
Protecting Industrial Control Systems From Electronic Threats By Joseph Weiss

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Securing Critical Infrastructures and Critical Control Systems: Approaches for Threat Protection
Privacy, Secrecy, and Cyber Insecurity in a Transparent World
The Oxford Handbook of Public Health Ethics
11th IFIP WG 11.10 International Conference, ICCIP 2017, Arlington, VA, USA, March 13-15, 2017, Revised Selected Papers
Cyber Security for Cyber Physical Systems
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Handbook of SCADA/Control Systems Security
Securing Water and Wastewater Systems
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Industrial Cybersecurity
Zusammenfassung [in deutscher Sprache]. Zsfass
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Cybersecurity of Industrial Systems
Industrial Cybersecurity
Applied Cyber Security and the Smart Grid
Efficiently monitor the cybersecurity posture of your ICS environment
Pentesting Industrial Control Systems

Global Experiences
The Definitive Threat Identification and Threat Reduction Handbook
Protecting Industrial Control Systems from Electronic Threats
Practice and Theory

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MATHIAS NICHOLSON

Securing Critical Infrastructures and Critical Control Systems: Approaches for Threat Protection
Springer

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.

Privacy, Secrecy, and Cyber Insecurity in a Transparent World Springer

See how privileges, insecure passwords, administrative rights, and remote access can be combined as an attack vector to breach any organization. Cyber attacks continue to increase in volume and sophistication. It is not a matter of if, but when, your organization will be breached. Threat actors target the path of least resistance: users and their privileges. In decades past, an entire enterprise might be sufficiently managed through just a handful of credentials. Today's environmental complexity has seen an explosion of privileged credentials for many different account types such as domain and local administrators, operating systems (Windows, Unix, Linux, macOS, etc.), directory services, databases, applications, cloud instances, networking hardware, Internet of Things (IoT), social media, and so many more. When unmanaged, these privileged credentials pose a significant threat from external hackers and insider threats. We are experiencing an expanding universe of privileged accounts almost everywhere. There is no one solution or strategy to provide the protection you need against all vectors and stages of an attack. And while some new and innovative products will help protect against or detect against a privilege attack, they are not guaranteed to stop 100% of malicious activity. The volume and frequency of privilege-based attacks continues to increase and test the limits of existing security controls and solution implementations. Privileged Attack Vectors details the risks associated with poor privilege management, the techniques that threat actors leverage, and the defensive measures that organizations should adopt to protect against an incident, protect against lateral movement, and improve the ability to detect malicious activity due to the inappropriate usage of privileged credentials. This revised and expanded second edition covers new attack vectors, has updated definitions for privileged access management (PAM), new strategies for defense, tested empirical steps for a successful implementation, and includes new disciplines for least privilege endpoint management and privileged remote access. What You Will Learn
Know how identities, accounts, credentials, passwords, and exploits can be leveraged to escalate privileges during an attack
Implement defensive and monitoring strategies to mitigate privilege threats and risk
Understand a 10-step universal privilege management implementation plan to guide you through a successful privilege access management journey
Develop a comprehensive model for documenting risk, compliance, and reporting based on privilege session activity
Who This Book Is For
Security management professionals, new security professionals, and auditors looking to understand and solve privilege access management problems

The Oxford Handbook of Public Health Ethics Springer

This book constitutes the refereed proceedings of the First Conference on Cybersecurity of Industrial Control Systems, CyberICS 2015, and the First Workshop on the Security of Cyber Physical Systems, WOS-CPS 2015, held in Vienna, Austria, in September 2015 in conjunction with ESORICS 2015, the 20th annual European Symposium on Research in Computer Security. The 6 revised full papers and 2 short papers of CyberICS 2015 presented together with 3 revised full papers of WOS-CPS 2015 were carefully reviewed and selected from 28 initial submissions. CyberICS 2015 focuses on topics

covering ICSs, including cyber protection and cyber defense of SCADA systems, plant control systems, engineering workstations, substation equipment, programmable logic controllers, PLCs, and other industrial control system. WOS-CPS 2015 deals with the Security of Cyber Physical Systems, that exist everywhere around us, and range in size, complexity and criticality, from embedded systems used in smart vehicles, to SCADA systems in smart grids to control systems in water distribution systems, to smart transportation systems etc.

