



KONICA MINOLTA

bizhub C550 / bizhub C451 / ineo⁺ 550 / ineo⁺ 451

Control Software

Security Target

This document is a translation of the evaluated and certified security target written in Japanese

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<Revision History>

| Date | Ver. | Division | Approved | Checked | Created | Revision |
|------------|------|------------------------|----------|----------|---------|---|
| 2007/01/22 | 1.00 | Development Div. 12 | Hirota | Nakajima | Yoshida | Initial Version ~About a difference with bizhubC450 version (20%~30%changed)~ <ul style="list-style-type: none"> • Add a security policy of organization, concept explanation. - Add a Trusted channel function. - Add a S/MIME function • Add a concept of account control. • Modify the concept of user mind (Consider external server Authentication) • Reflect the specification of rock processing of improved Authentication function. • Add a Enhanced Security Condition , reflect modify. • Deal with CCv2.3 • Deal with modification of Hard environment composition. |
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1. ST Introduction

1.1. ST Identification

- ST Title : bizhub C550 / bizhub C451 / ineo⁺ 550 / ineo⁺ 451 Control Software Security Target
- ST Version : 1.05
- CC Version : 2.3
- Created on : August 24, 2007
- Created by : KONICA MINOLTA BUSINESS TECHNOLOGIES, INC. Eiichi Yoshida

1.2. TOE Identification

- TOE Name : Japanese :
bizhub C550 / bizhub C451 / ineo⁺ 550 / ineo⁺ 451 Zentai Seigyo Software
English :
bizhub C550 / bizhub C451 / ineo⁺ 550 / ineo⁺ 451 Control Software
- TOE Version : A00J0Y0-0100-GM0-00
- TOE Type : Software
- Created by : KONICA MINOLTA BUSINESS TECHNOLOGIES, INC.

1.3. CC Conformance Claim

The TOE, which is the subject of this ST, conforms to the following.

- Security function requirement
Part2 Extended
- Security assurance requirement
Part3 Conformant
- Evaluation assurance level
EAL3 Conformant (No additional assurance component)
- PP Reference
This ST does not carry out a PP reference.
- Complement
Apply- Complement 0512 (Interpratations-0512)

- Reference
 - Common Criteria for Information Technology Security Evaluation Part 1: Introduction and general model 2005 Version 2.3 CCMB-2005-08-001
 - Common Criteria for Information Technology Security Evaluation Part 2: Security functional requirements 2005 Version 2.3 CCMB-2005-08-002
 - Common Criteria for Information Technology Security Evaluation Part 3: Security assurance requirements 2005 Version 2.3 CCMB-2005-08-003
 - CCIMB Interpretations-0407
 - Common Criteria for Information Technology Security Evaluation Part 1: Introduction and General Model Version 2.3 August 2005 CCMB-2005-08-001 (December 2005 Translation Version 1.0, Information-technology Promotion Agency Japan, Security Center, Information Security Certification Office)
 - Common Criteria for Information Technology Security Evaluation Part 2: Security Functional Requirements Version 2.3 August 2005 CCMB-2005-08-002 (December 2005 Translation Version 1.0, Information-technology Promotion Agency Japan, Security Center, Information Security Certification Office)
 - Common Criteria for Information Technology Security Evaluation Part 3: Security Assurance Requirements Version 2.3 August 2005 CCMB-2005-08-003 (December 2005 Translation Version 1.0, Information-technology Promotion Agency Japan, Security Center, Information Security Certification Office)
 - CCMB Interpretations - 0512 (December 2005 Information-technology Promotion Agency Japan, Security Center, Information Security Certification Office)

1.4. ST Overview

bizhub C550, bizhub C451, ineo⁺ 550, ineo⁺ 451 is Konica Minolta Business Technologies, Inc. digital MFP comprised by selecting and combining copy, print, scan and FAX functions. (Hereafter, “MFP” as all these generic names) . The target of evaluation (TOE) of this Security Target (ST) is the “bizhub C550, bizhub C451, ineo⁺ 550, ineo⁺ 451,” that controls the entire operation of MFP, including the operation control processing and the image data management that are accepting from the panel of the main body of MFP or through the network. This ST explains the security functions that are realized by the TOE.

TOE offers the protection from exposure of the highly confidential document stored in the MFP. Moreover, TOE can encrypt the image data written in HDD for the danger of taking HDD that is the medium that stores the image data in MFP out illegally by installing the encryption board which is the option parts of MFP. Besides, TOE has the deletion method to follow various overwrite deletion standards. It deletes all the data of HDD completely and it contributes to the prevention of the divulging information of the organization that uses MFP by using the method at the time of abandonment or the lease returns.

This ST is the documentation for describing the necessity and sufficiency of these TOE Security Functions.

2. TOE Description

2.1. TOE Type

The bizhub C550/bizhub C451/ineo⁺ 550/ineo⁺ 451 Control Software that is the TOE is an embedded software product that controls the operation of whole MFP overall in the flash memory on the MFP controller.

2.2. Environment for the usage of MFP

Figure 1 shows the expected general environment for the usage of MFP equipped with TOE. Moreover, the matters, assumed in the environment for the usage, show by a run of the item below

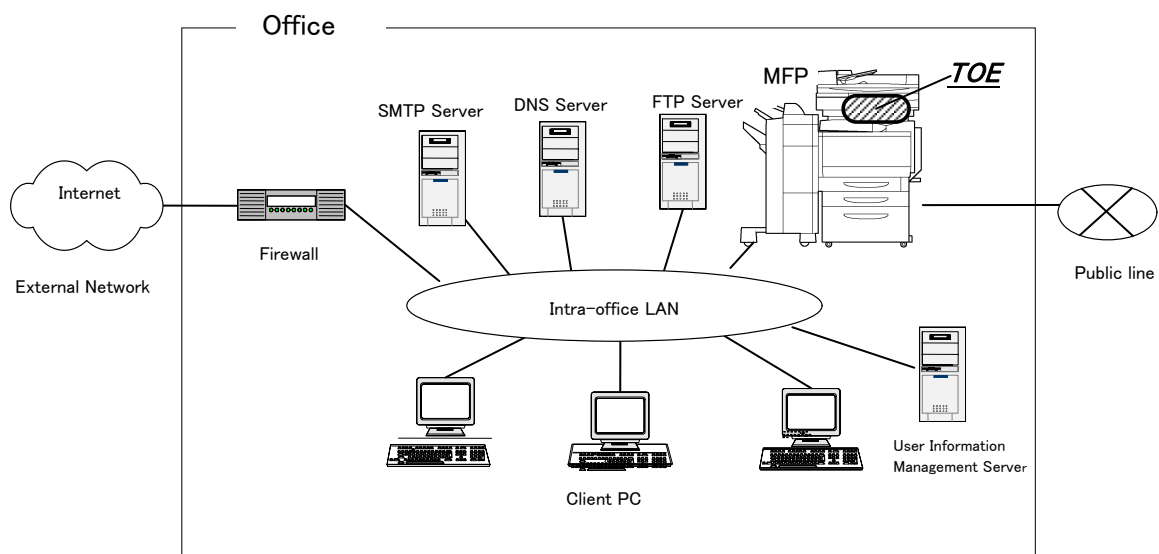


Figure 1 An example of the expected environment for usage of the MFP

- The intra-office LAN exists as a network in the office.
- The MFP connects to the client PCs via the intra-office LAN, and has mutual data communication.
- When the SMTP server or FTP server are connected to the intra-office LAN, the MFP can carry out data communication with these. (Need the DNS Service when setting the Domain name of SMTP Server or FTP Server)
- The case, which is unifying management of the user ID and the user password in the server, also assumes. In this case, TOE can control the access to the MFP by using the user registration information in the user information management server.
- When the intra-office LAN connects to an external network, measures such as connecting via a firewall are taken, and an appropriate setup to block access requests to the MFP from the external network is carried out.
- The intra-office LAN provides a network environment that cannot be intercepted by the office operation including using the switching hub and installing the wiretapping detector.
- The public line connected with MFP is used to communicate with the FAX and the remote support function.

2.3. Operation Environment of the TOE

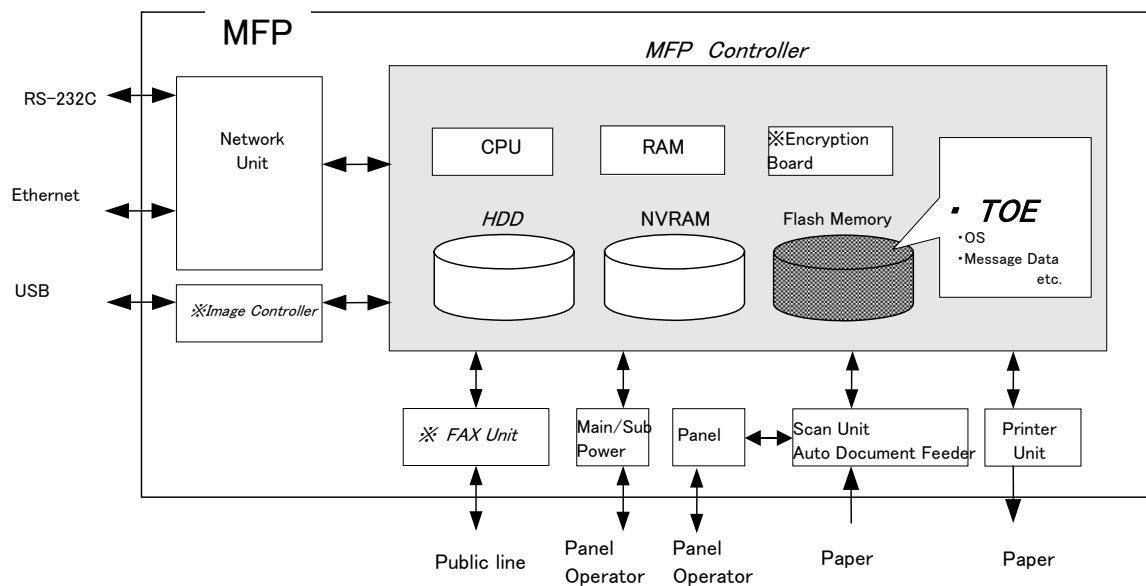


Figure 2 Hardware composition that relates to TOE

Figure 2 shows the structure of the hardware environment on the MFP that TOE needs for the operation. TOE exists on the flash memory on the MFP controller which builds in the body of the MFP and is loaded and run on the RAM.

The following explains about the unique hardware on the MFP controller, the hardware having the interface to the MFP controller, and the connection by using RS-232C, shown in Figure 2.

- Flash memory

Storage medium that stores the object code of the “MFP Control Software” that is the TOE. Additionally, it stores the message data of each country’s language to display the response accessed through the panel and network, OS (VxWorks), and so on.

- HDD

Hard disk drive of 60GB in capacity. It is utilized besides the image data is stored as a file, temporarily image data with such as extension conversion, and as an area where the transmission address data kept.

As a feature function, the security function (HDD lock function) is installed, being possible to set the password and not being possible to read and write unless it agrees to the password. Furthermore, when the frequency of uniformity of it becomes unsuccessful in password collation, the function is also ready to lock the password collation function.

- NVRAM

Nonvolatile Memory. The memory medium that stores various setting values needed for the operation of the MFP used for processing of TOE.

- Encryption Board (* Option parts)
The hardware-based cryptographic function, which is the integrated circuit for encryption, is installed in order to encipher all data to be written in HDD. It is not pre-installed in MFP as standard for convenience' sake of a sale, but is sold as an optional part.
- Panel
The exclusive control device for the operation of the MFP equipped with the touch panel of a liquid crystal monitor, ten-key, start key, stop key, screen switch key, etc.
- Main power supply
The power switch for activating MFP
- Network Unit
The interface device to connect to the Ethernet. It supports 10BASE-T, 100BASE-TX and Gigabit Ethernet.
- USB
The Port to print with local connection. It has interface connected directly to MFP controller.
- Image Controller (* Option parts)
The controller for Fiery etc. that be connected to MFP controller with Video bus.
- FAX Unit (* Option parts)
A device that is used for the communication for sending and receiving FAX and for the remote diagnosis function (described later) via public line. According to the circumstances in sales, it is sold as the option part and is not attached on the MFP.
- Scan Unit/ An automatic manuscript feeder
The device that scans images and photos from a paper and converts them into the digital data.
- Printer Unit
The device that actually prints the converted image data for printing when demanded to print by the MFP controller.
- RS-232C
The serial can be connected through the D-sub9 pin. When breaking down, the maintenance function can be used through this. In addition, it can utilize a remote diagnostic function (later description) to connect with the modem connected with the public circuit.

2.4. Role of the TOE User

The roles of the personnel that relate to the use of the MFP with the TOE are defined as follows.

- User

MFP's user who is registered into MFP. (In general, the employee in the office is assumed.)

- Administrator

MFP's user who carries out the management of the operation of MFP. An administrator performs the operation management of MFP and the management of user. (In general, it is assumed that the person elected from the employees in the office plays this role.)

- Service Engineers

A user who performs management of maintenance for the MFP. Service Engineer performs the repair and adjustment of MFP. (In general, the person in charge at the sales companies that performs the maintenance service of MFP and is in cooperation with Konica Minolta Business Technologies Inc. is assumed.)

- Person in charge at the Organization that uses the MFP

A person in charge at the organization that manages the office where the MFP is installed. This person assigns an administrator who carries out the management of the operation of the MFP.

- Person in charge at the Organization that manages the Maintenance of the MFP

A person in charge at the organization that carries out management of the maintenance for the MFP. This person assigns service engineers who perform the maintenance management for the MFP.

Besides this, though not a user of TOE, a person who goes in and out the office are assumed as an accessible person to TOE.

2.5. Functions provided by the TOE

A User uses a variety of functions of the TOE from the panel and a client PC via the network. The following explains typical functions, such as the basic function, the user box function to manage the image files stored, the user identification and authentication function, the administrator function manipulated by administrator, the service engineer function manipulated by service engineer, and the function operated in the background without user's awareness.

2.5.1. Basic Function

In MFP, a series of function for the office work concerning the image such as copy, print, scan, and fax exists as a basic function, and TOE performs the core control in the operation of these functions. It converts the raw data acquired from the external device of the MFP controller into the image file, and registered in RAM and HDD. (After two or more conversion processing is done, the compression conversion is done as for the print image file from PC.) The image file which has been compressed is decompressed into data for the print or for the transmission, and is transmitted to the device outside of the MFP controller concerned.

Operations of copy, print, scan, and fax are managed by the unit of job, and can be changed the operation order, can be modified the finishing if it's a printing job, and can be cancelled the

operation, by the command from the panel.

The following is the functions related to the security in the basic function.

- Secure Print Function

When the Secure Print password is received with the printing data, the image data is stored as the standby status. And the print command and password input from the panel allows printing.

This function, in the printing operation by the PC, removes the possibility that other users stole a glance at the printing of high-leveled confidential data and lost it into the other printings.

2.5.2. User Box Function

The directory named “user box” can be created as an area to store the image file in HDD. Three types of user box exist; the first is the personal user box which a user possesses, the second is the public user box which the registered user making a group within a certain number uses jointly and the third is the group box which the users belong to same account uses jointly. As for the personal user box, the operation is limited only for the user who owns it, the public user box performs access control by sharing a password set to the user box among users and group box, the operation is limited only for the user who the use of the account is permitted.

TOE processes the following required operation, against the user box or the image file in a user box for an operation requests that is transmitted from the panel or the network unit through a network from a client PC.

- Print, transmission, and download from client PC, of image file in a user box
 - The encryption of box file is possible in the E-mail that is one of the transmission methods.
- Deletion of the image file in the user box, and move and copy to other user boxes
- Storage period setting of image file in user box (Delete automatically after the period passes.)
- Change of user box name, change of the password, and deletion of user box, etc.
- Attribute setting of user box (classification change of a personal user box , a public user box and a group box)

2.5.3. User Authentication Function

TOE can limit the user who uses MFP. When accessing it through the panel or the network, TOE performs the identification and authentication that the user is permitted to use the MFP by applying the user password and user ID. When the identification and authentication succeeds, TOE permits the user the use of the basic function and the user box function, etc.

Several types of the following are supported in the method of the user authentication.

- ① Machine authentication

A method to authenticate on MFP by registering a user ID and a user password into HDD on MFP controller.

- ② External server authentication

A method to authenticate with processing the authentication on MFP by using the user ID

and the user password that are registered on the user information management server which is connected by the intra-office LAN without managing the user ID and user password on the MFP side. Though two or more methods named Active Directory¹, NTLM¹, and NDS are supported, the method of the external server authentication assumed in this ST is applied only the case with Active Directory.

2.5.4. Account Authentication Function

TOE can manage the MFP users by grouping them into Account unit. The methods of Account Authentication are as follows.

- ① Method synchronized with User Authentication
The user is set Account ID which he belongs to beforehand, and the user is related to account ID of belonging account when user is certified.
- ② Method not synchronized with User Authentication
When the certification is done by the account password set to each account ID, the user is related to the concerned account ID.

2.5.5. Administrator Function

TOE provides the functions such as the management of user boxes, management of user information at the time of MPF authentication and management of various settings of the network, image quality, etc in the administrator mode that only authenticated administrator can manipulate.

The following shows the function related to the security.

- The user registration management
 - Registration or change in user ID and user password, and deletion of a user.
- The account registration management
 - Registration or change in account ID and account password.
- Management of user box settings
 - Registration or change in user box password, and management of user attributes
- Operation setting of automatic system reset
 - Setting of the function that logs out automatically when the setting time passed.
- Management of network setting
 - Connection setting of the intra-office LAN (setting of DNS server)
 - SMTP setting (setting of SMTP server utilized by E-mail transmission)
 - IP address, NetBIOS name and AppleTalk printer name etc.
- Backup or restore function of NVRAM and HDD
 - It is performed through the network by using an application exclusive use for the management installed in the client PC.
- Complete overwrite deletion function of HDD
 - There is the data deletion method conformed to various military standards.

¹ A method of directory service that Windows Server 2000 (after it) offers to consolidate user information in network environment of Windows platform.

¹ Abbreviation of NT LAN Administrator. Authentic method used in directory service that Windows NT offers to consolidate user information in network environment of Windows platform.

- When it's started, in conformity with a set method, the overwrite deletion is executed for all area of HDD.
- Format function of HDD
 - A logical format is executable.

The followings are the operation setting function related especially to the behavior of the security function.

- Method setting of a user authentication function
 - Select the machine authentication, the external server authentication, or the user authentication stop.
 - Combination with Account Authentication is set up. (Method synchronized with User Authentication, Method not synchronized with User Authentication)
- User: Setting of access by PUBLIC
 - Select the permission and prohibition of MFP utilization of the user who is not identified by user ID.
- Setting of a password policy function
 - Select ON or OFF for the function to check the several conditions of the password, such as the valid number of digits for the various passwords, etc.
- Setting of the authentication method of secure print and the prohibit function of authenticating operations.
 - There are the mode that the authentication operation prohibition function operates for the authentication of the secure print, and the mode not done.
 - The operation mode of the function that the failure authentication in each authentication function detects the failure synchronizes, too.
 - Selecting the above-mentioned operational mode
- Setting of the network setting modification function by SNMPv1 and v2.
 - Select the permission or the prohibition of the modification operation function of MIB by SNMPv1 and v2
- Setting of HDD lock function
 - Selecting ON or OFF.
 - Register or change the HDD lock password when ON is selected.
- Setting of encryption function (* only when the encryption board installed)
 - Selecting ON or OFF.
 - Register or change the Encryption passphrase when ON is selected.
- Setting of user box collective management function
 - Select the permission or the prohibition for the user box collective management function.
- Setting of the print capture function
 - A function to verify the print data received by MFP when print function breaks down.
 - Selecting ON or OFF for the above-mentioned function.
- Setting of network setting management reset function
 - A network setting management reset function resets a series of items in a factory default.
 - Selecting permission or prohibition for the above-mentioned function.
- Setting of Trusted Channel (SSL/TLS encryption communication) Function
 - Create or import SSL/TLS server certificate.
 - Setting of encryption method that is used for communication.

- Setting of Transmission address data
 - Setting of address or method that is used for box file transmission etc.
 - Import S/MIME certificate
 - Setting of encryption method that is used for data encryption.

2.5.6. Service Engineer Function

TOE provides a management function of administrator and a maintenance function, such as adjusting the device for Scan/Print etc, within the service mode that only a service engineer can operate. The following shows the functions related to the security.

- Modification function of administrator password

The followings are the operation setting function related especially to the behavior of the security function.

- Authentication setting of the service engineer with the CE² password.
 - Select ON or OFF.
- Setting of remote diagnostic function (later description)
 - Able to select permission or prohibition.
- Setting of a TOE update function via Internet
 - Able to select permission or prohibition.
- Setting of maintenance function
 - Able to select permission or prohibition.
- The format function of HDD
 - A logical format and a physical format are executable.
- Installation setting of HDD
 - An explicit installation setting is necessary to use HDD as a data storage area.
 - When the installation setting done, a logical format is executed.
- Initialization function
 - The various setting values that the user or the administrator has set and the data that the user has stored are deleted.

2.5.7. Other Functions

TOE provides the functions that run background without awareness of the user and the updating function of TOE. The following explains the major functions.

- ① Encryption key generation function
When the encryption board, an optional product, is installed in MFP controller, the encoding and decoding is processed on the encryption board due to the reading and writing data in HDD. (TOE does not process the encryption and description itself.)
The operation setting of this function is performed by the administrator function. When it operates, TOE generates the encryption key by the encryption passphrase that was entered

²Abbreviation of Customer Service engineer

on the panel.

② HDD Lock Function

HDD has the HDD lock function as measure against the illegal taking out, when the password is set.

The administrator function does the operation setting of this function. As for the starting operation of MFP, the access to HDD is permitted by the matching of the HDD lock password set to the HDD and the one set on the MFP. (Even if HDD is taken out, it is impossible to use it excluding the MFP that the concerned HDD installed.)

③ Remote diagnostic function

Making use of several connected systems such as E-mail, and a modem connection through a FAX public line mouth or a RS-232C, in communication with support center of MFP produced by Konica Minolta business technologies Inc., it manages the state condition of MFP and the machinery information such as frequency of printing. In addition, if necessary, appropriate service (shipment of an additional toner, the account claim, dispatch of the service engineer due to the failure diagnosis, etc.) is provided.

④ Updating function of TOE

TOE facilitated with the function to update itself. As for the update means, there are a method that exists as one of items of remote diagnostic function, a method that downloads from FTP server through Ethernet (TOE update function via Internet), and a method that performs the connection of the Compact Flash memory medium.

⑤ Encryption Communication function

TOE can encrypt the data transmitted from PC to MFP, and the data received by download from MFP by using SSL/TLS.

The operation setting of this function is performed by the administrator function.

⑥ S/MIME certificate automatic registration function

It is the function to register the certificate for S/MIME (conforms to ITU-T X.509) with each transmission address automatically. When a certificate is attached in received e-mail, MFP recognizes user ID according to the information of e-mail header, and registers the certificate as certificate of the same user ID.

2.5.8. Enhanced Security Function

Various setting functions related to the behavior of the security function for the Administrator function and the Service engineer function can be set collectively to the secure values by the operation settings of the “Enhanced Security Function”. Each value set is prohibited changing itself into the vulnerable one individually. As the function that does not have a setting function of the operation individually, there is the reset function of the network setting and the update function of TOE through the network, but the use of these functions is prohibited.

The following explains the series of the setting condition of being the enhanced security function active. In order to activate the enhanced security function, the prerequisite is required that an

administrator password and a CE password should be set along with the password policy.

- Setting of user identification and authentication function
: Valid (Either the machine authentication, or the external server authentication are available)
- User : Setting of access of PUBLIC : Prohibit
- Setting of a service engineer authentication function
: Valid
- Setting of password policy function : Valid
- Setting of secure print authentication method
: Authentication operation prohibition function effective method (In conjunction with it, it becomes in the state of the panel lock for five seconds at the time of the authentication failure in the panel. And it becomes the account lock (Failure frequency threshold: 1-3 times) as well.)
- Setting of user box collective management function
: Prohibit
- Setting of the network setting modification function with SNMPv1 and v2
: Prohibit
- Setting of HDD lock function : Valid
- Setting of Encryption function : Valid
- Setting of print capture function : Prohibit
- Setting of maintenance function : Prohibit
- Remote diagnostic function : Prohibit
- Network setting management reset function
: Prohibit
- TOE update function via Internet : Prohibit
- Setting function of transmission address data by user
: Prohibit
- Operation setting of Trusted Channel function
: Valid

3. TOE Security Environment

This chapter will describe the concept of protected assets, assumptions, threats, and organizational security policies.

3.1. Protected Assets

Security concept of TOE is “the protection of data that can be disclosed against the intention of the user”. As MFP is generally used, the following image file in available situation becomes the protected assets.

- Secured print file(image file registered by secured print)
- User Box file(image file stored in the personal user box and public user box)

As for a image file of a job kept as a wait state by activities of plural jobs, and a image file of a job kept that prints the remainder of copies becoming as a wait state for confirmation of the finish, and other than the image file dealt with the above-mentioned is not intended to be protected in the general use of MFP, so that it is not treated as the protected assets.

In the print of the secure print file and the transmission of the user box file, making in the preparation for the threat thought when illegal MFP or mail server is connected by any chance, the setting of MFP (IP address etc.) requires not to be modified illegally. Therefore, the setting of MFP (IP address etc.) is considered as subsidiary protected assets.

On the other hand, when the stored data have physically been separated from the jurisdiction of a user, such as the use of MFP ended by the lease return or being disposed, or the case of an HDD theft, a user has concerns about leak possibility of every remaining data. Therefore, in this case, the following data files become protected assets.

- Secure Print File
- User Box File
- On Memory Image File
 - Image file of job in the wait state
- Stored Image File
 - Stored image files other than secure print file and user box file
- Remaining Image File
 - The file which remains in the HDD data area that is not deleted only by general deletion operation (deletion of a file maintenance area)
- File related to the Image
 - Temporary data file generated in print image file processing
- Transmission Address Data File
 - File including E-mail address and telephone numbers that become the destination to transmit an image.

3.2. Assumptions

The present section identifies and describes the assumptions for the environment for using the TOE.

A.ADMIN (Personnel conditions to be an administrator)

Administrators, in the role given to them, will not carry out a malicious act during the series of permitted operations given to them.

A.SERVICE (Personnel conditions to be a service engineer)

Service engineers, in the role given to them, will not carry out a malicious act during series of permitted operations given to them.

A.NETWORK (Network connection conditions for MFP)

- The intra-office LAN where the MFP with the TOE will be installed is not intercepted.
- When the intra-office LAN where the MFP with the TOE will be installed is connected to an external network, access from the external network to the MFP is not allowed.

A.SECRET (Operational condition about secret information)

Each password and encryption passphrase does not leak from each user in the use of TOE.

A.SETTING (Operational setting condition of Enhanced Security function)

MFP with the TOE is used after enabling the enhanced security function.

A.SERVER (Management condition of the user information management server connected to the intra-office LAN)

When the external server authentication is used for the user authentication method, the user information management server that is connected with the intra-official LAN installing MFP with TOE are performed appropriately the management of the account, access control and patch application, etc.

3.3. Threats

In this section, threats that are expected during the use of the TOE and the environment for using the TOE are identified and described.

T.DISCARD-MFP (Lease-return and disposal of MFP)

When the leaser returned or the discarded MFP were collected, secure print file, a user box file, on memory image file, the stored image file, the remaining image file, the image-related file, the transmission address data file, and the set various passwords can leak by the person with malicious intent taking out and analyzing an HDD in MFP.

