Industrial Network Security Second Edition Securing Critical Infrastructure Networks For Smart Grid Scada And Other Industrial Control Systems

Protecting Our Future, Volume 2, completes the comprehensive examination of the cybersecurity threats to our nation's sixteen Critical Infrastructure Sectors begun in Protecting Our Future, Volume 1. Subject matter experts offer an in-depth analysis of operational needs and suggest best practices within the remaining sectors: IT, the chemical industry, commercial facilities, manufacturing, water systems and dams, emergency services, food and agriculture, and transportation. Used separately or together, these two volumes are an excellent foundational resource, and will enable cybersecurity practitioners, students, and employers to gain ground-level insight from experienced professionals, and to develop top-of-mind awareness in the areas most directly impacting the future of our nation's security.

This book presents the proceedings of the 11th Scientific Conference "Intelligent systems for industrial automation," WCIS-2020, held in Tashkent, Uzbekistan, on November 26–28, 2020. It includes contributions from diverse areas of intelligent industrial systems design as hybrid control systems, intelligent information systems, decision making under imperfect information and others. The topics of the papers

include intelligent control systems, pattern recognition, Industry 4.0, information security, neural computing, fuzzy and evolutionary computation, decision making and support systems, modeling of chemical technological processes and others.

This book of 'directions' focuses on cyber security research, education and training in India, and work in this domain within the Indian Institute of Technology Kanpur. IIT Kanpur's Computer Science and Engineering Department established an 'Interdisciplinary Center for Cyber Security and Cyber Defense of Critical Infrastructures (C3I Center)' in 2016 with funding from the Science and Engineering Research Board (SERB), and other funding agencies. The work at the center focuses on smart grid security, manufacturing and other industrial control system security; network, web and data security; cryptography, and penetration techniques. The founders are involved with various Indian government agencies including the Reserve Bank of India, National Critical Information Infrastructure Protection Center, UIDAI, CCTNS under home ministry, Ministry of IT and Electronics, and Department of Science & Technology. The center also testifies to the parliamentary standing committee on cyber security, and has been working with the National Cyber Security Coordinator's office in India. Providing glimpses of the work done at IIT Kanpur, and including perspectives from other Indian institutes where work on cyber security is starting to take shape, the book is a valuable resource for researchers and professionals, as well as educationists and policymakers.

Nowadays one only needs to read the newspaper headlines to appreciate the importance of Industrial Network Security. Almost daily an article comes out describing the threat to our critical infrastructure, from spies in our electrical grid to the looming threat of cyberwar. Whether we talk about process control systems that run chemical plants and refineries, supervisory control and data acquisition (SCADA) systems for utilities, or factory automation systems for discrete manufacturing, the backbone of our nationA's critical infrastructure consists of these industrial networks and is dependent on their continued operation. This easy-to-read book introduces managers, engineers, technicians, and operators on how to keep our industrial networks secure amid rising threats from hackers, disgruntled employees, and even cyberterrorists.

The comprehensive A-to-Z guide on network security, fully revised and updated Network security is constantly evolving, and this comprehensive guide has been thoroughly updated to cover the newest developments. If you are responsible for network security, this is the reference you need at your side. Covering new techniques, technology, and methods for approaching security, it also examines new trends and best practices being used by many organizations. The revised Network Security Bible complements the Cisco Academy course instruction in networking security. Covers all core areas of network security and how they interrelate Fully revised to address new techniques, technology, and methods for securing an enterprise worldwide Examines new trends and best practices in use by organizations to secure their enterprises

Features additional chapters on areas related to data protection/correlation and forensics Includes cutting-edge topics such as integrated cybersecurity and sections on Security Landscape, with chapters on validating security, data protection, forensics, and attacks and threats If you need to get up to date or stay current on network security, Network Security Bible, 2nd Edition covers everything you need to know. ???12?.??????,??????????,?????????,?????????,??????????,?????,??????,IP???. This book offers the first benchmarking study of China's response to the problems of security in cyber space. There are several useful descriptive books on cyber security policy in China published between 2010 and 2016. As a result, we know quite well the system for managing cyber security in China, and the history of policy responses. What we don't know so well, and where this book is useful, is how capable China has become in this domain relative to the rest of the world. This book is a health check, a report card, on China's cyber security system in the face of escalating threats from criminal gangs and hostile states. The book also offers an assessment of the effectiveness of China's efforts. It lays out the major gaps and shortcomings in China's cyber security policy. It is the first book to base itself around an assessment of China's cyber industrial complex, concluding that China does not yet have one. As Xi Jinping said in July 2016, the country's core technologies are dominated by foreigners. As industrial control systems (ICS), including SCADA, DCS, and other process control networks, become Internet-facing, they expose crucial services to attack. Threats like

