An Introduction To Ddos Attacks And Defense Mechanisms An Analysts Handbook

Essay from the year 2012 in the subject Computer Science - IT-Security, , language: English, abstract: In a nutshell what the researcher hopes to achieve by this project is to develop a practical solution to control Distributed Denial of Service (DDoS) attacks launched using BitTorrent protocol by tweaking the source code of an existing open source BitTorrent client. Even though BitTorrent is a useful protocol, it could be misused to launch DDoS attacks. Since the number who uses BitTorrent protocol is high, by launching a DDoS the victim's machine could be crippled. Hence as a remedy to the issue this report is formulated so that it discusses how the attacks are done and how it could be prevented. For a simple analogical demonstration of what this attack does, take a look at figure 1 where computer A cannot fulfill the requests of a legit user computer B. this is what DDoS attack does. After enhancing the security architecture of BitTorrent client this problem would not occur hence it is improved to control these attacks.
Seven Deadliest Network Attacks identifies seven classes of network attacks and discusses how the attack works, including tools to accomplish the attack, the risks of the attack, and how to defend against the attack. This book pinpoints the most dangerous hacks and exploits specific to networks, laying out the anatomy of these attacks including how to make your system more secure. You will discover the best ways to defend against these vicious hacks with step-by-step instruction and learn techniques to make your computer and network impenetrable. The book consists of seven chapters that deal with the following attacks: denial of service; war dialing; penetration testing; protocol tunneling; spanning tree attacks; man-in-the-middle; and password replay. These attacks are not mutually exclusive and were chosen because they help illustrate different aspects of network security. The principles on which they rely are unlikely to vanish any time soon, and they allow for the possibility of gaining something of interest to the attacker, from money to high-value data. This book is intended to provide practical, usable information. However, the world of network security is evolving very rapidly, and the attack that works today may (hopefully) not work tomorrow. It is more important, then, to understand the principles on which the attacks and exploits are based in order to properly plan either a network attack or a network defense. Seven Deadliest Network Attacks will appeal to information security professionals of all levels, network admins, and recreational hackers. Knowledge is power, find out about the most dominant attacks currently waging war on computers and networks globally Discover the best ways to defend against these vicious attacks; step-by-step instruction shows you how Institute countermeasures, don't be caught defenseless again, and learn techniques to make your computer and network impenetrable
Without mathematics no science would survive. This especially applies to the engineering sciences which highly depend on the applications of mathematics and mathematical tools such as optimization techniques, finite element methods, differential equations, fluid dynamics, mathematical modelling, and simulation. Neither optimization in engineering, nor the performance of safety-critical system and system security; nor high assurance software architecture and design would be possible without the development of mathematical applications. De Gruyter Series on the Applications of Mathematics in Engineering and Information Sciences (AMEIS) focusses on the latest applications of engineering and information technology that are possible only with the use of mathematical methods. By identifying the gaps in knowledge of engineering applications the AMEIS series fosters the international interchange between the sciences and keeps the reader informed about the latest developments.
The book is a collection of high-quality peer-reviewed research papers presented at the Fifth International Conference on Innovations in Computer Science and Engineering (ICICSE 2017) held at Guru Nanak Institutions, Hyderabad, India during 18-19 August 2017. The book discusses a wide variety of industrial, engineering and scientific applications of the engineering techniques. Researchers from academic and industry present their original work and exchange ideas, information, techniques and applications in the field of Communication, Computing and Data Science and Analytics.
The complexity and severity of the Distributed Denial of Service (DDoS) attacks are increasing day-by-day. The Internet has a highly inconsistent structure in terms of resource distribution. Numerous technical solutions are available, but those involving economic aspects have not been given much consideration. The book, DDoS Attacks – Classification, Attacks, Challenges, and Countermeasures, provides an overview of both types of defensive solutions proposed so far, exploring different dimensions that would mitigate the DDoS effectively and show the implications associated with them. Features: Covers topics that describe taxonomies of the DDoS attacks in detail, recent trends and classification of defensive mechanisms on the basis of deployment location, the types of defensive action, and the solutions offering economic incentives. Introduces chapters discussing the various types of DDoS attack associated with different layers of security, an attacker's motivations, and the importance of incentives and liabilities in any defensive solution. Illustrates the role of fair resource-allocation schemes, separate payment mechanisms for attackers and legitimate users, negotiation models on cost and types of resources, and risk assessments and transfer mechanisms. DDoS Attacks – Classification, Attacks, Challenges, and Countermeasures is designed for the readers who have an interest in the cybersecurity domain, including students and researchers who are exploring different dimensions associated with the DDoS attack, developers and security professionals who are focusing on developing defensive schemes and applications for detecting or mitigating the DDoS attacks, and faculty members across different universities.
Suddenly your Web server becomes unavailable. When you investigate, you realize that a flood of packets is surging into your network. You have just become one of the hundreds of thousands of victims of a denial-of-service attack, a pervasive and growing threat to the Internet. What do you do? Internet Denial of Service sheds light on a complex and fascinating form of computer attack that impacts the confidentiality, integrity, and availability of millions of computers worldwide. It tells the network administrator, corporate CTO, incident responder, and student how DDoS attacks are prepared and executed, how to think about DDoS, and how to arrange computer and network defenses. It also provides a suite of actions that can be taken before, during, and after an attack. Inside, you'll find comprehensive information on the following topics How denial-of-service attacks are waged How to improve your network's resilience to denial-of-service attacks What to do when you are involved in a denial-of-service attack The laws that apply to these attacks and their implications How often denial-of-service attacks occur, how strong they are, and the kinds of damage they can cause Real examples of denial-of-service attacks as experienced by the attacker, victim, and unwitting accomplices The authors' extensive experience in handling denial-of-service attacks and researching defense approaches is laid out clearly in practical, detailed terms.
Denial of Service (DoS) attacks are a form of attack that seeks to make a network resource unavailable due to overloading the resource or machine with an overwhelming number of packets, thereby crashing or severely slowing the performance of the resource. Distributed Denial of Service (DDoS) is a large scale DoS attack which is distributed in the Internet. Every computer which has access to the Internet can behave as an attacker. Typically bandwidth depletion can be categorized as either a flood or an amplification attack. Flood attacks can be done by generating ICMP packets or UDP packets in which it can utilize stationary or random variable ports. Smurf and Fraggle attacks are used for amplification attacks. DDoS Smurf attacks are an example of an amplification attack where the attacker sends packets to a network amplifier with the return address spoofed to the victim's IP address. This book presents new research and methodologies along with a proposed algorithm for prevention of DoS attacks that has been written based on cryptographic concepts such as birthday attacks to estimate the rate of attacks generated and passed along the routers. Consequently, attackers would be identified and prohibited from sending spam traffic to the server which can cause DDoS attacks. Due to the prevalence of DoS attacks, there has been a lot of research conducted on how to detect them and prevent them. The authors of this short format title provide their research results on providing an effective solution to DoS attacks, including introduction of the new algorithm that can be implemented in order to deny DoS attacks. A