T.BRING-OUT-STORAGE (An unauthorized carrying out of HDD)

- A secure print file, a user box file, a on memory image file, a stored image file, a remaining image file, an image-related file, a transmission address data file, and the set-up various

passwords can leak by a person or a user with malicious intent illegally taking out and analyzing an HDD in MFP.

- A person or a user with malicious intent illegally replaces an HDD in MFP. In the replaced HDD, new files of the secure print file, a user box file, on memory image file, a stored image file, a remaining image file, an image related file, a transmission address data file and set various passwords are accumulated. A person or a user with malicious intent takes out and analyzes the replaced HDD and image files leak.

T.ACCESS-PRIVATE-BOX (Unauthorized access to the personal user box which used a user function)

Exposure of the user box file when a person or a user with malicious intent accesses the user box where other user owns, and downloads, prints and transmits the user box file (E-mail transmission, FTP transmission, fax transmission, and SMB³ transmission).

T.ACCESS-PUBLIC-BOX (Unauthorized access to public box which used a user function)

Exposure of the user box file when a person or the user with malicious intent accesses the public user box which is not permitted to use, and downloads, prints, transmits (E-mail transmission, FTP transmission, FAX transmission and SMB transmission) and removes and copies to the other user box the user box file.

T.ACCESS-GROUP-BOX (Unauthorized access to the group user box which used a user function)

Exposure of the user box file when a person or the user with malicious intent accesses the group user box which the account where a user does not belong to owns, and downloads, prints, transmits (E-mail transmission, FTP transmission, FAX transmission and SMB transmission) and removes and copies to the other user box the user box file.

T.ACCESS-SECURE-PRINT (Unauthorized access to the secure print file which used a user function)

Exposure of the secure print file when a person or the user with malicious intent prints the secure print file which is not permitted to use.

T.ACCESS-NET-SETTING (An unauthorized change of network setting)

- Malicious person or user changes the network settings that is related to the transmission of a user box file. Even an addressee is set precisely, a user box file is transmitted (the E-mail transmission or the FTP transmission) to the entity which a user does not intend to, so that a user box file is exposed.
 - < The network setting which is related to user box file transmission >
 - Setting related to the SMTP server
 - Setting related to the DNS server
- Malicious person or user changes the network setting which set in MFP to identify MFP itself where TOE installed, by setting to the value of the entity such as another illegal MFP from the value of MFP (NetBIOS name, AppleTalk printer name, IP address etc) that TOE is originally installed, so that secure print file is exposed.

³Abbreviation of Server Message Block. Protocol to realize the file sharing or printer sharing on Windows.

T.ACCESS-SETTING (An unauthorized change of a function setting condition related to security)

The possibility of leaking user box file and secure print file rises because malicious person or user changes the settings related to the enhanced security function.

T.BACKUP-RESTORE (Unauthorized use of Backup function and restoration function)

The user box file and the secure print file can leak by malicious person or user using the backup function and the restoration function illegally. Also highly confidential data such as password can be exposed and each setting values are falsified.

3.4. Organizational Security Policies

Recently, there are a lot of organizations that demand security of network in office.

Although a threat of wiretapping activities etc. in intra-office LAN is not assumed in this ST, TOE security environment that corresponds to the organization that demanded security measures in intra-office LAN is assumed.

Particularly, correspond to the secure communication of Protected Assets considering the confidentiality showed in the preceding.

The security policies applied in the organization that uses TOE are identified and described as follows.

P.COMMUNICATION-DATA (secure communication of image file)

Highly confidential image file (secure print file, user box file) which transmitted or received between IT equipment is communicated via trusted pass to the correct destination, or has to be encrypted.

4. Security Objectives

In this chapter, in relation to the assumptions, the threats, and the organizational security policy identified in Chapter 3, the required security objectives policy for the TOE and the environment for the usage of the TOE are described by being divided into the categories of the security objectives for the TOE and the security objectives for the environment, as follows.

4.1. Security Objectives for the TOE

In this section, the security objectives for the TOE is identified and described.

O.REGISTERED-USER (Utilization of registered user)

TOE permits only the registered user to use the MFP installing TOE.

O.PRIVATE-BOX (Personal user box access control)

- TOE permits only a user to use the user function of the personal user box which this user owns.
- TOE permits only a user to use the user function of the use box file in the personal user box which this user owns.

O.PUBLIC-BOX (Public user box access control)

- TOE permits the registered user the reading operation of the public user box.
- TOE permits the user function of the public user box only to the user who is permitted the use of this public user box.
- TOE permits the user function of the user box file in the public user box only to the user who is permitted the use of this public user box.

O.GROUP-BOX (Group user box access control)

- TOE permits the user function of the group user box which this account owns only to the user who is permitted the use of this account.
- TOE permits the user function of the user box file in the group user box which this account owns only to the user who is permitted the use of this account.

O.SECURE-PRINT (Secure print file access control)

TOE permits the print of the secure print file only to the user who is permitted the use of this secure print file.

O.CONFIG (Access limitation to management function)

TOE permits only the administrator the operation of the following functions.

- The setting function related to the SMTP server
- The setting function related to the DNS server
- The setting function related to the address of MFP
- Backup function
- Restoration function

- The setting function of Trusted Channel function setting data
- The setting function of certification, transmission address data, etc used for S/MIME function.

TOE permits the operation of the following functions only to the administrator and the service engineer.

- The function related to the setting of Enhanced Security function

O.OVERWRITE-ALL (Complete overwrite deletion)

TOE overwrites all data regions of HDD in MFP by using the deletion data, and makes all the image data of restoration impossible. In addition, TOE offers a function to initialize a setting value such as the highly confidential password on NVRAM (Administrator Password, SNMP Password, HDD Lock Password, and Encryption Passphrase) that is set by a user or an administrator.

O.CRYPT-KEY (Encryption key generation)

TOE generates the encryption key to encrypt and store all data including the image file written in HDD in MFP.

O.CHECK-HDD (Validity confirmation of HDD)

TOE verifies that correct HDD is installed.

O.TRUSTED-PASS (The use of Trusted Channel)

TOE offers the function that communicates via Trusted Channel the following image file which is transmitted and received between MFP and PC.

< Image file transmitted from MFP to PC >

- User box file

< Image file transmitted from PC to MFP >

- Image file that will be stored as user box file
- Image file that will be stored as secure print file

O.CRYPTO-MAIL (The use of encrypted mail)

TOE offers the function that encrypts and transmits the user box file transmitted from MFP to the correct destination with e-mail.

4.2. Security objectives for the environment

In this section, the security objectives for the environment, in the environment of the usage of the TOE, is identified and described being divided into the IT environment security objectives and the non-IT environment security objectives.

4.2.1. IT environment security objectives

OE.CRYPT (Encryption of HDD)

An encryption board installed in MFP encrypts all data including an image file to be written in HDD inside MFP and then stores it to an HDD.

OE.LOCK-HDD (Access control of HDD)

HDD installed in MFP accepts reading out of data only from the MFP where this HDD is installed.

OE.FEED-BACK (Feedback of password)

The application of a browser etc. used by client PC to access MFP offers the appropriate feedback protected for input user password, user box password, account password and administrator password.

4.2.2. Non-IT environment security objective

OE-N.ADMIN (A reliable administrator)

The person in charge in the organization who uses MFP will assign a person who can faithfully execute the given role during the operation of the MFP with TOE as an administrator.

OE-N.SERVICE (The service engineer's guarantee)

- The person in charge in the organization that carries out the maintenance management of the MFP educates a service engineer in order to faithfully carry out the given role for the installation of the TOE, the set up of TOE and the maintenance of the MFP with TOE.
- The administrator observes the maintenance work of MFP with TOE by a service engineer.

OE-N.NETWORK (Network Environment in which the MFP is connected)

- The person in charge in the organization who uses MFP carries out the tapping prevention measures by setting the cipher communications equipment and the tapping detection equipment to the LAN of the office where MFP with TOE is installed.
- The person in charge in the organization who uses MFP carries out the measures for the unauthorized access from the outside by setting up the equipment such as the firewall to intercept the access from an external network to MFP with TOE.

OE-N.SECRET (Appropriate management of confidential information)

The administrator has the user implement the following operation.

- Keep the user password and secure print password confidential.
- Keep the user box password and account password confidential between the user who commonly utilizes it.
- Should not set the value that can be guessed for the user password, secure print password and the user box password.
- The user password and the user box password should be properly changed.
- When the administrator changes the user password or the user box password, make the user to change them promptly.

The administrator executes the following operation.

- Should not set the value that can be guessed for the administrator password, the account password, SNMP password, the HDD lock password and encryption passphrase.
- Keep the administrator password, account password, the SNMP password, the HDD lock password, and the encryption passphrase confidential.
- The administrator password, the account password, the SNMP password, the HDD lock password, and the encryption Passphrase should be properly changed.

The service engineer executes the following operation.

- Should not set the value that can be guessed for the CE password.
- Keep the CE password confidential.
- The CE password should be properly changed.
- When the service engineer changes the administrator password, make the administrator to change it promptly.

OE-N.SERVER (Secure user information management server)

The person in charge in the organization who uses MFP manages the user information management server secure to the user information management server such as account management, application of the patch done, and execution of the access control appropriately made.

OE-N.SESSION (Termination of session after operation)

The administrator has the user implement the following operation.

- After the operation of the secure print file and the operation of user box and user box file end, the logoff operation is performed.

The administrator executes the following operation.

- After the operation of the various function in administrator mode ends, the logoff operation is performed

The service engineer executes the following operation.

- After the operation of the various function in service mode ends, the logoff operation is performed.

OE-N.SETTING-SECURITY (Operation setting of Enhanced Security function)

The administrator makes the setting of the enhanced security function effective for the operation of TOE.

5. IT Security Requirements

In this chapter, the TOE security requirements and IT environment security requirements are described.

<Definition of Label>

The security function requirements required for the TOE and IT environment are described. Those regulated in CC Part 2 will be directly used for the functional requirements components, and the same labels will be used as well. The new additional requirement which is not described in CC part 2 is newly established and identified with the label that doesn't compete with CC part 2. In addition, [E] is added at the end of a label of a requirement needed in IT environment in order to state it clearly whether an object of each requirement is TOE or IT environment.

< Method of specifying security function requirement "Operation" >

In the following description, when items are indicated in "italic" and "bold," it means that they are assigned or selected. When items are indicated in "italic" and "bold" with parenthesis right after the underlined original sentences, it means that the underlined sentences are refined. A number in the parentheses after a label means that the functional requirement is used repeatedly. (The number to indicate the repetition is added with separating respectively by TOE requirement and IT environmental requirement.)

<Method of clear indication of dependency>

The label in the parentheses "(") in the dependent section indicates a label for the security functional requirements used in this ST. When it is a dependency that is not required to be used in this ST, it is described as "N/A" in the same parentheses.

5.1. TOE Security Requirements

5.1.1. TOE Security Function Requirements

5.1.1.1. Cryptographic Support

| FCS_CKM.1 | | Cryptographic key generation | |
|--|---|--|--|
| FCS_CKM.1.1 | | | |
| The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm [assignment: <i>cryptographic key generation algorithm</i>] and specified cryptographic key sizes [assignment: <i>cryptographic key sizes</i>] that meet the following: [assignment: <i>list of standards</i>]. | | | |
| [assignment: <i>list of standards</i>] : | | | |
| Listed in / <i>Table1 Cryptographic key generation</i> Relation of Standards·Algorithm·Key sizes/ | | | |
| [assignment: <i>cryptographic key generation algorithm</i>] : | | | |
| Listed in / <i>Table1 Cryptographic key generation</i> Relation of Standards·Algorithm·Key sizes/ | | | |
| [assignment: <i>cryptographic key sizes</i>] : | | | |
| Listed in / <i>Table1 Cryptographic key generation</i> Relation of Standards·Algorithm·Key sizes/ | | | |
| Hierarchical to | : | No other components | |
| Dependencies | : | FCS_CKM.2 or FCS_COP.1 (FCS_COP.1, FCS_COP.1[E]) , FCS_CKM.4 (N/A) , FMT_MSA.2 (N/A) | |

Table 1 Cryptographic Key Generation Relation of Standards·Algorithm·Key sizes

| List of Standards | Cryptographic Key Generation Algorithm | Cryptographic Key sizes |
|--|--|--|
| <i>FIPS 186</i> | <i>Pseudorandom number Generation Algorithm</i> | <ul style="list-style-type: none"> • 128 bit • 192 bit • 168 bit • 256 bit |
| <i>KonicaMinolta Encryption specification standard</i> | <i>KonicaMinolta HDD Encryption Key Generation Algorithm (SHA-1)</i> | 128 bit |

| FCS_COP.1 Cryptographic operations | |
|---|---|
| FCS_COP.1.1 | |
| The TSF shall perform [assignment: <i>list of Cryptographic operations</i>] in accordance with a specified cryptographic algorithm [assignment: <i>cryptographic algorithm</i>] and cryptographic key sizes [assignment: <i>cryptographic key sizes</i>] that meet the following: [assignment: <i>list of standards</i>]. | |
| [assignment: <i>list of standards</i>] : <i>Listed in 'Table2 Cryptographic operation Relation of Algorithm·Key sizes·Cryptographic operation/</i> | |
| [assignment: <i>cryptographic algorithm</i>] : <i>Listed in 'Table2 Cryptographic operation Relation of Algorithm·Key sizes·Cryptographic operation/</i> | |
| [assignment: <i>cryptographic key sizes</i>] : <i>Listed in 'Table2 Cryptographic operation Relation of Algorithm·Key sizes·Cryptographic operation/</i> | |
| [assignment: <i>list of cryptographic operation</i>] : <i>Listed in 'Table2 Cryptographic operation Relation of Algorithm·Key sizes·Cryptographic operation/</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ITC.1 or FCS_CKM.1 (FCS_CKM.1 (only a part of events)), FCS_CKM.4 (N/A), FMT_MSA.2 (N/A) |

Table 2 Cryptographic Operation Relation of Algorithm·Keysizes·Cryptographic Operation

| List of standards | Cryptographic algorithm | Cryptographic key sizes | Contents of Cryptographic operation |
|---------------------|-------------------------|--|--|
| <i>FIPS PUB 197</i> | <i>AES</i> | <ul style="list-style-type: none"> • 128 bit • 192 bit • 256 bit | <i>Encryption of S/MIME transmission data</i> |
| <i>SP800-67</i> | <i>3-Key-Triple-DES</i> | • 168 bit | <i>Encryption of S/MIME transmission data</i> |
| <i>FIPS 186-1</i> | <i>RSA</i> | <ul style="list-style-type: none"> • 1024 bit • 2048 bit • 3072 bit • 4096 bit | <i>Encryption of cryptographic key to encrypt S/MIME transmission data</i> |

5.1.1.2. User data protection

| | |
|--|------------------------------|
| FDP_ACC.1[1] | Subset access control |
| FDP_ACC.1.1[1] | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] on [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>]. | |
| [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>] : Listed in [Table3 User box access control operational list] | |
| [assignment: <i>access control SFP</i>] : User Box access control | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACF.1 (FDP_ACF.1[1]) |

Table 3 User Box Access Control Operational List

| Subject | Object | Operational List |
|---------------------------------|----------------------|--|
| <i>A task to act for a user</i> | <i>User Box</i> | • <i>A List of user boxes</i> |
| | <i>User Box File</i> | • <i>Print</i> • <i>Transmission (E-mail transmission, FTP transmission, SMB transmission and FAX transmission)</i> • <i>Download</i> • <i>Move to other user boxes</i> • <i>Copy to other user boxes</i> • <i>Backup</i> |

| | |
|---|------------------------------|
| FDP_ACC.1[2] | Subset access control |
| FDP_ACC.1.1[2] | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] on [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>]. | |
| [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>] : Listed in [Table4 Secure print file access control operational list.] | |
| [assignment: <i>access control SFP</i>] : Secure print file access control | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACF.1 (FDP_ACF.1[2]) |

Table 4 Secure Print File Access Control: Operational List

| Subject | Object | Operational list |
|---------------------------------|---|---|
| <i>A task to act for a user</i> | <i>Secure Print File Access Control</i> | • <i>A List of Secure Print Files</i> • <i>Print</i> • <i>Back-Up</i> |

| | |
|---|------------------------------|
| FDP_ACC.1[3] | Subset access control |
| FDP_ACC.1.1[3] | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] on [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>]. | |
| [assignment: <i>list of subjects, objects, and operations among subjects and objects covered by the SFP</i>] : Listed in [Table 5 Setting management access control operational list.] | |
| [assignment: <i>access control SFP</i>] : | |

| <i>Setting management access control</i> | |
|--|----------------------------|
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACF.1 (FDP_ACF.1[3]) |

Table 5 Setting Management Access Control: Operational List

| Subject | Object | Operational list |
|---------------------------------|---|---|
| <i>A task to act for a user</i> | <ul style="list-style-type: none"> • <i>HDD Lock Password Object</i> • <i>Encryption passphrase Object</i> | <ul style="list-style-type: none"> • <i>Settings</i> |
| | <ul style="list-style-type: none"> • <i>SMTP Server Group Object</i> • <i>DNS Server Group Object</i> • <i>MFP Address Group Object</i> ⁴ | <ul style="list-style-type: none"> • <i>Settings</i> • <i>Restore</i> |

| FDP_ACF.1[1] | Security attribute based access control |
|--|--|
| FDP_ACF.1.1[1] | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] to objects based on the following: [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>]. | |
| [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>] : | |
| <p><Subject></p> <ul style="list-style-type: none"> • <i>A task to act for a user</i> | <p><Subject attributes></p> <ul style="list-style-type: none"> ⇒ • <i>User Attribute (User ID)</i> • <i>Account Name (Account ID)</i> • <i>User Box Attribute (User Box ID)</i> • <i>Administrator Attribute</i> |
| ----- | |
| <p><Object></p> <ul style="list-style-type: none"> • <i>User Box</i> • <i>User Box File</i> | <p><Object attributes></p> <ul style="list-style-type: none"> ⇒ • <i>User Attribute (User ID or Public or Account ID)</i> ⇒ • <i>User Attribute (User ID or Public or Account ID)</i> • <i>User Box Attribute (User Box ID)</i> |
| [assignment: <i>access control SFP</i>] : | |
| <i>User Box access control</i> | |
| FDP_ACF.1.2[1] | |
| The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [assignment: <i>rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects</i>]. | |
| [assignment: <i>rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects</i>] : | |
| <p><Operation control to Personal user box></p> <p><i>A task to act for a user is permitted to do the list display operation to the user box with the user attribute (user ID) of an object attribute corresponding to the user attribute (user ID) of the subject attribute.</i></p> | |
| <p><Operation control to user box file in Personal user box></p> <p><i>A task to act for a user is permitted to print, transmit (E-mail transmission, FTP transmission, SMB transmission and FAX transmission), download, move to other user boxes and copy to the other user boxes, to the user box file that have the matched user attributes (User ID) and user box attribute (user box ID) of the object attribute with the user attributes (User ID) and user box attribute (user box ID) of the subject attribute.</i></p> | |
| <p><Operation control to Group user box></p> <p><i>A task to act for a user is permitted to do the list display operation to the user box with the Account</i></p> | |

⁴The MFP address group object is a series of data concerning the address of the main body of MFP such as IP address and the Appletalk printer name.

| | |
|---|---|
| <p><i>Name (account ID) of an object attribute corresponding to the Account Name (account ID) of the subject attribute.</i></p> <p><i><Operation control to user box file in Group user box></i> <i>A task to act for a user is permitted to print, transmit (E-mail transmission, FTP transmission, SMB transmission and FAX transmission), download, move to other user boxes and copy to the other user boxes, to the user box file that have the matched the Account Name (Account ID) and user box attribute (user box ID) of the object attribute with the Account Name (Account ID) and user box attribute (user box ID) of the subject attribute.</i></p> <p><i><Operation control to Public user box></i> <i>A task to act for the user who is related to the user attribute (user ID) is permitted to do the list display operation to the user box where "Public" is set to the user attributes of the object attribute.</i></p> <p><i><Operation control to a user box file in Public user box></i> <i>A task to act for the user who is related to the user attribute (User ID) and user box attribute (user box ID) is permitted to print, transmit (E-mail transmission, FTP transmission, SMB transmission, and fax transmission), download, move to other user boxes, and copy operation to other user boxes to the user box file that "Public" is set to the user attribute of the object attribute and has matched user box attribute with the user box attribute of subject attribute.</i></p> | |
| FDP_ACF.1.3[1] | |
| The TSF shall explicitly authorize access of subjects to objects based on the following additional rules: [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects] : | |
| <ul style="list-style-type: none"> • <i>A task to act for the user that has a administrator attribute is permitted to operate displaying of user box list.</i> • <i>A task to act for the user that has a administrator attribute is permitted to operate the back-up the user box file.</i> | |
| FDP_ACF.1.4[1] | |
| The TSF shall explicitly deny access of subjects to objects based on the [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects] : | |
| <i>None</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 (FDP_ACC.1[1]) , FMT_MSA.3 (FMT_MSA.3[1]) |

| FDP_ACF.1[2] | | Security attribute based access control |
|---|---|---|
| FDP_ACF.1.1[2] | | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] to objects based on the following: [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>]. | | |
| [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>] : | | |
| <p><i><Subject></i></p> <ul style="list-style-type: none"> • <i>task substituted for a user</i> | ⇒ | <p><i><Subject attributes></i></p> <ul style="list-style-type: none"> • <i>File attributes (Secure print internal control ID)</i> • <i>User attributes (User ID)</i> • <i>Administrator attributes</i> |
| ----- | | |
| <p><i><Object></i></p> <ul style="list-style-type: none"> • <i>Secure print file</i> | ⇒ | <p><i><Object attributes></i></p> <ul style="list-style-type: none"> • <i>File attributes (Secure print internal control ID)</i> |
| [assignment: <i>access control SFP</i>] : | | |
| <i>Secure print file access control</i> | | |
| FDP_ACF.1.2[2] | | |
| The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [assignment: <i>rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects</i>]. | | |

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| [assignment: rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects] : <ul style="list-style-type: none"> • A task to act for a user who has a user attribute (user ID) is permitted to display of the list of all the secure print files. • A task to act for a user who has a user attribute (user ID) and the file attribute (the secure print internal control ID) is permitted the print operation to the secure print file that has matched the file attribute (secure print internal control ID) with the file attribute (secure print internal control ID). | |
| FDP_ACF.1.3[2] | |
| The TSF shall explicitly authorize access of subjects to objects based on the following additional rules: [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects] : A task to act for a user who has a administrator attribute is permitted to back up secure print file. | |
| FDP_ACF.1.4[2] | |
| The TSF shall explicitly deny access of subjects to objects based on the [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects] : None | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 (FDP_ACC.1[2]) , FMT_MSA.3 (FMT_MSA.3[2]) |

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| FDP_ACF.1[3] Security attribute based access control | |
| FDP_ACF.1.1[3] | |
| The TSF shall enforce the [assignment: <i>access control SFP</i>] to objects based on the following: [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>]. | |
| [assignment: <i>list of subjects and objects controlled under the indicated SFP, and for each, the SFP-relevant security attributes, or named groups of SFP-relevant security attributes</i>] : | |
| <Subject> <ul style="list-style-type: none"> • Task substituted for a user | <Subject attributes> <ul style="list-style-type: none"> • Administrator attributes • CE attributes |
| ----- | |
| <Object> <ul style="list-style-type: none"> • HDD Lock Password Object • Encryption passphrase object • SMTP server group object • DNS server group object • MFP address group object | |
| [assignment: <i>access control SFP</i>] : Setting management access control | |
| FDP_ACF.1.2[3] | |
| The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [assignment: <i>rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects</i>]. | |
| [assignment: <i>rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects</i>] : | |
| <ul style="list-style-type: none"> • A task act for a user who has a administrator attribute is permitted to set the HDD lock password object and the encryption passphrase object. • A task act for a user who has a administrator attribute is permitted to set the SMTP server group object, the DNS server group object and the MFP address group object, and to operate the restoration. • A task act for a user who has a CE attribute is permitted to set the HDD lock password object and the encryption passphrase object. | |
| FDP_ACF.1.3[3] | |
| The TSF shall explicitly authorize access of subjects to objects based on the following additional rules: [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly authorize access of subjects to objects] : None | |

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| FDP_ACF.1.4[3] | |
| The TSF shall explicitly deny access of subjects to objects based on the [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects]. | |
| [assignment: rules, based on security attributes, that explicitly deny access of subjects to objects] : None | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 (FDP_ACC.1[3]) , FMT_MSA.3 (N/A) |

5.1.1.3. Identification and authentication

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| FIA_AFL.1[1] | Authentication failure handling |
| FIA_AFL.1.1[1] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : <ul style="list-style-type: none"> • Authentication for accessing the service mode • Re-authentication for changing the CE password. | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] <i>[assignment: range of acceptable values] : an administrator configurable positive integer within 1~3</i> | |
| FIA_AFL.1.2[1] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : <Action when it is detected> <ul style="list-style-type: none"> • Log off from the authentication status of the service mode if it is, and lock the authentication function which uses the CE password. • If it's not under the authentication status, lock the authentication function which uses the CE password. <Operation for recovering the normal condition > Perform the lock release function of CE authentication by specific operation. (When CE authentication lock time passed from specific operation, the release process is performed.) | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[1]) |

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| FIA_AFL.1[2] | Authentication failure handling |
| FIA_AFL.1.1[2] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : <ul style="list-style-type: none"> • Authentication for accessing the administrator mode • Re-authentication for changing the administrator password | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] <i>[assignment: range of acceptable values] : an administrator configurable positive integer within 1~3</i> | |
| FIA_AFL.1.2[2] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : <Action when it is detected> <ul style="list-style-type: none"> • Log off from the authentication status of the administrator mode if it is, and lock the | |

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| <p><i>authentication function which uses the administrator password.</i></p> <ul style="list-style-type: none"> • <i>If it's not under the authentication status, lock the authentication function which uses the administrator password.</i> <p><Operation for recovering the normal condition ></p> <ul style="list-style-type: none"> • <i>Perform the lock release function offered within the service mode.</i> • <i>Perform the boot process of the TOE. (Release process is performed after Administrator authentication lock time by the boot process.)</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[2]) |

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| FIA_AFL.1[3] | Authentication failure handling |
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| FIA_AFL.1.1[3] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : | |
| Authentication for accessing the MIB object through SNMP | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] | |
| [assignment: range of acceptable values] : an administrator configurable positive integer within 1~3 | |
| FIA_AFL.1.2[3] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : | |
| <Action when it is detected > | |
| Deny the access to the MIB object and lock the authentication function to use SNMP password. | |
| <Operation for recovering the normal condition > | |
| <ul style="list-style-type: none"> • Perform the delete function of authentication failure frequency offered within the administrator mode. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[2]) |

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| FIA_AFL.1[4] | Authentication failure handling |
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| FIA_AFL.1.1[4] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : | |
| Authentication for accessing the TOE by user | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] | |
| [assignment: range of acceptable values] : an administrator configurable positive integer within 1~3 | |
| FIA_AFL.1.2[4] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : | |
| <Action when it is detected > | |
| Log off from the authentication status of the user if it is, and lock the authentication function for the user. | |
| <Operation for recovering the normal condition > | |
| <ul style="list-style-type: none"> • Perform the delete function of authentication failure frequency offered within the administrator mode. | |

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| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[3]) |

