative guide. Written by IT security experts, Security Information and Event Management (SIEM) Implementation shows you how to deploy SIEM technologies to monitor, identify, document, and respond to security threats and reduce false-positive alerts. The book explains how to implement SIEM products from different vendors, and discusses the strengths, weaknesses, and advanced tuning of these systems. You'll also learn how to use SIEM capabilities for business intelligence. Real-world case studies are included in this comprehensive resource. Assess your organization's business models, threat models, and regulatory compliance requirements Determine the necessary SIEM components for small- and medium-size businesses Understand SIEM anatomy—source device, log collection, parsing/normalization of logs, rule engine, log storage, and event monitoring Develop an effective incident response program Use the inherent capabilities of your SIEM system for business intelligence Develop filters and correlated event rules to reduce false-positive alerts Implement AlienVault's Open Source Security Information Management (OSSIM) Deploy the Cisco Monitoring Analysis and Response System (MARS) Configure and use the Q1 Labs QRadar SIEM system Implement ArcSight Enterprise Security Management

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(ESM) v4.5 Develop your SIEM security analyst skills

This is the eBook version of the print title and might not provide access to the practice test software that accompanies the print book. Learn, prepare, and practice for CompTIA Cybersecurity Analyst (CSA+) exam success with this CompTIA Authorized Cert Guide from Pearson IT Certification, a leader in IT certification learning and a CompTIA Authorized Platinum Partner. · Master CompTIA Cybersecurity Analyst (CSA+) exam topics · Assess your knowledge with chapter-ending quizzes · Review key concepts with exam preparation tasks · Practice with realistic exam questions CompTIA Cybersecurity Analyst (CSA+) Cert Guide is a best-of-breed exam study guide. Expert technology instructor and certification author Troy McMillan shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. The book presents you with an organized test-preparation routine through the use of proven series elements and techniques. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. Review questions help you assess your knowledge, and a final preparation chapter guides you through tools and resources to help you craft your final study plan. The companion website contains the powerful Pearson Test Prep practice test software, complete with hundreds of exam-realistic questions. The assessment engine offers you a wealth of customization options and reporting features, laying out a complete assessment of your knowledge to help you focus your study where it is needed most. Well regarded for its level of detail, assessment features, and challenging review questions and exercises, this CompTIA authorized

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study guide helps you master the concepts and techniques that will enable you to succeed on the exam the first time.

The CompTIA authorized study guide helps you master all the topics on the CSA+ exam, including

- Applying environmental reconnaissance
- Analyzing results of network reconnaissance
- Implementing responses and countermeasures
- Implementing vulnerability management processes
- Analyzing scan output and identifying common vulnerabilities
- Identifying incident impact and assembling a forensic toolkit
- Utilizing effective incident response processes
- Performing incident recovery and post-incident response
- Establishing frameworks, policies, controls, and procedures
- Remediating identity- and access-related security issues
- Architecting security and implementing compensating controls
- Implementing application security best practices
- Using cybersecurity tools and technologies

A comprehensive guide for deploying, configuring, and troubleshooting NetFlow and learning big data analytics technologies for cyber security Today's world of network security is full of cyber security vulnerabilities, incidents, breaches, and many headaches. Visibility into the network is an indispensable tool for network and security professionals and Cisco NetFlow creates an environment where network administrators and security professionals have the tools to understand who, what, when, where, and how network traffic is flowing. Network Security with NetFlow and IPFIX is a key resource for introducing yourself to and understanding the power behind the Cisco NetFlow solution. Omar Santos, a Cisco Product Security Incident Response Team (PSIRT) technical leader and author of numerous books including the CCNA Security 210-260 Official Cert Guide, details the importance of NetFlow and demonstrates how it can be used by large enterprises and small-to-medium-sized businesses to meet critical network challenges. This book also examines

