NIST SPECIAL PUBLICATION 1800-29A

Data Confidentiality:

Detect, Respond to, and Recover from Data Breaches

Volume A:

Executive Summary

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Executive Summary

CHALLENGE

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- 3 In our data-driven world, organizations must prioritize cybersecurity as part of their business risk
- 4 management strategy. Specifically, data security remains a challenge as attacks against an organization's
- 5 data can compromise emails, employee records, financial records, and customer information thereby
- 6 impacting business operations, revenue, and reputation. In the event of a data breach, data
- 7 confidentiality can be compromised via unauthorized exfiltration, leaking, or spills of data or corporate
- 8 information to unauthorized parties, including the general public. This can be intentional or accidental.
- 9 In the event of an ongoing data breach, it is essential that an organization be able to detect the ongoing
- 10 breach themselves, as well as begin to execute a response and recovery plan that leverages security
- 11 technology and controls.

BENEFITS

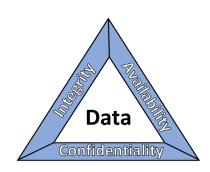
- 13 The National Cybersecurity Center of Excellence (NCCoE) at the National Institute of Standards and
- 14 Technology (NIST) developed this guide to help organizations implement strategies for preventing and
- 15 recovering from data confidentiality attacks. This NIST Cybersecurity Practice Guide demonstrates how
- 16 organizations can develop and implement appropriate actions to detect, respond and recover from a
- data confidentiality cybersecurity event. It includes numerous technology and security
- 18 recommendations to improve your organization's cybersecurity posture.

This practice guide can help your organization:

- Detect losses of data confidentiality in your organization
- Respond to data breach events using your organization's security architecture
- Recover from a data breach in a manner that lessens monetary and reputational damage

19 APPROACH

- 20 This publication is part of a series of projects that seek to
- 21 provide guidance to improve an organization's data security
- in the context of the CIA triad. The CIA triad represents the
- 23 three pillars of information security: confidentiality,
- 24 integrity, and availability. This practice guide focuses on data
- 25 confidentiality: the property that data has not been
- 26 disclosed in an unauthorized fashion. Data confidentiality
- concerns data in storage, during processing, and while in
- 28 transit. (Note: These definitions are from National Institute_{3.2}
- 29 of Standards and Technology (NIST) Special Publication (SP)
- 30 800-12 Rev 1, An Introduction to Information Security.)



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- This guide applies data confidentiality principles through the
- lens of the NIST Cybersecurity Framework version 1.1.
- 35 Specifically this practice guide focuses on the latter three of
- 36 those functions, informing organizations on how to **detect**,
- 37 **respond** to, and **recover** from a data confidentiality attack, and
- 38 manage data confidentiality risks. A complementary project and
- 39 accompanying practice guide (SP1800-XX) addresses data
- 40 confidentiality through the lens of the principles of identify and
- 41 protect.



- 42 The NCCoE developed and implemented a solution that incorporates multiple systems working in
- 43 concert to detect, respond to, and recover from data confidentiality cybersecurity events. The solution
- 44 will demonstrate the ability to detect an ongoing data breach, as well as recommending technical and
- 45 policy remediations against the same.
- 46 In developing this solution, the NCCoE sought existing technologies that provided the following
- 47 capabilities:
- 48 Logging
- 49 Data protection
- 50 Event detection
- User access control

Collaborator	Security Capability or Component
Dispel	Network Protection
Cisco	Event Detection, User Access Control
FireEye	Logging
PKWARE	Data Protection

- 52 While the NCCoE used a suite of commercial products to address this challenge, this guide does not
- 53 endorse these particular products, nor does it guarantee compliance with any regulatory initiatives. Your
- 54 organization's information security experts should identify the products that will best integrate with
- 55 your existing tools and IT system infrastructure. Your organization can adopt this solution or one that
- adheres to these guidelines in whole, or you can use this guide as a starting point for tailoring and
- 57 implementing parts of a solution.

HOW TO USE THIS GUIDE

- 59 Depending on your role in your organization, you might use this guide in different ways:
- 60 Business decision makers, including chief information security and technology officers can use this
- 61 part of the guide, NIST SP 1800-29a: Executive Summary, to understand the drivers for the guide, the
- 62 cybersecurity challenge we address, our approach to solving this challenge, and how the solution could
- 63 benefit your organization.

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- 64 **Technology, security, and privacy program managers** who are concerned with how to identify,
- 65 understand, assess, and mitigate risk can use NIST SP 1800-29b: Approach, Architecture, and Security
- 66 Characteristics, which describes what we built and why, including the risk analysis performed and the
- 67 security/privacy control mappings.
- 68 **IT professionals** who want to implement an approach like this can make use of NIST SP 1800-29c: How-
- 69 To Guides, which provide specific product installation, configuration, and integration instructions for
- 70 building the example implementation, allowing you to replicate all or parts of this project.

SHARE YOUR FEEDBACK

- 72 You can view or download the guide at https://www.nccoe.nist.gov/projects/building-blocks/data-
- 73 security/dc-detect-identify-protect. Help the NCCoE make this guide better by sharing your thoughts
- with us as you read the guide. If you adopt this solution for your own organization, please share your
- experience and advice with us. We recognize that technical solutions alone will not fully enable the
- 76 benefits of our solution, so we encourage organizations to share lessons learned and best practices for
- transforming the processes associated with implementing this guide.
- 78 To provide comments or to learn more by arranging a demonstration of this example implementation,
- 79 contact the NCCoE at <u>ds-nccoe@nist.gov</u>.

COLLABORATORS

- 81 Collaborators participating in this project submitted their capabilities in response to an open call in the
- 82 Federal Register for all sources of relevant security capabilities from academia and industry (vendors
- and integrators). Those respondents with relevant capabilities or product components signed a
- 84 Cooperative Research and Development Agreement (CRADA) to collaborate with NIST in a consortium to
- 85 build this example solution.
- 86 Certain commercial entities, equipment, products, or materials may be identified by name or company
- 87 logo or other insignia in order to acknowledge their participation in this collaboration or to describe an
- 88 experimental procedure or concept adequately. Such identification is not intended to imply special
- 89 status or relationship with NIST or recommendation or endorsement by NIST or NCCoE; neither is it
- 90 intended to imply that the entities, equipment, products, or materials are necessarily the best available
- 91 for the purpose.