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| FIA_AFL.1[5] | Authentication failure handling |
| FIA_AFL.1.1[5] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : | |
| Authentication for accessing the secure print file | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] | |
| [assignment: range of acceptable values] : an administrator configurable positive integer within 1~3 | |
| FIA_AFL.1.2[5] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : | |
| <Action when it is detected> | |
| Deny the access to the secure print file and lock the authentication function for the secure print file. | |
| <Operation for recovering the normal condition> | |
| <ul style="list-style-type: none"> • Perform the delete function of authentication failure frequency offered within the administrator mode. • Reboot the TOE. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[4]) |

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| FIA_AFL.1[6] | Authentication failure handling |
| FIA_AFL.1.1[6] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>]. : | |
| Authentication for accessing the public user box | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within [assignment: range of acceptable values]] | |
| [assignment: range of acceptable values] : an administrator configurable positive integer within 1~3 | |
| FIA_AFL.1.2[6] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : | |
| <Action when it is detected> | |
| Log off from the authentication status of the user box if it is, and lock the authentication function for the concerned user box. | |
| <Operation for recovering the normal condition> | |
| <ul style="list-style-type: none"> • Perform the delete function of authentication failure frequency offered within the administrator mode. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[5]) |

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| FIA_AFL.1[7] | Authentication failure handling |
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| FIA_AFL.1.1[7] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] unsuccessful authentication attempts occur related to <i>[assignment: list of authentication events]</i> . | |
| <p>[assignment: <i>list of authentication events</i>] :</p> <ul style="list-style-type: none"> • Account authentication: Account authentication when the belonging account of the user who accesses in the synchronized method is not registered. • Account authentication: Account authentication of the user who accesses in the method not synchronized. | |
| <p>[selection: <i>[assignment: positive integer number]</i>, an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] <i>[assignment: range of acceptable values]</i> : an administrator configurable positive integer within 1~3</p> | |
| FIA_AFL.1.2[7] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall <i>[assignment: list of actions]</i> . | |
| <p>[assignment: <i>list of actions</i>] :</p> <p><Action when it is detected> <i>Lock the authentication function for the concerned account, and deny the access to the TOE by the user who permitted the use of the account.</i></p> <p><Operation for recovering the normal condition> <i>Perform the delete function of authentication failure frequency offered within the administrator mode.</i></p> | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[6]) |

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| FIA_AFL.1[8] Authentication failure handling | |
| FIA_AFL.1.1[8] | |
| The TSF shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] unsuccessful authentication attempts occur related to <i>[assignment: list of authentication events]</i> . | |
| <p>[assignment: <i>list of authentication events</i>] :</p> <ul style="list-style-type: none"> • Authentication when it accesses service mode • Authentication when it accesses administrator mode from the panel • User authentication when user accesses TOE from the panel • Account authentication when user accesses TOE from the panel • Authentication when it accesses secure print file • Authentication when it accesses Public user box from the panel | |
| <p>[selection: <i>[assignment: positive integer number]</i>, an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] <i>[assignment: positive integer number]</i> : 1</p> | |
| FIA_AFL.1.2[8] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall <i>[assignment: list of actions]</i> . | |
| <p>[assignment: <i>list of actions</i>] :</p> <p><Action when it is detected> <i>Deny all access from the panel.</i></p> <p><Operation for recovering the normal condition> <ul style="list-style-type: none"> • Automatically release the lock after 5 seconds. </p> | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[1], FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[4], FIA_UAU.2[5], FIA_UAU.2[6]) |

| FIA_ATD.1 | | User attribute definition |
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| FIA_ATD.1.1 | | |
| The TSF shall maintain the following list of security attributes belonging to individual users: [assignment: <i>list of security attributes</i>]. | | |
| [assignment: <i>list of security attributes</i>] : | | |
| <ul style="list-style-type: none"> • User box attributes (User box ID) • File attributes (Secure print internal control ID) • Account name (Account ID) | | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

| FIA_SOS.1[1] | | Verification of secrets |
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| FIA_SOS.1.1[1] | | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (Administrator Password, CE Password) meet [assignment: <i>a defined quality metric</i>]. | | |
| [assignment: <i>a defined quality metric</i>] : | | |
| <ul style="list-style-type: none"> • Number of digits: 8- digits • Character type: ASCII code (0x21 ~ 0x7E, except 0x22 and 0x2B) • Rule : ① Do not composed by only the same kind of character strings. ② Do not set the same password as the current setting. | | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

| FIA_SOS.1[2] | | Verification of secrets |
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| FIA_SOS.1.1[2] | | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (SNMP Password) meet [assignment: <i>a defined quality metric</i>]. | | |
| [assignment: <i>a defined quality metric</i>] : | | |
| <ul style="list-style-type: none"> • Number of digits: 8- digits or more • Character type: ASCII code 0x20 ~ 0x7E) | | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

| FIA_SOS.1[3] | | Verification of secrets |
|---|---|-------------------------|
| FIA_SOS.1.1[3] | | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (User Password) meet [assignment: <i>a defined quality metric</i>]. | | |
| [assignment: <i>a defined quality metric</i>] : | | |
| <ul style="list-style-type: none"> • Number of digits: 8- digits or more • Character type: ASCII code (0x20~ 0x7E) • Rule : Do not composed by only the same kind of character strings. | | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

| FIA_SOS.1[4] | | Verification of secrets |
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| FIA_SOS.1.1[4] | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (<i>HDD Lock Password, Encryption passphrase</i>) meet [assignment: <i>a defined quality metric</i>]. | |
| [assignment: <i>a defined quality metric</i>] : | |
| <ul style="list-style-type: none"> • <i>Number of digits: 20- digits</i> • <i>Character type: ASCII code (0x21 ~ 0x7E, except 0x22, 0x28, 0x29, 0x2C, 0x3A, 0x3B, 0x3C, 0x3E, 0x5B, 0x5C and 0x5D)</i> • <i>Rule : ① Do not composed by only the same kind of character strings.</i> ② <i>Do not set the same password or passphrase as the current setting.</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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| FIA_SOS.1[5] Verification of secrets | |
| FIA_SOS.1.1[5] | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (<i>Secure print password</i>) meet [assignment: <i>a defined quality metric</i>]. | |
| [assignment: <i>a defined quality metric</i>] : | |
| <ul style="list-style-type: none"> • <i>Number of digits: 8- digits</i> • <i>Character type: ASCII code (0x20 ~ 0x7E, except 0x22 and 0x2B)</i> • <i>Rule : Do not composed by only the same kind of character strings.</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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| FIA_SOS.1[6] Verification of secrets | |
| FIA_SOS.1.1[6] | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (<i>Session Information</i>) meet [assignment: <i>a defined quality metric</i>]. | |
| [assignment: <i>a defined quality metric</i>] : | |
| <i>10¹⁰ and above</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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| FIA_SOS.1[7] Verification of secrets | |
| FIA_SOS.1.1[3] | |
| The TSF shall provide a mechanism to verify that <u>secrets</u> (<i>User Box Password, Account Password</i>) meet [assignment: <i>a defined quality metric</i>]. | |
| [assignment: <i>a defined quality metric</i>] : | |
| <ul style="list-style-type: none"> • <i>Number of digits: 8- digits</i> • <i>Character type: ASCII code (0x20~ 0x7E)</i> • <i>Rule : Do not composed by only the same kind of character strings.</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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| FIA_SOS.2 TSF Generation of secrets | |
| FIA_SOS.2.1 | |
| The TSF shall provide a mechanism to generate secrets (<i>Session information</i>) that meet [assignment: <i>a</i> | |

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| <i>defined quality metric.</i> | |
| [assignment: <i>a defined quality metric.</i>] : | |
| 10¹⁰ and above | |
| FIA_SOS.2.2 | |
| The TSF shall be able to enforce the use of TSF generated secrets for [assignment: <i>list of TSF functions</i>]. | |
| [assignment: <i>list of TSF functions</i>] : | |
| <ul style="list-style-type: none"> • Administrator authentication (Access through the network) • User authentication (Access through the network) • User box authentication (Access through the network) | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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| FIA_UAU.2[1] User authentication before any action | |
| FIA_UAU.2.1[1] | |
| The TSF shall require each <u>user</u> (Service Engineer) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (Service Engineer) . | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[1]) |

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| FIA_UAU.2[2] User authentication before any action | |
| FIA_UAU.2.1[2] | |
| The TSF shall require each <u>user</u> (Administrator) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (Administrator) . | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[2]) |

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| FIA_UAU.2[3] User authentication before any action | |
| FIA_UAU.2.1[3] | |
| The TSF shall require each <u>user</u> (User) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (User) | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[3]) |

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| FIA_UAU.2[4] User authentication before any action | |
| FIA_UAU.2.1[4] | |
| The TSF shall require each <u>user</u> (User who is permitted to use secure print file) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (User who is permitted to use secure print file) | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[4]) |

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| FIA_UAU.2[5] User authentication before any action | |
| FIA_UAU.2.1[5] | |

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| The TSF shall require each <u>user</u> (<i>User who is permitted to use the public user box</i>) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User who is permitted to use the public user box</i>) | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[5]) |

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| FIA_UAU.2[6] | User authentication before any action |
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| FIA_UAU.2.1[6] | |
| The TSF shall require each <u>user</u> (<i>User who is permitted to use the account</i>) to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User who is permitted to use the account</i>) | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (FIA_UID.2[6]) |

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| FIA_UAU.6 | Re-authenticating |
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|---|-----------------------|
| FIA_UAU.6.1 | |
| The TSF shall re-authenticate the use under the conditions [assignment: <i>list of conditions under which re-authentication is required</i>]. | |
| [assignment: <i>list of conditions under which re-authentication is required</i>] | |
| <ul style="list-style-type: none"> • <i>When the administrator modifies the administrator password.</i> • <i>When the service engineer modifies the CE password.</i> • <i>When the administrator changes the HDD lock setting.</i> • <i>When the administrator changes the Encryption function setting.</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

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|------------------|--|
| FIA_UAU.7 | Protected authentication feedback |
|------------------|--|

| | |
|--|--|
| FIA_UAU.7.1 | |
| The TSF shall provide only [assignment: <i>list of feedback</i>] to the user while the authentication is in progress. | |
| [assignment: <i>list of feedback</i>] : | |
| <i>Display "*" every character data input.</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[1], FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[4], FIA_UAU.2[5]) |

| | |
|---------------------|--|
| FIA_UID.2[1] | User identification before any action |
|---------------------|--|

| | |
|--|-------------------|
| FIA_UID.2.1[1] | |
| The TSF shall require each <u>user</u> (<i>Service Engineer</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>Service Engineer</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|---------------------|--|
| FIA_UID.2[2] | User identification before any action |
|---------------------|--|

| | |
|--|-------------------|
| FIA_UID.2.1[2] | |
| The TSF shall require each <u>user</u> (<i>Administrator</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>Administrator</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|--|-------------------|
| FIA_UID.2[3] User identification before any action | |
| FIA_UID.2.1[3] | |
| The TSF shall require each <u>user</u> (<i>User</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|--|-------------------|
| FIA_UID.2[4] User identification before any action | |
| FIA_UID.2.1[4] | |
| The TSF shall require each <u>user</u> (<i>User who is permitted to use secure print file</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User who is permitted to use secure print file</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|--|-------------------|
| FIA_UID.2[5] User identification before any action | |
| FIA_UID.2.1[5] | |
| The TSF shall require each <u>user</u> (<i>User who is permitted to use the public user box</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User who is permitted to use the public user box</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|--|-------------------|
| FIA_UID.2[6] User identification before any action | |
| FIA_UID.2.1[6] | |
| The TSF shall require each <u>user</u> (<i>User who is permitted to use the account</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>User who is permitted to use the account</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| | |
|--|-------------------|
| FIA_UID.2[7] User identification before any action | |
| FIA_UID.2.1[7] | |
| The TSF shall require each <u>user</u> (<i>External Server</i>) to identify itself before allowing any other TSF-mediated actions on behalf of that <u>user</u> (<i>External Server</i>) . | |
| Hierarchical to | : FIA_UID.1 |
| Dependencies | : No dependencies |

| FIA_USB.1 | | User-subject binding |
|---|---|----------------------|
| FIA_USB.1.1 | | |
| The TSF shall associate the following user security attributes with subjects acting on the behalf of that user: [assignment: <i>list of user security attributes</i>]. | | |
| [assignment: <i>list of user security attributes</i>]: | | |
| <ul style="list-style-type: none"> • User box attributes (User Box ID) • File attributes (Secure print internal control ID) • Account Name (account ID) | | |
| FIA_USB.1.2 | | |
| The TSF shall enforce the following rules on the initial association of user security attributes with subjects acting on the behalf of users: [assignment: <i>rules for the initial association of attributes</i>]. | | |
| [assignment: <i>rules for the initial association of attributes</i>]: | | |
| <p>< User box attribute ></p> <p><i>the user box ID of the concerned user box associates to the task acting on the behalf of users when authenticated with the access to the user box</i></p> | | |
| <p>< Account Name ></p> <ul style="list-style-type: none"> • <i>In the method not synchronized with User authentication, the account ID of the concerned account associates to the task acting on the behalf of users when authenticated with the access to the account.</i> • <i>In the method synchronized with User authentication, the account ID that is set to the concerned user associates to the task acting on the behalf of users when authenticated with the access to the user.</i> | | |
| <p>< File attribute ></p> <p><i>The secure print internal control ID of the concerned secure print file associates to the task acting on the behalf of users when authenticated with the access to the secure print file.</i></p> | | |
| FIA_USB.1.3 | | |
| The TSF shall enforce the following rules governing changes to the user security attributes associated with subjects acting on the behalf of users: [assignment: <i>rules for the changing of attributes</i>]. | | |
| [assignment: <i>rules for the changing of attributes</i>]. | | |
| None | | |
| Hierarchical to | : | No other components |
| Dependencies | : | FIA_ATD.1 |

5.1.1.4. Security management

| FMT_MOF.1[1] | | Management of security functions behavior |
|---|---|--|
| FMT_MOF.1.1[1] | | |
| The TSF shall restrict the ability to [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] the functions [assignment: <i>list of functions</i>] to [assignment: <i>the authorized identified roles</i>]. | | |
| [assignment: <i>list of functions</i>] : | | |
| <ul style="list-style-type: none"> • Enhanced Security Setting | | |
| [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] : | | |
| disable | | |
| [assignment: <i>the authorized identified roles</i>] : | | |
| <ul style="list-style-type: none"> • Administrator • Service Engineer | | |
| Hierarchical to | : | No other components |
| Dependencies | : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[1], FMT_SMR.1[2]) |

| FMT_MOF.1[2] Management of security functions behavior | |
|---|--|
| FMT_MOF.1.1[2] | |
| The TSF shall restrict the ability to [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] the functions [assignment: <i>list of functions</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of functions</i>] : | |
| <ul style="list-style-type: none"> • User Authentication Function • SNMP password authentication function | |
| [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] : | |
| modify the behavior of | |
| [assignment: <i>the authorized identified roles</i>] : | |
| Administrator | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MOF.1[3] Management of security functions behavior | |
|---|--|
| FMT_MOF.1.1[3] | |
| The TSF shall restrict the ability to [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] the functions [assignment: <i>list of functions</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of functions</i>] : | |
| <ul style="list-style-type: none"> • Account Authentication Function | |
| [selection: <i>determine the behavior of, disable, enable, modify the behavior of</i>] : | |
| disable, modify the behavior of | |
| [assignment: <i>the authorized identified roles</i>] : | |
| Administrator | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MSA.1[1] Management of security attributes | |
|--|--|
| FMT_MSA.1.1[1] | |
| The TSF shall enforce the [assignment: <i>access control SFP, information flow control SFP</i>] to restrict the ability to [selection: <i>change_default, query, modify, delete, [assignment: other operations]</i>] the security attributes [assignment: <i>list of security attributes</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of security attributes</i>] : | |
| User attributes of the user box that is set user's own [user ID]. | |
| [selection: <i>change_default, query, modify, delete, [assignment: other operations]</i>] : | |
| Modify (modify to other user's [User ID], [account ID] or [public]) | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <ul style="list-style-type: none"> • User • Administrator | |
| [assignment: <i>access control SFP, information flow control SFP</i>] : | |
| User box access control | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 or FDP_IFC.1 (FDP_ACC.1[1]) , FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[3]) |

| FMT_MSA.1[2] Management of security attributes | |
|---|--|
| FMT_MSA.1.1[2] | |
| The TSF shall enforce the [assignment: <i>access control SFP, information flow control SFP</i>] to restrict the ability to [selection: <i>change_default, query, modify, delete, [assignment: other operations]</i>] the security | |

| | |
|--|--|
| attributes [assignment: <i>list of security attributes</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of security attributes</i>] : | |
| <i>User attributes of user box that is set the [public].</i> | |
| [selection: <i>change_default, query, modify, delete</i> , [assignment: <i>other operations</i>]] : | |
| <i>modify (modify to [User ID] or [account ID])</i> | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <ul style="list-style-type: none"> • <i>User who is permitted to use that public user box</i> • <i>Administrator</i> | |
| [assignment: <i>access control SFP, information flow control SFP</i>] : | |
| <i>User box access control</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 or FDP_IFC.1 (FDP_ACC.1[1]) , FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[4]) |

| FMT_MSA.1[3] Management of security attributes | |
|--|--|
| FMT_MSA.1.1[3] | |
| The TSF shall enforce the [assignment: <i>access control SFP, information flow control SFP</i>] to restrict the ability to [selection: <i>change_default, query, modify, delete</i> , [assignment: <i>other operations</i>]] the security attributes [assignment: <i>list of security attributes</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of security attributes</i>] : | |
| <i>User attributes of user box that is set the [Account ID].</i> | |
| [selection: <i>change_default, query, modify, delete</i> , [assignment: <i>other operations</i>]] : | |
| <i>modify (modify to [user ID], [public] or other [account ID])</i> | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <ul style="list-style-type: none"> • <i>User who is permitted to use that account</i> • <i>Administrator</i> | |
| [assignment: <i>access control SFP, information flow control SFP</i>] : | |
| <i>User box access control</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ACC.1 or FDP_IFC.1 (FDP_ACC.1[1]) , FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[6]) |

| FMT_MSA.3[1] Static attribute initialization | |
|---|-----------------------|
| FMT_MSA.3.1[1] | |
| The TSF shall enforce the [assignment: <i>access control SFP, information flow control SFP</i>] to provide [selection, choose one of: <i>restrictive, permissive</i> , [assignment: <i>other property</i>]] default values for security attributes (<i>User attributes of the user box</i>) that are used to enforce the SFP. | |
| [selection, choose one of: <i>restrictive, permissive</i> , [assignment: <i>other property</i>]] : | |
| <i>[assignment: other property] :</i> | |
| <i>Responded the registered situation of the user box classified into the following cases.</i> | |
| <ul style="list-style-type: none"> ① <i>[Public], when an user box is registered by the operation of user or administrator</i> ② <i>[User ID] of the user who performed the relevant job, when an user box is registered automatically according to the operation of stored job specifying unregistered user box.</i> | |
| [assignment: <i>access control SFP, information flow control SFP</i>] : | |
| <i>User box access control</i> | |
| FMT_MSA.3.2[1] | |
| The TSF shall allow the [assignment: <i>the authorized identified roles</i>] to specify alternative initial values to override the default values when an object or information is created. | |
| [assignment: <i>the authorized identified roles</i>] | |
| <i>Case ① identified in [assignment: other property] of FMT_MSA.3.1 : User</i> | |
| <i>Case ② identified in [assignment: other property] of FMT_MSA.3.1 : None</i> | |
| Hierarchical to | : No other components |

Dependencies : FMT_MSA.1 (FMT_MSA.1[1], FMT_MSA.1[2]) , FMT_SMR.1 (FMT_SMR.1[3])

| FMT_MSA.3[2] Static attribute initialization | |
|---|-------------------------------------|
| FMT_MSA.3.1[2] | |
| The TSF shall enforce the [assignment: <i>access control SFP, information flow control SFP</i>] to provide [selection, choose one of: <i>restrictive, permissive, [assignment: other property]</i>] default values for <u>security attributes</u> (Secure print internal control ID) that are used to enforce the SFP. | |
| [selection, choose one of: <i>restrictive, permissive, [assignment: other property]</i>] : | |
| [assignment: other property] : Identified uniquely | |
| [assignment: <i>access control SFP, information flow control SFP</i>] : | |
| Secure print file access control | |
| FMT_MSA.3.2[2] | |
| The TSF shall allow the [assignment: <i>the authorized identified roles</i>] to specify alternative initial values to override the default values when an object or information is created. | |
| [assignment: <i>the authorized identified roles</i>] | |
| None | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_MSA.1 (N/A) , FMT_SMR.1 (N/A) |

| FMT_MTD.1[1] Management of TSF data | |
|---|--|
| FMT_MTD.1.1[1] | |
| (When the [machine authentication] is selected as the User authentication method) The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear, [assignment: other operations]</i>] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| User password | |
| [selection: <i>change_default, query, modify, delete, clear, [assignment: other operations]</i>] : | |
| [assignment: other operations] : Registration | |
| [assignment: <i>the authorized identified roles</i>] : | |
| Administrator | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MTD.1[2] Management of TSF data | |
|---|--|
| FMT_MTD.1.1[2] | |
| (When the [machine authentication] is selected as the User authentication method) The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear, [assignment: other operations]</i>] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| User's own user password | |
| [selection: <i>change_default, query, modify, delete, clear, [assignment: other operations]</i>] : | |
| modify | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <ul style="list-style-type: none"> • User • Administrator | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[3]) |

| FMT_MTD.1[3] Management of TSF data | |
|---|--|
| FMT_MTD.1.1[3] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| <ul style="list-style-type: none"> • <i>User ID</i> • <i>Account ID</i> • <i>Account password</i> • <i>SNMP password</i> • <i>Secure print password</i> • <i>Panel auto log-off time</i> • <i>Threshold Number of authentication failure</i> • <i>External server authentication setting data</i> • <i>S/MIME certificate⁵</i> • <i>Transmission address data</i> • <i>Trusted Channel function setting data</i> • <i>Belonging Account of User</i> • <i>Administrator authentication lock time</i> | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | |
| <i>modify</i> | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>Administrator</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MTD.1[4] Management of TSF data | |
|--|--|
| FMT_MTD.1.1[4] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| <i>User box password of the relevant user box</i> | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | |
| <i>modify</i> | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <ul style="list-style-type: none"> • <i>User who is permitted to use that public user box</i> • <i>Administrator</i> | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[4]) |

| FMT_MTD.1[5] Management of TSF data | |
|--|--|
| FMT_MTD.1.1[5] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| <i>User box password</i> | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | |
| <i>[assignment: other operations] : Registration</i> | |

⁵ It intends the operation of replacing a settable digital certificate for each user in stead of the modification of the value itself.

| | |
|---|---|
| [assignment: <i>the authorized identified roles</i>] : | <ul style="list-style-type: none"> • <i>User</i> • <i>Administrator</i> |
| Hierarchical to : | No other components |
| Dependencies : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[3]) |

| FMT_MTD.1[6] Management of TSF data | |
|--|---|
| FMT_MTD.1.1[6] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | <ul style="list-style-type: none"> • <i>Administrator password</i> |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | <i>modify</i> |
| [assignment: <i>the authorized identified roles</i>] : | <ul style="list-style-type: none"> • <i>Administrator</i> • <i>Service Engineer</i> |
| Hierarchical to : | No other components |
| Dependencies : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[1], FMT_SMR.1[2]) |

| FMT_MTD.1[7] Management of TSF data | |
|--|---|
| FMT_MTD.1.1[7] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | <ul style="list-style-type: none"> • <i>SNMP password</i> • <i>User password</i> • <i>Account password</i> • <i>User box password</i> • <i>Secure print password</i> |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | <i>query</i> |
| [assignment: <i>the authorized identified roles</i>] : | <ul style="list-style-type: none"> • <i>Administrator</i> |
| Hierarchical to : | No other components |
| Dependencies : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MTD.1[8] Management of TSF data | |
|--|--|
| FMT_MTD.1.1[8] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | <i>Secure print password</i> |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | <i>[assignment: other operations] : Registration</i> |
| [assignment: <i>the authorized identified roles</i>] : | <i>User</i> |
| Hierarchical to : | No other components |

| | | |
|--------------|---|--|
| Dependencies | : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[3]) |
|--------------|---|--|

| FMT_MTD.1[9] Management of TSF data | | |
|--|---|--|
| FMT_MTD.1.1[9] | | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | | |
| [assignment: <i>list of TSF data</i>] : | | |
| <i>CE password</i> | | |
| <i>CE authentication lock time</i> | | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | | |
| <i>modify</i> | | |
| [assignment: <i>the authorized identified roles</i>] : | | |
| <i>Service Engineer</i> | | |
| Hierarchical to | : | No other components |
| Dependencies | : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[1]) |

| FMT_MTD.1[10] Management of TSF data | | |
|--|---|--|
| FMT_MTD.1.1[10] | | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | | |
| [assignment: <i>list of TSF data</i>] : | | |
| <i>User ID</i> | | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | | |
| <i>[assignment: other operations] : Registration</i> | | |
| [assignment: <i>the authorized identified roles</i>] : | | |
| <i>Administrator, External server</i> | | |
| Hierarchical to | : | No other components |
| Dependencies | : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[5]) |

| FMT_MTD.1[11] Management of TSF data | | |
|--|---|--|
| FMT_MTD.1.1[11] | | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | | |
| [assignment: <i>list of TSF data</i>] : | | |
| <i>Administrator password, SNMP password</i> | | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | | |
| <i>[assignment: other operations] : Initialization</i> | | |
| [assignment: <i>the authorized identified roles</i>] : | | |
| <i>Administrator, Service Engineer</i> | | |
| Hierarchical to | : | No other components |
| Dependencies | : | FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[1], FMT_SMR.1[2]) |

| FMT_MTD.1[12] Management of TSF data | |
|--|--|
| FMT_MTD.1.1[12] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: | |

| | |
|---|--|
| <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| <ul style="list-style-type: none"> • <i>Account ID</i> • <i>Account password</i> • <i>S/MIME certificate</i> • <i>Transmission address data</i> • <i>Trusted channel function setting data</i> | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | |
| [assignment: <i>other operations</i>] : Registration | |
| [assignment: <i>the authorized identified roles</i>] : | |
| Administrator | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2]) |

| FMT_MTD.1[13] Management of TSF data | |
|--|--|
| FMT_MTD.1.1[11] | |
| The TSF shall restrict the ability to [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] the [assignment: <i>list of TSF data</i>] to [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>list of TSF data</i>] : | |
| <i>Belonging Account of a user oneself</i> | |
| [selection: <i>change_default, query, modify, delete, clear</i> , [assignment: <i>other operations</i>]] : | |
| [assignment: <i>other operations</i>] : Registration | |
| [assignment: <i>the authorized identified roles</i>]: | |
| Administrator, the user who is permitted to use of the account⁶ | |
| Hierarchical to | : No other components |
| Dependencies | : FMT_SMF.1 (FMT_SMF.1) , FMT_SMR.1 (FMT_SMR.1[2], FMT_SMR.1[6]) |

| FMT_SMF.1 Specification of Management Functions | |
|---|--|
| FMT_SMF.1.1 | |
| The TSF shall be capable of performing the following security management functions: [assignment: <i>list of security management functions to be provided by the TSF</i>]. | |
| [assignment: <i>list of security management functions to be provided by the TSF</i>] : | |
| <ul style="list-style-type: none"> • <i>Stop Function of Enhanced security function by administrator</i> • <i>Operation Method Setting Function of User Authentication Function by administrator</i> • <i>Operation Method Setting Function of Account Authentication Function by administrator</i> • <i>Operation Setting Function of SNMP password authentication function by administrator</i> • <i>Setting function of authentication failure frequency threshold by administrator in the authentication operation prohibition function</i> • <i>Backup Function by administrator⁷</i> • <i>Restoration Function by administrator⁸</i> • <i>Registration function of account ID by administrator</i> • <i>Modification function of account ID by administrator</i> • <i>Panel Auto Log-off Time Setting Function by administrator</i> • <i>Deletion Function of detected value of unauthorized access to SNMP by administrator</i> • <i>Deletion Function of detected value of unauthorized access of user by administrator</i> • <i>Deletion function of detected value of unauthorized access to secure print by administrator</i> • <i>Deletion function of detected value of unauthorized access to user box by administrator</i> • <i>Deletion function of detected value of unauthorized access to account by administrator</i> • <i>Modification function of administrator password by administrator</i> | |

⁶ A user who isn't related with an account name, and who was informed of the account password for the account ID from the administrator off-line.