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NetFlow's potential as a powerful network security tool. Network Security with NetFlow and IPFIX explores everything you need to know to fully understand and implement the Cisco Cyber Threat Defense Solution. It also provides detailed configuration and troubleshooting guidance, sample configurations with depth analysis of design scenarios in every chapter, and detailed case studies with real-life scenarios. You can follow Omar on Twitter: @santosomar

NetFlow and IPFIX basics  
Cisco NetFlow versions and features  
Cisco Flexible NetFlow  
NetFlow Commercial and Open Source Software Packages  
Big Data Analytics tools and technologies such as Hadoop, Flume, Kafka, Storm, Hive, HBase, Elasticsearch, Logstash, Kibana (ELK)  
Additional Telemetry Sources for Big Data Analytics for Cyber Security  
Understanding big data scalability  
Big data analytics in the Internet of everything  
Cisco Cyber Threat Defense and NetFlow Troubleshooting  
NetFlow Real-world case studies

This indispensable text/reference presents a comprehensive overview on the detection and prevention of anomalies in computer network traffic, from coverage of the fundamental theoretical concepts to in-depth analysis of systems and methods. Readers will benefit from invaluable practical guidance on how to design an intrusion detection technique and incorporate it into a system, as well as on how to analyze and correlate alerts without prior information. Topics and features:

- introduces the essentials of traffic management in high speed networks, detailing types of anomalies, network vulnerabilities, and a taxonomy of network attacks;
- describes a systematic approach to

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generating large network intrusion datasets, and reviews existing synthetic, benchmark, and real-life datasets; provides a detailed study of network anomaly detection techniques and systems under six different categories: statistical, classification, knowledge-base, cluster and outlier detection, soft computing, and combination learners; examines alert management and anomaly prevention techniques, including alert preprocessing, alert correlation, and alert post-processing; presents a hands-on approach to developing network traffic monitoring and analysis tools, together with a survey of existing tools; discusses various evaluation criteria and metrics, covering issues of accuracy, performance, completeness, timeliness, reliability, and quality; reviews open issues and challenges in network traffic anomaly detection and prevention. This informative work is ideal for graduate and advanced undergraduate students interested in network security and privacy, intrusion detection systems, and data mining in security. Researchers and practitioners specializing in network security will also find the book to be a useful reference.

This book explains how AI and Machine Learning can be applied to help businesses solve problems, support critical thinking and ultimately create customer value and increase profit. By considering business strategies, business process modeling, quality assurance, cybersecurity, governance and

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big data and focusing on functions, processes, and people's behaviors it helps businesses take a truly holistic approach to business optimization. It contains practical examples that make it easy to understand the concepts and apply them. It is written for practitioners (consultants, senior executives, decision-makers) dealing with real-life business problems on a daily basis, who are keen to develop systematic strategies for the application of AI/ML/BD technologies to business automation and optimization, as well as researchers who want to explore the industrial applications of AI and higher-level students.

This is the eBook version of the print title. Note that the eBook does not provide access to the practice test software that accompanies the print book.

Learn, prepare, and practice for CCNA Cyber Ops SECOPS #210-255 exam success with this Official Cert Guide from Pearson IT Certification, a leader in IT Certification learning. Master CCNA Cyber Ops SECOPS #210-255 exam topics Assess your knowledge with chapter-ending quizzes Review key concepts with exam preparation tasks CCNA Cyber Ops SECOPS 210-255 Official Cert Guide is a best-of-breed exam study guide. Best-selling authors and internationally respected cybersecurity experts Omar Santos and Joseph Muniz share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual

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knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. The book presents you with an organized test preparation routine through the use of proven series elements and techniques. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. Review questions help you assess your knowledge, and a final preparation chapter guides you through tools and resources to help you craft your final study plan. Well-regarded for its level of detail, assessment features, and challenging review questions and exercises, this study guide helps you master the concepts and techniques that will allow you to succeed on the exam the first time. The study guide helps you master all the topics on the SECOPS #210-255 exam, including: Threat analysis Forensics Intrusion analysis NetFlow for cybersecurity Incident response and the incident handling process Incident response teams Compliance frameworks Network and host profiling Data and event analysis Intrusion event categories Big data is presenting challenges to cybersecurity. For an example, the Internet of Things (IoT) will reportedly soon generate a staggering 400 zettabytes (ZB) of data a year. Self-driving cars are predicted to churn out 4000 GB of data per hour of driving. Big data analytics, as an emerging analytical

