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Office equipment — Security requirements for hard copy devices (HCDs) used for information processing in small, private office environments

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Foreword

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Introduction

The need for a secure working environment is increasing with the progress and spread of information and communications technology.

In particular, there are high security needs in the office environment where company information and customer information are handled.

With hard copy device (HCD) office equipment, it is common practice for many manufacturers to acquire common criteria (CC) certification and demonstrate to customers that they meet the Protection Profile, which defines the security requirements, environment, and so on required for HCD product areas.

While CC certification is a standard that guarantees relatively high security functionality, there is no indicator that shows the level of security functionality for models other than CC certified models. This causes confusion when selecting a model that has appropriate security functionality for use as office equipment and not intended for home use.

If HCDs are used in the office without proper model selection, security risks are introduced.

It is necessary to establish an index that can judge whether or not the appropriate security functionality is satisfied as office equipment.

Among them, this time, as office equipment, an index was created that defines the basic security requirements for small office, home office users.

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Office equipment — Security requirements for hard copy devices (HCDs) used for information processing in small, private office environments

1 Scope

This document defines basic security requirements for the protection of hard copy devices (HCDs) including identification and authentication, security management, software update, field-replaceable nonvolatile storage data protection, network data protection and public switched telephone network (PSTN) fax-network separation.

It can be applied to office equipment with network functions including printers, scanners, fax machines, digital copiers, and digital multi-function machines, specifically for small office and home office users.

This document assumes a small, private information processing environment in which most elements of security are provided by the physical environment. In such an environment is assumed to be physically and logically protected from threats originating from outside of that environment, typically by limiting physical access to the HCD and connecting it to a LAN that is protected from the public Internet. A small office or home office would be a typical example of this environment.

Please note that the requirements outlined in this document are not intended to replace the existing Common Criteria Certification for hardcopy devices which ensure the minimum-security requirements for enterprise environment. For example, aspects being required in Common Criteria Certification such as audit data generation, self-test capabilities, and protection of key material are not adequately addressed.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

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

3.1
hard copy device
HCD
printer, scanner, fax machine, digital copier, or digital multifunction device

3.2
security setting
setting that is designed to affect device security functionality

Note 1 to entry: Security settings include settings related to network connection and time.

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3.3
user identifier
character string or pattern that is used by a data processing system to identify a user

Note 1 to entry: Some devices support different categories of user including *administrator* (3.5) and *normal user* (3.6).

[SOURCE: ISO/IEC 20944-1:2013, 3.11.4.17, modified — Note 1 to entry was added.]

3.4
authentication
action to prove the identity of the *administrator* (3.5) or *normal user* (3.6)

3.5
administrator
user with authority to manage some portion or all of the *hard copy device (HCD)* (3.1) and whose actions may affect the HCD security policy

3.6
normal user
user with authority to use a device but not to configure or change *security settings* (3.2)

3.7
data integrity
property that signifies that data has not been altered or destroyed in an unauthorized manner

[SOURCE: ISO 7498-2:1989, 3.3.21, modified — "signifies that" has been added.]

3.8
digital signature
digest generated from data using a hash function and encrypted with a private key

Note 1 to entry: *Data integrity* (3.7) can be verified with digital signatures by applying public key cryptography.

3.9
field-replaceable nonvolatile storage device
nonvolatile storage device that can be swapped in the field to repair a malfunction

3.10
wear levelling
distribution of the writing locations of memory storage with a limited number of write cycles to increase its life

Note 1 to entry: Storage element of flash memory such as solid-state drives generally have a limit to the number of rewrites. To maximize the life of these devices, the writing positions are dispersed so that the writing is not concentrated on a specific storage element. This distributed technology is called wear levelling. Once data would be deleted logically, it would be difficult to restore data because the write positions are distributed by the controller.

3.11
vulnerability
weaknesses that compromise security or operation of a system

Note 1 to entry: There could be a case that security flaws in design or implementation are referred as vulnerabilities. Besides software vulnerabilities in some cases an incomplete state of setting security options sometimes are referred to as being vulnerable.

3.12
threat
factors that pose a security risk

Note 1 to entry: Security risks arise when threats and vulnerabilities combine.

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3.13
firmware
hardware that contains a computer program or data that cannot be changed in its user environment

Note 1 to entry: The computer program and data contained in firmware are classified as software; the circuitry containing the computer program and data is classified as hardware.

[SOURCE: ISO 10795:2019, 3.105]

3.14
firewall
type of security barrier placed between network environments — consisting of a dedicated device or a composite of several components and techniques — through which all traffic from one network environment traverses to another, and vice versa, and only authorized traffic, as defined by the local security policy, is allowed to pass

[SOURCE: ISO/IEC 27033-1:2015, 3.12]

3.15
configuration management system
system for configuring electronic device software, *firmware* (3.13) and hardware including version control of each component part

3.16
security function
functions which are implemented in the *hard copy device (HCD)* (3.1) as countermeasures to risks for important assets residing in the HCD

Note 1 to entry: The security functions should be enabled or configured according to *security settings* (3.2) specified with security management function.

3.17
administrator rights
authority to modify device settings including *security settings* (3.2)

Note 1 to entry: Administrator rights may require a *user identifier* (3.3) and password or may require only a password depending on the product specification.

3.18
network function
network service function using Internet protocol (IP) for the internet layer and transmission control protocol (TCP) and / or user datagram protocol (UDP) for the transport layer

Note 1 to entry: In this document, the network interface layer such as a wired local area network (LAN) or wireless LAN need not be considered.

3.19
image overwrite function
function to write some meaningless data onto a medium so that residual data cannot be retrieved

Note 1 to entry: This technique is often used for clearing residual image data stored in electron medium such as hard disk driver (HDD).

3.20
logical deletion function
technique for clearing data stored in a logical file system

Note 1 to entry: The function erases indices to the data stored and removed from the file system so that residual image data cannot be accessed through the file system.

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