⁷ A part of a backup function corresponds to the inquiry function of TSF data.

⁸ A part of the restoration function corresponds to the modification function of the TSF data.

- *Modification function of SNMP password by administrator*
- *Modification function of user password by administrator*
- *Registration function of user box password by administrator*
- *Modification function of user box password by administrator*
- *User box registration function by administrator (However, only when the [public] is registered for user attribute.)*
- *Modification function of user attribute of the user box by the administrator (However, only when the user attribute of previous setting is "user ID")*
- *Registration function of user ID by administrator*
- *Registration function of user password when method of user authentication by administrator is machine authentication*
- *Modification function of user password when method of user authentication by administrator is machine authentication*
- *Initialization function of administrator password by administrator*
- *Initialization function of SNMP password by administrator*
- *Registration function of S/MIME certificate by administrator*
- *Registration modification function of S/MIME certificate by administrator*
- *Operation setting function of S/MIME function by administrator*
- *Registration function of transmission address data by administrator*
- *Modification function of transmission address data by administrator*
- *Registration function of Trusted Channel function setting data by administrator*
- *Modification function of Trusted Channel function setting data by administrator*
- *Operation setting function of Trusted Channel function setting data by administrator*
- *Registration function of Belonging Account of user by administrator*
- *Modification function of Belonging Account of user by administrator*
- *Modification function of Administrator authentication lock time by administrator*
- *Modification function of service engineer password by service engineer*
- *Modification function of administrator password by service engineer*
- *Stop function of Enhanced Security function by service engineer*
- *Initialization function of administrator password by service engineer*
- *Initialization function of SNMP password by service engineer*
- *Deletion function of detected value of unauthorized access to administrator by service engineer*
- *Modification function of CE authentication lock time by service engineer*
- *Overwrite function for the default value of the user attribute of the user box by the user.*
- *Modification function of user password when method of user authentication is machine authentication by user*
- *Registration function of user box password by user*
- *Modification function of user attribute of user box by user*
- *Registration function of Belonging Account of user oneself by user who is permitted the use of the account*
- *User box registration function by user*
- *Automatic Personal user box registration function by user box stored job that specifies unregistered box by user*
- *Machine non-registered users' user ID automatic registration function with external server when user authentication method is external server authentication*
- *Registration function of secure print password according to secure print file registration by user*
- *Modification function of user attribute of user box by user who is permitted the use of public user box*
- *Modification function of user box password of the user box by user who is permitted the use of public user box*
- *Modification function of the concerned user box's user attribute by user who is permitted the use of the group box*

Hierarchical to : No other components

Dependencies : No dependencies

FMT_SMR.1[1]

Security roles

| | |
|---|----------------------------|
| FMT_SMR.1.1[1] | |
| The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>Service Engineer</i> | |
| FMT_SMR.1.2[1] | |
| The TSF shall be able to associate users with roles. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UID.1 (FIA_UID.2[1]) |

| | |
|---------------------|-----------------------|
| FMT_SMR.1[2] | Security roles |
|---------------------|-----------------------|

| | |
|---|----------------------------|
| FMT_SMR.1.1[2] | |
| The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>Administrator</i> | |
| FMT_SMR.1.2[2] | |
| The TSF shall be able to associate users with roles. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UID.1 (FIA_UID.2[2]) |

| | |
|---------------------|-----------------------|
| FMT_SMR.1[3] | Security roles |
|---------------------|-----------------------|

| | |
|---|----------------------------|
| FMT_SMR.1.1[3] | |
| The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>User</i> | |
| FMT_SMR.1.2[3] | |
| The TSF shall be able to associate users with roles. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UID.1 (FIA_UID.2[3]) |

| | |
|---------------------|-----------------------|
| FMT_SMR.1[4] | Security roles |
|---------------------|-----------------------|

| | |
|---|----------------------------|
| FMT_SMR.1.1[4] | |
| The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>User who is authorized to use that public user box</i> | |
| FMT_SMR.1.2[4] | |
| The TSF shall be able to associate users with roles. | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UID.1 (FIA_UID.2[5]) |

| | |
|---------------------|-----------------------|
| FMT_SMR.1[5] | Security roles |
|---------------------|-----------------------|

| | |
|---|--|
| FMT_SMR.1.1[5] | |
| The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. | |
| [assignment: <i>the authorized identified roles</i>] : | |
| <i>External server</i> | |
| FMT_SMR.1.2[5] | |
| The TSF shall be able to associate users with roles. | |

| | | |
|-----------------|---|--------------------------|
| Hierarchical to | : | No other components |
| Dependencies | : | FIA_UID.1 (FIA_UID.2[7]) |

| | | |
|---------------------|--|--------------------------|
| FMT_SMR.1[6] | Security roles | |
| FMT_SMR.1.1[6] | The TSF shall maintain the roles [assignment: <i>the authorized identified roles</i>]. [assignment: <i>the authorized identified roles</i>] : | |
| | <i>The user who is permitted to use of the account</i> | |
| FMT_SMR.1.2[6] | The TSF shall be able to associate users with roles. | |
| Hierarchical to | : | No other components |
| Dependencies | : | FIA_UID.1 (FIA_UID.2[6]) |

5.1.1.5. Protection of the TSF

| | | |
|------------------|--|---------------------|
| FPT_RVM.1 | Non-bypassability of the TSP | |
| FPT_RVM.1.1 | The TSF shall ensure that TSP enforcement functions are invoked and succeed before each function within the TSC is allowed to proceed. | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

| | | |
|------------------|--|---------------------|
| FPT_SEP.1 | TSF domain separation | |
| FPT_SEP.1.1 | The TSF shall maintain a security domain for its own execution that protects it from interference and tampering by untrusted subjects. | |
| FPT_SEP.1.2 | The TSF shall enforce separation between the security domains of subjects in the TSC. | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

5.1.1.6. TOE Access

| | | |
|------------------|--|---------------------|
| FTA_SSL.3 | TSF-initiated termination | |
| FTA_SSL.3.1 | The TSF shall terminate an interactive session after a [assignment: <i>time interval of user inactivity</i>]. [assignment: <i>time interval of user inactivity</i>] : | |
| | <i>Time decided from the final operation depending on the panel auto logoff time (1-9 minute/s) while a administrator or a user is operating on the panel</i> | |
| Hierarchical to | : | No other components |
| Dependencies | : | No dependencies |

5.1.1.7. Trusted pass/channel

| FTP_ITC.1 Inter-TSF trusted channel | |
|-------------------------------------|--|
| FTP_ITC.1.1 | The TSF shall provide a communication channel between itself and a remote trusted IT product that is logically distinct from other communication channels and provides assured identification of its end points and protection of the channel data from modification or disclosure. |
| FTP_ITC.1.2 | The TSF shall permit [selection : <i>the TSF, the remote trusted IT product</i>] to initiate communication via the trusted channel. [selection : <i>the TSF, the remote trusted IT product</i>] <i>The remote trusted IT product</i> |
| FTP_ITC.1.3 | The TSF shall initiate communication via the trusted channel for [assignment : <i>list of functions for which a trusted channel is required</i>]. [assignment : <i>list of functions for which a trusted channel is required</i>] <ul style="list-style-type: none"> • <i>Download of the user box file.</i> • <i>Upload of the image file that will be stored as a user box file.</i> • <i>Upload of the image file that will be the secure print file.</i> |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

5.1.1.8. Extended requirement: Identification and approval of access destination

| FIA_NEW.1 Identification and approval of a user becoming an access object from TOE | |
|--|--|
| FIA_NEW.1.1 | TSF shall demand to succeed in the user's identification before the action is taken to <u>user</u> (<i>HDD</i>) by TOE. |
| FIA_NEW.1.2 | TSF shall stop the start of the action to <u>user</u> (<i>HDD</i>) by TOE if the user's identification is failed. |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

| | |
|---|---|
| Audit : FIA_NEW.1 | |
| The following actions should be auditable if FAU_GEN Security audit data generation is included in the PP/ST. | |
| a) Minimal | unsuccessful use of user identification mechanism including offered user identification information |
| b) Basic | Use all of user identification mechanism including offered user deification information |
| Management : FIA_NEW.1 | |
| The following actions could be considered for the management functions in FMT. | |
| a) | management of user identification information |

5.1.1.9. Extended requirement: Remaining information protection after the explicit deletion operation

| FNEW_RIP.1 Protection of remaining information on the user data and TSF data after explicit deletion operation | |
|--|--|
| FNEW_RIP.1.1 | TSF shall guarantee not to be able to use the content of any information before having been assigned |

| | |
|--|-----------------------|
| to the resource on the explicit deleting operation to the following objects and the TSF data: [assignment: <i>list of object and list of TSF data</i>]. | |
| [assignment : <i>List of object and list of TSF data</i>] : | |
| <p>< <i>Objects</i> ></p> <ul style="list-style-type: none"> • <i>User Box file</i> • <i>Secure print file</i> • <i>On memory image file</i> • <i>Stored image file</i> • <i>Remaining image file</i> • <i>Image-related file</i> • <i>Transmission addressee data file</i> • <i>HDD lock password object</i> • <i>Encryption passphrase object</i> <p>< <i>TSF data</i> ></p> <ul style="list-style-type: none"> • <i>Administrator password</i> • <i>SNMP password</i> • <i>User ID</i> • <i>User password</i> • <i>User Box password</i> • <i>Secure print password</i> • <i>Account ID</i> • <i>Account password</i> • <i>S/MIME certificate</i> • <i>Trusted Channel setting data</i> • <i>Remaining TSF data⁹</i> | |
| Hierarchical to | : No other components |
| Dependencies | : No dependencies |

| |
|--|
| Audit : FNEW_RIP.1 |
| Use including the information of user identification performing the explicit deletion operation. |
| Management : FNEW_RIP.1 |

There is no foreseen management activity.

5.1.2. Minimum Security Strength of Function

The minimum strength of function level of the TOE is SOF-Basic. The required TOE security functions that use a probabilistic/permutational mechanism are FIA_UAU.2[1], FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[4], FIA_UAU.2[5], FIA_UAU.2[6], FIA_UAU.6, FIA_SOS.1[1], FIA_SOS.1[2], FIA_SOS.1[3], FIA_SOS.1[4], FIA_SOS.1[5], FIA_SOS.1[6], FIA_SOS.1[7] and FIA_SOS.2.

Cryptographic key generation algorithm of FMT_CKM.1 and cryptographic algorithm of FCS_COP.1 are not included in the object of the minimum strength of function level.

5.1.3. TOE Security Assurance Requirements

The TOE is a commercial office product that is used in a general office environment, and therefore a TOE security assurance requirement that is required for EAL3 conformance, which is a sufficient level as an assurance for commercial office products, is applied. The following table summarizes the applied TOE security assurance requirements.

⁹ TSF data remaining in the HDD data area, that cannot be deleted only by the deletion of the file management area.

Table 6 TOE Security Assurance Requirements

| TOE Security Assurance Requirements | | Component |
|--|---------------------------------------|-----------|
| Class ACM: Configuration management | CM capabilities | ACM_CAP.3 |
| | CM scope | ACM_SCP.1 |
| Class ADO: Delivery and Operation | Delivery | ADO_DEL.1 |
| | Installation, generation and start-up | ADO_IGS.1 |
| Class ADV: Development | Function specification | ADV_FSP.1 |
| | High-level design | ADV_HLD.2 |
| | Representation correspondence | ADV_RCR.1 |
| Class AGD: Guidance Documents | Administrator guidance | AGD_ADM.1 |
| | User guidance | AGD_USR.1 |
| Class ALC: Life Cycle Support | Development security | ALC_DVS.1 |
| Class ATE: Tests | Coverage | ATE_COV.2 |
| | Depth | ATE_DPT.1 |
| | Functional tests | ATE_FUN.1 |
| | Independent testing | ATE_IND.2 |
| Class AVA: Vulnerability Assessment | Misuse | AVA_MSU.1 |
| | Strength of TOE security functions | AVA_SOF.1 |
| | Vulnerability analysis | AVA_VLA.1 |

5.2. Security Requirements for the IT environment

5.2.1. Cryptographic support

| | |
|---|--|
| FCS_COP.1[E] | Cryptographic operation |
| FCS_COP.1.1[E] | |
| The TSE (Encryption board) , shall perform [assignment: <i>list of cryptographic operations</i>] in accordance with a specified cryptographic algorithm [assignment: <i>cryptographic algorithm</i>] and cryptographic key sizes [assignment: <i>cryptographic key sizes</i>] that meet the following: [assignment: <i>list of standards</i>]. | |
| [assignment: <i>list of standards</i>] : | |
| FIPS PUB 197 | |
| [assignment: <i>cryptographic algorithm</i>] : | |
| AES | |
| [assignment: <i>cryptographic key sizes</i>] : | |
| 128bit | |
| [assignment: <i>list of cryptographic operations</i>] : | |
| <ul style="list-style-type: none"> • Encryption of all data written in HDD • Decryption of all data read from HDD | |
| Hierarchical to | : No other components |
| Dependencies | : FDP_ITC.1 or FCS_CKM.1 (FCS_CKM.1) , FCS_CKM.4 (N/A) , FMT_MSA.2 (N/A) |

5.2.2. Identification and Authentication

| | |
|---------------------|--|
| FIA_AFL.1[E] | Authentication failure handling |
|---------------------|--|

| | |
|---|----------------------------|
| FIA_AFL.1.1[E] | |
| The <u>TSP</u> (HDD) shall detect when [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] unsuccessful authentication attempts occur related to [assignment: <i>list of authentication events</i>]. | |
| [assignment: <i>list of authentication events</i>] : | |
| Authentication by HDD Lock function at the time of accessing HDD | |
| [selection: <i>[assignment: positive integer number]</i> , an administrator configurable positive integer within <i>[assignment: range of acceptable values]</i>] | |
| [assignment: positive integer number] : 5 | |
| FIA_AFL.1.2[E] | |
| When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSP shall [assignment: <i>list of actions</i>]. | |
| [assignment: <i>list of actions</i>] : | |
| <Action when it is detected> | |
| Deny the reading and writing of data to HDD. | |
| <Operation for recovering the normal condition > | |
| Turn off electricity to HDD (Power OFF) | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[E]) |

| | |
|--|-------------------|
| FIA_UAU.2[E] | |
| User authentication before any action | |
| FIA_UAU.2.1[E] | |
| The <u>TSP</u> (HDD) shall require each <u>user</u> (The main body of MFP where HDD installed) to be successfully authenticated before allowing any other TSP-mediated actions on behalf of that <u>user</u> (The main body of MFP where HDD installed) . | |
| Hierarchical to | : FIA_UAU.1 |
| Dependencies | : FIA_UID.1 (N/A) |

| | |
|---|--|
| FIA_UAU.7[E] | |
| Protected authentication feedback | |
| FIA_UAU.7.1[E] | |
| The <u>TSP</u> (PC application) shall provide only [assignment: <i>list of feedback</i>] to the user while the authentication is in progress. | |
| [assignment: <i>list of feedback</i>] : | |
| display "*" in every character data input | |
| Hierarchical to | : No other components |
| Dependencies | : FIA_UAU.1 (FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[5]) |

6. TOE Summary Specification

6.1. TOE Security Functions

The list of the TOE security function led from the TOE security function requirement is shown in the following Tables7. The detailed specification is explained in the paragraphs described below.

Table 7 The list of the name and identifier of TOE Security function

| No. | TOE Security Function | |
|-----|-----------------------|---------------------------------------|
| 1 | F.ADMIN | Administrator function |
| 2 | F.ADMIN-SNMP | SNMP administrator function |
| 3 | F.SERVICE | Service mode function |
| 4 | F.USER | User function |
| 5 | F.BOX | User box function |
| 6 | F.PRINT | Secure print function |
| 7 | F.OVERWRITE-ALL | Overwrite all area function |
| 8 | F.CRYPT | Encryption key generation function |
| 9 | F.HDD | HDD validation function |
| 10 | F.RESET | Authentication Failure Reset function |
| 11 | F-TRUSTED-PASS | Trusted Channel function |
| 12 | F.S/MIME | S/MIME encryption processing function |

6.1.1. F.ADMIN (Administrator Function)

F.ADMIN is a series of security function that administrator operates, such as an administrator identification authentication function in an administrator mode accessing from a panel or through a network, and a security management function that includes a change of an administrator password and a lock cancellation of a locked user box. (Nevertheless, all functions are not feasible functions through both a panel and a network.)

6.1.1.1. Administrator identification authentication function

It identifies and authenticates the accessing user as the administrator in response to the access request to the administrator mode.

- Offers the administrator authentication mechanism authenticating by the administrator password that consists of the character shown in Table 8.
 - Offers the administrator authentication mechanism using the session information besides the administrator password, after the administrator is authenticated to the access from the network,
 - According to protocol, use the session information of more than 10^{10} , or generate and use the session information more than 10^{10} .
- Return "*" for each character as feedback for the entered administrator password.
- Resets the number of authentication failure when succeeding in the authentication.

- In the case of access from a panel, it doesn't accept the input from a panel for five seconds when failing in the authentication.
- Locks all the authentication functions to use the administrator password when detecting the authentication failure that becomes 1~3 times at total in each authentication function by using the administrator password. (Refuse the access to the administrator mode)
 - The administrator specifies the failure frequency threshold by the unauthorized access detected threshold setting function.
- F.RESET works and the lock release function of the administrator authentication function in F.SERVICE is carried out, and the lock of authentication function is released.

Table 8 character and number of digits used for password

| Objectives | Number of digits | Characters |
|--|------------------|---|
| CE Password | 8-digits | 92 characters in total can be selected ASCII code (0x21 - 0x7E, except 0x22 and 0x2B) • Number : 0 - 9 • Alphabet : Capital letter and small letter • Symbols : !, #, \$, %, &, ' (,), *, , - ., /, :, ;, <, =, >, ?, @, [, ¥,] , ^ , _ , ` , { , , } , ~ |
| Administrator Password | | |
| Secure Print Password | 8-digits | 93 characters in total can be selected ASCII code (0x20 - 0x7E, except 0x22 and 0x2B) • Number : 0 - 9 • Alphabets : Capital letter and small letter • Symbols : !, #, \$, %, &, ' (,), * , , - ., /, :, ;, <, =, >, ? , @ , [, ¥ ,] , ^ , _ , ` , { , , } , ~ , <i>SPACE</i> |
| HDD Lock Password | 20-digits | 83 characters in total can be selected ASCII code (0x21-0x7E, except 0x22, 0x28, 0x29, 0x2C, 0x3A, 0x3B, 0x3C, 0x3E, 0x5B, 0x5C and 0x5D) • Number : 0 - 9 • Alphabets : Capital letter and small letter • Symbols : !, #, \$, %, &, ' , * , + , - ., / , =, ?, @, ^, _ , ` , { , , } , ~ |
| Encryption passphrase | | |
| SNMP Password • Privacy Password • Authentication Password | 8-digits or more | 95 characters in total can be selected ASCII code (0x20 - 0x7E) • Number : 0 - 9 • Alphabets : Capital letter and small letter • Symbols : !, #, \$, %, &, ' (,), * , , - ., /, :, ;, <, =, >, ? , @ , [, ¥ ,] , ^ , _ , ` , { , , } , ~ , " , + , <i>SPACE</i> |
| User Password | | |
| Account Password | 8-digits | |
| User Box Password | | |

6.1.1.2. Auto logoff function of administrator mode

While accessing an administrator mode from a panel, if not accepting any operation during the panel automatic logoff time, it logs off the administrator mode automatically.

6.1.1.3. Function offered in Administrator mode

When a user is identified and authenticated as an administrator by the administrator identification authentication function at the accessing request to the administrator mode, the administrator authority is associated with the task substituting the user. And the following operations and the use of the functions are permitted.

① Change of Administrator password

When a user is re-authenticated as an administrator by the panel and the new password satisfies the quality, the password is changed.

- Offers the administrator authentication mechanism that is authenticated by the administrator password which consists of the character shown in Table 8.
- Resets the number of authentication failure when succeeding in the re-authentication.
- Return "*" for each character as feedback for the entered administrator password in the re-authentication by the access from the panel.
- When the authentication failure that becomes 1-3 times at total in each authentication function by using the administrator password is detected, it logoffs the administrator mode accessing from the panel, and locks all the authentication functions to use the administrator password. (The access to the administrator mode is refused.)
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- F.RESET works or the lock release function of the administrator authentication function in F.SERVICE is carried out, so that the lock of the authentication function is released.
- Verify the new administrator password if the following qualities are satisfied.
 - It is composed of the characters and by the number of digits, shown in the Table 8.
 - It shall not be composed of one kind of character.
 - It doesn't match with the current value.

② User Settings

- User Registration (Only the user who uses with the machine authentication as User authentication method.)

User is registered by setting the user ID (Though user ID is composed of the user name and the authentication server information¹⁰, only user name is registered in case of the machine authentication.) and registering the user password. It verifies whether the user password newly set have been satisfied the following qualities.

- It is composed of the characters and by the number of digits, shown in the Table 6.
- It shall not be composed of one kind of character.

While the external server authentication is effective, the user password cannot be registered.

Also register the belonging account (account ID), and relate. (The account setting is necessary beforehand.)

- Change of user password (Only the user who uses with the machine authentication as User authentication method.)

User password is changed. It verifies whether the user password newly set have been satisfied the following qualities.

¹⁰ It associates with the external server authentication setting data that is set in the case of the use of the external server (only Active Directly method is applicable) as the method of the user authentication function. Because it deals when there are plural user information management servers, there is the case which plural authentication server information are included in the external server information setting data.

- It is composed of the characters and by the number of digits, shown in the Table 8.
- It shall not be composed of one kind of character.

While the external server authentication is effective, the user ID and the user password cannot be changed, same as the user registration.

➤ User deletion

User ID and user password is deleted.

- When a personal user box that a concerned user owns exists, that personal user box is automatically set to the public user box of “user attributes: public.”

➤ Change of the belonging account

The belonging account that related to user is changed

③ User Box Settings

➤ User Box Registration

To register a personal user box or a public user box by selecting the user attribute to the non-registration user box ID selected. When it's registered, it is possible to select "User ID" in the user attribute of the user box which have been specified "Public" as a default value.

- In the case of the personal user box, the arbitrary user ID registered is specified.
- In the case of the public user box, verify that a user box password registered satisfies the following conditions.
 - ◇ It is composed of the characters and by the number of digits, shown in the Table 8.
 - ◇ It shall not be composed of one kind of character.
- Specify the arbitrary account ID registered when Group user box.

➤ Change of User Box Password

- The user box password set to the public user box is changed.
- It verifies whether the user box password newly set have been satisfied the following qualities.
 - ◇ It is composed of the characters and by the number of digits, shown in the Table 6.
 - ◇ It shall not be composed of one kind of character.

➤ Change of user attribute of user box

- Specify the user attribute of a personal user box to the other user or the account that registered.
- Specify the user attribute of group user box to the user or the other account that registered.
- Specify the user attribute of public user box to the user or account that registered.
- Specify the user attribute of a personal user box or group user box to public.
 - ◇ The registration of a user box password is necessary at the same time, and then the processing which is similar to a change of the above-mentioned user box password should be done.

④ Release of Lock

Reset (0 clear) the number of authentication failure for each users.

- If there is a user to whom access is locked, the lock is released.

Reset (0 clear) the number of authentication failure for all secure prints.

- If there is a secure print to which access is locked, the lock is released.

Reset (0 clear) the number of authentication failure of each user boxes.

- If there is a user box to which access is locked, the lock is released.

Reset (0 clear) the number of authentication failure of each account.

- If there is a user box to which access is locked, the lock is released.
Reset (0 clear) the number of authentication failure of SNMP password.
- If there is a MIB object to which access is locked, the lock is released.

⑤ Setting of user authentication function

Set the following authentication method in a user authentication function.

- Machine authentication: Authentication method which utilizes a user password managed on MFP sides.
- External server authentication : Authentication method which utilizes a user password managed with a user information management server connected through a network.(Only Active Directory method is object)
 - When external server authentication is used, the external server authentication setting data(Contain the multiple authentication server information, such as domain name to which external server belongs) needs to be set.
- Account authentication function : synchronized method
The method which utilizes an account ID related to user ID beforehand.
- Account authentication function : method not synchronized
The method to authenticate by the account ID and the account password at the time of access, without utilizing the account ID that related to user ID beforehand.
- Account authentication function : not use
Utilize only the authentication function by user ID, and not utilize the authentication by account information.

⑥ Setting of unauthorized access detection threshold

The unauthorized access detection threshold in the authentication operation prohibition function is set for 1-3 times.

⑦ Setting and execution of all area overwrite deletion function

The deletion method shown in the following table is selected first, and then the overwrite deletion at the data area of HDD and the initialization of NVRAM are performed. (Perform F.OVERWRITE-ALL.)

Table 9 A type of overwrite deletion of all area and the method of overwriting

| Method | Overwritten data type and their order |
|--------|--|
| Mode:1 | 0x00 |
| Mode:2 | Random numbers ⇒ Random numbers ⇒ 0x00 |
| Mode:3 | 0x00 ⇒ 0xFF ⇒ Random numbers ⇒ Verification |
| Mode:4 | Random numbers ⇒ 0x00 ⇒ 0xFF |
| Mode:5 | 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF |
| Mode:6 | 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ Random numbers |
| Mode:7 | 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ 0xAA |
| Mode:8 | 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ 0x00 ⇒ 0xFF ⇒ 0xAA ⇒ Verification |

⑧ Setting of auto logoff function

The panel auto logoff time which is the setting data of the auto logoff function should be set within the following time range.

- panel auto logoff time : 1 - 9 minutes

⑨ Network Settings

A setup operation of the following setting data is performed.

- A series of setup data that relates to SMTP server (IP address, Port Number, etc.)
- A series of setup data that relates to DNS server (IP address, Port Number, etc.)
- A series of setup data that relates to MFP address (IP address, NetBIOS Name, AppleTalk Printer Name, etc.)

⑩ Execution of back-up and restoration function

All the setting data stored in NVRAM and HDD is backed-up and re-stored except the administrator password and the CE password. As the object related to security, due to the relation of confidentiality and completeness, the one shown by the following classifications is targeted.

<Type A : Object to which back-up and restoration should be limited >

- SNMP password
- User password
- Account password
- Secure print password
- User Box password

<Type B : Object to which restoration should be limited >

- A series of data that relates to SMTP server setting
- A series of data that relates to DNS server setting
- A series of data that relates to MFP address setting
- Setting data of Enhanced Security function
- Setting data of operation method of user authentication function
- Authentication failure frequency threshold of authentication operation prohibition function
- Panel auto logoff time
- User ID
- User attribute of user box
- User box ID
- S/MIME certificate
- Transmission address data
- Encryption strength setting data in S/MIME function
- Trusted Channel function setting data
- Belonging Account of user
- CE authentication lock time
- Administrator authentication lock time

<Type C : Object to which back-up should be limited >

- Secure print file

- User box file

⑪ Operation setting function of HDD lock function

<Operation Setting ON>

When turning it ON from OFF, it verifies that the newly set HDD lock password satisfies the following qualities.

