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Information technology — Security techniques — Vulnerability handling processes

Technologies de l'information — Techniques de sécurité — Processus de traitement de la vulnérabilité

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 27, *Information security, cybersecurity and privacy protection*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This second edition cancels and replaces the first edition (ISO/IEC 30111:2013), which has been technically revised. The main changes compared to the previous edition are as follows:

— a number of normative provisions have been revised or added (summarized in Annex A);

— organizational and editorial changes have been made for clarity and harmonization with ISO/IEC 29147:2018.

This document is intended to be used with ISO/IEC 29147.

Introduction

This document describes processes for vendors to handle reports of potential vulnerabilities in products and services.

The audience for this document includes developers, vendors, evaluators, and users of information technology products and services. The following audiences can use this document:

— developers and vendors, when responding to actual or potential vulnerability reports;

— evaluators, when assessing the security assurance afforded by vendors' and developers' vulnerability handling processes; and

— users, to express procurement requirements to developers, vendors and integrators.

This document is integrated with ISO/IEC 29147 at the point of receiving potential vulnerability reports and at the point of distributing vulnerability remediation information (see 5.1).

Relationships to other standards are noted in Clause 5.

Information technology — Security techniques — Vulnerability handling processes

1 Scope

This document provides requirements and recommendations for how to process and remediate reported potential vulnerabilities in a product or service.

This document is applicable to vendors involved in handling vulnerabilities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 27000, *Information technology — Security techniques — Information security management systems — Overview and vocabulary*

ISO/IEC 29147:2018, *Information technology — Security techniques — Vulnerability disclosure*

3 Terms and definitions

For the purposes of this document, terms and definitions given in ISO/IEC 27000 and ISO/IEC 29147 apply.

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Abbreviated terms

The following abbreviated terms are used in this document.

CSIRT Computer Security Incident Response Team

PSIRT Product Security Incident Response Team

5 Relationships to other International Standards

5.1 ISO/IEC 29147

ISO/IEC 29147 shall be used in conjunction with this document. The relationship between the two is illustrated in Figure 1.

This document provides guidelines for vendors on how to process and remediate potential vulnerability information reported by internal or external individuals or organizations.

ISO/IEC 29147 provides guidelines for vendors to include in their normal business processes when receiving reports about potential vulnerabilities from external individuals or organizations and when distributing vulnerability remediation information to affected users.

While this document deals with the investigation, triage, and remediation of internally or externally reported vulnerabilities, ISO/IEC 29147 deals with the interface between vendors and those who find and report potential vulnerabilities.

