

The CERT Guide to Coordinated Vulnerability Disclosure

This is the web edition of *The CERT® Guide to Coordinated Vulnerability Disclosure*. We've reproduced the original report here in its entirety to make it easier to find the topic you're looking for. We're also in the process of revising the guide based on feedback we've received since its original publication. Got a suggestion? [Submit it here](#).

Abstract

Security vulnerabilities remain a problem for vendors and deployers of software-based systems alike. Vendors play a key role by providing fixes for vulnerabilities, but they have no monopoly on the ability to discover vulnerabilities in their products and services. Knowledge of those vulnerabilities can increase adversarial advantage if deployers are left without recourse to remediate the risks they pose. Coordinated Vulnerability Disclosure (CVD) is the process of gathering information from vulnerability finders, coordinating the sharing of that information between relevant stakeholders, and disclosing the existence of software vulnerabilities and their mitigations to various stakeholders including the public. The CERT Coordination Center has been coordinating the disclosure of software vulnerabilities since its inception in 1988. This document is intended to serve as a guide to those who want to initiate, develop, or improve their own CVD capability. In it, the reader will find an overview of key principles underlying the CVD process, a survey of CVD stakeholders and their roles, and a description of CVD process phases, as well as advice concerning operational considerations and problems that may arise in the provision of CVD and related services.

CVD Quick Start

When we finished the first version of [The CERT Guide to Coordinated Vulnerability Disclosure](#), we noticed folks kept commenting on its length. Feedback we have received in the intervening time has convinced us that there is a need for a more succinct way to get started with CVD without requiring someone to read every word in the Guide. To that end, we offer this CVD Quick Start to act as a meta-guide to the Guide.

The [Executive Summary](#) contains an overview of the entire document, and is a good place for all readers to become familiar with what's in the guide without necessarily poring over the details. Where you go from there depends on what you're trying to achieve.

- If you're a *researcher*, *vendor*, or *coordinator* trying to coordinate a disclosure and you need help, you might want to start with the [6.10 Troubleshooting Coordinated Vulnerability Disclosure Table](#) to find the problem area(s) you're currently dealing with. From there you can follow the links into the document for more details.
- If you're a *vendor* trying to establish a vendor product security incident response team (PSIRT), you may be interested in [2. Principles of Coordinated Vulnerability Disclosure](#), [5. Process Variation Points](#), and [7. Operational Considerations](#) as a starting points. Additionally, you can use the [6.10 Troubleshooting Coordinated Vulnerability Disclosure Table](#) as a rubric of scenarios to consider when planning your operational processes. [Appendix E - Disclosure Policy Templates](#) contains links to a number of disclosure policy examples and templates.
- If you're a *coordinator* spinning up your CVD capability, you should become familiar with [2. Principles of Coordinated Vulnerability Disclosure](#), [3. Roles in CVD](#), [5. Process Variation Points](#), and [7. Operational Considerations](#). The [Appendices](#) may also be useful to you.
- If you're a *policy-maker* (or influencer thereof), the sections [1. Introduction](#), [2. Principles of Coordinated Vulnerability Disclosure](#), [3. Roles in CVD](#), and [4. Phases of CVD](#) are probably most useful to you to start, but there are many edge cases in [6.10 Troubleshooting Coordinated Vulnerability Disclosure Table](#) that are worth considering when you're thinking about writing policy that sets out how things are expected to be done. [Appendix E - Disclosure Policy Templates](#) contains links to a number of disclosure policy examples and templates.

Of course, we think it's best if you eventually become familiar with the entire document, but hopefully the hints above will help you find the most effective places to start. If you're already familiar with the guide and just want to see what's new, see the update log below.

Recently Updated

[4.2 Reporting](#)
2020-08-19 • updated by [Allen D. Householder](#) • [view change](#)

[3.2. Reporter](#)
2020-06-09 • updated by [Art Manion](#) • [view change](#)

[Copyright](#)
2020-04-22 • updated by [Allen D. Householder](#) • [view change](#)

[Appendix E - Disclosure Policy Templates](#)
2019-12-12 • updated by [Allen D. Householder](#) • [view change](#)

[The CERT Guide to Coordinated Vulnerability Disclosure](#)
2019-12-12 • updated by [Allen D. Householder](#) • [view change](#)

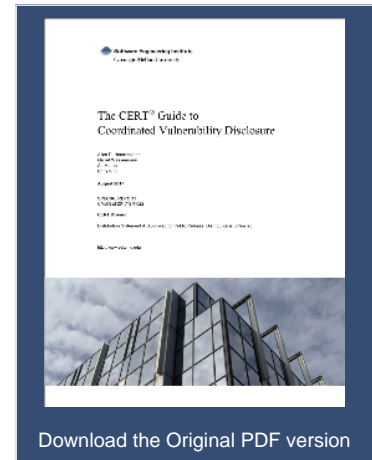
[1.1. Coordinated Vulnerability Disclosure is a Process, Not an Event](#)
2019-12-12 • updated by [Allen D. Householder](#) • [view change](#)

[Sightings](#)
2019-09-17 • updated by [Allen D. Householder](#) • [view change](#)

Authors:

[Allen D. Householder](#)
[Garret Wassermann](#)
[Art Manion](#)
[Chris King](#)

Originally Published as [CMU/SEI-2017-SR-022](#)



[CERT/CC Blog post announcing the publication of the Guide](#)

Sightings

Here is a partial list of places The CERT Guide to Coordinated Vulnerability Disclosure has appeared.