- It is composed of the characters and by the number of digits shown in Table 8.
- It shall not be composed of one kind of character.

<Modification of HDD lock password>

Change the HDD lock password. By using the HDD lock password currently set, when it is re-authenticated as an administrator, and the new password satisfies the quality, it is changed.

- Offers the HDD lock password verification mechanism that verified the HDD lock password that consists of the character shown in Table 8.
- Return, in verification, "*" for each character as feedback for the entered HDD lock password.
- Verify the HDD lock password newly set if the following qualities are satisfied.
 - It is composed of the characters and by the number of digits shown in Table 8.
 - It shall not be composed of one kind of character.
 - It shall not be matched with the current value.

⑫ Operation setting of encryption function

(* When an optional encryption board is installed to MFP, it can be operated.)

<Operation Setting ON>

When turning it ON from OFF, it verifies that the encryption passphrase newly set satisfies the following qualities, and F.CRYPT is performed.

- It is composed of the characters and by the number of digits shown in Table 8.
- It shall not be composed of one kind of character.

<Encryption Passphrase Change>

Change the encryption passphrase. By using the encryption passphrase currently set, when it is re-authenticated as an administrator, and the new encryption passphrase satisfies the quality, F.CRYPT is performed.

- Offers the encryption passphrase verification mechanism that verified the encryption passphrase that consists of the character shown in Table 8.
- Return, in verification, "*" for each character as feedback for the entered encryption passphrase.
- Verify the encryption passphrase newly set if the following qualities are satisfied.
 - It is composed of the characters and by the number of digits shown in Table 8.
 - It shall not be composed of one kind of character.
 - It shall not be matched with the current value.

⑬ Function related to Enhanced Security function

The function that influences the setting of the Enhanced Security function that the administrator operates is as follows. (* It has explained the influence of the backup and

- restoration function in ⑩.)
- Operation setting of Enhanced Security function
Function to set valid or invalid of Enhanced Security function.
 - HDD logical format function
Function to re-write system file of OS in HDD. Along with the execution of this logical format, the setting of the Enhanced Security function is invalidated.
 - Overwrite deletion function for all area
The settings of enhanced security function are invalidated by executing the overwrite deletion of all area
- ⑭ Change of SNMP password
The SNMP password (Privacy password and Authentication password) is changed. Verify that the SNMP password newly set satisfies the following qualities.
- It is composed of the characters and by the number of digits shown in Table 8.
- ⑮ Setting of SNMP password authentication function
The authentication method in the SNMP password authentication function is set to "Only Authentication password" or the "Authentication password and Privacy password".
- ⑯ Account Settings
- Account registration
Account is registered by setting the account ID and registering the account password. It verifies whether the account password newly set have been satisfied the following qualities.
 - It is composed of the characters and by the number of digits, shown in Table 8.
 - It shall not be composed of one kind of character.
 - Change of account ID and account password
Account ID and account password is changed. It verifies whether the account password newly set have been satisfied the following qualities.
 - It is composed of the characters and by the number of digits, shown in Table 8.
 - It shall not be composed of one kind of character.
 - Account deletion
Account ID and account password are deleted.
 - When the Group box of the account ID exists, that group user box is automatically set to the public user box of "user attributes: public."
- ⑰ Setting of Administrator Authentication Lock Time
Set the Administration authentication lock time between 1 - 60 minutes.
- ⑱ Setting of Trusted Channel function
Set the setting data of Trusted Channel function by SSL/TLS
- Communication Encryption Strength Setting (Modification of the communication encryption method that can be used.)
- ⑲ Setting of S/MIME transmission function
Set the setting data which are used when the user box file is S/MIME transmitted.
- Transmission address data (e-mail address)
 - Registration and modification of S/MIME certificate

- Setting of Encryption Strength

6.1.2. F.ADMIN-SNMP (SNMP administrator function)

F.ADMIN-SNMP is a security function, which identifies and authenticates the administrator in the access through the network by using SNMP from PC, and then permits the operation of a setting function of the network only to the administrator whose identification and authentication was succeeded.

6.1.2.1. Identification and authentication function by SNMP password

It identifies and authenticates by the SNMP password, that the user who accesses the MIB object through the network with the use of SNMP is an administrator

- Offers the SNMP authentication mechanism which authenticates by the SNMP password that consists of the character shown in chart 8.
 - Only Authentication password or both the Privacy password and the Authentication password is used.
 - In the case of SNMP, the SNMP password is used for every session without requiring the administrator authentication mechanism by the separate session information.
- Reset the authentication failure frequency if it succeeds in authentication.
 - In the case of both the Privacy password and the Authentication password are used, the authentication failure frequency is reset only when both passwords together succeeded in the authentication.
- When the authentication failure that becomes the 1-3 times at total in each authentication function by using the SNMP password is detected, all the authentication functions to use the SNMP password are locked. (The access to the MIB object is refused.)
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
 - In the case of both the Privacy password and the Authentication password are utilized, even though both passwords together fails in authentication, it is detected as one failure.
- To release the lock, the lock release function to the MIB object of F.ADMIN is performed or the F.RESET function operates.
- The lock status is released when the lock release function to the MIB object of F. ADMIN is performed.

6.1.2.2. Management function using SNMP

When it is identified and authenticated that the user is an administrator by the SNMP password, the access to the MIB object is permitted, and then the operation of the setting data shown as followings is permitted to be done.

① Network Settings

Setting operation of the following setting data is performed.

- Setting data that relates to SMTP server (IP address, port number, etc.)
- Setting data that relates to DNS server (IP address, port number, etc.)
- A series of setting data that relates to MFP address (IP address, NetBIOS name, AppleTalk printer name, etc.)

② Change of SNMP password

The SNMP password (Privacy password and Authentication password) is changed. Verify that the SNMP password newly set satisfies the following qualities.

- It is composed of the characters and by the number of digits shown in Table 8.

③ Setting of SNMP password authentication function

The authentication method in the SNMP password authentication function is set to the "Authentication password only" or the "Privacy password and the Authentication password".

6.1.3. F.SERVICE (Service mode function)

F.SERVICE is a series of security function that the service engineer operates, such as the service engineer identification authentication function in service mode accessing from a panel, and a security management function that includes a change in the CE password and the administrator password.

6.1.3.1. Service engineer identification authentication function

It is identified and authenticated the accessing user as the service engineer in response to the access request to the service mode from the panel.

- Offers the CE authentication mechanism that is authenticated by the CE password that consists of the character shown in Table 8.
 - The CE authentication mechanism by the separate session information is not required because the service mode can only be accessed from the panel.
- Return "*" for each character as feedback for the entered CE password.
- Resets the number of the authentication failure when succeeding in the authentication.
- Not accept the input from the panel for five seconds when the authentication failed.
- When the authentication failure that becomes 1-3 times at total in each authentication function by using the CE password is detected, it locks all the authentication functions to use the CE password. (The access to the service mode is refused.)
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- Lock of authentication function is released with F.RESET function operated.

6.1.3.2. Function offered in service mode

When a user is identified and authenticated as a service engineer by the service engineer identification authentication function at the access request to the service mode, the use of the following functions is permitted.

① Change of CE password

When a user is re-authenticated as a service engineer and the new password satisfies the quality, it is changed.

- Offers the CE authentication mechanism that is re-authenticated by the CE password that consists of the characters shown in Table 8.
- Resets the number of authentication failure when succeeding in the re-authentication.
- Return "*" for each character as feedback for the entered service codes in the re-authentication.
- When the authentication failure that becomes 1-3 times at total in each authentication function by using the CE password is detected, it logoffs the service mode accessing from the panel, and locks all the authentication functions to use the CE password. (The access to the service mode is refused.)
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- The F.RESET function operates to release the lock of the authentication function.
- It verifies that the CE password newly set satisfies the following qualities.
 - It is composed of the characters and by the number of digits, shown in the Table 8.
 - It shall not be composed of one kind of character.
 - It shall not be matched with the current value.

② Change of administrator password

Change the administrator password. Verify that the administrator password newly set satisfies the following qualities.

- It is composed of the characters and by the number of digits, shown in the Table 8.
- It shall not be composed of one kind of character.
- It shall not be matched with the current value.

③ Function that relates to Enhanced Security function

The functions that influence the setting of the Enhanced Security function that the service engineer operates are as follows.

➤ HDD logical format function

Function to re-write system file of OS in HDD. The setting of the Enhanced Security function is invalidated along with the execution of this logical format.

➤ HDD physical format function

A function to rewrite the entire disk in HDD with a regulated pattern including the signal rows such as the track and sector information. The setting of the Enhanced Security function is invalidated along with the execution of this physical format.

➤ HDD installation setting function

Function to make the installed HDD effective. The setting of the Enhanced Security function is invalidated by nullifying this HDD installation setting.

➤ Initialization function

Function to reset every setting value written in NVRAM to the factory default. The setting of the Enhanced Security function is invalidated by executing this initialization function.

④ Function that relates to password initialization function

The function that relates to the initialization of the password that the service engineer operates is as follows.

➤ Initialization function

Function to reset various setting values written in NVRAM to the factory default. The administrator password and the SNMP password are set to an initial value of the factory

shipment by executing this initialization function. Both of the operation settings of the HDD lock function and the encryption function are turned OFF. (The HDD lock password and the encryption passphrase have been set cannot be used again by turning OFF the setting operation.)

➤ HDD physical format function

A function to rewrite the entire disk to a regulated pattern in HDD including the signal rows such as the track and sector information. The HDD lock function is turned OFF along with the execution of this physical format. (The HDD lock password that is set cannot be used again by turning OFF the operation setting.)

⑤ Release of the lock of administrator authentication function

Reset (0 clear) the number of authentication failure for the administrator authentication.

- If access is locked, the lock is released.

⑥ Setting of CE Authentication Lock Time

Set the CE Authentication Lock Time between 1 - 60 minutes.

6.1.4. F.USER (User Function)

F.USER identifies and authenticates the user for the use of MFP various function. To the identified and authenticated user, it offers the management function of the user password that is managed in the MFP at the time of machine authentication, besides the permission of the use of functions such as F.BOX and F.PRINT.

6.1.4.1. User Identification and Authentication Function

<Account Authentication : User identification and authentication in the synchronized method>

When the access request for the user box and the request for the registration of the secure print file, it is identified and authenticated to be a user. Account Name (account ID) is associated with the concerned user ID that is set up beforehand besides the user ID for the identified and authenticated user, and the use of F.BOX and F.PRINT is permitted to the identified and authenticated user.

- Offers the user authentication mechanism that authenticates the user that consists of the characters shown in Table 8.
 - After the user is authenticated to the access from the network, the user authentication mechanism using session information besides the user password is offered.
 - According to the protocol, it uses the session information more than 10^{10} or it generates and uses the session information more than 10^{10} .
- Return "*" for each character as feedback for the entered user password.
- Resets the number of authentication failure when succeeding in the authentication.
- Not accept the access from the panel for five seconds when the authentication failed.
- When the authentication failure that becomes 1-3 times at total for the concerned user is detected, it locks all the authentication functions to the user.
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- To release the lock of the authentication function is to perform the lock release function to the user authentication of F.ADMIN.

<Account Authentication : Account registration function when the belonging account of user is not registered in the synchronized method>

- Require the Account authentication after User identification and authentication.
- Register the successful account ID as account name when succeeding in the account authentication.

(The detail of the account authentication is the same as processing of the items explained in the following <Account authentication: User identification and authentication in the authentication method not synchronized>)

<Account Authentication :User identification and authentication in the authentication method not synchronized>

When the access request for the user box and the request for the registration of the secure print file, it is identified and authenticated to be a user. The detail of user authentication is the same as account authentication: user identification and authentication in the synchronized method. In the case of the access from the panel, the account authentication is required, Account Name is associated with the user ID if succeeding the account authentication, and the use of F.BOX and F.PRINT is permitted to the user who is identified and authenticated.

- Offers account authentication mechanism that is authenticated the account by the account password that consists of the characters shown in Table 8.
- Return "*" for each character as feedback for the entered account password.
- Resets the number of authentication failure when succeeding in the authentication.
- Not accept the access from the panel for five seconds when the authentication failed.
- When the authentication failure that becomes 1-3 times at total for the concerned account is detected, it locks all the authentication functions to the account.
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- The lock of the authentication function is to perform the lock release function to the concerned account of F.ADMIN.

When accessing from a network, the account is not authenticated after the user authentication but the user and the account are processed with one sequence. When authenticating the account, the account ID is associated with the user ID, and the user ID and the account ID are measured by the session information which is the same as user identification and authentication in the account authentication: the synchronized method.

<Automatic registration of the User ID>

In the case of the "External server authentication" has been selected as the user authentic method, the identified and authenticated user is registered as an user ID with the user name and authentication server information that was used with identification and authentication.

6.1.4.2. Auto logoff function in user identification and authentication domain

While the user who is identified and authenticated is accessing from a panel, if it does not accept any operations for more than the "panel automatic logoff time", it logs off from a user identification and authentication domain automatically.

6.1.4.3. Modification function of user password

When the identification and authentication are succeeded, and the access to the user identification and authentication domain is permitted, the user is permitted to change its own password. When the external server authentication is effective, this function cannot be applied.

When the user password newly set satisfies the following qualities, it is changed.

- It is composed of the characters and by the number of digits, shown in the Table 8.
- It shall not be composed of one kind of character.

6.1.5. F.BOX (User Box Function)

F.BOX is a series of security function related to the user box to the user who is identified and authenticated that you are the registered user, such as the permission of the operation and management of the personal user box of the user, the authentication to the user who is permitted the utilization of the user box in the access to the public box, and the access control function to permit various operations of the concerned user box and the user box file after the authentication.

<Registration of user box by user operation>

To register a personal user box or a public user box by selecting the user attribute to the non-registration user box ID selected. When it's registered, it is possible to select "User ID" in the user attribute of the user box which have been specified "Public" as a default value.

- In the case of the personal user box, the arbitrary user ID registered is specified.
- In the case of the public user box, verify that a user box password registered satisfies the following conditions.
 - It is composed of the characters and by the number of digits, shown in the Table 8.
 - It shall not be composed of one kind of character.
- In the case of group user box, the arbitrary account ID registered is specified.

<Automatic registration of user box>

- In the user box operation to store of the copy job and the print job, when the specified user box is unregistered, the personal user box which is set the user ID of the user who operates the job concerned is automatically registered.

6.1.5.1. Personal User Box Function

① Access control function to personal user box

The task to act for the identified and authenticated user has "User ID" of the user who is identified and authenticated for the user attribute. This task is permitted the display of the list of the personal user box which has a corresponding user attribute with this user attribute.

② Access control function to a user box file in a personal user box

When the user box to operate is selected, "User Box ID" of the user box is related to the task as a user box attribute in addition to the user attribute. This task is permitted, to the user box file with the user attribute and the user box attribute corresponding to the user attribute and the user box attribute of itself, the printing, the E-mail transmission (include the S/MIME

transmission), the FTP transmission, the FAX transmission, the SMB transmission, download, the removing to other user boxes, and the copy operations to other user boxes.

③ User attribute change of a personal user box

The user attributes can be changed.

- If another registered user is specified, it becomes a personal user box that another user manages.
- If public is specified, it becomes a public user box. It is necessary to register the user box password. In this case, it is verified that the user box password meets the following requirements.
 - It is composed of the characters and by the number of digits shown in Table 8.
 - It shall not be composed of one kind of character.
- If account ID is specified, it becomes a group user box that can be accessed by a user who is permitted the use of the concerned account.

6.1.5.2. Public User Box Function

When the user is identified and authenticated as a registered user, the task to act for the user who is identified and authenticated has "User ID" of the identified and authenticated user as the user attribute. This task is permitted the display of the list of the public user box which is set the public as the user attribute. The operation specification of each public user box is as follows.

● Authentication function in access to a public user box

For the access request for each public user box, after the above-mentioned verification function is operated, the user who accesses is authenticated that it is a user permitted the use of a user box concerned respectively.

- Offers the user box authentication mechanism that is authenticated by the user box password that consists of the character shown in Table 8.
 - After the user box is authenticated to the access from the network, it offers the user box authentication mechanism using the session information besides the user box password.
- According to protocol, it utilizes the 10¹⁰ session information or more, or generated and uses the 10¹⁰ session information or more.
- Return "*" for each character as feedback for the entered user box password.
- Resets the number of authentication failure when succeeding in the authentication.
- In case of the access from the panel, when it fails in the authentication, an input from the panel is not accepted for five seconds.
- When the authentication failure that becomes the 1-3 times in total is detected for the public user box concerned, the authentication function to the public user box concerned is locked.
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- The lock of the authentication function is released by the lock release function to the public user box of F.ADMIN executed.

The following is a function that the user who is permitted the use of the user box is offered in the user box identification and authentication domain of the user box.

- Access control to a user box file in a public user box
The task to act for the user is related the "User Box ID" of the user box as a user box attribute in addition to the user attribute. This task is permitted the user box file, which have been set the public to the user attribute and have a corresponding user box attribute to the user box attribute of the subject attribute, to do the printing, the E-mail transmission (include the S/MIME transmission), the FTP transmission, the fax transmission, the SMB transmission, download, the movement to other user boxes, and the copy operations to other user boxes.
- User attribute change of a public user box
The user attribute of the user box can be changed.
 - Specify the registered user. And change to a personal user box for the registered user.
 - Specify the account ID, and then it becomes a group user box that can be accessed by a user who is permitted the use of the concerned account.
- Change of a public user box password
Change the user box password of the public user box. When the user box password newly set satisfies the following qualities, it is changed.
 - It is composed of the characters and by the number of digits shown in Table 8.
 - It shall not be composed of one kind of character.

6.1.5.3. Group User Box Function

- ① Access control function for Group User Box
The task to act for the identified and authenticated user has the "Account ID" as the Account Name that is related to the identified and authenticated user. This task is permitted the display of the list of the group user box which has a corresponding user attribute with this account ID.
- ② Access control function to a user box file in a group user box
When the user box to operate is selected, "User Box ID" of the user box is related to the task as a user box attribute in addition to the user attribute. This task is permitted, to the user box file with the user attribute and the user box attribute corresponding to the user attribute and the user box attribute of itself, the printing, the E-mail transmission (include the S/MIME transmission), the FTP transmission, the FAX transmission, the SMB transmission, download, the removing to other user boxes, and the copy operations to other user boxes.
- ③ User attribute change of a group user box
The user attributes can be changed.
 - If another account ID is specified, the user of another Account Name becomes an accessible group user box.
 - If public is specified, it becomes a public user box. It is necessary to register the user box password. In this case, it is verified that the user box password satisfies the following requirements.
 - It is composed of the characters and by the number of digits shown in Table 8.
 - It shall not be composed of one kind of character.
 - Specify a registered user, and change to a personal user box for the registered user.

6.1.6. F.PRINT (Secure Print Function)

F.PRINT is a series of security function related to the secure print such as the access control function that allows the printing and displaying the list of the secure print file after authenticating if a user is the authorized user to use the secure print file for the access to the secure print file from the panel to the identified and authenticated user as a registered user.

6.1.6.1. Authentication function by the secure print password

When the user is identified and authenticated as the registered user, it authenticates that the accessing user is a user to whom the use of the secure print file concerned is permitted, in response to the access request to each secure print file.

- Offers the secure print password authentication mechanism that is authenticated by the secure print password that consists of the character shown in Table 8.
 - The secure print authentication mechanism by the separate session information is not needed because it becomes only an access from the panel in the case of the secure print.
- Return "*" for each character as feedback for the entered secure print password.
- Resets the number of authentication failure when succeeding in the authentication.
- The access from the panel is not accepted for 5 seconds when the authentication is failed.
- When the authentication failure that becomes the 1-3 times in total for the secure print file concerned is detected, the authentication function to the secure print file is locked.
 - The administrator specifies the failure frequency threshold by the unauthorized access detection threshold setting function.
- The lock is released by the lock release function to the secure print file of F.ADMIN executed.

6.1.6.2. Access control function to a secure print file

The secure print file access control operates when it is authenticated.

- The task to act for the user who is identified and authenticated has the authenticated secure print internal control ID as the file attribute.
- This task is permitted the printing to the secure print file with a corresponding file attribute to the file attribute of this task.

6.1.6.3. Registration function of a secure print file

When it is authenticated as a registered user in the registration request of the secure print file, the user is permitted to register the secure print password with the concerned secure print file.

① Registration of the secure print password

The registered secure print password is verified to meet the following requirements.

- It is composed of the characters and by the number of digits shown in Table 8.
- It shall not be composed of one kind of character.

② Giving of the secure print internal control ID

When the verification of the secure print password is completed in a registration request of the secure print file, the secure print internal control ID uniquely identified is set to the concerned secure print file.

6.1.7. F.OVERWRITE-ALL (All area overwrite deletion function)

F.OVERWRITE-ALL executes the overwrite deletion in the data area of HDD and initializes the setting value of the password that is set to NVRAM as well. The object for the deletion or the initialization is as follows.

<Object for the deletion : HDD>

- Secure print file
- User box file
- On memory image file
- Stored image file
- Remaining image file
- Image related file
- Transmission address data file
- User ID
- User password
- User box password
- Secure print password
- Account ID
- Account password
- S/MIME certificate
- Remaining TSF data

<Object for the initialization : NVRAM>

- Administrator Password
- SNMP password
- Operation setting of HDD lock function (OFF) • • • HDD lock password is deleted.
- Operation setting of Encryption function (OFF) • • • Encryption Passphrase is deleted.
- Trusted Channel setting data • • • Trusted Channel setting data is deleted, because initialization has no default value.

The deletion methods such as the data written in HDD and the written frequency is executed according to the deletion method of all area overwrite deletion function set in F.ADMIN (Table 9). The HDD lock password and the encryption passphrase cannot be used for being turned off the operation setting of the HDD lock function and the encryption function. The setting of the Enhanced Security function becomes invalid in the execution of this function. (Refer to the description for the operation setting of the Enhanced Security function in F.ADMIN.)

6.1.8. F.CRYPT (Encryption key generation function)

F.CRYPT is generated the encryption key to encrypt all data written in HDD by using the HDD encryption key generation algorithm (SHA-1) that is regulated by the KonicaMinolta encryption specification standard. KonicaMinolta HDD encryption key generation algorithm (SHA-1) is the algorithm to generate the encryption key by using the SHA-1 regulated by FIPS

180-1.

When the encryption passphrase is decided in the encryption functional operation setting to which the access is restricted in F.ADMIN, the encryption key of 128bit length is generated from the encryption passphrase by applying the SHA-1 algorithm.

6.1.9. F.HDD (HDD verification function)

F.HDD is a check function to permit reading from and writing in the HDD only when it is verified that the illegal HDD is not installed and is confirmed validity when the HDD lock password is set to HDD

When the HDD lock password is set to HDD, the status of HDD is confirmed in the HDD operation verifying at the time of TOE starting. When the HDD lock password certainly being set is returned as the result of status confirmation, the access to HDD is permitted. If the HDD lock password not being set is returned, the access to HDD is refused because of an illegitimate possibility.

6.1.10. F.RESET (Authentication Failure Frequency Reset Function)

F.RESET is a function that releases the lock by resetting the authentication failure frequency when the account locks in the administrator authentication and CE authentication.

①CE Authentication function lock release processing function

The function is executed by the specific operation, and the lock is released by clearing the failure frequency of the CE authentication to 0 after CE authentication lock time.

②Administrator authentication function lock release processing function

The function is executed by OFF/ON of the main power supply, and the lock is released by clearing the failure frequency of the administrator authentication to 0 after the administrator authentication lock time.

6.1.11. F.TRUSTED-PASS (Trust Channel Function)

F.TRUSTED-PASS is a function that generates and achieves the Trusted Channel by using SSL or TSL protocol when transmitting and receiving the following image file between PC and MFP.

- User box file (download from MFP to PC)
- Image file that will be stored as a user box file (upload from PC to MFP)
- Image file that will be stored as Secure Print file (upload from PC to MFP)

6.1.12. F.S/MIME (S/MIME Encryption Processing Function)

F.S/MIME is a function to encrypt the User box file when transmitting the User box file as S/MIME.

<User box file Encryption Key generation>

- The Encryption key is generated to encrypt the user box file by the pseudorandom number Generation Algorithm which FIPS 186 provides. (Encryption key length is 128bit, 168bit, 192bit or 256bit.)

<Encryption of User box file >

- It is encrypted by AES which FIPS PUB 197 provides by using encryption key (128bit, 168bit and 256bit) to encrypt the user box file.
- It is encrypted by the 3-Key-Triple-DES which SP800-67 provides by using the encryption key (168bit) to encrypt the user box file.

<Encryption of User box file Encryption key>

- The encryption key to encrypt the user box file is encrypted by RSA which FIPS 186 -1 provides.
- The key length of the encryption key used in this case is 1024 bit, 2048bit, 3072bit or 4096bit.

6.2. TOE Security Strength of Function

The TOE security functions having probabilistic/permutational mechanisms are as follows. The strength of each of the functions satisfies the SOF-Basic.

- ① Administrator authentication mechanism, HDD lock password verification mechanism, and encryption passphrase verification mechanism which F.ADMIN offers
- ② CE authentication mechanism which F.SERVICE offers
- ③ Secure print authentication mechanism which F.PRINT offers
- ④ User box authentication mechanism which F.BOX offers
- ⑤ SNMP authentication mechanism which F.ADMIN-SNMP offers
- ⑥ User authentication mechanism which F.USER offers

6.3. Correspondence between TOE Security Functions and Function Requirements

The correspondence between TOE security function and TOE security function requirements shows in Table 15. Table 15 shows that the TOE security function corresponds to at least one TOE security function requirement.

6.4. Assurance Measures

The following table shows the assurance measures to meet the component of the TOE security assurance requirements for EAL3 that are stipulated in Table 10.

Table 10 Correspondence between TOE Assurance Requirements and assurance measures

| TOE Security Assurance Requirement | | Component | TOE Security Assurance Requirement |
|--|---------------------------------------|-----------|---|
| Class ACM: Configuration management | CM capabilities | ACM_CAP.3 | • Configuration management plan |
| | CM scope | ACM_SCP.1 | • Configuration List • CM record |
| Class ADO: Delivery and Operation | Delivery | ADO_DEL.1 | Delivery / operation instructions |
| | Installation, generation and start-up | ADO_IGS.1 | • Service Manual [Security Function] bizhub C550 / C451 • Service Manual [Security Function] bizhub C550/C451 ineo * 550 / 451 |

| TOE Security Assurance Requirement | | Component | TOE Security Assurance Requirement |
|---|---------------------------------------|-----------|--|
| | | | <ul style="list-style-type: none"> • User's Guide [Security Function] bizhub C550/C451 • User's Guide [Security Operations] Bizhub C550/C451 • User's Guide[Security Operations] ineo⁺ 550 / 451 |
| Class ADV: Development | Functional specification | ADV_FSP.1 | Security function specifications |
| | High-level design | ADV_HLD.2 | Security high level design specifications |
| | Representation correspondence | ADV_RCR.1 | Representation correspondence analysis report |
| Class AGD: Guidance Document | Administrator guidance | AGD_ADM.1 | <ul style="list-style-type: none"> • Service Manual[Security Function] bizhub C550 / C451 • Service Manual[Security Function] bizhub C550/C451 ineo⁺ 550 / 451 • User's Gide[Security operations] bizhub C550/C451 |
| | User Guidance | AGD_USR.1 | <ul style="list-style-type: none"> • User's Guide[Security operations] bizhub C550 / C451 • User's Guide[Security operations] ineo⁺ 550 / 451 |
| Class ALC: Life Cycle Support | Development security | ALC_DVS.1 | Development security instructions |
| Class ATE: Test | Coverage | ATE_COV.2 | Coverage analysis report |
| | Depth | ATE_DPT.1 | Depth analysis report |
| | Functional tests | ATE_FUN.1 | Test specification and results report |
| | Independent testing | ATE_IND.2 | MFP control software including TOE |
| Class AVA: Vulnerability Assessment | Misuse | AVA_MSU.1 | ※ no specific document (Reflected in the guidance documents) |
| | Strength of TOE security functions | AVA_SOF.1 | Vulnerability analysis report |
| | Vulnerability analysis | AVA_VLA.1 | |

7. PP Claims

There is no conformance to a PP in this ST.