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technology, offers the capability to collect, store, process, and visualize these vast amounts of data. Big Data Analytics in Cybersecurity examines security challenges surrounding big data and provides actionable insights that can be used to improve the current practices of network operators and administrators. Applying big data analytics in cybersecurity is critical. By exploiting data from the networks and computers, analysts can discover useful network information from data. Decision makers can make more informative decisions by using this analysis, including what actions need to be performed, and improvement recommendations to policies, guidelines, procedures, tools, and other aspects of the network processes. Bringing together experts from academia, government laboratories, and industry, the book provides insight to both new and more experienced security professionals, as well as data analytics professionals who have varying levels of cybersecurity expertise. It covers a wide range of topics in cybersecurity, which include: Network forensics Threat analysis Vulnerability assessment Visualization Cyber training. In addition, emerging security domains such as the IoT, cloud computing, fog computing, mobile computing, and cyber-social networks are examined. The book first focuses on how big data analytics can be used in different aspects of cybersecurity including network forensics, root-cause analysis, and security training.

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Next it discusses big data challenges and solutions in such emerging cybersecurity domains as fog computing, IoT, and mobile app security. The book concludes by presenting the tools and datasets for future cybersecurity research.

The definitive guide to incident response--updated for the first time in a decade! Thoroughly revised to cover the latest and most effective tools and techniques, *Incident Response & Computer Forensics, Third Edition* arms you with the information you need to get your organization out of trouble when data breaches occur. This practical resource covers the entire lifecycle of incident response, including preparation, data collection, data analysis, and remediation. Real-world case studies reveal the methods behind--and remediation strategies for--today's most insidious attacks.

Architect an infrastructure that allows for methodical investigation and remediation  
Develop leads, identify indicators of compromise, and determine incident scope  
Collect and preserve live data  
Perform forensic duplication  
Analyze data from networks, enterprise services, and applications  
Investigate Windows and Mac OS X systems  
Perform malware triage  
Write detailed incident response reports  
Create and implement comprehensive remediation plans

SDN: Software Defined Networks  
An Authoritative Review of Network Programmability

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Technologies"O'Reilly Media, Inc."

Use data analytics to drive innovation and value throughout your network infrastructure. Network and IT professionals capture immense amounts of data from their networks. Buried in this data are multiple opportunities to solve and avoid problems, strengthen security, and improve network performance. To achieve these goals, IT networking experts need a solid understanding of data science, and data scientists need a firm grasp of modern networking concepts. *Data Analytics for IT Networks* fills these knowledge gaps, allowing both groups to drive unprecedented value from telemetry, event analytics, network infrastructure metadata, and other network data sources. Drawing on his pioneering experience applying data science to large-scale Cisco networks, John Garrett introduces the specific data science methodologies and algorithms network and IT professionals need, and helps data scientists understand contemporary network technologies, applications, and data sources. After establishing this shared understanding, Garrett shows how to uncover innovative use cases that integrate data science algorithms with network data. He concludes with several hands-on, Python-based case studies reflecting Cisco Customer Experience (CX) engineers' supporting its largest customers. These are designed to serve as templates for developing custom solutions ranging from advanced

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troubleshooting to service assurance. Understand the data analytics landscape and its opportunities in Networking See how elements of an analytics solution come together in the practical use cases Explore and access network data sources, and choose the right data for your problem Innovate more successfully by understanding mental models and cognitive biases Walk through common analytics use cases from many industries, and adapt them to your environment Uncover new data science use cases for optimizing large networks Master proven algorithms, models, and methodologies for solving network problems Adapt use cases built with traditional statistical methods Use data science to improve network infrastructure analysis Analyze control and data planes with greater sophistication Fully leverage your existing Cisco tools to collect, analyze, and visualize data