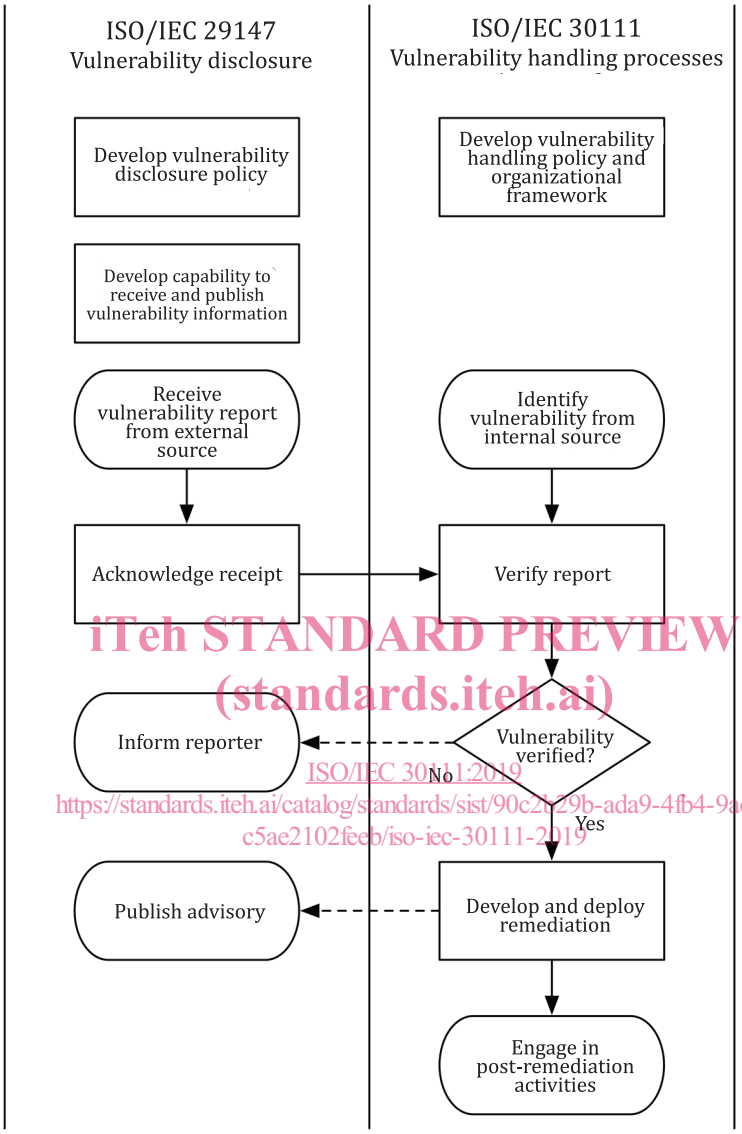

Figure 1 — Relationship between ISO/IEC 29147 and ISO/IEC 30111

5.2 ISO/IEC 27034 (all parts)

Application security seeks to reduce the creation of application vulnerabilities (see ISO/IEC 27034-1:2011, 6.5.2[1]). Application security techniques can also be useful for remediating reported vulnerabilities.

5.3 ISO/IEC 27036-3

Effective vulnerability handling processes require thorough understanding of ICT supply chain security as described in ISO/IEC 27036-3:2013, 5.4 a), 5.8 i), 6.1.1 a) 2) and 6.3.4[2].

5.4 ISO/IEC 15408-3

This document takes into consideration the relevant elements of ISO/IEC 15408-3:2008, 13.5[3].

6 Policy and organizational framework

6.1 General

Clause 6 describes the organizational elements that vendors should consider in their vulnerability handling processes. Vendors should create a vulnerability handling process in accordance with this document in order to prepare for investigating and remediating potential vulnerabilities. The creation of a vulnerability handling process is a task that is performed by a vendor and should be periodically assessed to ensure that the process performs as expected and to support process improvements. Vendors should document their vulnerability handling processes in order to ensure that they are repeatable. The documentation should describe the procedures and methods used to track all reported vulnerabilities.

See ISO/IEC 27034 (all parts)[1] for information on how identification of the root cause of a vulnerability, which is a step in the process of vulnerability handling, can help improve secure software development lifecycles and result in an outcome of more secure product development.

6.2 Leadership

6.2.1 Leadership and commitment

Top management should demonstrate leadership and commitment with respect to vulnerability handling by:

a) ensuring the policy and the objectives of vulnerability handling are established and are compatible with the strategic direction of the organization;

b) ensuring the integration of the vulnerability handling into the organization's processes;

c) ensuring that the resources needed for the vulnerability handling are available;

d) communicating the importance of effective vulnerability handling;

e) ensuring that the vulnerability handling process achieves its intended outcome(s);

f) directing and supporting persons to contribute to the effectiveness of the vulnerability handling process;

g) promoting continual improvement; and

h) supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

6.2.2 Policy

Top management should establish vulnerability handling policy that:

a) is appropriate to the purpose of the organization;

b) includes a best-effort commitment to satisfy user's requirements related to its product or online service security; and

c) includes a commitment to continual improvement of the vulnerability handling process.

More information about vulnerability handling policy is provided in 6.3.

6.2.3 Organizational roles, responsibilities, and authorities

Top management should ensure that the responsibilities and authorities for roles relevant to vulnerability handling are assigned and communicated.

Top management should assign the responsibility and authority for:

a) ensuring that the vulnerability handling process conforms to the requirements of this document; and

b) reporting on the performance of the vulnerability handling to top management.

6.3 Vulnerability handling policy development

A vendor shall develop and maintain an internal vulnerability handling policy to define and clarify its intentions for investigating and remediating vulnerabilities as part of a vulnerability handling process. This policy should be compatible with the external vulnerability disclosure policy required by ISO/IEC 29147.