8. Rational

8.1. Security Objectives Rationale

8.1.1. Necessity

The correspondence between the assumptions, threats and security objectives are shown in the following table. It shows that the security objectives correspond to at least one assumption or threat.

Table 11 Conformity of Security Objectives to assumptions and Threats

| Assumption/Treat | A.ADMIN | A.SERVICE | A.NETWORK | A.SECRET | A.SETTING | A.SERVER | T.DISCARD-MFP | T.BRING-OUT-STORAGE | T.ACCESS-PRIVATE-BOX | T.ACCESS-PUBLIC-BOX | T.ACCESS-GROUP-BOX | T.ACCESS-SECURE-PRINT | T.ACCESS-NET-SETTING | T.ACCESS-SETTING | T.BACKUP-RESTORE | P.COMMUNICATION-DATA |
|-----------------------|---------|-----------|-----------|----------|-----------|----------|---------------|---------------------|----------------------|---------------------|--------------------|-----------------------|----------------------|------------------|------------------|----------------------|
| O.REGISTERED-USER | | | | | | | | | ● | ● | ● | ● | | | | |
| O.PRIVATE-BOX | | | | | | | | | ● | | | | | | | |
| O.PUBLIC-BOX | | | | | | | | | | ● | | | | | | |
| O.GROUP-BOX | | | | | | | | | | | ● | | | | | |
| O.SECURE-PRINT | | | | | | | | | | | | ● | | | | |
| O.CONFIG | | | | | | | | | | | | | ● | ● | ● | ● |
| O.OVERWRITE-ALL | | | | | | | ● | | | | | | | | | |
| O.CRYPT-KEY | | | | | | | | ● | | | | | | | | |
| O.CHECK-HDD | | | | | | | | ● | | | | | | | | |
| O.TRUSTED-PASS | | | | | | | | | | | | | | | | ● |
| O.CRYPTO-MAIL | | | | | | | | | | | | | | | | ● |
| OE.CRYPT | | | | | | | | ● | | | | | | | | |
| OE.LOCK-HDD | | | | | | | | ● | | | | | | | | |
| OE.FEED-BACK | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| OE-N.ADMIN | ● | | | | | | | | | | | | | | | |
| OE-N.SERVICE | | ● | | | | | | | | | | | | | | |
| OE-N.NETWORK | | | ● | | | | | | | | | | | | | |
| OE-N.SECRET | | | | ● | | | | | | | | | | | | |
| OE-N.SERVER | | | | | | ● | | | | | | | | | | |
| OE-N.SESSION | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| OE-N.SETTING-SECURITY | | | | | ● | | | | | | | | | | | |

8.1.2. Sufficiency of Assumptions

The security objectives for the assumptions are described as follows.

- **A.ADMIN (Personnel Conditions to be an Administrator)**

This condition assumes that administrators are not malicious.

With OE-N.ADMIN, the organization that uses the MFP assigns personnel who are reliable in the organization that uses the MFP, so the reliability of the administrator is realized.

- **A.SERVICE (Personnel Conditions to be a Service Engineer)**

This condition assumes the service engineer are not malicious.

With OE-N.SERVICE, the organization that manages the maintenance of the MFP educates the service engineer. Also the administrator needs to observe the maintenance of the MFP, so that the reliability of service engineers is assured.

- **A.NETWORK (Network Connection Conditions for the MFP)**

This condition assumes that there are no wiretapping activities for the intra-office LAN and no access by an unspecified person from an external network.

OE-N.NETWORK regulates the wiretapping prevention by the installation of devices such as a wiretapping detection device and device to perform the encryption communication on the intra-office LAN. It also regulates the unauthorized access prevention from external by the installation of devices such as firewall in order to block access to the MFP from the external networks, so that this condition is realized.

- **A.SECRET (Operating condition concerning confidential information)**

This condition assumes each password and encryption passphrase using for the use of TOE should not be leaked by each user.

OE-N.SECRET regulates that the administrator makes the user to execute the operation rule concerning the secure print password, the user box password, user password and account password and that the administrator executes the operation rule concerning the administrator password, the HDD lock password, SNMP password, encryption passphrase and account password. It also regulates that the service engineer executes the operation rule concerning the CE password, and that the service engineer makes the administrator to execute the operation rule concerning the administrator password, so that this condition is realized.

- **A.SETTING (Enhanced Security Function Operational Settings Condition)**

This condition assumes the enhanced security function operational settings condition is satisfied.

OE-N.SETTING-SECURITY regulates that this is used after the administrator activates the enhanced security function, so that this condition is realized.

- **A.SERVER (Management condition of user information management server connected with the intra-official LAN)**

This condition assumes that the requiring user information management server is managed securely when "external server authentication" is used as the method of the user authentication.

OE-N.SERVER regulates that the person in charge of the organization executes the server management which is necessary to maintain security such as the patch application, the account management, and the access control for the user information management serve, so that this condition is realized.

8.1.3. Sufficiency of Threats

The security objectives against threats are described as follows.

- **T.DISCARD-MFP (Lease return and disposal of MFP)**

This threat assumes the possibility of leaking information from MFP collected from the user. O.OVERWRITE-ALL is that TOE offers the function to overwrite data for the deletion to all area of HDD and initializes the information of NVRAM, so that the possibility of the threat is removed by executing this function before MFP is collected. Accordingly, this threat is countered sufficiently.

- **T.BRING-OUT-STORAGE (Unauthorized taking out of HDD)**

This threat assumes the possibility that the image data in HDD leaks by being stolen from the operational environment under MFP used or by installing the unauthorized HDD and taking away with the data accumulated in it.

For the above, the possibility of the threat is removed because at least either of the following two measures is selected by the administrator.

①O.CRYPT-KEY generates the encryption key for TOE to encrypt data to be written in HDD, and the encryption board encodes data by OE.CRYPT.

②OE.LOCK-HDD doesn't permit to read data from any other MFP, as a function of the HDD, but the MFP where this HDD is installed.

In the above-mentioned, when only ② is selected, danger of leaking exists by taking out the another HDD without the function of ② having been secretly replaced. For the above, because the validity of HDD installed by TOE is verified by O.CHECK-HDD, data is not written in the HDD replaced secretly. The possibility of the threat is removed consequently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-PRIVATE-BOX (Unauthorized access to personal user box using user function)**

This threat assumes the possibility that an unauthorized operation is done by using the user function for the personal user box which each user uses to store the image file.

O.REGISTERED-USER is assumed that only the user to whom TOE was registered is permitted to use MFP installed TOE, furthermore, the operation of a personal user box and the user box file in a personal user box is restricted only to the user who is the owner by O.PRIVATE-BOX, so that the possibility of the threat is removed.

OE.FEED-BACK regulates to return the protected feedback for the entered password in the user's authentication, and OE-N.SESSIOIN also requires the log-off operation after the operation ends, so that O.REGISTERED-USER and O.PRIVATE-BOX are supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-PUBLIC-BOX (Unauthorized access to public user box using user function)**

This threat assumes the possibility that an unauthorized operation is done by using the user function for the public user box which each user shares to store the image file.

O.REGISTERED-USER assumes that only the user to whom TOE was registered is permitted to use MFP installing TOE, furthermore, the operation of the public user box and the user box file in the public user box is restricted only to the user who is permitted by O.PUBLIC-BOX, so that the possibility of the threat is removed.

OE.FEED-BACK regulates to return the protected feedback for the entered password in the user's authentication and user box's authentication, and OE-N.SESSION requires the log-off operation after the operation ends, so that O.REGISTERED-USER and O.PUBLIC-BOX are supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-GROUP-BOX (Unauthorized access to a group user box using user function)**

This threat assumes the possibility that an unauthorized operation is performed by using the user function for the group box that is a storage area of image file used by user who is permitted the use of the account, or the user box file in it.

O.REGISTERED-USER assumes that only the user to whom TOE was registered is permitted to use MFP installed TOE, furthermore, the operation of the group user box and user box file in the group user box is restricted only to the permitted user by O.GROUP-BOX, so that the possibility of the threat is removed.

OE.FEED-BACK regulates to return the protected feedback for the entered password in the user's authentication and account's authentication, and OE-N.SESSION also requires the log-off operation after the operation ends, so that O.REGISTERED-USER and O.GROUP-BOX are supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-SECURE-PRINT (Unauthorized access to a secure print file)**

This threat assumes the possibility that an unauthorized operation is done to the secure print. O.REGISTERED-USER assumes that only the user to whom TOE was registered is permitted to use MFP installing TOE, furthermore, the operation of the secure print is limited only to the authorized user by O.SECURE-PRINT, so that the possibility of the threat is removed.

OE.FEED-BACK regulates to return the protected feedback for the entered password in the user's authentication and access authentication to the secure print, and OE-N.SESSION requires the log-off operation after the operation ends, so that O.REGISTERED-USER and O.SECURE-PRINT are supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-NET-SETTING (Unauthorized change in network setting)**

This threat assumes the possibility of sending the user box file to the address that isn't intended, when the network setting that relates to the transmission is illegally changed. This is concerned about a possibility that the user box file is transmitted to the specified server illegally without the change of the network environment constitution by the malicious person by, for instance, illegally being changed the address of the SMTP server that relays E-mail for the E-mail, or illegally being changed the address of the DNS server where the domain name is inquired when the address of the SMTP server is used for a search of the domain name.

For FTP transmission, by being likely to use the mechanism of the search of the domain name is concerned about the similar possibility of the incident might be occurred by E-mailing. Furthermore, when the network setting which is related to the address of MFP is modified illegally, it assumes the possibility to use the print function to the unauthorized entity from PC by the user who believes as TOE. Especially, it becomes a problem if a secure print file which is required to be concealed from other users in the office is transmitted to the unauthorized entity.

On the other hand, O.CONFIG regulates that the role to operate the network setting relating to the transmission of TOE is limited to the administrator, and so the possibility of this threat is removed.

OE.FEED-BACK regulates that the feedback protected is returned for the entered password by the administrator's authentication and OE-N.SESSION requires to logoff after the operation ends, so that O.CONFIG is supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.ACCESS-SETTING (Unauthorized change of function setting condition related to security)**

This threat assumes the possibility of developing consequentially into the leakage of the user box file and the secure print file by having been changed the specific function setting which relates to security.

O.CONFIG regulates that only the administrator is permitted to perform the setting of the enhanced security function that controls all setting function related to a series of security, and so the possibility of the threat is removed.

OE.FEED-BACK regulates that the feedback protected is returned for the entered password by the administrator's authentication, and OE-N.SESSION is also requested to logoff respectively after the operations of the administrator mode ends, so that O.CONFIG is supported sufficiently.

Accordingly, this threat is countered sufficiently.

- **T.BACKUP-RESTORE (Unauthorized use of back-up function and restoration function)**

This threat assumes a possibility that the user box file or the secure print file may leak since the back-up function or the restoration function being illegally used. Moreover, this assumes that because of a leak of confidential data such as the password, the various setting values are falsified and there is a similar possibility that the user box file or the secure print file may leak.

O.CONFIG regulates that the use of the back-up function and the restoration function is permitted only to the administrator, so that the possibility of the threat is removed.

OE.FEED-BACK regulates that the protected feedback is returned for the entered password by the administrator authentication and OE-N.SESSION is also requested the log-off operation after the operation ends, and so O.CONFIG is sufficiently supported.

Accordingly, this threat is countered sufficiently.

8.1.4. Sufficiency of Organizational Security Policies

Security objective corresponding to organizational security policies is explained as follows.

- **P.COMMUNICATION-DATA (secure communication of image file)**

This organizational security policies prescribes carrying out processing via trusted pass to a correct destination or encrypting to ensure the confidentiality about the image file which flows on a network.

O.TRUSTED-PASS offers the Trusted Channel to a correct destination in the transmission and reception of an image such as from MFP to PC or from PC to MFP, for the user box file and the secure print file that is a confidential image, so that the organizational security policies is achieved.

Also, the security objective offers the transmission function to a correct destination by encrypting the user box file transmitted by e-mail from MFP to PC by O.CRYPTO-MAIL, so that the organizational security policies is achieved. Furthermore, O.CONFIG restricts the Trusted Channel function setting data, the management of the user box files' encryption by e-mail and the transmission address data to the administrator. And then, OE.FEED-BACK regulates that the protected feedback is returned for the entered password in the administrator's authentication, and OE.SESSON is also regulated to log off after the operations of the administrator mode ends, so that O.CONFIG is supported.

Accordingly, this organizational security policies is sufficiently to achieve.

8.2. IT Security Requirements Rationale

8.2.1. Rationale for IT Security Functional Requirements

8.2.1.1. Necessity

The correspondence between the security objectives and the IT security functional requirements are shown in the following table. It shows that the IT security functional requirements correspond to at least one security objective.

Table 12 Conformity of IT Security Functional Requirements to Security Objectives

| Security Objective \ Security Functional Requirements | O.REGISTERED-USER | O.PRIVATE-BOX | O.PUBLIC-BOX | O.GROUP-BOX | O.SECURE-PRINT | O.CONFIG | O.OVERWRITE-ALL | O.CRYPT-KEY | O.CHECK-HDD | O.TRUSTED-PASS | O.CRYPTO-MAIL | OE.CRYPT | OE.LOCK-HDD | OE.FEED-BACK | ※ set:admin | ※ set:service |
|---|-------------------|---------------|--------------|-------------|----------------|----------|-----------------|-------------|-------------|----------------|---------------|----------|-------------|--------------|-------------|---------------|
| set.admin | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| set.service | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| FCS_CKM.1 | | | | | | | | ● | | | ● | | | | | |
| FCS_COP.1 | | | | | | | | | | | ● | | | | | |
| FDP_ACC.1[1] | | ● | ● | ● | | ● | | | | | | | | | | |
| FDP_ACC.1[2] | | | | | ● | ● | | | | | | | | | | |
| FDP_ACC.1[3] | | | | | | ● | | | | | | | | | | |
| FDP_ACF.1[1] | | ● | ● | ● | | ● | | | | | | | | | | |
| FDP_ACF.1[2] | | | | | ● | ● | | | | | | | | | | |
| FDP_ACF.1[3] | | | | | | ● | | | | | | | | | | |
| FIA_AFL.1[1] | | | | | | | | | | | | | | | | ● |
| FIA_AFL.1[2] | | | | | | | | | | | | | | | ● | |

| Security Objective Security Functional Requirements | O.REGISTERED-USER | O.PRIVATE-BOX | O.PUBLIC-BOX | O.GROUP-BOX | O.SECURE-PRINT | O.CONFIG | O.OVERWRITE-ALL | O.CRYPT-KEY | O.CHECK-HDD | O.TRUSTED-PASS | O.CRYPTO-MAIL | OE.CRYPT | OE.LOCK-HDD | OE.FEED-BACK | ※ set:admin | ※ set:service |
|--|-------------------|---------------|--------------|-------------|----------------|----------|-----------------|-------------|-------------|----------------|---------------|----------|-------------|--------------|-------------|---------------|
| FIA_AFL.1[3] | | | | | | ● | | | | | | | | | | |
| FIA_AFL.1[4] | ● | | | | | | | | | | | | | | | |
| FIA_AFL.1[5] | | | | | ● | | | | | | | | | | | |
| FIA_AFL.1[6] | | | ● | | | | | | | | | | | | | |
| FIA_AFL.1[7] | | | | ● | | | | | | | | | | | | |
| FIA_AFL.1[8] | ● | | ● | ● | ● | | | | | | | | | | ● | ● |
| FIA_ATD.1 | | ● | ● | ● | ● | | | | | | | | | | | |
| FIA_SOS.1[1] | | | | | | ● | | | | | | | | | ● | ● |
| FIA_SOS.1[2] | | | | | | ● | | | | | | | | | | |
| FIA_SOS.1[3] | ● | | | | | | | | | | | | | | | |
| FIA_SOS.1[4] | | | | | | ● | | | | | | | | | | |
| FIA_SOS.1[5] | | | | | ● | | | | | | | | | | | |
| FIA_SOS.1[6] | ● | | ● | | | | | | | | | | | | ● | |
| FIA_SOS.1[7] | | | ● | ● | | | | | | | | | | | | |
| FIA_SOS.2 | ● | | ● | | | | | | | | | | | | ● | |
| FIA_UAU.2[1] | | | | | | | | | | | | | | | | ● |
| FIA_UAU.2[2] | | | | | | ● | | | | | | | | | ● | |
| FIA_UAU.2[3] | ● | | | | | | | | | | | | | | | |
| FIA_UAU.2[4] | | | | | ● | | | | | | | | | | | |
| FIA_UAU.2[5] | | | ● | | | | | | | | | | | | | |
| FIA_UAU.2[6] | | | | ● | | | | | | | | | | | | |
| FIA_UAU.6 | | | | | | ● | | | | | | | | | ● | ● |
| FIA_UAU.7 | ● | | ● | ● | ● | | | | | | | | | | ● | ● |
| FIA_UID.2[1] | | | | | | | | | | | | | | | | ● |
| FIA_UID.2[2] | | | | | | ● | | | | | | | | | ● | |
| FIA_UID.2[3] | ● | | | | | | | | | | | | | | | |
| FIA_UID.2[4] | | | | | ● | | | | | | | | | | | |
| FIA_UID.2[5] | | | ● | | | | | | | | | | | | | |
| FIA_UID.2[6] | | | | ● | | | | | | | | | | | | |
| FIA_UID.2[7] | ● | | | | | | | | | | | | | | | |
| FIA_USB.1 | | ● | ● | ● | ● | | | | | | | | | | | |
| FMT_MOF.1[1] | | | | | | ● | | | | | | | | | | |
| FMT_MOF.1[2] | ● | | | | | ● | | | | | | | | | | |
| FMT_MOF.1[3] | | | | ● | | | | | | | | | | | | |
| FMT_MSA.1[1] | | ● | | | | ● | | | | | | | | | | |
| FMT_MSA.1[2] | | | ● | | | ● | | | | | | | | | | |
| FMT_MSA.1[3] | | | | ● | | ● | | | | | | | | | | |
| FMT_MSA.3[1] | | ● | ● | | | | | | | | | | | | | |
| FMT_MSA.3[2] | | | | | ● | | | | | | | | | | | |
| FMT_MTD.1[1] | ● | | | | | | | | | | | | | | | |
| FMT_MTD.1[2] | ● | | | | | ● | | | | | | | | | | |
| FMT_MTD.1[3] | ● | | ● | ● | ● | ● | | | | | | | | ● | ● | |
| FMT_MTD.1[4] | | | ● | | | ● | | | | | | | | | | |
| FMT_MTD.1[5] | | | ● | | | | | | | | | | | | | |
| FMT_MTD.1[6] | | | | | | | | | | | | | | ● | | |

| Security Objective / Security Functional Requirements | O.REGISTERED-USER | O.PRIVATE-BOX | O.PUBLIC-BOX | O.GROUP-BOX | O.SECURE-PRINT | O.CONFIG | O.OVERWRITE-ALL | O.CRYPT-KEY | O.CHECK-HDD | O.TRUSTED-PASS | O.CRYPTO-MAIL | OE.CRYPT | OE.LOCK-HDD | OE.FEED-BACK | ※ set:admin | ※ set:service |
|---|-------------------|---------------|--------------|-------------|----------------|----------|-----------------|-------------|-------------|----------------|---------------|----------|-------------|--------------|-------------|---------------|
| FMT_MTD.1[7] | | | | | ● | | | | | | | | | | | |
| FMT_MTD.1[8] | | | | | ● | | | | | | | | | | | |
| FMT_MTD.1[9] | | | | | | | | | | | | | | | | ● |
| FMT_MTD.1[10] | ● | | | | | | | | | | | | | | | |
| FMT_MTD.1[11] | | | | | | ● | | | | | | | | | ● | |
| FMT_MTD.1[12] | | | | ● | | ● | | | | | | | | | | |
| FMT_MTD.1[13] | | | | ● | | | | | | | | | | | | |
| FMT_SMF.1 | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● |
| FMT_SMR.1[1] | | | | | | ● | | | | | | | | | ● | ● |
| FMT_SMR.1[2] | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | |
| FMT_SMR.1[3] | ● | ● | | | ● | | | | | | | | | | | |
| FMT_SMR.1[4] | | | ● | | | | | | | | | | | | | |
| FMT_SMR.1[5] | ● | | | | | | | | | | | | | | | |
| FMT_SMR.1[6] | | | | ● | | | | | | | | | | | | |
| FPT_RVM.1 | ● | ● | ● | ● | ● | ● | | | ● | | | | | | ● | ● |
| FPT_SEP.1 | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● |
| FTA_SSL.3 | ● | | | | | | | | | | | | | | ● | |
| FTP_ITC.1 | | | | | | | | | | ● | | | | | | |
| FNEW_RIP.1 | | | | | | | ● | | | | | | | | | |
| FIA_NEW.1 | | | | | | | | | ● | | | | | | | |
| FCS_COP.1[E] | | | | | | | | | | | | ● | | | | |
| FIA_AFL.1[E] | | | | | | | | | | | | | ● | | | |
| FIA_UAU.2[E] | | | | | | | | | | | | | ● | | | |
| FIA_UAU.7[E] | | | | | | | | | | | | | | ● | | |

Note) **set.admin** and **set.service** indicates the set of the requirements. And the security objectives assumed to have the correspondence and presented by "●" also correspond to a series of requirement set associated by ※ set.admin and ※ set.service shown in column.

8.2.1.2. Sufficiency

The IT security functional requirements for the security objectives are described as follows.

- **O.REGISTERED-USER (Usage of a registered user)**

This security objective limits the utilization of MFP installing TOE to only the registered user, and needs various requirements that related to the user identification and authentication.

< Necessary requirement for identification and authentication of the user >

It identifies and authenticates that the user who accesses is a registered user by FIA_UID.2[3] and FIA_UAU.2[3].

FIA_UAU.7 returns "*" for each entered character as feedback protected by the panel and

supports the authentication.

In the case of the failure authentication from the panel, FIA_AFL.1 [8] refuses all input acceptances from the panel for 5 seconds in every failure. When the authentication failure reaches 1-3 times, FIA_AFL.1 [4] locks the authentication function for that user from then on. This lock status is released by the administrator's release operation.

FMT_MOF.1[2] permits only the administrator the selection of the user authentication methods which are "Machine authentication" and "External server authentication". FMT_MTD.1[3] permits only the administrator the setting (modification) of the threshold of the Authentication failure frequency which is the trial frequency of the failure authentication in the user authentication.

FIA_SOS.1[6] secures the quality verification of the session information used in the user authentication via the network, and FIA_SOS.2 secures the quality of the session information which is generated and used.

< Necessary requirements for managing session of user who is identified and authenticated >

The duration of session of the user who is identified and authenticated contributes to reduce the chance of attacking associated with unnecessary session connection, by ending the session after the panel automatic logoff time elapses with FTA_SSL.3. when it logs in from the panel. The change in the panel auto logoff time is limited to the administrator by FMT_MTD.1[3].

< Necessary requirement for managing the identification and authentication information of the user >

When "the machine authentication" is chosen in a method of the user authentication by FMT_MTD.1[1], the initial registration of a user password in the user's registration is permitted only by the administrator.

When "the machine authentication" has been selected in the method of the user authentication, the registration of the user ID in the user registration is permitted to the administrator by FMT_MTD.1[10]. When the "external server authentication" (has been selected in the user authentication method, the user who is authenticated the identification is permitted from an external server and registered automatically by this requirement. (This corresponds to the user ID registration of the "external server".) At this registration, the external server accessing TOE is identified the external server registered by FIA_UID.2[7]. This management behavior is maintained as the role of the external server by FMT_SMR.1 [5]. In addition, the registration function of user ID is specified for the administration function by FMT_SMF.1. The setting change operation of an external server is limited to only the administrator by FMT_MTD.1[3].

The quality of the user password is verified by FIA_SOS.1[3]. When "machine authentication" is selected in the method of the user authentication, a change of the user password is limited to the user itself and the administrator by FMT_MTD.1[2].

< Necessary requirement to keep the administrator secure >

⇒ refer to set.admin

< Necessary requirement to keep the service engineer secure >

⇒ refer to set.service

< Role and management function for each management >

The role to do these managements is maintained as a administrator by FMT_SMR.1[2] and a user by FMT_SMR.1[3]. Moreover, these management functions are specified by FMT_SMF.1.

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.PRIVATE-BOX (personal user box access control)**

This security objective limits access to the personal user box and the user box file in the personal user box to only the user who owns that user box, and needs various requirements that relate to the access control.

< User box access control (a personal user box) >

By FDP_ACC.1[1] and FDP_ACF.1[1], the task of acting the user has a user ID, and is permitted to display the list of the user box with a corresponding user attribute. In addition, after the user box has been selected, when the user box ID is related to the task of acting a use by FIA_ATD.1 and FIA_USB.1, the operation such as a print, a download, transmissions, a movement, and a copy is permitted to the user box file that has a corresponding object attribute to user ID and user box ID of the subject attribute.

< Management of a personal user box >

FMT_MSA.1[1] permits to the user and the administrator the change operation of the user attribute of the user box where the user ID is set.

As for the registration of the user box, public is appointed to the user attribute of the user box by FMT_MSA.3[1], and it is permitted only to the user being able to give the initial value to change. In addition, when the job to store the non-registered user box into the user box appointed is executed due to the same requirement, a user ID of the user who executes a job concerned is appointed automatically.

< Necessary requirement to keep the administrator secure >

⇒ refer to set.admin

< Necessary requirement to keep the service engineer secure >

⇒ refer to set.service

< Role and controlling function for each management >

As the role of doing these managements, FMT_SMR.1[2] maintains an administrator and FMT_SMR.1[3] maintains a user permitted the use of the user box. FMT_SMF.1 specifies these management functions.

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.PUBLIC-BOX (a public user box access control)**

This security objective permits the inspection of the public user box to all users, and limits the setting of the public user box and the operation of the user box file in the public user box only to the user who permitted the utilization of that public user box. And it needs the various requirements that related to the access control.

<User box access control (a public user box)>

FDP_ACC.1[1] and FDP_ACF.1[1] permits the list display operation to the user box where public is set to the user attribute to the task of acting the user who has user ID.

It is required to be a user who is permitted the use of the user box to operate the user box file in the public user box. FIA_UID.2[5] and FIA_UAU.2[5] identifies and authenticates that it is a user who is permitted the use of the user box.

FIA_UAU.7 returns "*" for each entered character as feedback protected by the panel and supports the authentication.