Cyber Security Innovation for the Digital Economy considers possible solutions to the relatively new scientific-technical problem of developing innovative solutions in the field of cyber security for the Digital Economy. The solutions proposed are based on the results of exploratory studies conducted by the author in the areas of Big Data acquisition, cognitive information technologies (cogno-technologies), new methods of analytical verification of digital ecosystems on the basis of similarity invariants and dimensions, and "computational cognitivism,"

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involving a number of existing models and methods. In practice, this successfully allowed the creation of new entities - the required safe and trusted digital ecosystems - on the basis of the development of digital and cyber security technologies, and the resulting changes in their behavioral preferences. Here, the ecosystem is understood as a certain system of organizations, created around a certain Technological Platform that use its services to make the best offers to customers and access to them to meet the ultimate needs of clients - legal entities and individuals. The basis of such ecosystems is a certain technological platform, created on advanced innovative developments, including the open interfaces and code, machine learning, cloud technologies, Big Data collection and processing, artificial intelligence technologies, etc. The mentioned Technological Platform allows creating the best offer for the client both from own goods and services and from the offers of external service providers in real time. This book contains four chapters devoted to the following subjects: Relevance of the given scientific-technical problems in the cybersecurity of Digital Economy Determination of the limiting capabilities Possible scientific and technical solutions Organization of perspective research studies in the area of Digital Economy cybersecurity in Russia.

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the eBook does not provide access to the practice test software that accompanies the print book. Learn, prepare, and practice for CCNA Cyber Ops SECFND 210-250 exam success with this Cert Guide from Pearson IT Certification, a leader in IT Certification learning. Master CCNA Cyber Ops SECFND 210-250 exam topics Assess your knowledge with chapter-ending quizzes Review key concepts with exam preparation tasks CCNA Cyber Ops SECFND 210-250 Official Cert Guide is a best-of-breed exam study guide. Cisco enterprise security experts Omar Santos, Joseph Muniz, and Stefano De Crescenzo share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. The book presents you with an organized test preparation routine through the use of proven series elements and techniques. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. Review questions help you assess your knowledge, and a final preparation chapter guides you through tools and resources to help you craft your final study plan. Well-regarded for its level of detail, assessment features, and challenging review questions and exercises, this study guide helps you master the

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concepts and techniques that will allow you to succeed on the exam the first time. The study guide helps you master all the topics on the CCNA Cyber Ops SECFND exam, including: Fundamentals of networking protocols and networking device types Network security devices and cloud services Security principles Access control models Security management concepts and techniques Fundamentals of cryptography and PKI Essentials of Virtual Private Networks (VPNs) Windows-based Analysis Linux /MAC OS X-based Analysis Endpoint security technologies Network and host telemetry Security monitoring operations and challenges Types of attacks and vulnerabilities Security evasion techniques

As more and more devices become interconnected through the Internet of Things (IoT), there is an even greater need for this book, which explains the technology, the internetworking, and applications that are making IoT an everyday reality. The book begins with a discussion of IoT "ecosystems" and the technology that enables them, which includes: Wireless Infrastructure and Service Discovery Protocols Integration Technologies and Tools Application and Analytics Enablement Platforms A chapter on next-generation cloud infrastructure explains hosting IoT platforms and applications. A chapter on data analytics throws light on IoT data collection, storage, translation, real-time processing,