Duqu, a sophisticated worm found in the wild that appeared to share portions of its code with the Stuxnet worm, emerge with increasing frequency. Explaining how to develop and implement an effective cybersecurity program for ICS, Cybersecurity for Industrial Control Systems: SCADA, DCS, PLC, HMI, and SIS provides you with the tools to ensure network security without sacrificing the efficiency and functionality of ICS. Highlighting the key issues that need to be addressed, the book begins with a thorough introduction to ICS. It discusses business, cost, competitive, and regulatory drivers and the conflicting priorities of convergence. Next, it explains why security requirements differ from IT to ICS. It differentiates when standard IT security solutions can be used and where SCADA-specific practices are required. The book examines the plethora of potential threats to ICS, including hi-jacking malware, botnets, spam engines, and porn dialers. It outlines the range of vulnerabilities inherent in the ICS quest for efficiency and functionality that necessitates risk behavior such as remote access and control of critical equipment. Reviewing risk assessment techniques and the evolving risk assessment process, the text concludes by examining what is on the horizon for ICS security, including IPv6, ICSv6 test lab designs, and IPv6 and ICS sensors.
?????????????????,?????????LAN?????????,??????????????????????????????? This book constitutes the refereed proceedings of the 20th EPIA Conference on Artificial Intelligence, EPIA 2021, held virtually in September 2021. The 62 full papers

and 6 short papers presented were carefully reviewed and selected from a total of 108 submissions. The papers are organized in the following topical sections: artificial intelligence and IoT in agriculture; artificial intelligence and law; artificial intelligence in medicine; artificial intelligence in power and energy systems; artificial intelligence in transportation systems; artificial life and evolutionary algorithms; ambient intelligence and affective environments; general AI; intelligent robotics; knowledge discovery and business intelligence; multi-agent systems: theory and applications; and text mining and applications.

The proliferation of Internet of Things (IoT) has enabled rapid enhancements for applications, not only in home and environment scenarios, but also in factory automation. Now, Industrial Internet of Things (IIoT) offers all the advantages of IoT to industry, with applications ranging from remote sensing and actuating, to de-centralization and autonomy. In this book, the editor presents the IIoT and its place during the new industrial revolution (Industry 4.0) as it takes us to a better, sustainable, automated, and safer world. The book covers the cross relations and implications of IIoT with existing wired/wireless communication/networking and safety technologies of the Industrial Networks. Moreover, the book includes practical use-case scenarios from the industry for the application of IIoT on smart factories, smart cities, and smart grids. IoT-driven advances in commercial and industrial building lighting and in street lighting are presented as an example to shed light on the application domain of IIoT. The state

of the art in Industrial Automation is also presented to give a better understanding of the enabling technologies, potential advantages, and challenges of the Industry 4.0 and IIoT. Finally, yet importantly, the security section of the book covers the cyber-security related needs of the IIoT users and the services that might address these needs. User privacy, data ownership, and proprietary information handling related to IIoT networks are all investigated. Intrusion prevention, detection, and mitigation are all covered at the conclusion of the book.

?Universe books,New York,1974????

Traditional Chinese edition of Winter Garden

Revision of the best selling applied introduction to networking.

Get up and running with industrial cybersecurity monitoring with this hands-on book, and explore ICS cybersecurity monitoring tasks, activities, tools, and best practices Key Features Architect, design, and build ICS networks with security in mind Perform a variety of security assessments, checks, and verifications Ensure that your security processes are effective, complete, and relevant Book Description With Industrial Control Systems (ICS) expanding into traditional IT space and even into the cloud, the attack surface of ICS environments has increased significantly, making it crucial to recognize your ICS vulnerabilities and implement advanced techniques for monitoring and defending against rapidly evolving cyber threats to critical infrastructure. This second edition covers the updated Industrial Demilitarized Zone (IDMZ) architecture and shows you how to implement, verify, and monitor a holistic security program for your ICS environment. You'll begin by learning how to design security-oriented