comprehensive study on the basics of network security Provides a wide revision on client puzzle theory An experimental model to mitigate distributed denial of service (DDoS) attacks

Our world is increasingly driven by sophisticated networks of advanced computing technology, and the basic operation of everyday society is becoming increasingly vulnerable to those networks' shortcomings. The implementation and upkeep of a strong network defense is a substantial challenge, beset not only by economic disincentives, but also by an inherent logistical bias that grants advantage to attackers. Network Security Attacks and Countermeasures discusses the security and optimization of computer networks for use in a variety of disciplines and fields. Touching on such matters as mobile and VPN security, IP spoofing, and intrusion detection, this edited collection emboldens the efforts of researchers, academics, and network administrators working in both the public and private sectors. This edited compilation includes chapters covering topics such as attacks and countermeasures, mobile wireless networking, intrusion detection systems, next-generation firewalls, and more.

As global communities are attempting to transform into more efficient and technologically-advanced metropolises, artificial intelligence (AI) has taken a firm grasp on various professional fields. Technology used in these industries is transforming by introducing intelligent techniques including machine learning, cognitive computing, and computer vision. This has raised significant attention among researchers and practitioners on the specific impact that these smart technologies have and what challenges remain. Applications of Artificial Intelligence for Smart Technology is a pivotal reference source that provides vital research on the implementation of advanced technological techniques in professional industries through the use of AI. While highlighting topics such as pattern recognition, computational imaging, and machine learning, this publication explores challenges that various fields currently face when applying these technologies and examines the future uses of AI. This book is ideally designed for researchers, developers, managers, academicians, analysts, students, and practitioners seeking current research on the involvement of AI in professional practices.

This book examines the theory, practice, history, and ethics of civil disobedience on the internet through a study of activist distributed denial of service actions (DDOS).

This book constitutes the refereed proceedings of the First International Conference on Advances in Parallel, Distributed Computing Technologies and Applications, PDCTA 2011, held in Tirunelveli, India, in September 2011. The 64 revised full papers were carefully reviewed and selected from over 400 submissions. Providing an excellent international forum for sharing knowledge and results in theory, methodology and applications of parallel, distributed computing the papers address all current issues in this field with special focus on algorithms and applications, computer networks, cyber trust and security, wireless networks, as well as mobile computing and bioinformatics.