11th IFIP WG 11.10 International Conference, ICCIP 2017, Arlington, VA, USA, March 13-15, 2017, Revised Selected Papers Packt Publishing Ltd

This book, written by leaders in the protection field of critical infrastructures, provides an extended overview of the technological and operative advantages together with the security problems and challenges of the new paradigm of the Internet of Things in today's industry, also known as the Industry Internet of Things (IIoT). The incorporation of the new embedded technologies and the interconnected networking advances in the automation and monitoring processes, certainly multiplies the functional complexities of the underlying control system, whilst increasing security and privacy risks. The critical nature of the application context and its relevance for the well-being of citizens and their economy, attracts the attention of multiple, advanced attackers, with stealthy abilities to evade security policies, ex-filter information or exploit vulnerabilities. Some real-life events and registers in CERTs have already clearly demonstrated how the control industry can become vulnerable to multiple types of advanced threats whose focus consists in hitting the safety and security of the control processes. This book, therefore, comprises a detailed spectrum of research papers with highly analytical content and actuation procedures to cover the relevant security and privacy issues such as data protection, awareness, response and resilience, all of them working at optimal times. Readers will be able to comprehend the construction problems of the fourth industrial revolution and are introduced to effective, lightweight protection solutions which can be integrated as part of the new IIoT-based monitoring ecosystem.

Cyber Security for Cyber Physical Systems Oxford University Press

The increased use of technology is necessary in order for industrial control systems to maintain and monitor industrial, infrastructural, or environmental processes. The need to secure and identify threats to the system is equally critical. *Securing Critical Infrastructures and Critical Control Systems: Approaches for Threat Protection* provides a full and detailed understanding of the vulnerabilities and security threats that exist within an industrial control system. This collection of research defines and analyzes the technical, procedural, and managerial responses to securing these systems.

7th IFIP WG 11.10 International Conference, ICCIP 2013, Washington, DC, USA, March 18-20, 2013, Revised Selected Papers IGI Global

This book provides profound insights into industrial control system resilience, exploring fundamental and advanced topics and including practical examples and scenarios to support the theoretical approaches. It examines issues related to the safe operation of control systems, risk analysis and assessment, use of attack graphs to evaluate the resiliency of control systems, preventive maintenance, and malware detection and analysis. The book also discusses sensor networks and Internet of Things devices. Moreover, it covers timely responses to malicious attacks and hazardous

situations, helping readers select the best approaches to handle such unwanted situations. The book is essential reading for engineers, researchers, and specialists addressing security and safety issues related to the implementation of modern industrial control systems. It is also a valuable resource for students interested in this area.

An ethical hacker's guide to analyzing, compromising, mitigating, and securing industrial processes Springer

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

Critical Infrastructure Risk Assessment Springer

The availability and security of many services we rely upon including water treatment, electricity, healthcare, transportation, and financial transactions are routinely put at risk by cyber threats. *The Handbook of SCADA/Control Systems Security* is a fundamental outline of security concepts, methodologies, and relevant information pertaining to the

Handbook of SCADA/Control Systems Security Springer Nature
How to manage the cybersecurity of industrial systems is a crucial question. To implement relevant solutions, the industrial manager must have a clear understanding of IT systems, of communication networks and of control-command systems. They must also have some knowledge of the methods used by attackers, of the standards and regulations involved and of the available security solutions. *Cybersecurity of Industrial Systems* presents these different subjects in order to give an in-depth overview and to help the reader manage the cybersecurity of their installation. The book addresses these issues for both classic SCADA architecture systems and Industrial Internet of Things (IIoT) systems.