architecture that allows you to implement the tools, techniques, and activities covered in this book effectively and easily. You'll get to grips with the monitoring, tracking, and trending (visualizing) and procedures of ICS cybersecurity risks as well as understand the overall security program and posture/hygiene of the ICS environment. The book then introduces you to threat hunting principles, tools, and techniques to help you identify malicious activity successfully. Finally, you'll work with incident response and incident recovery tools and techniques in an ICS environment. By the end of this book, you'll have gained a solid understanding of industrial cybersecurity monitoring, assessments, incident response activities, as well as threat hunting. What you will learn Monitor the ICS security posture actively as well as passively Respond to incidents in a controlled and standard way Understand what incident response activities are required in your ICS environment Perform threat-hunting exercises using the Elasticsearch, Logstash, and Kibana (ELK) stack Assess the overall effectiveness of your ICS cybersecurity program Discover tools, techniques, methodologies, and activities to perform risk assessments for your ICS environment Who this book is for If you are an ICS security professional or anyone curious about ICS cybersecurity for extending, improving, monitoring, and validating your ICS cybersecurity posture, then this book is for you. IT/OT professionals interested in entering the ICS cybersecurity monitoring domain or searching for additional learning material for different industry-leading cybersecurity certifications will also find this book useful.

Industrial Network Security: Securing Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control Systems describes an approach to ensure the security of industrial networks by taking into account the unique network, protocol, and application characteristics of

an industrial control system, along with various compliance controls. It offers guidance on deployment and configuration, and it explains why, where, and how security controls should be implemented. Divided into 11 chapters, the book explains the basics of Ethernet and Transmission Control Protocol/Internet Protocol (TCP/IP) networking communications and the SCADA and field bus protocols. It also discusses industrial networks as they relate to "critical infrastructure and cyber security, potential risks and consequences of a cyber attack against an industrial control system, compliance controls in relation to network security practices, industrial network protocols, such as Modbus and DNP3, assessment of vulnerabilities and risk, how to secure enclaves, regulatory compliance standards applicable to industrial network security, and common pitfalls and mistakes, like complacency and deployment errors. This book is a valuable resource for plant operators and information security analysts, as well as compliance officers who want to pass an audit with minimal penalties and/or fines. Covers implementation guidelines for security measures of critical infrastructure Applies the security measures for system-specific compliance Discusses common pitfalls and mistakes and how to avoid them

Traditional Chinese Edition of [Sandworm: A New Era of Cyberwar and the Hunt for the Kremlin's Most Dangerous Hackers]

Develop and implement an effective end-to-end security program Today's complex world of mobile platforms, cloud computing, and ubiquitous data access puts new security demands on every IT professional. Information Security: The Complete Reference, Second Edition (previously titled Network Security: The Complete Reference) is the only comprehensive book that offers vendor-neutral details on all aspects of information protection, with an eye toward

the evolving threat landscape. Thoroughly revised and expanded to cover all aspects of modern information security—from concepts to details—this edition provides a one-stop reference equally applicable to the beginner and the seasoned professional. Find out how to build a holistic security program based on proven methodology, risk analysis, compliance, and business needs. You'll learn how to successfully protect data, networks, computers, and applications. In-depth chapters cover data protection, encryption, information rights management, network security, intrusion detection and prevention, Unix and Windows security, virtual and cloud security, secure application development, disaster recovery, forensics, and real-world attacks and countermeasures. Included is an extensive security glossary, as well as standards-based references. This is a great resource for professionals and students alike. Understand security concepts and building blocks Identify vulnerabilities and mitigate risk Optimize authentication and authorization Use IRM and encryption to protect unstructured data Defend storage devices, databases, and software Protect network routers, switches, and firewalls Secure VPN, wireless, VoIP, and PBX infrastructure Design intrusion detection and prevention systems Develop secure Windows, Java, and mobile applications Perform incident response and forensic analysis