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mining, and analysis, all of which can yield actionable insights from the data collected by IoT applications. There is also a chapter on edge/fog computing. The second half of the book presents various IoT ecosystem use cases. One chapter discusses smart airports and highlights the role of IoT integration. It explains how mobile devices, mobile technology, wearables, RFID sensors, and beacons work together as the core technologies of a smart airport. Integrating these components into the airport ecosystem is examined in detail, and use cases and real-life examples illustrate this IoT ecosystem in operation. Another in-depth look is on envisioning smart healthcare systems in a connected world. This chapter focuses on the requirements, promising applications, and roles of cloud computing and data analytics. The book also examines smart homes, smart cities, and smart governments. The book concludes with a chapter on IoT security and privacy. This chapter examines the emerging security and privacy requirements of IoT environments. The security issues and an assortment of surmounting techniques and best practices are also discussed in this chapter. Traditional intrusion detection and logfile analysis are no longer enough to protect today's complex networks. In this practical guide, security researcher Michael Collins shows you several techniques and tools for collecting and analyzing network traffic

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datasets. You'll understand how your network is used, and what actions are necessary to protect and improve it. Divided into three sections, this book examines the process of collecting and organizing data, various tools for analysis, and several different analytic scenarios and techniques. It's ideal for network administrators and operational security analysts familiar with scripting. Explore network, host, and service sensors for capturing security data Store data traffic with relational databases, graph databases, Redis, and Hadoop Use SiLK, the R language, and other tools for analysis and visualization Detect unusual phenomena through Exploratory Data Analysis (EDA) Identify significant structures in networks with graph analysis Determine the traffic that's crossing service ports in a network Examine traffic volume and behavior to spot DDoS and database raids Get a step-by-step process for network mapping and inventory Explore the emerging definitions, protocols, and standards for SDN—software-defined, software-driven, programmable networks—with this comprehensive guide. Two senior network engineers show you what's required for building networks that use software for bi-directional communication between applications and the underlying network infrastructure. This vendor-agnostic book also presents several SDN use cases, including bandwidth scheduling and manipulation, input traffic

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and triggered actions, as well as some interesting use cases around big data, data center overlays, and network-function virtualization. Discover how enterprises and service providers alike are pursuing SDN as it continues to evolve. Explore the current state of the OpenFlow model and centralized network control. Delve into distributed and central control, including data plane generation. Examine the structure and capabilities of commercial and open source controllers. Survey the available technologies for network programmability. Trace the modern data center from desktop-centric to highly distributed models. Discover new ways to connect instances of network-function virtualization and service chaining. Get detailed information on constructing and maintaining an SDN network topology. Examine an idealized SDN framework for controllers, applications, and ecosystems.

Network security is not simply about building impenetrable walls—determined attackers will eventually overcome traditional defenses. The most effective computer security strategies integrate network security monitoring (NSM): the collection and analysis of data to help you detect and respond to intrusions. In *The Practice of Network Security Monitoring*, Mandiant CSO Richard Bejtlich shows you how to use NSM to add a robust layer of protection around your networks—no prior experience required. To help you avoid costly and inflexible

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solutions, he teaches you how to deploy, build, and run an NSM operation using open source software and vendor-neutral tools. You'll learn how to:

- Determine where to deploy NSM platforms, and size them for the monitored networks
- Deploy stand-alone or distributed NSM installations
- Use command line and graphical packet analysis tools, and NSM consoles
- Interpret network evidence from server-side and client-side intrusions
- Integrate threat intelligence into NSM software to identify sophisticated adversaries

There's no foolproof way to keep attackers out of your network. But when they get in, you'll be prepared. *The Practice of Network Security Monitoring* will show you how to build a security net to detect, contain, and control them. Attacks are inevitable, but losing sensitive data shouldn't be.