This book describes the essential components of the SCION secure Internet architecture, the first architecture designed foremost for strong security and high availability. Among its core features, SCION also provides route control, explicit trust information, multipath communication, scalable quality-of-service guarantees, and efficient forwarding. The book includes functional specifications of the network elements, communication protocols among these elements, data structures, and configuration files. In particular, the book offers a specification of a working prototype. The authors provide a comprehensive description of the main design features for achieving a secure Internet architecture. They facilitate the reader throughout, structuring the book so that the technical detail gradually increases, and supporting the text with a glossary, an index, a list of abbreviations, answers to frequently asked questions, and special highlighting for examples and for sections that explain important research, engineering, and deployment features. The book is suitable for researchers, practitioners, and graduate students who are interested in network security.

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This book constitutes the refereed proceedings of the 32nd IFIP TC 11 International Conference on ICT Systems Security and Privacy Protection, SEC 2017, held in Rome, Italy, in May 2017. The 38 revised full papers presented were carefully reviewed and selected from 199 submissions. The papers are organized in the following topical sections: network security and cyber attacks; security and privacy in social applications and cyber attacks defense; private queries and aggregations; operating systems and firmware security; user authentication and policies; applied cryptography and voting schemes; software security and privacy; privacy; and digital signature, risk management, and code reuse attacks.

"This book provides the latest research findings, solutions and relevant theoretical frameworks in the area of blockchain technologies, information security, and privacy in computing and communication for professionals who want to improve their understanding of the recent challenges, design, and issues in these areas"--

Denial of Service (DoS) attacks are a form of attack that seeks to make a network resource unavailable due to overloading the resource or machine with an overwhelming number of packets, thereby crashing or severely slowing the performance of the resource. Distributed Denial of Service (DDoS) is a large scale DoS attack which is distributed in the Internet. Every computer which has access to the Internet can behave as an attacker. Typically bandwidth depletion can be categorized as either a flood or an amplification attack. Flood attacks can be done by generating ICMP packets or UDP packets in which it can utilize stationary or random variable ports. Smurf and Fraggle attacks are used for amplification attacks. DDoS Smurf attacks are an example of an amplification attack where the attacker sends packets to a network amplifier with the return address spoofed to the victim's IP address. This book presents new research and methodologies along with a proposed algorithm for prevention of DoS attacks that has been written based on cryptographic concepts such as birthday attacks to estimate the rate of attacks generated and passed along the routers. Consequently, attackers would be identified and prohibited from sending spam traffic to the server which can cause DDoS attacks. Due to the prevalence of DoS attacks, there has been a lot of research conducted on how to detect them and prevent them. The authors of this short format title provide their research results on providing an effective solution to DoS attacks, including introduction of the new algorithm that can be implemented in order to deny DoS attacks. A comprehensive study on the basics of network security Provides a wide revision on client puzzle theory An experimental model to mitigate distributed denial of service (DDoS) attacks

In recent years, industries have transitioned into the digital realm, as companies and organizations are adopting certain forms of technology to assist in information storage and efficient

methods of production. This dependence has significantly increased the risk of cyber crime and breaches in data security. Fortunately, research in the area of cyber security and information protection is flourishing; however, it is the responsibility of industry professionals to keep pace with the current trends within this field. The Handbook of Research on Cyber Crime and Information Privacy is a collection of innovative research on the modern methods of crime and misconduct within cyber space. It presents novel solutions to securing and preserving digital information through practical examples and case studies. While highlighting topics including virus detection, surveillance technology, and social networks, this book is ideally designed for cybersecurity professionals, researchers, developers, practitioners, programmers, computer scientists, academicians, security analysts, educators, and students seeking up-to-date research on advanced approaches and developments in cyber security and information protection.