2019-09-17 - [Update on the CERT Guide to Coordinated Vulnerability Disclosure](#) - (Software Engineering Institute)

2018-12-14 - [Economics of Vulnerability Disclosure](#) (ENISA)

2018-10-23 - [The Criticality of Coordinated Disclosure in Modern Cybersecurity](#) (US House Energy and Commerce Committee, Majority Staff)

2018-10-10 - [Announcing Arduino's Coordinated Vulnerability Disclosure Policy](#) (Arduino)

2018-09-18 - [It Takes a Village: How Hacktivity Can Save Your Company](#) (Atlantic Council)

2018-07-26 - [SEI Response to Senate and House Committees regarding Coordinated Vulnerability Disclosure](#) (Software Engineering Institute)

2018-07-17 - [Letter to SEI from House Committee on Energy and Commerce and Senate Committee on Commerce, Science, and Transportation regarding Coordinated Vulnerability Disclosure](#) (US House & Senate)

[Appendix A - On the Internet of Things and Vulnerability Analysis](#)

2019-09-17 • [updated by Allen D. Householder](#) • [view change](#)

[3. Roles in CVD](#)

2019-09-17 • [updated by Allen D. Householder](#) • [view change](#)

[role_relationships.png](#)

2019-09-17 • [attached by Allen D. Householder](#)

Table of contents

- [Copyright](#)
- [Preface](#)
- [Acknowledgements](#)
- [Executive Summary](#)
- [1. Introduction](#)
 - [1.1. Coordinated Vulnerability Disclosure is a Process, Not an Event](#)
 - [1.2. CVD Context and Terminology Notes](#)
 - [1.3. Why Coordinate Vulnerability Disclosures?](#)
 - [1.4. Previewing the Remainder of this Document](#)
- [2. Principles of Coordinated Vulnerability Disclosure](#)
 - [2.1. Reduce Harm](#)
 - [2.2. Presume Benevolence](#)
 - [2.3. Avoid Surprise](#)
 - [2.4. Incentivize Desired Behavior](#)
 - [2.5. Ethical Considerations](#)
 - [2.6. Process Improvement](#)
 - [2.7. CVD as a Wicked Problem](#)
- [3. Roles in CVD](#)
 - [3.1. Finder](#)
 - [3.2. Reporter](#)
 - [3.3. Vendor](#)
 - [3.4. Deployer](#)
 - [3.5. Coordinator](#)
 - [3.6. Other Roles and Variations](#)
- [4. Phases of CVD](#)
 - [4.1 Discovery](#)
 - [4.2 Reporting](#)
 - [4.3 Validation and Triage](#)
 - [4.4 Remediation](#)
 - [4.5 Gaining Public Awareness](#)
 - [4.6 Promote Deployment](#)
- [5. Process Variation Points](#)
 - [5.1 Choosing a Disclosure Policy](#)
 - [5.2 Disclosure Choices](#)
 - [5.3 Two-Party CVD](#)
 - [5.4 Multiparty CVD](#)
 - [5.5 Response Pacing and Synchronization](#)
 - [5.6 Maintaining Pre-Disclosure Secrecy](#)
 - [5.7 Disclosure Timing](#)
- [6. Troubleshooting CVD](#)
 - [6.1 Unable to Find Vendor Contact](#)
 - [6.2 Unresponsive Vendor](#)
 - [6.3 Somebody Stops Replying](#)
 - [6.4 Intentional or Accidental Leaks](#)
 - [6.5 Independent Discovery](#)
 - [6.6 Active Exploitation](#)
 - [6.7 Relationships that Go Sideways](#)
 - [6.8 Hype, Marketing, and Unwanted Attention](#)
 - [6.9 What to Do When Things Go Wrong](#)
 - [6.10 Troubleshooting Coordinated Vulnerability Disclosure Table](#)
- [7. Operational Considerations](#)
 - [7.1 Tools of the Trade](#)
 - [7.2 Operational Security](#)
 - [7.3 CVD Staffing Considerations](#)
- [8. Open Problems in CVD](#)
 - [8.1 Vulnerability IDs and DBs](#)
 - [8.2 IoT and CVD](#)
- [9. Conclusion](#)
- [Appendices](#)
 - [Appendix A - On the Internet of Things and Vulnerability Analysis](#)
 - [Appendix B - Traffic Light Protocol](#)
 - [Appendix C - Sample Vulnerability Report Form](#)
 - [Appendix D - Sample Vulnerability Disclosure Document](#)
 - [Appendix E - Disclosure Policy Templates](#)
 - [Appendix F - Additional Resources for Web Vulnerabilities](#)
- [Bibliography](#)
- [Sightings](#)
- [Recent Changes](#)

2018-07-11 - [Senate Testimony regarding Complex Cybersecurity Vulnerabilities: Lessons Learned from Spectre and Meltdown \(Art Manion's testimony to the US Senate\)](#)

2018-06-28 - [Software Vulnerability Disclosure in Europe: Technology, Policies and Legal Challenges \(Centre for European Policy Studies\)](#)

2018-02-07 - [Response to US House Energy and Commerce Committee regarding Meltdown and Spectre \(Microsoft\)](#)

2018-01-31 - [Response to US House Energy and Commerce Committee regarding Meltdown and Spectre \(Intel\)](#)

2017-11-28 - [AMA with Authors of The CERT Guide to Coordinated Vulnerability Disclosure \(HackerOne\)](#)

2017-10-26 - [Your TL;DR Summary of the CERT Guide to Coordinated Vulnerability Disclosure \(HackerOne\)](#)

2017-08-16 - [This one matters, too: Carnegie Mellon issues guide to disclosing software vulnerabilities responsibly \(cyberscoop\)](#)

2017-08-15 - [CERT Guide to Coordinated Vulnerability Disclosure Released \(Software Engineering Institute\)](#)