If you're involved in cybersecurity as a software developer, forensic investigator, or network administrator, this practical guide shows you how to apply the scientific method when assessing techniques for protecting your information systems. You'll learn how to conduct scientific experiments on everyday tools and procedures, whether you're evaluating corporate security systems, testing your own security product, or looking for bugs in a mobile game. Once author Josiah Dykstra gets you up to speed on the scientific method, he helps you focus on standalone, domain-specific topics, such as

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cryptography, malware analysis, and system security engineering. The latter chapters include practical case studies that demonstrate how to use available tools to conduct domain-specific scientific experiments. Learn the steps necessary to conduct scientific experiments in cybersecurity Explore fuzzing to test how your software handles various inputs Measure the performance of the Snort intrusion detection system Locate malicious “needles in a haystack” in your network and IT environment Evaluate cryptography design and application in IoT products Conduct an experiment to identify relationships between similar malware binaries Understand system-level security requirements for enterprise networks and web services

Intensively hands-on training for real-world network forensics Network Forensics provides a uniquely practical guide for IT and law enforcement professionals seeking a deeper understanding of cybersecurity. This book is hands-on all the way—by dissecting packets, you gain fundamental knowledge that only comes from experience. Real packet captures and log files demonstrate network traffic investigation, and the learn-by-doing approach relates the essential skills that traditional forensics investigators may not have. From network packet analysis to host artifacts to log analysis and beyond, this book emphasizes the critical techniques that

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bring evidence to light. Network forensics is a growing field, and is becoming increasingly central to law enforcement as cybercrime becomes more and more sophisticated. This book provides an unprecedented level of hands-on training to give investigators the skills they need. Investigate packet captures to examine network communications. Locate host-based artifacts and analyze network logs. Understand intrusion detection systems—and let them do the legwork. Have the right architecture and systems in place ahead of an incident. Network data is always changing, and is never saved in one place; an investigator must understand how to examine data over time, which involves specialized skills that go above and beyond memory, mobile, or data forensics. Whether you're preparing for a security certification or just seeking deeper training for a law enforcement or IT role, you can only learn so much from concept; to thoroughly understand something, you need to do it. Network Forensics provides intensive hands-on practice with direct translation to real-world application.

Practical IPv6 for Windows Administrators is a handy guide to implementing IPv6 in a Microsoft Windows environment. This is the book you need if you are a Microsoft Windows Administrator confronted with IPv6 and in need of a quick resource to get up and going. The book covers the current state of IPv6 and its support in Microsoft Windows. It provides best-

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practices and other guidance toward successful implementation. This book is especially written with the goal of translating your current expertise in IPv4 into the new realm of IPv6. Special attention is given to dual-stack configurations, helping you to run IPv4 and IPv6 side-by-side and support both protocol versions during a transition period. Practical IPv6 for Windows Administrators is also a fast reference you can look at to get something done quickly. It covers IPv6 addressing, management of IPv6 from Powershell, Advanced Firewall configuration, and use of IPv6 in Hyper-V and virtual networking environments. You'll find practical examples showing how IPv6 integrates with all the standard tools you use for IPv4 today, tools like DNS and DHCP. You'll also find insider knowledge on IPv6 that can help avert stumbling points on the road to deployment. Provides a quick path from IPv4 expertise to IPv6 implementation Gives best-practices specific to Windows on IPv6 and dual stack networks Is chock full of practical examples showing how to manage IPv6 on Windows

This textbook is for courses in cyber security education that follow National Initiative for Cybersecurity Education (NICE) KSAs work roles and framework, that adopt the Competency-Based Education (CBE) method. The book follows the CBT (KSA) general framework, meaning each chapter contains three sections, knowledge and questions, and skills/labs for Skills and Abilities. The author makes an explicit balance between knowledge and skills material in information security,

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giving readers immediate applicable skills. The book is divided into seven parts: Securely Provision; Operate and Maintain; Oversee and Govern; Protect and Defend; Analysis; Operate and Collect; Investigate. All classroom materials (in the book an ancillary) adhere to the NICE framework. Mirrors classes set up by the National Initiative for Cybersecurity Education (NICE) Adopts the Competency-Based Education (CBE) method of teaching, used by universities, corporations, and in government training Includes content and ancillaries that provide skill-based instruction on compliance laws, information security standards, risk response and recovery, and more