The internal vulnerability handling the policy is intended for the vendor's staff and defines who is responsible in each stage of the vulnerability handling process and how they should handle reports about potential vulnerabilities. It should include the following items:

a) basic guidance, principles, and responsibilities for handling potential vulnerabilities in products or services;

b) a list of departments and roles responsible for handling potential vulnerabilities;

c) safeguards to prevent premature disclosure of information about potential vulnerabilities before they are fixed; and

d) a target schedule for remediation development.

The audience for the external vulnerability disclosure policy is internal and external stakeholders, including reporters who wish to report potential vulnerabilities, and users of the vendor's products or services. This policy informs the audience of how the vendor is willing to interact with them when a potential vulnerability is found in the vendor's product or services. Guidance, details and examples of public vulnerability disclosure policies are included in ISO/IEC 29147:2018, Clause 9 and Annex A.

6.4 Organizational framework development

Handling vulnerabilities has several additional aspects than just engineering and technology (for example, customer service and public relations). An organizational framework should be designed, recognized, and supported by the stakeholder divisions of the vendor responsible for each area.

An organization should have a role or capability that is responsible for and has authority to make decisions on vulnerability handling, preferably at a management level. This role or capability should understand the responsibility toward the vendor's users, the internal processes, and the organizational framework for vulnerability handling.

An organization should have a role or capability that is a point of contact for handling potential vulnerabilities. This point of contact should be identified for each division or department within a vendor that provides products or services to customers.

An organization should establish a point of contact for external parties to reach and communicate with about vulnerabilities. The point of contact can be part of a vendor computer security incident response team (CSIRT) or a product security incident response team (PSIRT). Further details are discussed in 6.5.

Since customers and members of the media can contact the vendor with questions or requests for additional information after a vulnerability is disclosed, divisions responsible for customer and public relations should be prepared so that they can respond.

6.5 Vendor CSIRT or PSIRT

6.5.1 General

Subclause 6.5 describes the organizational role and responsibilities of a CSIRT or PSIRT. For clarity, PSIRT will be used to refer to this role throughout the rest of this document. A PSIRT is responsible for coordinating external vulnerability reports. In some cases, a PSIRT also coordinates the handling of vulnerabilities that were reported by internal teams within the vendor.

6.5.2 PSIRT mission

A PSIRT plays a central role in a vendor's vulnerability handling processes. In addition to coordinating vulnerability handling internally, the PSIRT acts as a single point of contact for external stakeholders such as vulnerability reporters, coordinators, and other vendors.

Vendors should include all of their products and services in their vulnerability disclosure and vulnerability handling processes. A PSIRT should be implemented centrally within a vendor. However, a PSIRT may be implemented within a business unit, as long as all products and services are covered by the vendor's vulnerability handling processes.

6.5.3 PSIRT responsibilities

6.5.3.1 General

Subclause 6.5.3 describes the responsibilities of vulnerability response teams. This is an unordered list.

Example PSIRT services and functions can be found in the FIRST PSIRT Services Framework[4].

6.5.3.2 Public vulnerability monitoring

A PSIRT should monitor known public sources of vulnerability information for disclosures or discussion that affect the vendor's products or services. Sources can include mailing lists, social media, discussion forums, or vulnerability databases.

6.5.3.3 Communication with external reporters

A PSIRT should develop a single entry-point for receiving potential vulnerability reports from reporters or coordinators, typically either an e-mail address or a form on a web page.

A PSIRT is responsible for maintaining communication with reporters. It is important to understand the interests and motivations of reporters and to communicate in a timely manner.

A PSIRT may choose to handle security vulnerabilities from customers with a valid support contract through their customer support division rather than receiving them directly. In that case, appropriate processes and training should be provided to the customer support division. The customer support division should partner closely with the PSIRT to ensure that the vulnerability is appropriately handled and responded to.

For more information about communication with external vulnerability reporters, see ISO/IEC 29147:2018, 5.5.4 and Clause 6.

6.5.3.4 Communication within vendor organization

A PSIRT should work with product and services divisions to build a database of contacts for each product. When a potential vulnerability is reported, the PSIRT should identify the responsible product business division to dispatch the report to them through the contact person. The information should be shared confidentially on a need-to-know basis.