Contrary to popular belief, Ethernet switches are not inherently secure. Security vulnerabilities in Ethernet switches are multiple: from the switch implementation, to control plane protocols (Spanning Tree Protocol [STP], Cisco® Discovery Protocol [CDP], and so on) and data plane protocols, such as Address Routing Protocol (ARP) or Dynamic Host Configuration Protocol (DHCP). LAN Switch Security explains all the vulnerabilities in a network infrastructure related to Ethernet switches. Further, this book shows you how to configure a switch to prevent or to mitigate attacks based on those vulnerabilities. This book also includes a section on how to use an Ethernet switch to increase the security of a network and prevent future attacks. Divided into four parts, LAN Switch Security provides you with steps you can take to ensure the integrity of both voice and data traffic traveling over Layer 2 devices. Part I covers vulnerabilities in Layer 2 protocols and how to configure switches to prevent attacks against those vulnerabilities. Part II addresses denial-of-service (DoS) attacks on an Ethernet switch and shows how those attacks can be mitigated. Part III shows how a switch can actually augment the security of a network through the utilization of wirespeed access control list (ACL) processing and IEEE 802.1x for user authentication and authorization. Part IV examines future developments from the LinkSec working group at the IEEE. For all parts, most of the content is vendor independent and is useful for all network architects deploying Ethernet switches. After reading this book, you will have an in-depth understanding of LAN security and be prepared to plug the security holes that exist in a great number of campus networks. Use port security to protect against CAM attacks Prevent spanning-tree attacks Isolate VLANs with proper configuration techniques Protect against rogue DHCP servers Block ARP snooping Prevent IPv6 neighbor discovery and router solicitation exploitation Identify Power over Ethernet vulnerabilities Mitigate risks from HSRP and VRPP Stop information leaks with CDP, PaGP, VTP, CGMP and other Cisco ancillary protocols Understand and prevent DoS attacks against switches Enforce simple wirespeed security policies with ACLs Implement user authentication on a port base with IEEE 802.1x Use new IEEE protocols to encrypt all Ethernet frames at wirespeed. This security book is part of the Cisco Press® Networking Technology Series. Security titles from Cisco Press help networking professionals secure critical data and resources, prevent and mitigate network attacks, and build end-to-end self-defending networks.

Network infrastructures are growing rapidly to meet the needs of business, but the required repolicing and reconfiguration provide challenges that need to be addressed. The software-defined network (SDN) is the future generation of Internet technology that can help meet these challenges of network management. This book includes quantitative research, case studies, conceptual papers, model papers, review papers, and theoretical backing on SDN. This book investigates areas where SDN can help other emerging technologies deliver more efficient services, such as IoT, industrial IoT, NFV, big data, blockchain, cloud computing, and edge computing. The book demonstrates the many benefits of SDNs, such as reduced costs, ease of deployment and management, better scalability, availability, flexibility and fine-grained control of traffic, and security. The book demonstrates the many benefits of SDN, such as reduced costs, ease of deployment and management, better scalability, availability, flexibility and fine-grained control of traffic, and security. Chapters in the volume address: Design considerations for security issues and detection methods State-of-the-art approaches for mitigating DDos attacks using SDN Big data using Apache Hadoop for processing and analyzing large amounts of data Different tools used for attack simulation Network policies and policy management approaches that are widely used in the context of SDN Dynamic flow tables, or static flow table management A new four-tiered architecture that includes cloud, SDN-controller, and fog computing Architecture for keeping computing resources available near the industrial IoT network through edge computing The impact of SDN as an innovative approach for smart city development More. The book will be a valuable resource for SDN researchers as well as academicians, research scholars, and students in the related areas.

Cyber security research is one of the important areas in the computer science domain which also plays a major role in the life of almost every individual, enterprise, society and country, which this book illustrates. A large number of advanced security books focus on either cryptography or system security which covers both information and network security. However, there is hardly any books available for advanced-level students and research scholars in security research to systematically study how the major attacks are studied, modeled, planned and combated by the community. This book aims to fill this gap. This book provides focused content related to specific attacks or attack families. These dedicated discussions in the form of individual chapters covers the application or area specific aspects, while discussing the placement of defense solutions to combat the attacks. It includes eight high quality chapters from established security research groups worldwide, which address important attacks from theoretical (modeling) as well as practical aspects. Each chapter brings together comprehensive and structured information on an attack or an attack family. The authors present crisp detailing on the state of the art with quality illustration of defense mechanisms and open research problems. This book also covers various important attacks families such as insider threats, semantics social engineering attacks, distributed denial of service attacks, botnet based attacks, cyber physical malware based attacks, cross-vm attacks, and IoT covert channel attacks. This book will serve the interests of cyber security enthusiasts, undergraduates, post-graduates, researchers and professionals working in this field.

The use of digital images in today’s modernized market is rapidly increasing throughout organizations due to the prevalence of social media and digital content. Companies who wish to distribute their content over the internet face numerous security risks such as copyright violation. Advanced methods for the protection and security of digital data are constantly emerging, and up-to-date research in this area is lacking. Advancements in Security and Privacy Initiatives for Multimedia Images is a collection of innovative research on the methods and applications of contemporary techniques for the security and copyright protection of images and their distribution. While highlighting topics including simulation-based security, digital watermarking protocols,

and counterfeit prevention, this book is ideally designed for security analysts, researchers, developers, programmers, academicians, practitioners, students, executives, educators, and policymakers seeking current research on modern security improvements for multimedia images.