“This is a must-have work for anybody in information security, digital forensics, or involved with incident handling. As we move away from traditional disk-based analysis into the interconnectivity of the cloud, Sherri and Jonathan have created a framework and roadmap that will act as a seminal work in this developing field.” – Dr. Craig S. Wright (GSE), Asia Pacific Director at Global Institute for Cyber Security + Research. “It’s like a symphony meeting an encyclopedia meeting a spy novel.” –Michael Ford, Corero Network Security On the Internet, every action leaves a mark—in routers, firewalls, web proxies, and within network traffic itself. When a hacker breaks into a bank, or an insider smuggles secrets to a competitor, evidence of the crime is always left behind. Learn to recognize hackers’ tracks and uncover network-based evidence in *Network Forensics: Tracking Hackers through Cyberspace*. Carve suspicious email attachments from packet captures. Use flow records to track an intruder as he pivots through the network. Analyze a real-world wireless encryption-cracking attack (and then crack the key yourself). Reconstruct a suspect’s web surfing history—and cached web pages, too—from a web proxy. Uncover DNS-tunneled traffic. Dissect the Operation Aurora

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exploit, caught on the wire. Throughout the text, step-by-step case studies guide you through the analysis of network-based evidence. You can download the evidence files from the authors' web site ([imgsecurity.com](http://imgsecurity.com)), and follow along to gain hands-on experience. Hackers leave footprints all across the Internet. Can you find their tracks and solve the case? Pick up Network Forensics and find out.

Modern organizations rely on Security Operations Center (SOC) teams to vigilantly watch security systems, rapidly detect breaches, and respond quickly and effectively. To succeed, SOCs desperately need more qualified cybersecurity professionals. Cisco's new Cisco Certified CyberOps Associate certification prepares candidates to begin a career working as associate-level cybersecurity analysts within SOCs. It demonstrates their knowledge about creating, operating, and working within computer security incident response teams (CSIRTs) and product security incident response teams (PSIRTs); the incident response lifecycle, and cyber forensics. To earn this valuable certification, candidates must pass the new Understanding Cisco Cybersecurity Operations Fundamentals (200-201 CBROPS) consolidated exam. Cisco CyberOps Associate CBROPS 200-201 Official Cert Guide is Cisco's official, comprehensive self-study resource for this exam. Designed for all exam candidates, it covers every exam objective concisely and logically, with extensive teaching features that promote retention and understanding. You'll find: Pre-chapter quizzes to assess knowledge upfront and focus your study more efficiently Foundation topics sections that explain concepts and configurations, and link theory to practice Key topics sections calling attention to every figure, table, and list you must know Exam Preparation sections with additional chapter review features Final preparation chapter providing tools and a complete final study plan A customizable practice

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test library This guide offers comprehensive, up-to-date coverage of all CBROPS #200-201 topics related to: Security concepts Security monitoring Host-based analysis Network intrusion analysis Security policies and procedures Investigating the Cyber Breach The Digital Forensics Guide for the Network Engineer · Understand the realities of cybercrime and today's attacks · Build a digital forensics lab to test tools and methods, and gain expertise · Take the right actions as soon as you discover a breach · Determine the full scope of an investigation and the role you'll play · Properly collect, document, and preserve evidence and data · Collect and analyze data from PCs, Macs, IoT devices, and other endpoints · Use packet logs, NetFlow, and scanning to build timelines, understand network activity, and collect evidence · Analyze iOS and Android devices, and understand encryption-related obstacles to investigation · Investigate and trace email, and identify fraud or abuse · Use social media to investigate individuals or online identities · Gather, extract, and analyze breach data with Cisco tools and techniques · Walk through common breaches and responses from start to finish · Choose the right tool for each task, and explore alternatives that might also be helpful The professional's go-to digital forensics resource for countering attacks right now Today, cybersecurity and networking professionals know they can't possibly prevent every breach, but they can substantially reduce risk by quickly identifying and blocking breaches as they occur. Investigating the Cyber Breach: The Digital Forensics Guide for the Network Engineer is the first comprehensive guide to doing just that. Writing for working professionals, senior cybersecurity experts Joseph Muniz and Aamir Lakhani present up-to-the-minute techniques for hunting attackers, following their movements within networks, halting exfiltration of data and intellectual property, and collecting evidence for investigation and prosecution. You'll