A new edition of a bestselling industrial and systems engineering reference, Handbook of Industrial and Systems Engineering, Second Edition provides students, researchers, and practitioners with easy access to a wide range of industrial engineering tools and techniques in a concise format. This edition expands the breadth and depth of coverage, emphasizing new systems engineering tools, techniques, and models. See What's New in the Second Edition: Section covering safety, reliability, and quality Section on operations research, queuing,

logistics, and scheduling Expanded appendix to include conversion factors and engineering, systems, and statistical formulae Topics such as control charts, engineering economy, health operational efficiency, healthcare systems, human systems integration, Lean systems, logistics transportation, manufacturing systems, material handling systems, process view of work, and Six Sigma techniques The premise of the handbook remains: to expand the breadth and depth of coverage beyond the traditional handbooks on industrial engineering. The book begins with a general introduction with specific reference to the origin of industrial engineering and the ties to the Industrial Revolution. It covers the fundamentals of industrial engineering and the fundamentals of systems engineering. Building on this foundation, it presents chapters on manufacturing, production systems, and ergonomics, then goes on to discuss economic and financial analysis, management, information engineering, and decision making. Two new sections examine safety, reliability, quality, operations research, queuing, logistics, and scheduling. The book provides an updated collation of the body of knowledge of industrial and systems engineering. The handbook has been substantively expanded from the 36 seminal chapters in the first edition to 56 landmark chapters in the second edition. In addition to the 20 new chapters, 11 of the chapters in the first edition have been updated with new materials. Filling the gap that exists between the traditional and modern practice of industrial and systems engineering, the handbook provides a one-stop resource for teaching, research, and practice. Secure your ICS and SCADA systems the battle-tested Hacking ExposedTM way This hands-on guide exposes the devious methods cyber threat actors use to compromise the hardware and software central to petroleum pipelines, electrical grids, and nuclear refineries. Hacking Exposed Industrial Control Systems: ICS and SCADA Security Secrets and Solutions shows,

step-by-step, how to implement and maintain an ICS-focused risk mitigation framework that is targeted, efficient, and cost-effective. The book arms you with the skills necessary to defend against attacks that are debilitating?and potentially deadly. See how to assess risk, perform ICS-specific threat modeling, carry out penetration tests using "ICS safe" methods, and block malware. Throughout, the authors use case studies of notorious attacks to illustrate vulnerabilities alongside actionable, ready-to-deploy countermeasures. Learn how to: • Assess your exposure and develop an effective risk management plan • Adopt the latest ICS-focused threat intelligence techniques • Use threat modeling to create realistic risk scenarios • Implement a customized, low-impact ICS penetration-testing strategy • See how attackers exploit industrial protocols • Analyze and fortify ICS and SCADA devices and applications • Discover and eliminate undisclosed "zero-day" vulnerabilities • Detect, block, and analyze malware of all varieties

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.

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??????????????????,???????????,??????????????????????????,???????????????????. Your one-step guide to understanding industrial cyber security, its control systems, and its operations.About This Book* Learn about endpoint protection such as anti-malware implementation, updating, monitoring, and sanitizing user workloads and mobile devices* Filled

with practical examples to help you secure critical infrastructure systems efficiently* A step-by-step guide that will teach you the techniques and methodologies of building robust infrastructure systemsWho This Book Is ForIf you are a security professional and want to ensure a robust environment for critical infrastructure systems, this book is for you. IT professionals interested in getting into the cyber security domain or who are looking at gaining industrial cyber security certifications will also find this book useful. What You Will Learn* Understand industrial cybersecurity, its control systems and operations* Design security-oriented architectures, network segmentation, and security support services* Configure event monitoring systems, anti-malware applications, and endpoint security* Gain knowledge of ICS risks, threat detection, and access management* Learn about patch management and life cycle management* Secure your industrial control systems from design through retirementIn DetailWith industries expanding, cyber attacks have increased significantly. Understanding your control system's vulnerabilities and learning techniques to defend critical infrastructure systems from cyber threats is increasingly important. With the help of real-world use cases, this book will teach you the methodologies and security measures necessary to protect critical infrastructure systems and will get you up to speed with identifying unique challenges.Industrial cybersecurity begins by introducing Industrial Control System (ICS) technology, including ICS architectures, communication media, and protocols. This is followed by a presentation on ICS (in) security. After presenting an ICS-related attack scenario, securing of the ICS is discussed, including topics such as network segmentation, defense-in-depth strategies, and protective solutions. Along with practical examples for protecting industrial control systems, this book details security assessments, risk management, and security program development. It also

covers essential cybersecurity aspects, such as threat detection and access management. Topics related to endpoint hardening such as monitoring, updating, and anti-malware implementations are also discussed.Style and approachA step-by-step guide to implement Industrial Cyber Security effectively.

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Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training.