Expanded into two volumes, the Second Edition of Springer's Encyclopedia of Cryptography and Security brings the latest and most comprehensive coverage of the topic: Definitive information on cryptography and information security from highly regarded researchers Effective tool for professionals in many fields and researchers of all levels Extensive resource with more than 700 contributions in Second Edition 5643 references, more than twice the number of references that appear in the First Edition With over 300 new entries, appearing in an A-Z format, the Encyclopedia of Cryptography and Security provides easy, intuitive access to information on all aspects of cryptography and security. As a critical enhancement to the First Edition's base of 464 entries, the information in the Encyclopedia is relevant for researchers and professionals alike. Topics for this comprehensive reference were elected, written, and peer-reviewed by a pool of distinguished researchers in the field. The Second Edition's editorial board now includes 34 scholars, which was expanded from 18 members in the First Edition. Representing the work of researchers from over 30 countries, the Encyclopedia is broad in scope, covering everything from authentication and identification to quantum cryptography and web security. The text's practical style is instructional, yet fosters investigation. Each area presents concepts, designs, and specific implementations. The highly-structured essays in this work include synonyms, a definition and discussion of the topic, bibliographies, and links to related literature. Extensive cross-references to other entries within the Encyclopedia support efficient, user-friendly searches for immediate access to relevant information. Key concepts presented in the Encyclopedia of Cryptography and Security include: Authentication and identification; Block ciphers and stream ciphers; Computational issues; Copy protection; Cryptanalysis and security; Cryptographic protocols; Electronic payment and digital certificates; Elliptic curve cryptography; Factorization algorithms and primality tests; Hash functions and MACs; Historical systems; Identity-based cryptography; Implementation aspects for smart cards and standards; Key management; Multiparty computations like voting schemes; Public key cryptography; Quantum cryptography; Secret sharing schemes; Sequences; Web Security. Topics covered: Data Structures, Cryptography and Information Theory; Data Encryption; Coding and Information Theory; Appl.Mathematics/Computational Methods of Engineering; Applications of Mathematics; Complexity. This authoritative reference will be published in two formats: print and online. The online edition features hyperlinks to cross-references, in addition to significant research.

Our world is increasingly driven by sophisticated networks of advanced computing technology, and the basic operation of everyday society is becoming increasingly vulnerable to these networks' shortcomings. The implementation and upkeep of a strong network defense is a substantial challenge, beset not only by economic disincentives but also by an inherent logistical bias that grants advantage to attackers. Research Anthology on Combating Denial-of-Service Attacks examines the latest research on the development of intrusion detection systems and best practices for preventing and combatting cyber-attacks intended to disrupt business and user experience. Highlighting a range of topics such as network administration, application-layer protocols, and malware detection, this publication is an ideal reference source for cybersecurity professionals, IT specialists, policymakers, forensic analysts, technology developers, security administrators, academicians, researchers, and students.

An Introduction to Ddos Attacks and Defense MechanismsLAP Lambert Academic Publishing

?This book is open access under a CC BY 4.0 license. This book constitutes the refereed proceedings of the 11th IFIP WG 6.6 International Conference on Autonomous Infrastructure, Management, and Security, AIMS 2017, held in Zurich, Switzerland, in July 2017. The 8 full papers presented together with 11 short papers were carefully reviewed and selected from 24 submissions. The papers are organized in the following topical sections: security management; management of cloud environments and services, evaluation and experimental study of rich network services; security, intrusion detection, and configuration; autonomic and self-management solutions; and methods for the protection of infrastructure.

ICT technologies have contributed to the advances in wireless systems, which provide seamless connectivity for worldwide communication. The growth of interconnected devices and the need to store, manage, and process the data from them has led to increased research on the intersection of the internet of things and cloud computing. The Handbook of Research on the IoT, Cloud Computing, and Wireless Network Optimization is a pivotal reference source that provides the latest research findings and solutions for the design and augmentation of wireless systems and cloud computing. The content within this publication examines data mining, machine learning, and software engineering, and is designed for IT specialists, software engineers, researchers, academicians, industry professionals, and students.

This brief provides readers a complete and self-contained resource for information about DDoS attacks and how to defend against them. It presents the latest developments in this increasingly crucial field along with background context and survey material. The book also supplies an overview of DDoS attack issues, DDoS attack detection methods, DDoS attack source traceback, and details on how hackers organize DDoS attacks. The author concludes with future directions of the field, including the impact of DDoS attacks on cloud computing and cloud technology. The concise yet comprehensive nature of this brief makes it an ideal reference for researchers and professionals studying DDoS attacks. It is also a useful resource for graduate students interested in cyberterrorism and networking.