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learn how to make the most of today's best open source and Cisco tools for cloning, data analytics, network and endpoint breach detection, case management, monitoring, analysis, and more. Unlike digital forensics books focused primarily on post-attack evidence gathering, this one offers complete coverage of tracking threats, improving intelligence, rooting out dormant malware, and responding effectively to breaches underway right now. This book is part of the Networking Technology: Security Series from Cisco Press®, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

**Logging and Log Management: The Authoritative Guide to Understanding the Concepts Surrounding Logging and Log Management** introduces information technology professionals to the basic concepts of logging and log management. It provides tools and techniques to analyze log data and detect malicious activity. The book consists of 22 chapters that cover the basics of log data; log data sources; log storage technologies; a case study on how syslog-ng is deployed in a real environment for log collection; covert logging; planning and preparing for the analysis log data; simple analysis techniques; and tools and techniques for reviewing logs for potential problems. The book also discusses statistical analysis; log data mining; visualizing log data; logging laws and logging mistakes; open source and commercial toolsets for log data collection and analysis; log management procedures; and attacks against logging systems. In addition, the book addresses logging for programmers; logging and compliance with regulations and policies; planning for log analysis system deployment; cloud logging; and the future of log standards, logging, and log analysis. This book was written for anyone interested in learning more about logging and log management. These include systems administrators,

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junior security engineers, application developers, and managers. Comprehensive coverage of log management including analysis, visualization, reporting and more Includes information on different uses for logs -- from system operations to regulatory compliance Features case Studies on syslog-ng and actual real-world situations where logs came in handy in incident response Provides practical guidance in the areas of report, log analysis system selection, planning a log analysis system and log data normalization and correlation

As the sophistication of cyber-attacks increases, understanding how to defend critical infrastructure systems—energy production, water, gas, and other vital systems—becomes more important, and heavily mandated. Industrial Network Security, Second Edition arms you with the knowledge you need to understand the vulnerabilities of these distributed supervisory and control systems. The book examines the unique protocols and applications that are the foundation of industrial control systems, and provides clear guidelines for their protection. This how-to guide gives you thorough understanding of the unique challenges facing critical infrastructures, new guidelines and security measures for critical infrastructure protection, knowledge of new and evolving security tools, and pointers on SCADA protocols and security implementation. All-new real-world examples of attacks against control systems, and more diagrams of systems Expanded coverage of protocols such as 61850, Ethernet/IP, CIP, ISA-99, and the evolution to IEC62443 Expanded coverage of Smart Grid security New coverage of signature-based detection, exploit-based vs. vulnerability-based detection, and signature reverse engineering Today, security demands unprecedented visibility into your network. Cisco NetFlow can help companies of all sizes achieve and maintain this visibility. Network Security with

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NetFlow and IPFIX: Big Data Analytics for Information Security is the definitive guide to using NetFlow to strengthen network security. Omar Santos, Technical Leader of Cisco's Product Security Incident Response Team (PSIRT), covers all you need to successfully capture network telemetry with NetFlow and use it to: See what is actually happening across your entire network Regain control of your network Quickly identify compromised end points and network infrastructure devices Monitor network usage by employees, contractors, or partners Detect firewall misconfigurations and inappropriate access to corporate resources Act effectively during incident response and network forensics Utilize big data analytics to improve IT security Writing for organizations of all sizes, Santos shows how to work with each current version of NetFlow, and several leading open source analyzers. He addresses NetFlow services, versions, and features; shows how to perform Big Data security analyses of Cisco NetFlow data; and explains how NetFlow integrates into broader Cisco Cyber Threat Defense (CTD) solutions. Each chapter presents multiple sample configurations, accompanied by detailed design analyses and realistic case studies.

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