Securing Water and Wastewater Systems Springer

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 hijacking 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.

Protecting Industrial Control Systems Grand Central Publishing

This book constitutes revised selected papers from the 13th International Conference on Critical Information Infrastructures Security, CRITIS 2018, held in Kaunas, Lithuania, in September 2018. The 16 full papers and 3 short papers presented were carefully reviewed and selected from 61 submissions. They are grouped in the following topical sections: advanced analysis of critical energy systems, strengthening urban resilience, securing internet of things and industrial control systems, need and tool sets for industrial control system security, and advancements in governance and resilience of critical infrastructures.

SCADA, DCS, PLC, HMI, and SIS Momentum Press

The information infrastructure - comprising computers, embedded devices, networks and software systems - is vital to day-to-day operations in every sector: information and telecommunications, banking and finance, energy, chemicals and hazardous materials, agriculture, food, water, public health, emergency services, transportation, postal and shipping, government and defense. Global business and industry, governments, indeed society itself, cannot function effectively if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Areas of coverage include: themes and issues; control systems security; infrastructure modeling and simulation; risk and impact assessment. This book is the tenth volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of fourteen edited papers from the Tenth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at SRI International, Arlington, Virginia, USA in the spring of 2016. Critical Infrastructure Protection is an important resource for researchers, faculty members and graduate students, as well as for policy makers, practitioners and other individuals with interests in homeland security.

Securing Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control Systems Government Printing Office

Aimed at both the novice and expert in IT security and industrial control systems (ICS), this book will

help readers gain a better understanding of protecting ICSs from electronic threats. Cyber security is getting much more attention and SCADA security (Supervisory Control and Data Acquisition) is a particularly important part of this field, as are Distributed Control Systems (DCS), Programmable Logic Controllers (PLCs), Remote Terminal Units (RTUs), Intelligent Electronic Devices (IEDs)-and all the other, field controllers, sensors, and drives, emission controls, and that make up the intelligence of modern industrial buildings and facilities. This book will help the reader better understand what is industrial control system cyber security, why is it different than IT security, what has really happened to date, and what needs to be done. Loads of practical advice is offered on everything from clarity on current cyber-security systems and how they can be integrated into general IT systems, to how to conduct risk assessments and how to obtain certifications, to future trends in legislative and regulatory issues affecting industrial security.

Industrial Network Security Apress

This book focuses on the vulnerabilities of state and local services to cyber-threats and suggests possible protective action that might be taken against such threats. Cyber-threats to U.S. critical infrastructure are of growing concern to policymakers, managers and consumers. Information and communications technology (ICT) is ubiquitous and many ICT devices and other components are interdependent; therefore, disruption of one component may have a negative, cascading effect on others. Cyber-attacks might include denial of service, theft or manipulation of data. Damage to critical infrastructure through a cyber-based attack could have a significant impact on the national security, the economy, and the livelihood and safety of many individual citizens. Traditionally cyber security has generally been viewed as being focused on higher level threats such as those against the internet or the Federal government. Little attention has been paid to cyber-security at the state and local level. However, these governmental units play a critical role in providing services to local residents and consequently are highly vulnerable to cyber-threats. The failure of these services, such as waste water collection and water supply, transportation, public safety, utility services, and communication services, would pose a great threat to the public. Featuring contributions from leading experts in the field, this volume is intended for state and local government officials and managers, state and Federal officials, academics, and public policy specialists.