In 2004, a California computer whiz named Barrett Lyon uncovered the identity of a hacker running major assaults on business websites. Without fully grasping the repercussions, he set on an investigation that led him into the heart of the Russian mob. Cybercrime was evolving. No longer the domain of small-time thieves, it had been discovered by sophisticated gangs. They began by attacking corporate websites but increasingly stole financial data from consumers and defense secrets from governments. While Barrett investigated the cutting edge of technology crime, the U.S. government struggled to catch up. Britain, however, was a different story. In the late 1990s, the Queen herself had declared safe e-commerce a national security priority. Agents from the London-based National Hi-Tech Crime Unit sought out Barrett and enlisted his help. They also sent detective Andrew Crocker, a Welsh former boxer, to Russia to track down and prosecute the hackers—and to find out who they worked for. Fatal System Error penetrates both the Russian cyber-mob and the American mafia as the two fight over the Internet's massive spoils. It takes readers into the murky hacker underground, traveling the globe from San Francisco to Costa Rica, London, and Russia. Using unprecedented access to mob businesses and Russian officials, it shows how top criminals earned protection from the Russian government—and how Barrett Lyon and Andrew Crocker got closer to the titans of the underground economy than any previous outsider. Together, their stories explain why cybercrime is much worse than you thought—and why the Internet might not survive.

This book constitutes the refereed proceedings of the 12th Asia-Pacific Network Operations and Management Symposium, APNOMS 2009, held in Jeju, South Korea in September 2009. The 41 revised full papers and 32 revised short papers presented were carefully reviewed and selected from 173 submissions. The papers are organized in topical sections on network monitoring and measurement,

configuration and fault management, management of IP-based networks, autonomous and distributed control, sensor network and P2P management, converged networks and traffic, engineering, SLA and QoS management, active and security management, wireless and mobile network management, and security management.

DDoS Attacks: Evolution, Detection, Prevention, Reaction, and Tolerance discusses the evolution of distributed denial-of-service (DDoS) attacks, how to detect a DDoS attack when one is mounted, how to prevent such attacks from taking place, and how to react when a DDoS attack is in progress, with the goal of tolerating the attack. It introduces types and characteristics of DDoS attacks, reasons why such attacks are often successful, what aspects of the network infrastructure are usual targets, and methods used to launch attacks. The book elaborates upon the emerging botnet technology, current trends in the evolution and use of botnet technology, its role in facilitating the launching of DDoS attacks, and challenges in countering the role of botnets in the proliferation of DDoS attacks. It introduces statistical and machine learning methods applied in the detection and prevention of DDoS attacks in order to provide a clear understanding of the state of the art. It presents DDoS reaction and tolerance mechanisms with a view to studying their effectiveness in protecting network resources without compromising the quality of services. To practically understand how attackers plan and mount DDoS attacks, the authors discuss the development of a testbed that can be used to perform experiments such as attack launching, monitoring of network traffic, and detection of attacks, as well as for testing strategies for prevention, reaction, and mitigation. Finally, the authors address current issues and challenges that need to be overcome to provide even better defense against DDoS attacks.

Learn the art of preventing digital extortion and securing confidential data About This Book Get acquainted with multiple cyber extortion attacks and techniques to mitigate them Learn how DDOS, Crypto Virus, and other cyber extortion techniques can infect your computers, smartphones, servers, and cloud A concise, fast-paced guide that develops your skills in protecting confidential data by leveraging widely used tools Who This Book Is For This book targets IT security managers, IT security engineers, security analysts, and professionals who are eager to avoid digital extortion for themselves or their organizations. They may have heard of such attacks but are not aware of their various types, techniques, and business impact. What You Will Learn Delve into the various types, stages, and economics of digital extortion Understand the science behind different attacks Understand the gravity of and mechanics behind ransomware and prevent and mitigate data breaches and financial losses Use effective tools to defend against ransomware Analyze attacks, the money flow, and cyber insurance processes Learn the art of preventing digital extortion and securing confidential data Get an idea of the future of extortion tactics and how technological advances will affect their development In Detail More and more cyber threats keep emerging every day, affecting organizations across the board, targeting the entire spectrum of the Internet. Digital--or cyber--extortion so far has come across as the most serious of such threats as it seeks to profit from criminal activity, akin to blackmail. Such extortion has been rising exponentially in the digital age and has become a huge illegal money-making business, affecting users and organizations ranging from small businesses to large enterprises. This is an insightful study spelling out in detail the ways and means employed by cyber criminals in targeting various devices and the multiple dangers such malicious activity embodies. Here will be found an overview of methods employed to impact and infect computers, smartphones, servers, and the IoT for cyber extortion. Then, it will move on to specific subjects in more detail, covering attacks such as DDoS-based extortion, cryptoviruses, and ransomware. You will learn how to prevent such attacks and eliminate them if you are compromised. This book will help you become a pro at securing your data and preventing your organization from paying a hefty ransom. Style and approach This step-by-step guide will start with the fundamentals of digital or cyber extortion and the various techniques used by hackers to demand ransom from an organization. It also focuses on types of ransomware and how it can infect your computer, mobile, cloud, server, and IOT. This practical guide will also explain how you can eliminate such attacks by leveraging various open source/commercial tools.