Discover modern tactics, techniques, and procedures for pentesting industrial control systems Key Features Become well-versed with offensive ways of defending your industrial control

systems Learn about industrial network protocols, threat hunting, Active Directory compromises, SQL injection, and much more Build offensive and defensive skills to combat industrial cyber threats Book Description The industrial cybersecurity domain has grown significantly in recent years. To completely secure critical infrastructure, red teams must be employed to continuously test and exploit the security integrity of a company's people, processes, and products. This pentesting book takes a slightly different approach than most by helping you to gain hands-on experience with equipment that you'll come across in the field. This will enable you to understand how industrial equipment interacts and operates within an operational environment. You'll start by getting to grips with the basics of industrial processes, and then see how to create and break the process, along with gathering open source intel to create a threat landscape for your potential customer. As you advance, you'll find out how to install and utilize offensive techniques used by professional hackers. Throughout the book, you'll explore industrial equipment, port and service discovery, pivoting, and much more, before finally launching attacks against systems in an industrial network. By the end of this penetration testing book, you'll not only understand how to analyze and navigate the intricacies of an industrial control system (ICS), but you'll also have developed essential offensive and defensive skills to proactively protect industrial networks from modern cyberattacks. What you will learn Set up a starter-kit ICS lab with both physical and virtual equipment Perform open source intel-gathering pre-engagement to help map your attack landscape Get to grips with the Standard Operating Procedures (SOPs) for penetration testing on industrial equipment Understand the principles of traffic spanning and the importance of listening to customer networks Gain fundamental knowledge of ICS communication Connect physical operational

technology to engineering workstations and supervisory control and data acquisition (SCADA) software Get hands-on with directory scanning tools to map web-based SCADA solutions Who this book is for If you are an ethical hacker, penetration tester, automation engineer, or IT security professional looking to maintain and secure industrial networks from adversaries, this book is for you. A basic understanding of cybersecurity and recent cyber events will help you get the most out of this book.

In today's modernized market, many fields are utilizing internet technologies in their everyday methods of operation. The industrial sector is no different as these technological solutions have provided several benefits including reduction of costs, scalability, and efficiency improvements. Despite this, cyber security remains a crucial risk factor in industrial control systems. The same public and corporate solutions do not apply to this specific district because these security issues are more complex and intensive. Research is needed that explores new risk assessment methods and security mechanisms that professionals can apply to their modern technological procedures. Cyber Security of Industrial Control Systems in the Future Internet Environment is a pivotal reference source that provides vital research on current security risks in critical infrastructure schemes with the implementation of information and communication technologies. While highlighting topics such as intrusion detection systems, forensic challenges, and

smart grids, this publication explores specific security solutions within industrial sectors that have begun applying internet technologies to their current methods of operation. This book is ideally designed for researchers, system engineers, managers, networkers, IT professionals, analysts, academicians, and students seeking a better understanding of the key issues within securing industrial control systems that utilize internet technologies.

This book provides a comprehensive overview of the fundamental security of Industrial Control Systems (ICSs), including Supervisory Control and Data Acquisition (SCADA) systems and touching on cyber-physical systems in general. Careful attention is given to providing the reader with clear and comprehensive background and reference material for each topic pertinent to ICS security. This book offers answers to such questions as: Which specific operating and security issues may lead to a loss of efficiency and operation? What methods can be used to monitor and protect my system? How can I design my system to reduce threats?This book offers chapters on ICS cyber threats, attacks, metrics, risk, situational awareness, intrusion detection, and security testing, providing an advantageous reference set for current system owners who wish to securely configure and operate their ICSs. This book is appropriate for non-specialists as well. Tutorial information is provided in two initial chapters and

in the beginnings of other chapters as needed. The book concludes with advanced topics on ICS governance, responses to attacks on ICS, and future security of the Internet of Things.

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A thoroughly updated introduction to the current issues and challenges facing managers and administrators in the investor and publicly owned utility industry, this engaging volume addresses management concerns in five sectors of the utility industry: electric power, natural gas, water, wastewater systems and public transit.

Industrial Network SecuritySecuring Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control SystemsSyngress Press

A simultaneous Traditional Chinese translation of the much talked about book No Place to Hide: Edward Snowden, the NSA, and the U.S. Surveillance State by Glenn Greenwald. The book is the winner of the 2014 Pulitzer Prize for Public Service. In Traditional Chinese. Annotation copyright Tsai Fong Books, Inc. Distributed by Tsai Fong Books, Inc.

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