In the case of the failure authentication from the panel, FIA_AFL.1 [8] refuses all input acceptances from the panel for 5 seconds in every failure. When the authentication failure reaches 1-3 times, FIA_AFL.1 [6] locks the authentication function for that user from then on. This lock status is released by the administrator's release operation.

FMT_MTD.1[3] permits only to the administrator the setting of the threshold of the unauthorized access detection value that is the trial frequency of the failure authentication in the authentication of the user who is permitted the use of the user box.

When FIA_ATD.1 and FIA_USB.1 relates a user box ID to the task of acting use, FDP_ACC.1[1] and FDP_ACF.1[1] permit the user box file that has a corresponding object attribute to the user box ID of the subject attribute and is set public to the user attribute of user box, the operation such as a print, a download, transmissions, a movement, and a copy.

FIA_SOS.1[6] secures the quality verification of the session information used in the user box authentication via the network, and FIA_SOS.2 secures the quality of the session information which is generated and used.

<Management of a public user box>

FMT_MSA.1[2] permits the user who is permitted the use of the user box to operate the change of the user attribute of use box which "Public" is set. FMT_MTD.1[4] permits the change in the user box password only to the administrator and the user who is permitted to the use of the user box. FIA_SOS.1[7] verifies the quality of the user box password. As for the user box registration, FMT_MSA.3 specifies the public to the user attribute of the user box, and permits only the user to be given the initial value to change it. Moreover, when the job that stores an unregistered user box in the box where is specified by this requirement is executed, the user ID of the user who executed a job concerned is automatically specified. FMT_MTD.1[5] permits the registration of the user box password only to the user or the administrator.

<Necessary requirement to keep the administrator secure>

⇒ refer to set.admin

<Necessary requirement to keep the service engineer secure>

⇒ refer to set.service

<Role and controlling function for each management>

As the role of doing these managements, FMT_SMR.1[2] maintains an administrator and FMT_SMR.1[4] maintains a user permitted the use of the user box. FMT_SMF.1 specifies these management functions.

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.GROUP-BOX (Group user box access control)**

This security objective permits the browser of the group box only to the user who is permitted the use of the account, and limits the operation of the user function of the box file in the group user box, set of the group box only to the user who is permitted the use of the group user box, and requires various requirements that relate to the access control.

<User box access control (a group user box)>

FDP_ACC.1[1] and FDP_ACF.1[1] permits a task to act for the user to operate the list to the user box (group user box) where the user attribute corresponded with the Account Name (account ID) in the security attribute of the subject is set.

It is required to be a user who is permitted the use of the group user box to operate the user box file in the group user box. When the Account authentication method is “the method not synchronized”, FIA_UID.2[6] and FIA_UAU.2[6] identifies and authenticates that it is a user who is permitted the use of the group user box. When the account authentication method is “synchronized method” and the Account that user belongs to is not registered, FIA_UID.2[6] and FIA_UAU.2[6] identifies and authenticates that it is a user who is permitted the use of the account.

FIA_UAU.7 returns “*” for each entered character as feedback protected by the panel and supports the authentication.

In the case of the failure authentication from the panel, FIA_AFL.1[8] refuses all input acceptances from the panel for 5 seconds in every failure. When the authentication failure reaches 1-3 times, FIA_AFL.1[7] locks the authentication function for that account from then on.

This lock status is released by the administrator’s release operation.

FMT_MTD.1[3] permits only the administrator the setting of the threshold of the unauthorized access detection value that is the trial frequency of the failure authentication in the authentication of the user who is permitted the use of the group user box.

When FIA_ATD.1 and FIA_USB.1 relates to the user box ID under the task to act for user, FDP_ACC.1[1] and FDP_ACF.1[1] permits the user box file that has a corresponding object attribute to the account ID and the user box ID of the subject attribute the operation such as print, download, transmissions, movement and copy.

<Necessary requirement to manage the group box>

FMT_MAS.1[3] permits the modification operation of the user attribute of the user box that is set “account ID” to the user who is permitted the access to the group user box.

<Necessary requirement to manage the subject attribute related with the group user box>

FMT_MTD.1[12] restricts the registration of the account ID and account password only to the administrator. Also, FMT_MTD.1[3] restricts the modification of the account ID and account password only to the administrator.

FMT_MTD.1[13] restricts the registration of the belonging account assigned to the user, to the administrator and to the user who is permitted the use of the account.

FIA_SOS.1[7] verifies the quality of the account password .

<Management of the account authentication method>

FMT_MOF.1[3] restricts the behavior management of the account authentication function and the stop operation management to the administrator.

< Necessary requirement to keep the administrator secure >

⇒ refer to set.admin

< Necessary requirement to keep the service engineer secure >

⇒ refer to set.service

< Role and controlling function for each management >

As the role of doing these managements, FMT_SMR.1[2] maintains an administrator and FMT_SMR.1[6] maintains a user permitted the use of the group user box. FMT_SMF.1 specifies these management functions.

This security objective is satisfied by the completion of these multiple functional requirements.

O.SECURE-PRINT (Secure print file access control)

This security objective limits the print of the secure print file only for the user, who is permitted the use of the secure print file, and requires various requirements that relate to the access control.

< Secure print file access control >

FDP_ACC.1[2] and FDP_ACF.1[2] permits the list display operation of every secure print user box to the task of acting the user who has user ID.

As it must be a user who is permitted the use of the secure print file to print it, FIA_UID.2[4] and FIA_UAU.2[4] identifies and authenticates that it is a user who is permitted the use of the secure print file.

FIA_UAU.7 returns "*" for each entered character as feedback protected by the panel and supports the authentication.

FIA_AFL.1 [8] refuses all input acceptances from the panel for 5 seconds in every failure. When the authentication failure reaches 1-3 times, FIA_AFL.1 [5] locks the authentication function for to the concerned secure print file. This lock status is released by the administrator's release operation.

FMT_MTD.1[3] permits only to the administrator the setting of the threshold of the authentication failure frequency that is the trial frequency of the failure authentication in the authentication of the user who is permitted the use of the secure print file.

When FIA_ATD.1 and FIA_USB.1 relate the secure print internal control ID to the task of acting use, FDP_ACC.1[2] and FDP_ACF.1[2] permit the print operation to the secure print file that has a corresponding object attribute to the secure print internal control ID of the subject attribute.

As for secure print internal control ID, FMT_MSA.3[2] gives the value uniquely identified when the secure print file is registered.

< Secure print password >

FMT_MTD.1[8] permits only to the user the registration of the secure print password used

for the authentication. FIA_SOS.1[5] verifies the quality of the secure print password.

< Necessary requirement to keep the administrator secure >

⇒ refer to set.admin

< Necessary requirement to keep the service engineer secure >

⇒ refer to set.service

< Role and controlling function for each management >

As the role of doing these managements, FMT_SMR.1[2] maintains an administrator and FMT_SMR.1[3] maintains a user. Moreover, FMT_SMF.1 specifies these management functions.

This security objective is satisfied by the completion of these multiple functional requirements.

● **O.CONFIG (Access limitation to an management function)**

This security objective limits the setting related to the SMTP server, the setting related to the DNS server, the setting related to the Enhanced Security function, the backup function, and the restorations function to the administrator, and needs various requirements to limit the access to a series of setting function and the management function.

< Management of network setting >

When the administrator attribute is associated with the task of substituting the use, FDP_ACC.1[3] and FDP_ACF.1[3] permits the task of substituting the user to operate the SMTP server group object, the DNS server group object and the settings for the MFP address group object.

< Operation limitation of Backup and restoration function >

When the administrator attribute is related to the task of acting the use, the task of acting the user is permitted the back-up operation of;

- the user box files by FDP_ACC.1[1] and FDP_ACF.1[1].
- the secure print files by FDP_ACC.1[2] and FDP_ACF.1[2].

In addition, the restoration operation is permitted for

- the encryption passphrase object, the HDD lock password object, SMTP server group object, DNS server group object and MFP address group object by FDP_ACC.1[3] and FDP_ACF.1[3].

Moreover, the restoration operation is permitted for

- the encryption passphrase object, the HDD lock password object, the SMTP server group object, the DNS server group object, and the MFP address group object by FDP_ACC.1[3] and FDP_ACF.1[3].

Moreover, the restoration operation (modifying operation) of the followings is permitted only to the administrator.

- the enhanced security setting data by FMT_MOF.1[1]
- the user attribute of the user box by FMT_MSA.1[1] and FMT_MSA.1[2].
- the user password by FMT_MTD.1[2].
- the user ID, the SNMP password, the panel auto logoff time, the authentication failure frequency, the secure print password, the external authentication setting data, the account

ID, the account password, the S/MIME certificate, the transmission address data, the trusted channel function setting data, the belonging account of user, CE authentication lock time, administrator authentication lock time by FMT_MTD.1[3].

- the user box password by FMT_MTD.1[4].

FMT_MTD.1[7] permits only to the administrator the backup operation (inquiry operation) of the SNMP password, the user password, the user box password, and the secure print password, the account password.

<Operational limitation of Enhanced Security function>

FMT_MOF.1[1] permits only the administrator and service engineer to disable the setting for the enhanced security function.

<Management of HDD lock password and encryption passphrase>

When the administrator attribute is related to the task of acting the user, FDP_ACC.1[3] and FDP_ACF.1[3] permit the setting operation to the HDD lock password object and the encryption passphrase object to the task of acting the user. FIA_SOS.1[4] verifies the quality of the HDD lock password and the encryption passphrase. In order to change the HDD lock password and encryption passphrase, FIA_UAU.6 re-authenticates that a user is an administrator by collating with the registered HDD lock password and encryption Passphrase object. When the authentication is succeeded, the HDD lock password and the encryption passphrase are allowed to be changed.

Moreover, when the CE attribute is related to the task of acting the user, FDP_ACC.1[3] and FDP_ACF.1 [3] permit the setting operation to the HDD lock password object and the encryption Passphrase object to the task of acting the user.

<Necessary requirement for accessing MIB object>

The SMTP server group object, the DNS server group object and the MFP address group object exists as an MIB object as well, so that the restriction is necessary even in the access from the SNMP.

FIA_UID.2[2] and FIA_UAU.2[2] identifies and authenticates that the user who accesses the MIB object is an administrator.

FIA_AFL.1[3] locks the authentication function to access the MIB object when the failure authentication reaches 1-3 times. This lock is released by the start of TOE or the lock release operation by the administrator.

FMT_MTD.1[3] restricts the threshold setting of the unauthorized access detection value that is the trial frequency of the failure authentication in the administrator authentication using the SNMP password only to the administrator

FMT_MTD.1[3] restricts the change in the SNMP password to the administrator.

FIA_SOS.1[2] verifies the quality of the SNMP password.

FMT_MTD.1[11] restricts the initialization of the SNMP password only to the administrator and the service engineer.

FMT_MOF.1[2] restricts the method of the SNMP password authentication function only to the administrator.

<Operational Limit of Trusted Channel function setting data>

The registration of the Trusted Channel function setting data is permitted only to the administrator by FMT_MOF.1[12]. The modification of the Trusted Channel function setting

data is permitted only to the administrator by FMT_MTD.1[3]. The behavior of Trusted Channel function is permitted only to the administrator by FMT_MOF.1[2].

<Operational Limit for S/MIME function>

The registration of the S/MIME certificate and the transmission address data is permitted only to the administrator by FMT_MTD.1[12]. The modification of the S/MIME certificate and the transmission address data is permitted only to the administrator by FMT_MTD.1[3]. The behavior of the S/MIME function is permitted only to the administrator by the FMT_MOF.1[2].

<Necessary requirements to keep the administrator secure>

⇒ refer to set.admin

<Necessary requirements to keep the service engineer secure>

⇒ refer to set.service

<Role and controlling function for each management>

As the role of doing these managements, FMT_SMR.1[1] maintains a service engineer and FMT_SMR.1[2] maintains an administrator. Moreover, FMT_SMF.1 specifies these management functions.

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.OVERWRITE-ALL (Complete over write deletion)**

This security objective regulates that it deletes all data areas of HDD and initializes the concealed information of NVRAM that is set by the user, and requires various requirements that relate to the deletion.

FNEW_RIP.1 guarantees that these objective information not to be able to use the content of any previous information by the deletion operation.

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.CRYPT-KEY (Encryption key generation)**

This security objective regulates that, when the encryption board is installed, the encryption key necessary to encrypt all the data written in HDD is generated, and needs various requirements that relate to the encryption key generation.

Using KonicaMinolta HDD encryption key generation mechanism (SHA-1) according to KonicaMinolta encryption specification standard, FCS_CKM.1 generates the 128bit encryption key. KonicaMinolta HDD encryption key generation algorithm is not the general standard algorithm that is recognized, but it is the algorithm using SHA-1 specified with FIPS 180-1, and so this is the algorithm with sufficient strength which does not undermine the entropy of 128 bit, and does not undermine the strength level that is required by security objective. (Refer to chapter 6 TOE summary specification for the description related to this algorithm)

This security objective is satisfied by the completion of these multiple functional requirements.

- **O.CHECK-HDD (Validity confirmation of HDD)**

This security objective regulates that it verifies the validity of HDD in order to confirm the unauthorized HDD doesn't exist, and needs various requirements that relate to the verification of an external entity from TOE.

FIA_NEW.1 identifies HDD before the action from TOE to HDD, and cancels the scheduled action when the identification fails.

This security objective is satisfied by the completion of this function requirement.

- **O.TRUSTED-PASS(Usage of Trusted Channel)**

This security objective generates the Trusted Channel in the transmission and reception such as a user box file and a secure print file, and the requirement that relates with the Trusted Channel is necessary. FTP_ITC.1 generates the Trusted Channel according to the requirement from the remote Trusted IT product, and it is applied to the transmission and reception, such as the user box file and the secure print file.

This security objective is satisfied by the completion of this function requirement,

- **O.CRYPTO-MAIL (Usage of Encryption mail)**

This security objective regulates the encryption of a user box file when transmitting the user box file by e-mail, and various requirements related to the encryption are necessary.

FCS_CKM.1 generates the encryption key (128bit, 168bit, 192bit or 256bit) by using Pseudorandom number Generation Algorithm according to FIPS 186.

FCS_COP.1 encrypts the user box file by using AES (encryption key: 128bit, 192bit or 256bit) of FIPS PUB 197 (it becomes a transmission data of S/MIME). Also, the same requirement encrypts the user box file by using 3-Key-Triple-DES (encryption key: 168bit) of SP800-67. (By the same token, it becomes a transmission data of S/MIME.)

FCS-COP.1 encrypts these encryption keys are encrypted by RSA of FIPS 186-1 that is a public key of S/MIME certificate of each destination.

This security objective is satisfied by the completion of these plural function requirements.

- **OE.CRYPT (Encryption of HDD)**

This security objective regulates that the data stored in HDD is encrypted by the encryption board that is the entity of a necessary IT environment for the security maintenance of TOE, and needs various requirements that relate to the encryption.

Applying FCS_COP.1[E], the encryption board encodes and decodes all the written data to HDD by the 128bit encryption key using AES that conforms to FIPS PUB 197.

This security objective is satisfied by the completion of this function requirement.

- **OE.LOCK-HDD (Access control of HDD)**

This security objective regulates that it refuses the unauthorized access from MFP other than the one that is set by the HDD which is the entity of a necessary IT environment for the TOE security maintenance, and needs various requirements that verify that it is right MFP where TOE is installed.

By FIA_UAU.2[E], HDD authenticates that the entity accessing to HDD is MFP, which HDD is installed.

When the failure authentication reaches five times, FIA_AFL.1[E] refuses all the accesses to HDD concerning reading and writing data.

This security objective is satisfied by the combination of these multiple functional requirements.

- **OE.FEED-BACK (Feedback of password)**

This security objective regulates that the application (used by client PC for accessing to MFP) that is the entity of a necessary IT environment for the TOE security maintenance offers the appropriate protected feedback for the entered user password, the entered user box password, the entered administrator password and the entered account password.

By FIA_UAU.7[E], the application displays "*" for each character as feedback for entered character data.

This security objective is satisfied by the completion of this function requirement.

The following is the compilation of set such as ①the set of necessary requirement to keep administrator secure (set.admin), ②the set of necessary requirement to keep service engineer secure (set.service).

- **set.admin (Set of necessary requirement to keep administrator secure)**

<Identification and Authentication of an administrator>

FIA_UID.2[2] and FIA_UAU.2[2] identifies and authenticates that the accessing user is a administrator.

FIA_UAU.7 returns "*" for each character entered as feedback protected in the panel, and supports the authentication.

FIA_AFL.1[8] refuses, in case of the failure authentication tried from the panel, all the input receipts from the panel for five seconds in every failure. When the failure authentication reaches 1-3 times, FIA_AFL.1[2] logoffs if it's under authentication, and locks all the authentication functions that use the administrator password from then on. The release function is executed by starting TOE with turning OFF and ON the power supply, so that the lock is released after the administrator authentication lock time passed.

FMT_MTD.1[3] permits only to the administrator the setting of the threshold of the authentication failure frequency which is the trial frequency of the failure authentication in the administrator authentication.<Management of session of identified and authenticated administrator>

The duration of session of the administrator who is identified and authenticated contributes to reduce the chance of attacking associated with unnecessary session connection by ending the session after the panel automatic logoff time elapses by FTA_SSL.3. if it logs in from the panel. The change in the panel auto logoff time is limited to the administrator by FMT_MTD.1[3].

<Management of administrator's authentication information>

FIA_SOS.1[1] verifies the quality of the administrator password. Moreover, FIA_SOS.[6] verifies the quality of session information used to authenticate the administrator via the network, and FIA_SOS.2 secures the quality of session information that is generated and used. FMT_MTD.1[6] restricts the change in the administrator password to the administrator and the service engineer. When the administrator changes the administrator password, FIA_UAU.6 re-authenticates it. In this re-authentication, when the failure authentication reaches 1-3 times, FIA_AFL.1[2] logoffs it if it's under authentication, and releases the

authentication status of the administrator from then on. And it locks all the authentication functions to use the administrator password. The release function is executed by starting TOE with turning OFF and ON the power supply, so that the lock is released after the administrator authentication lock time passed.

Moreover, FMT_MTD.1[11] restricts the initialization of the administrator password to the administrator and the service engineer.

<Role and management function for each management>

FMT_SMR.1[1] have service engineer maintain the role to do these management, and FMT_SMR.1[2] have the administrator do the same. Additionally, FMT_SMF.1 specifies these management functions.

➤ **set.service (Set of necessary requirement to keep service engineer secure)**

<Identification and Authentication of a service engineer>

FIA_UID.2[1] and FIA_UAU.2[1] identifies and authenticates that the accessing user is a service engineer.

FIA_UAU.7 returns "*" every one character entered as the feedback protected in the panel, and supports the authentication.

FIA_AFL.1[8] refuses all the input receipts from the panel for five seconds at each failure, and when the failure authentication reaches 1-3 times, FIA_AFL.1[1] logoffs it if it's under authentication, and locks all the authentication functions to use the CE password. The secret lock release function is executed and the CE authentication lock time goes by, so that this lock status is released.

FMT_MTD.1[3] permits only to the administrator the setting of the threshold of the authentication failure frequency that is the trial frequency of the failure authentication in the service engineer authentication. FMT_MTD.1[9] permits only to the service engineer the setting of the CE authentication lock time.

<Management of service engineer's authentication information>

FIA_SOS.1[1] verifies the quality of the CE password. FMT_MTD.1[9] restricts the change in the CE password to the service engineer. Moreover, FIA_UAU.6 re-authenticates it. In this re-authentication, when the failure authentication reaches 1-3 times, FIA_AFL.1[1] releases the authentication status of the service engineer and locks all the authentication functions to use the CE password. The secret lock release function is executed and the CE authentication lock time goes by, so that this lock status is released.

<Role and management function for each management>

FMT_SMR.1[1] maintains the role to do these management as a service engineer. FMT_SMF.1 specifies these management functions.

FPT_RVM.1 and FPT_SEP.1 are the security function requirements immediately not related to the security measures policy, though it not included in the explanation of the above-mentioned sufficiency. But, they are shown to support the security function requirement which is included in the explanation of the above-mentioned sufficiency in the mutual support described later. Because these two security function requirements will relate to the security objective that corresponds to the security function requirement supported respectively by two security function requirements, the relation with the security objective is consequentially clear.

8.2.1.3. Necessity of specified IT security function requirement

In this ST, FNEW_RIP.1 and FIA_NEW.1 is stated as an extended requirement. The necessity that presents these requirements and the validity of the assurance requirement applied in guaranteeing requirements is described as follows.

- Extended requirement : Necessity of FNEW RIP.1

Regarding FNEW_RIP.1, FDP_RIP.1 is the closest requirement in the viewpoint of remaining information protection, but the requirement needs to regulate the protection of not only user data, but also the TSF data. And so, it is improper in the function requirement concerned that exists in the class of the user data protection, and it requires the extended requirement.

<Validity of requirement identification structure>

Because this requirement doesn't have the corresponding class in the data protection class of integration of no division of the TSF data and the user data, a new class named FNEW was set up, the same family name as the RIP family of the FDP class that indicates the remaining information protection, and clarifies the identification.

Though the predicted management activity is assumed not to be existed, as for the timing of information assuming not to be able to recycle in the requirement is stipulated concretely, especially, the parameter treated as changeability are not guessed in this requirement. In addition, it is shown that the execution record has been left at the predicted audit activity with the user identification.

Extended requirement : Necessity of FIA_NEW.1

Regarding FIA_NEW.1, FIA_UID.1 or FIA_UID.2 is the closest requirement in the viewpoint of identification. But the verification act of HDD doesn't approve the act accessed from an external entity by TOE, but approval the act that TOE itself assigns to an external entity. It is improper in the function requirement concerned, and the extended requirement is necessary.

<Validity of requirement identification structure>

Because this requirement is one of the identification requirements, the family named NEW is set as a family added to the FIA class, and clarifies the identification.

As an activity that is predicted on management, FIA_UID requirement and similar management items are assumed. Also, an activity that is predicted on audit, FIA_UID requirement and similar audit item are assumed.

8.2.1.4. Assurance validity of specified IT security function requirement

Two specified function requirements (FNEW_RIP.1, FIA_NEW.1) are not the greatly extended concept of the function requirement provided by CC part 2, and high contents of novelty. This is not the one to assume the necessity of presenting the TSP model specially or the possibility of a potential hiding channel in order to evaluate this function requirement accurately.

Therefore, it is possible to assure sufficiently the validity of the function that these functional requirements show by the set of the assurance requirement of EAL3, and a special assurance requirement and the assurance requirement required at EAL4 or higher are not required.

8.2.1.5. Dependencies of the IT Security Functional Requirements

The dependencies of the IT security functional requirements components are shown in the

following table. When a dependency regulated in CC Part 2 is not satisfied, the reason is provided in the section for the “dependencies Relation in this ST.”

Table 13 Dependencies of IT Security Functional Requirements Components

N/A : Not Applicable

| Functional Requirements Component for this ST | Dependencies on CC Part 2 | Dependencies Relation in this ST |
|---|--|---|
| FCS_CKM.1 | FCS_CKM.2 or FCS_COP.1, FCS_CKM.4, FMT_MSA.2 | <p>FCS_COP.1, FCS_COP.1[E]</p> <p><The reason not to apply①FCS_CKM.4, ② FMT_MSA.2></p> <p>① The encryption key is regularly kept for the stored data. Moreover, an arbitrary access to the storage medium is difficult, and there is no necessity of the encryption key cancellation.</p> <p>② TOE does not have the security attribute to be managed for the encryption key, and so it is not necessary to regulate a security attribute that is secure.</p> |
| FCS_COP.1 | FCS_CKM.1 or FDP_ITC.1, FCS_CKM.4, FMT_MSA.2 | <p>FCS_CKM.1 (only a part of the phenomenon)</p> <p>The satisfied events: The encryption key for enciphering the attached file by the S/MIME communication is generated.</p> <p><The reason not to satisfy a part of the FCS_CKM.1 or FDP_ITC.1></p> <ul style="list-style-type: none"> • It seems proper to use FDP_ITC.1 because the public key to encrypt the encryption key for the data encryption of S/MIME is imported outside of TSC, but S/MIME certificate is registered by the administrator's operation. In that case, it is unnecessary to consider whether it passes thorough the untrusted channel or not. There is not inevitability to apply the security requirement (The use under the condition that A.NETWORK is realized) . • Also, the attribute information of imported encryption key doesn't apply to the security attribute used for the access control, etc., is not related to the initialization, etc., and the application is difficult. • In FMT_MTD.1[12], it is expressed as registration of TSF data, and the object of import operation is assigned to an appropriate role. • As a result, the event corresponding to the key management is explained by using not the security requirement that is showed in the dependencies but other security requirement, so that it's no problem even if this dependencies is not satisfied. <p><The reason not apply FCS_CKM.4></p> <p>The Encryption Key is stored constantly for the stored data. The arbitrary access to the storing media is difficult, so it is not necessary to cancel the Encryption Key.</p> |

| Functional Requirements Component for this ST | Dependencies on CC Part 2 | Dependencies Relation in this ST |
|---|---------------------------|---|
| | | <p><The reason not apply FMT_MSA.2> The regulation of the secure security attribute is unnecessary because the encryption key of 3-Key-Triple-DES which is generated at every transmission does not have a security attribute which should be managed to the encryption key.</p> |
| FDP_ACC.1[1] | FDP_ACF.1 | FDP_ACF.1[1] |
| FDP_ACC.1[2] | FDP_ACF.1 | FDP_ACF.1[2] |
| FDP_ACC.1[3] | FDP_ACF.1 | FDP_ACF.1[3] |
| FDP_ACF.1[1] | FDP_ACC.1, FMT_MSA.3 | FDP_ACC.1[1], FMT_MSA.3[1] |
| FDP_ACF.1[2] | FDP_ACC.1, FMT_MSA.3 | FDP_ACC.1[2], FMT_MSA.3[2] |
| FDP_ACF.1[3] | FDP_ACC.1, FMT_MSA.3 | FDP_ACC.1[3] <The reason not to apply FMT_MSA.3> There is no necessity for applying this requirement because the object attribute doesn't exist. |
| FIA_AFL.1[1] | FIA_UAU.1 | FIA_UAU.2[1] |
| FIA_AFL.1[2] | FIA_UAU.1 | FIA_UAU.2[2] |
| FIA_AFL.1[3] | FIA_UAU.1 | FIA_UAU.2[2] |
| FIA_AFL.1[4] | FIA_UAU.1 | FIA_UAU.2[3] |
| FIA_AFL.1[5] | FIA_UAU.1 | FIA_UAU.2[4] |
| FIA_AFL.1[6] | FIA_UAU.1 | FIA_UAU.2[5] |
| FIA_AFL.1[7] | FIA_UAU.1 | FIA_UAU.2[6] |
| FIA_AFL.1[8] | FIA_UAU.1 | FIA_UAU.2[1], FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[4], FIA_UAU.2[5], FIA_UAU.2[6] |
| FIA_ATD.1 | None | N/A |
| FIA_SOS.1[1] | None | N/A |
| FIA_SOS.1[2] | None | N/A |
| FIA_SOS.1[3] | None | N/A |
| FIA_SOS.1[4] | None | N/A |
| FIA_SOS.1[5] | None | N/A |
| FIA_SOS.1[6] | None | N/A |
| FIA_SOS.1[7] | None | N/A |
| FIA_SOS.2 | None | N/A |
| FIA_UAU.2[1] | FIA_UID.1 | FIA_UID.2[1] |
| FIA_UAU.2[2] | FIA_UID.1 | FIA_UID.2[2] |
| FIA_UAU.2[3] | FIA_UID.1 | FIA_UID.2[3] |
| FIA_UAU.2[4] | FIA_UID.1 | FIA_UID.2[4] |
| FIA_UAU.2[5] | FIA_UID.1 | FIA_UID.2[5] |
| FIA_UAU.2[6] | FIA_UID.1 | FIA_UID.2[6] |
| FIA_UAU.6 | None | N/A |
| FIA_UAU.7 | FIA_UAU.1 | FIA_UAU.2[1], FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[4], FIA_UAU.2[5], FIA_UAU.2[6] |
| FIA_UID.2[1] | None | N/A |
| FIA_UID.2[2] | None | N/A |
| FIA_UID.2[3] | None | N/A |
| FIA_UID.2[4] | None | N/A |
| FIA_UID.2[5] | None | N/A |