Conflict in cyberspace is becoming more prevalent in all public and private sectors and is of concern on many levels. As a result, knowledge of the topic is becoming essential across most disciplines. This book reviews and explains the technologies that underlie offensive and defensive cyber operations, which are practiced by a range of cyber actors including state actors, criminal enterprises, activists, and individuals. It explains the processes and technologies that enable the full spectrum of cyber operations. Readers will learn how to use basic tools for cyber security and pen-testing, and also be able to quantitatively assess cyber risk to systems and environments and discern and categorize malicious activity. The book provides key concepts of information age conflict technical basics/fundamentals needed to understand more specific remedies and activities associated with all aspects of cyber operations. It explains techniques associated with offensive cyber operations, with careful distinctions made between cyber ISR, cyber exploitation, and cyber attack. It explores defensive cyber operations and includes case studies that provide practical information, making this book useful for both novice and advanced information warfare practitioners.

DNS Security: Defending the Domain Name System provides tactics on how to protect a Domain Name System (DNS) framework by exploring common DNS vulnerabilities, studying different attack vectors, and providing necessary information for securing DNS infrastructure. The book is a timely reference as DNS is an integral part of the Internet that is involved in almost every attack against a network. The book focuses entirely on the security aspects of DNS, covering common attacks against DNS servers and the protocol itself, as well as ways to use DNS to turn the tables on the attackers and stop an incident before it even starts. Presents a multi-platform approach, covering Linux and Windows DNS security tips Demonstrates how to implement DNS Security tools, including numerous screen shots and configuration examples Provides a timely reference on DNS security, an integral part of the Internet Includes information of interest to those working in DNS: Securing Microsoft DNS and BIND servers, understanding buffer overflows and cache poisoning, DDoS Attacks, pen-testing DNS infrastructure, DNS firewalls, Response Policy Zones, and DNS Outsourcing, amongst other topics

Businesses in today’s world are adopting technology-enabled operating models that aim to improve growth, revenue, and identify emerging markets. However, most of these businesses are not suited to defend themselves from the cyber risks that come with these data-driven practices. To further prevent these threats, they need to have a complete understanding of modern network security solutions and the ability to manage, address, and respond to security breaches. The Handbook of Research on Intrusion Detection Systems provides emerging research exploring the theoretical and practical aspects of prominent and effective techniques used to detect and contain breaches within the fields of data science and cybersecurity. Featuring coverage on a broad range of topics such as botnet detection, cryptography, and access control models, this book is ideally designed for security analysts, scientists, researchers, programmers, developers, IT professionals, scholars, students, administrators, and faculty members seeking research on current advancements in network security technology.

Distributed Denial of Service (DDoS) attacks have become more destructive, wide-spread and harder to control over time. This book allows students to understand how these

attacks are constructed, the security flaws they leverage, why they are effective, how they can be detected, and how they can be mitigated. Students use software defined networking (SDN) technology to created and execute controlled DDoS experiments. They learn how to deploy networks, analyze network performance, and create resilient systems. This book is used for graduate level computer engineering instruction at Clemson University. It augments the traditional graduate computing curricula by integrating: Internet deployment, network security, ethics, contemporary social issues, and engineering principles into a laboratory based course of instruction. Unique features of this book include: A history of DDoS attacks that includes attacker motivations Discussion of cyber-war, censorship, and Internet black-outs SDN based DDoS laboratory assignments Up-to-date review of current DDoS attack techniques and tools Review of the current laws that globally relate to DDoS Abuse of DNS, NTP, BGP and other parts of the global Internet infrastructure to attack networks Mathematics of Internet traffic measurement Game theory for DDoS resilience Construction of content distribution systems that absorb DDoS attacks This book assumes familiarity with computing, Internet design, appropriate background in mathematics, and some programming skills. It provides analysis and reference material for networking engineers and researchers. By increasing student knowledge in security, and networking; it adds breadth and depth to advanced computing curricula.