Implementing Security Controls into the Modern Power Infrastructure CRC Press

This comprehensive handbook covers fundamental security concepts, methodologies, and relevant information pertaining to supervisory control and data acquisition (SCADA) and other industrial control systems used in utility and industrial facilities worldwide. A community-based effort, it collects differing expert perspectives, ideas, and attitudes r

Efficiently secure critical infrastructure systems John Wiley & Sons

The information infrastructure - comprising computers, embedded devices, networks and software systems - is vital to operations in every sector: chemicals, commercial facilities, communications, critical manufacturing, dams, defense industrial base, emergency services, energy, financial services, food and agriculture, government facilities, healthcare and public health, information technology, nuclear reactors, materials and waste, transportation systems, and water and wastewater systems. Global business and industry, governments, indeed society itself, cannot function if major components of the critical information infrastructure are degraded, disabled or

destroyed. Critical Infrastructure Protection XI describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Areas of coverage include: Infrastructure Protection, Infrastructure Modeling and Simulation, Industrial Control System Security, and Internet of Things Security. This book is the eleventh volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of sixteen edited papers from the Eleventh Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at SRI International, Arlington, Virginia, USA in the spring of 2017. Critical Infrastructure Protection XI is an important resource for researchers, faculty members and graduate students, as well as for policy makers, practitioners and other individuals with interests in homeland security.

The Daily Show (The Book) Springer Science & Business Media

This book is a pioneering yet primary general reference resource on cyber physical systems and their security concerns. Providing a fundamental theoretical background, and a clear and comprehensive overview of security issues in the domain of cyber physical systems, it is useful for students in the fields of information technology, computer science, or computer engineering where this topic is a substantial emerging area of study.

An Oral History as Told by Jon Stewart, the Correspondents, Staff and Guests Springer

"This reference book considers all emerging aspects of cybersecurity in the business sector including frameworks, models, best practices, and emerging areas of interest, discussing items such as audits and risk assessments that businesses can conduct to ensure the security of their systems, training and awareness initiatives for staff that promotes a security culture and software and systems that can be used to secure and manage cybersecurity threats"--

8th IFIP WG 11.10 International Conference, ICCIP 2014, Arlington, VA, USA, March 17-19, 2014, Revised Selected Papers Springer

The information infrastructure - comprising computers, embedded devices, networks and software systems - is vital to day-to-day operations in every sector: information and telecommunications, banking and finance, energy, chemicals and hazardous materials, agriculture, food, water, public health, emergency services, transportation, postal and shipping, government and defense. Global business and industry, governments, indeed society itself, cannot function effectively if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection VII describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors.

Areas of coverage include: themes and issues; control systems security; infrastructure security; infrastructure modeling and simulation; and risk assessment. This book is the seventh volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of fifteen edited papers from the Seventh Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at George Washington University, Washington, DC, USA in the spring of 2013. Critical Infrastructure Protection VII is an important resource for researchers, faculty members and graduate students, as well as for policy makers, practitioners and other individuals with interests in homeland security. Jonathan Butts is an Assistant Professor of Computer Science at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, USA. Sujeet Shenoj is the F.P. Walter Professor of Computer Science and a Professor of Chemical Engineering at the University of Tulsa, Tulsa, Oklahoma, USA.

Industrial Automation and Control System Security Principles Rothstein Publishing

The information infrastructure---comprising computers, embedded devices, networks and software systems---is vital to day-to-day operations in every sector: information and telecommunications, banking and finance, energy, chemicals and hazardous materials, agriculture, food, water, public health, emergency services, transportation, postal and shipping, government and defense. Global business and industry, governments, indeed society itself, cannot function effectively if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Areas of coverage include: Themes and Issues, Control Systems Security, Cyber-Physical Systems Security, Infrastructure Security, Infrastructure Modeling and Simulation, Risk and Impact Assessment. This book is the ninth volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of nineteen edited papers from the Ninth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at SRI International, Arlington, Virginia, USA in the spring of 2015. Critical Infrastructure Protection IX is an important resource for researchers, faculty members and graduate students, as well as for policy makers, practitioners and other individuals with interests in homeland security. Mason Rice is an Assistant Professor of Computer Science at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, USA. Sujeet Shenoj is the F.P. Walter Professor of Computer Science and a Professor of Chemical Engineering at the University of Tulsa, Tulsa, Oklahoma, USA.