Technical Report from the year 2017 in the subject Computer Science - IT-Security, grade: N/A, University of Technology, Sydney, language: English, abstract: The purpose of this report investigates the present state of Internet of Things (IoT) devices. It highlights the current security issues of using IoT devices, and discusses its possible solutions to maximise security and minimise DDoS and cyberattacks. The measures that needs to be considered to prevent attacks on IoT devices from Mirai botnet has been highlighted, which include the use of cloudflare's orbit and other general security practices. Cloudflare's orbit allows manufactures to implement virtual patchs for vulnerabilities found in IoT devices until those vulnerabilities are fixed through software updates.

This book on computer security threats explores the computer security threats and includes a broad set of solutions to defend the computer systems from these threats. The book is triggered by the understanding that digitalization and growing dependence on the Internet poses an increased risk of computer security threats in the modern world. The chapters discuss different research frontiers in computer security with algorithms and implementation details for use in the real world. Researchers and practitioners in areas such as statistics, pattern recognition, machine learning, artificial intelligence, deep learning, data mining, data analytics and visualization are contributing to the field of computer security. The intended audience of this book will mainly consist of researchers, research students, practitioners, data analysts, and business professionals who seek information on computer security threats and its defensive measures.

In order to understand hackers and protect the network infrastructure you must think like a hacker in today's expansive and eclectic internet and you must understand that nothing is fully secured.This book will focus on some of the most dangerous hacker tools that are favourite of both, White Hat and Black Hat hackers.If you attempt to use any of the tools discussed in this book on a network without being authorized and you disturb or damage any systems, that would be considered illegal black hat hacking. So, I would like to encourage all readers to deploy any tool described in this book for WHITE HAT USE ONLY.The focus of this book will be to introduce some of the best well known software that you can use for free of charge, furthermore where to find them, how to access them, and finally in every chapter you will find demonstrated examples step-by-step.Additionally you will be demonstrated how to create a Denial of Service Attack, how to manipulate the network infrastructure by creating fake packets, as well how to replicate any networking device, and fool end users to install backdoors on demand.There are many step by step deployment guides on how to plan a successful penetration test and examples on how to manipulate or misdirect trusted employees using social engineering.Your reading of this book will boost your knowledge on what is possible in today's hacking world and help you to become an Ethical Hacker.BUY THIS BOOK NOW AND GET STARTED TODAY!IN THIS BOOK YOU WILL LEARN: -Introduction to Botnets-The history of DOS attacks-Defining DoS Attacks-Distributed Denial of Service Attacks-Key Attributes of DoS Attacks-Motivations for DDoS-Anonymous-Accidental DoS-The Impact of DoS Attacks-Protocols & The OSI Model-HTTP Flood Attacks-SYN Flood Attacks-UDP and ICMP Attacks-DNS reflection Attack-Dos Attacks using Kali Linux-Peer-to-Peer DoS Attack-Slowloris DDoS Attack-Permanent DoS Attack-Man on the Side Attack-The "Cutwail" Botnet-Low Orbit Ion Cannon-DOS Services-Preparation Against DOS Attacks-Discovering the Attack Pattern-Defense Strategy: Absorbing DoS Attacks-Recognizing Traffic Pattern-Defense Strategy at Layer 4-Defense Strategy at Layer 7-Testing Resiliency against DoS AttacksBUY THIS BOOK NOW AND GET STARTED TODAY!

Seven Deadliest Social Network Attacks describes the seven deadliest social networking attacks and how to defend against them. This book pinpoints the most dangerous hacks and exploits specific to social networks like Facebook, Twitter, and MySpace, and provides a comprehensive view into how such attacks have impacted the livelihood and lives of adults and children. It lays out the anatomy of these attacks, including how to make your system more secure. You will discover the best ways to defend against these vicious hacks with step-by-step instruction and learn techniques to make your computer and network impenetrable. The book is separated into seven chapters, with each focusing on a specific type of attack that has been furthered with social networking tools and devices. These are: social networking infrastructure attacks; malware attacks; phishing attacks; Evil Twin Attacks; identity theft; cyberbullying; and physical threat. Each chapter takes readers through a detailed overview of a particular attack to demonstrate how it was used, what was accomplished as a result, and the ensuing consequences. In addition to analyzing the anatomy of the attacks, the book offers insights into how to develop mitigation strategies, including forecasts of where these types of attacks are heading. This book can serve as a reference guide to anyone who is or will be involved in oversight roles within

the information security field. It will also benefit those involved or interested in providing defense mechanisms surrounding social media as well as information security professionals at all levels, those in the teaching profession, and recreational hackers. Knowledge is power, find out about the most dominant attacks currently waging war on computers and networks globally Discover the best ways to defend against these vicious attacks; step-by-step instruction shows you how Institute countermeasures, don’t be caught defenseless again, and learn techniques to make your computer and network impenetrable