| Functional Requirements Component for this ST | Dependencies on CC Part 2 | Dependencies Relation in this ST |
|---|--|---|
| FIA_UID.2[6] | None | N/A |
| FIA_UID.2[7] | None | N/A |
| FIA_USB.1 | FIA_ATD.1 | FIA_ATD.1 |
| FMT_MOF.1[1] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[1], FMT_SMR.1[2] |
| FMT_MOF.1[2] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2] |
| FMT_MOF.1[3] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2] |
| FMT_MSA.1[1] | FDP_ACC.1 or FDP_IFC.1, FMT_SMF.1, FMT_SMR.1 | FDP_ACC.1[1], FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[3] |
| FMT_MSA.1[2] | FDP_ACC.1 or FDP_IFC.1, FMT_SMF.1, FMT_SMR.1 | FDP_ACC.1[1], FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[4] |
| FMT_MSA.1[3] | FDP_ACC.1 or FDP_IFC.1, FMT_SMF.1, FMT_SMR.1 | FDP_ACC.1[1], FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[6] |
| FMT_MSA.3[1] | FMT_MSA.1, FMT_SMR.1 | FMT_MSA.1[1], FMT_MSA.1[2], FMT_SMR.1[3] |
| FMT_MSA.3[2] | FMT_MSA.1, FMT_SMR.1 | Neither is applicable. <The reason not to apply FMT_MSA.1> This is the internal control ID that is identified uniquely, and this does not require the management such as change or deletion, after this is assigned once. <FMT_SMR.1> The assignment of FMT_MSA.3.2 is not applicable. FMT_SMR.1 is the dependency that is set relating to the following and so there is no necessity of application. |
| FMT_MTD.1[1] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2] |
| FMT_MTD.1[2] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[3] |
| FMT_MTD.1[3] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2] |
| FMT_MTD.1[4] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[4] |
| FMT_MTD.1[5] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2], FMT_SMR.1[3] |
| FMT_MTD.1[6] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[1], FMT_SMR.1[2] |
| FMT_MTD.1[7] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[2] |
| FMT_MTD.1[8] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1, FMT_SMR.1[3] |
| FMT_MTD.1[9] | FMT_SMF.1, FMT_SMR.1 | FMT_SMF.1 FMT_SMR.1[1] |
| FMT_MTD.1[10] | FMT_SMF.1 FMT_SMR.1 | FMT_SMF.1 FMT_SMR.1[2], FMT_SMR.1[5] |

| Functional Requirements Component for this ST | Dependencies on CC Part 2 | Dependencies Relation in this ST |
|---|--|--|
| FMT_MTD.1[11] | FMT_SMF.1 FMT_SMR.1 | FMT_SMF.1 FMT_SMR.1[1] FMT_SMR.1[2] |
| FMT_MTD.1[12] | FMT_SMF.1 FMT_SMR.1 | FMT_SMF.1 FMT_SMR.1[2] |
| FMT_MTD.1[13] | FMT_SMF.1 FMT_SMR.1 | FMT_SMF.1 FMT_SMR.1[2] FMT_SMR.1[6] |
| FMT_SMF.1 | None | N/A |
| FMT_SMR.1[1] | FIA_UID.1 | FIA_UID.2[1] |
| FMT_SMR.1[2] | FIA_UID.1 | FIA_UID.2[2] |
| FMT_SMR.1[3] | FIA_UID.1 | FIA_UID.2[3] |
| FMT_SMR.1[4] | FIA_UID.1 | FIA_UID.2[5] |
| FMT_SMR.1[5] | FIA_UID.1 | FIA_UID.2[7] |
| FMT_SMR.1[6] | FIA_UID.1 | FIA_UID.2[6] |
| FPT_RVM.1 | None | N/A |
| FPT_SEP.1 | None | N/A |
| FTA_SSL.3 | None | N/A |
| FTP_ITC.1 | None | N/A |
| FNEW_RIP.1 | None | N/A |
| FIA_NEW.1 | None | N/A |
| FCS_COP.1[E] | FDP_ITC.1 or FCS_CKM.1, FCS_CKM.4, FMT_MSA.2 | FCS_CKM.1 <The reason not to apply①FCS_CKM.4, ② FMT_MSA.2 > ① The encryption key is regularly kept for the stored data. Moreover, an arbitrary access to the storage medium is difficult, and there is no necessity of the encryption key cancellation. ② TOE does not have the security attribute to be managed for the encryption key, it is not necessary to be regulated a security attribute that is secure. |
| FIA_AFL.1[E] | FIA_UAU.1 | FIA_UAU.2[E] |
| FIA_UAU.2[E] | FIA_UID.1 | N/A <The reason not to apply FIA_UID.1 > This regulates the access to HDD installed in MFP. There are no multiple access routes because the access to HDD is done through a general IDE interface. In other words, when the some users access, it is unnecessary for this processing the authentication information that each user accessing is needed, and there is no necessity of the identification of the entity to access. |
| FIA_UAU.7[E] | FIA_UAU.1 | FIA_UAU.2[2], FIA_UAU.2[3], FIA_UAU.2[5] |

8.2.1.6. Mutual Support Correlations of IT Security Functional Requirements

The IT security function requirements to operate effectively other security functional requirements which are not specified in the analysis of the dependencies relation of the functional requirement are shown in the table below.

Table 14 Mutual Support Correlations of IT Security Functional Requirements

N/A : Not Applicable

| IT Security Functional Requirement | Functional requirement component that operates other security functional requirements validly | | | |
|------------------------------------|---|---|------------------------------|----------------------|
| | ①Bypass Prevention | ②Interference/ Destruction Prevention | ③Deactivation Prevention | ④Disabling Detection |
| FCS_CKM.1 | N/A | FMT_MTD.1[3] FMT_MTD.1[12] | FMT_MOF.1[1] | N/A |
| FCS_COP.1 | N/A | FMT_MTD.1[3] FMT_MTD.1[12] | N/A | N/A |
| FDP_ACC.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FDP_ACC.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FDP_ACC.1[3] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FDP_ACF.1[1] | FIA_UAU.2[2] FIA_UAU.2[3] FIA_UAU.2[5] FIA_UAU.2[6] | FMT_MSA.1[1] FMT_MSA.1[2] FMT_MSA.1[3] FPT_SEP.1 | FMT_MOF.1[1] | N/A |
| FDP_ACF.1[2] | FIA_UAU.2[2] FIA_UAU.2[3] FIA_UAU.2[4] FIA_UAU.2[6] | FPT_SEP.1 | FMT_MOF.1[1] | N/A |
| FDP_ACF.1[3] | FIA_UAU.2[1] FIA_UAU.2[2] | FPT_SEP.1 | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[1] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[2] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[3] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[4] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[5] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[6] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[7] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] FMT_MOF.1[3] | N/A |
| FIA_AFL.1[8] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_ATD.1 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[3] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[4] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[5] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.1[6] | N/A | N/A | N/A | N/A |
| FIA_SOS.1[7] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_SOS.2 | N/A | N/A | N/A | N/A |
| FIA_UAU.2[1] | FPT_RVM.1 | FMT_MTD.1[9] | FMT_MOF.1[1] | N/A |
| FIA_UAU.2[2] | FPT_RVM.1 | FMT_MTD.1[3] FMT_MTD.1[6] FMT_MTD.1[7] FMT_MTD.1[11] | FMT_MOF.1[1] | N/A |
| FIA_UAU.2[3] | FPT_RVM.1 | FMT_MTD.1[1] FMT_MTD.1[2] | FMT_MOF.1[1] | N/A |

| IT Security Functional Requirement | Functional requirement component that operates other security functional requirements validly | | | |
|------------------------------------|---|---|------------------------------|----------------------|
| | ①Bypass Prevention | ②Interference/ Destruction Prevention | ③Deactivation Prevention | ④Disabling Detection |
| | | FMT_MTD.1[7] | | |
| FIA_UAU.2[4] | FPT_RVM.1 | FMT_MTD.1[3] FMT_MTD.1[7] FMT_MTD.1[8] | FMT_MOF.1[1] | N/A |
| FIA_UAU.2[5] | FPT_RVM.1 | FMT_MTD.1[4] FMT_MTD.1[5] FMT_MTD.1[7] | FMT_MOF.1[1] | N/A |
| FIA_UAU.2[6] | FPT_RVM.1 | FMT_MTD.1[3] FMT_MTD.1[7] FMT_MTD.1[12] | FMT_MOF.1[1] FMT_MOF.1[3] | N/A |
| FIA_UAU.6 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UAU.7 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UID.2[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UID.2[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UID.2[3] | N/A | FMT_MTD.1[10] | FMT_MOF.1[1] | N/A |
| FIA_UID.2[4] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UID.2[5] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UID.2[6] | N/A | FMT_MTD.1[3] FMT_MTD.1[12] | FMT_MOF.1[1] FMT_MOF.1[3] | N/A |
| FIA_UID.2[7] | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FIA_USB.1 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MOF.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MOF.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MOF.1[3] | N/A | N/A | N/A | N/A |
| FMT_MSA.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MSA.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MSA.1[3] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MSA.3[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MSA.3[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[3] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[4] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[5] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[6] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[7] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[8] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[9] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[10] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[11] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[12] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_MTD.1[13] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMF.1 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMR.1[1] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMR.1[2] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMR.1[3] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMR.1[4] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FMT_SMR.1[5] | N/A | N/A | FMT_MOF.1[1] | N/A |

| IT Security Functional Requirement | Functional requirement component that operates other security functional requirements validly | | | |
|------------------------------------|---|---------------------------------------|------------------------------|----------------------|
| | ①Bypass Prevention | ②Interference/ Destruction Prevention | ③Deactivation Prevention | ④Disabling Detection |
| FMT_SMR.1[6] | N/A | N/A | FMT_MOF.1[1] FMT_MOF.1[3] | N/A |
| FPT_RVM.1 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FPT_SEP.1 | N/A | N/A | FMT_MOF.1[1] | N/A |
| FTA_SSL.3 | N/A | FMT_MTD.1[3] | FMT_MOF.1[1] | N/A |
| FTP_ITC.1 | N/A | FMT_MTD.1[3] FMT_MTD.1[12] | FMT_MOF.1[1] | N/A |
| FIA_NEW.1 | FPT_RVM.1 | N/A | FMT_MOF.1[1] | N/A |
| FNEW_RIP.1 | N/A | N/A | N/A | N/A |
| FCS_COP.1[E] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_AFL.1[E] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UAU.2[E] | N/A | N/A | FMT_MOF.1[1] | N/A |
| FIA_UAU.7[E] | N/A | N/A | FMT_MOF.1[1] | N/A |

① Bypass Prevention

<By-pass prevention of functional requirement that relates to administrator >

As for FDP_ACF.1[1] that regulates the user box access control, FDP_ACF.1[2] that regulates the secure print file access control, and FDP_ACF.1[3] that regulates the setting management access control, the by-pass prevention is supported by FIA_UAU.2[2] that regulates the administrator's identification and authentication.

Furthermore, because FIA_UAU.2[2] is called by FPT_RVM.1 without fail, the by-pass prevention is supported.

<By-pass prevention of functional requirement that relates to service engineer >

As for FDP_ACF.1[3] that regulates the setting management access control, the by-pass prevention is supported by FIA_UAU.2[1] that regulates the service engineer's identification and authentication.

In addition, FIA_UAU.2[1] is called by FPT_RVM.1 without fail, the by-pass prevention is supported.

<By-pass prevention of functional requirement that relates to user box >

As for FDP_ACF.1[1] that regulates the user box access control, the by-pass prevention is supported by FIA_UAU.2[3] that regulates the authentication of the user, FIA_UAU.2[6] that regulates the account authentication. FIA_UAU.2[5] also contributes to the by-pass prevention of FDP_ACF.1[1] for the access to the public user box.

In addition, because FIA_UAU.2[3] that regulates the authentication of the user, FIA_UAU.2[6] that regulates the account authentication and FIA_UAU.2[5] that regulates the authentication of the user who is permitted the use of the public user box are called by FPT_RVM.1 without fail, and so the by-pass prevention is supported.

<By-pass prevention of functional requirement that relates to secure print >

As for FDP_ACF.1[2] that regulates the secure print file access control, the by-pass prevention is supported by FIA_UAU.2[3] that regulates the authentication of the user,

FIA_UAU.2[6] that regulates the account authentication and FIA_UAU.2[4] that authenticates the authorized user to use the secure print file.

In addition, because FIA_UAU.2[3] that regulates the authentication of the user, FIA_UAU.2[6] that regulates the account authentication and FIA_UAU.2[4] that regulates the authentication of the authorized user to use the secure print file are called by FPT_RVM.1 without fail, so that the by-pass prevention is supported.

<By-pass prevention of validity verification of HDD>

FIA_NEW.1 that verifies the validity of HDD is called by FPT_RVM.1 without fail, so that the by-pass prevention is supported.

② Interference and Destruction Prevention

<Maintenance of user box access control>

The user attribute that is the security attribute of the user box, when "Public" is set, permits the modification only to the user who is allowed to use the user box or the administrator by When "User ID" is set, FMT_MSA.1[1] permits the modification only to the user and the administrator. When "Account ID" is set, FMT_MSA.1[3] permits the modification only to the user who are allowed to use the account and administrator. Moreover, by FPT_SEP.1, only the subject of three types such as the authenticated user who is assumed by the user box access control, the authenticated administrator, and the user who is permitted the use of the authenticated public user box, can operate the user box and the user box file.

With four requirements in the above-mentioned, FDP_ACF.1[1] is supported in the prevention of interference and destruction from other illegal subject.

<Maintenance of secure print file access control>

FPT_SEP.1 permits the operation of the secure print file only to the three types of subject which are the authenticated user who is assumed by the secure print file access control, the authenticated administrator, and the authenticated user who is permitted the use of secure print file. FDP_ACF.1[2] is supported in the interference and destruction prevention from other illegal subject.

<Maintenance of setting management access control>

Only the subject that acts the authenticates administrator who is assumed by the set management access control and the authenticated service engineer can operate the object regulated for by the setting management access control by FPT_SEP.1, and the prevention of an illegal interference and destruction from other illegal subject are supported for FDP_ACF.1[3].

<Management of CE password>

The modification operation of the CE password has been permitted only to the service engineer by FMT_MTD.1[9]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[1].

<Management of administrator password>

The modification operation of the administrator password is permitted only to the administrator and the service engineer by FMT_MTD.1[6]. The initialization of the administrator password is permitted only to the administrator and the service engineer by

FMT_MTD.1[11]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[2].

<Management of SNMP password>

The modification operation of the SNMP password is permitted to the administrator by FMT_MTD.1[3]. The inquiry operation is permitted to the administrator by FMT_MTD.1[7], and the initialization operation is permitted only to the administrator and the service engineer by FMT_MTD.1[11]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[2].

<Management of user password>

The registration of the user password is permitted to the administrator by FMT_MTD.1[1]. The modification operation is permitted to the administrator and the user by FMT_MTD.1[2], and the inquiry operation is permitted only to the administrator by FMT_MTD.1[7]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[3].

<Management of account password>

The registration of the account password is permitted to the administrator by FMT_MTD.1[12]. The modification operation is permitted to the administrator by FMT_MTD.1[3], and the inquiry operation is permitted only to the administrator by FMT_MTD.1[7]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[6].

<Management of secure print password>

The registration of the secure print password is permitted only to the user by FMT_MTD.1[8], and the inquiry operation is permitted only to the administrator by FMT_MTD.1[7]. The modification is permitted only to the administrator by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[4].

<Management of user box password>

The registration of the user box password is permitted to the administrator and the user by FMT_MTD.1[5], and the modification operation is permitted to the administrator and the user who is permitted the use of the public user box by FMT_MTD.1[4]. The inquiry operation is permitted only to the administrator by FMT_MTD.1[7]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[5].

<Management of user ID>

The registration of user ID is limited only to the administrator by FMT_MTD.1[10], and when the external server authentication is used, the user who is not registered in MFP is automatically registered with successful user authentication. Moreover, FMT_MTD.1[3] permits the modification operation only to the administrator. This supports the prevention of unauthorized interference and destruction of FIA_UID.2[3].

<Management of account ID, account name>

The registration of the account ID is permitted only to the administrator by FMT_MTD.1[12]. And the modification operation is permitted only to the administrator by FMT_MTD.1[3],

Moreover the modification operation of the belonging account of user is permitted only to the administrator by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FIA_UAU.2[6].

<Management of setting data for the external server authentication>

The setting of the external server authentication setting data used for the external server authentication is permitted only to the administrator by FMT_MTD.1[10]. This supports the prevention of unauthorized interference and destruction of FIA_UID.2[7].

<Management of auto logoff time>

FMT_MTD.1[3] permits the modification operation of the panel auto logoff time only to the administrator. This supports the prevention of unauthorized interference and destruction of FTA_SSL.3.

<Management of authentication failure frequency threshold>

The modification operation of the authentication frequency failure threshold which is set in all the authentication activities such as the service engineer authentication, the administrator authentication, the user authentication, the secure print authentication, the user authentication, and the MIB object access authentication is permitted only to the administrator by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FIA_AFL.1[1], FIA_AFL.1[2], FIA_AFL.1[3], FIA_AFL.1[4], FIA_AFL.1[5], FIA_AFL.1[6], FIA_AFL.1[7].

<Management of trusted channel function>

The registration of the trusted channel function setting data is restricted only to the administrator by FMT_MTD.1[12]. Also, the modification operation is permitted only to the administrator by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FTP_ITC.1.

<Management of CE authentication lock time>

The setting of the CE authentication lock time is permitted only to the service engineer by FMT_MTD.1[9]. This supports the prevention of unauthorized interference and destruction of FIA_AFL.1[2].

<Management of administrator authentication lock time>

The setting of the administrator authentication lock time is permitted only to the service engineer by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FIA_AFL.1[1].

<Management of S/MIME certificate>

The registration of the S/MIME certificate is restricted only to the administrator by FMT_MTD.1[12]. Also, the modification operation is permitted only to the administrator by FMT_MTD.1[3]. This supports the prevention of unauthorized interference and destruction of FCS_CKM.1, FCS_COP.1.

③ Deactivation Prevention

<Maintenance of Enhanced Security function>

FMT_MOF.1[1] permits only to the administrator and the service engineer the operation setting of the Enhanced Security function. The Enhanced Security function influences all the security structures of TOE, and this supports the deactivation prevention of all the security functions achieved by the security requirements of TOE except FCS_COP.1, FMT_MOF.1[1], FMT_MOF.1[3], FIA_SOS.1[6], FIA_SOS.2, and FNEW_RIP.1.

<Maintenance of account authentication function>

FMT_MOF.1[3] permits the administrator the operation setting (management of stop operation) of account authentication function. This supports the deactivation prevention of FIA_UID.2[6], FIA_UAU.2[6], FIA_AFL.1[7], FMT_SMR.1[6] related with the account authentication.

④ Disabling Detection

The requirement that supports the disabling detection doesn't exist.¹¹

8.2.2. Rational for Minimum Strength of Function

The MFP that is loaded with this TOE is connected to an intra-office LAN with appropriately controlled connections with external networks. Therefore, there is no possibility that it is directly attacked by unspecified people via the Internet. As long as it has a strength level that can counter the threat by users who are users of the TOE and a person who can enter the office and not user of the TOE as an agent, it is acceptable, as explicitly described in section 3.3. Therefore, this TOE regulates security objectives by assuming an unskilled attacker and thus, the selection of the SOF-Basic as the minimum strength of function is reasonable.

8.2.3. Rationale for IT Security Assurance Requirements

This TOE is installed and used in an environment where adequate security is maintained in terms of the physical, personnel, and connectivity. Nonetheless, adequate effectiveness in the environment where the TOE is used must be assured. As a general commercial office product, the execution of tests based on function specifications and high level design, and analysis of the strength of function and a search for vulnerabilities are required. In addition, it is desirable that it has a development environment control, a configuration management for the TOE and a secure distribution procedure. And therefore the selection of EAL3, which provides an adequate assurance level, is reasonable.

The secure requirement dependency analysis is assumed to be appropriate because the package EAL has been selected, therefore details are not discussed.

8.2.4. Consistency rationale for the set of IT security functional requirement

The followings show the rationale in which the IT security requirement with a possibility to compete does not exist.

¹¹ Though this is not shown in the mutual support analysis, FIA_AFL.1 requirement supports respectively against the attack that aims at the disabling of each authentication function. This is sufficient to maintain the security objective of this TOE. (This content is specified by the dependency analysis.)

<IT security functional requirement>

- Though several access control policies are set up by repeating the access control requirement (FDP_ACC.1 etc.), and it regulates the access control related to the followings, such as ① user box, ② secure print, ③ MFP addresses. These do not cover each other the same controlled object by several policies, and so they do not compete each other.
- FNEW_RIP.1 is applied as an extended requirement that regulates the deletion of the protective assets, but the threat concerning the possibility of an unauthorized deletion is not targeted in this case because of the concept of emphasis on confidentiality. Therefore, the requirement for the competing data deletion protection has not been selected at all.
- The structure, that a competition possibility is suggested, doesn't exist from the relations between requirements by dependency, correlation by mutual support, and the various analysis of validity of security functional requirement to TOE security objectives.

<IT security assurance requirement>

- EAL that is the assurance package is applied. Therefore, it is confirmed that the possibility of the competition between security assurance requirements doesn't exist regardless of this ST.

8.3. Rational for TOE Summary Specifications

8.3.1. Rational for the TOE Security Functions

8.3.1.1. Necessity

The conformity of the TOE security functions and the TOE security functional requirements are shown in the following table. It shows that the TOE security functions correspond to at least one TOE security functional requirement.

Table 15 Conformity of TOE Security Functions to TOE Security Functional Requirements

| TOE Security Function \ TOE Security Functional Requirement | F.ADMIN | F.ADMIN-SNMP | F.SERVICE | F.USER | F.BOX | F.PRINT | F.OVERWRITE-ALL | F.CRYPT | F.HDD | F.RESET | F.TRUSTED-PASS | F.S/MIME |
|---|---------|--------------|-----------|--------|-------|---------|-----------------|---------|-------|---------|----------------|----------|
| FCS_CKM.1 | | | | | | | | ● | | | | ● |
| FCS_COP.1 | | | | | | | | | | | | ● |
| FDP_ACC.1[1] | ● | | | | ● | | | | | | | |
| FDP_ACC.1[2] | ● | | | | | ● | | | | | | |
| FDP_ACC.1[3] | ● | ● | ● | | | | | | | | | |
| FDP_ACF.1[1] | ● | | | | ● | | | | | | | |
| FDP_ACF.1[2] | ● | | | | | ● | | | | | | |
| FDP_ACF.1[3] | ● | ● | ● | | | | | | | | | |
| FIA_AFL.1[1] | | | ● | | | | | | | ● | | |
| FIA_AFL.1[2] | ● | | ● | | | | | | | ● | | |
| FIA_AFL.1[3] | ● | ● | | | | | | | | | | |
| FIA_AFL.1[4] | ● | | | ● | | | | | | | | |

| TOE Security Function TOE Security Functional Requirement | F.ADMIN | F.ADMIN-SNMP | F.SERVICE | F.USER | F.BOX | F.PRINT | F.OVERWRITE-ALL | F.CRYPT | F.HDD | F.RESET | F.TRUSTED-PASS | F.S/MIME |
|--|---------|--------------|-----------|--------|-------|---------|-----------------|---------|-------|---------|----------------|----------|
| FIA_AFL.1[5] | ● | | | | | ● | | | | | | |
| FIA_AFL.1[6] | ● | | | | ● | | | | | | | |
| FIA_AFL.1[7] | ● | | | ● | | | | | | | | |
| FIA_AFL.1[8] | ● | | ● | ● | ● | ● | | | | | | |
| FIA_ATD.1 | | | | ● | ● | ● | | | | | | |
| FIA_SOS.1[1] | ● | | ● | | | | | | | | | |
| FIA_SOS.1[2] | ● | ● | | | | | | | | | | |
| FIA_SOS.1[3] | ● | | | ● | | | | | | | | |
| FIA_SOS.1[4] | ● | | | | | | | | | | | |
| FIA_SOS.1[5] | | | | | | ● | | | | | | |
| FIA_SOS.1[6] | ● | | | ● | ● | | | | | | | |
| FIA_SOS.1[7] | ● | | | | ● | | | | | | | |
| FIA_SOS.2 | ● | | | ● | ● | | | | | | | |
| FIA_UAU.2[1] | | | ● | | | | | | | | | |
| FIA_UAU.2[2] | ● | ● | | | | | | | | | | |
| FIA_UAU.2[3] | | | | ● | | | | | | | | |
| FIA_UAU.2[4] | | | | | | ● | | | | | | |
| FIA_UAU.2[5] | | | | | ● | | | | | | | |
| FIA_UAU.2[6] | | | | ● | | | | | | | | |
| FIA_UAU.6 | ● | | ● | | | | | | | | | |
| FIA_UAU.7 | ● | | ● | ● | ● | ● | | | | | | |
| FIA_UID.2[1] | | | ● | | | | | | | | | |
| FIA_UID.2[2] | ● | ● | | | | | | | | | | |
| FIA_UID.2[3] | | | | ● | | | | | | | | |
| FIA_UID.2[4] | | | | | | ● | | | | | | |
| FIA_UID.2[5] | | | | | ● | | | | | | | |
| FIA_UID.2[6] | | | | ● | | | | | | | | |
| FIA_UID.2[7] | | | | ● | | | | | | | | |
| FIA_USB.1 | | | | ● | ● | ● | | | | | | |
| FMT_MOF.1[1] | ● | | ● | | | | | | | | | |
| FMT_MOF.1[2] | ● | ● | | | | | | | | | | |
| FMT_MOF.1[3] | ● | | | | | | | | | | | |
| FMT_MSA.1[1] | ● | | | | ● | | | | | | | |
| FMT_MSA.1[2] | ● | | | | ● | | | | | | | |
| FMT_MSA.1[3] | ● | | | | ● | | | | | | | |
| FMT_MSA.3[1] | ● | | | | ● | | | | | | | |
| FMT_MSA.3[2] | | | | | | ● | | | | | | |
| FMT_MTD.1[1] | ● | | | | | | | | | | | |
| FMT_MTD.1[2] | ● | | | ● | | | | | | | | |
| FMT_MTD.1[3] | ● | ● | | | | | | | | | | |
| FMT_MTD.1[4] | ● | | | | ● | | | | | | | |
| FMT_MTD.1[5] | ● | | | | ● | | | | | | | |
| FMT_MTD.1[6] | ● | | ● | | | | | | | | | |
| FMT_MTD.1[7] | ● | | | | | | | | | | | |
| FMT_MTD.1[8] | | | | | | ● | | | | | | |

| TOE Security Function \ TOE Security Functional Requirement | F.ADMIN | F.ADMIN-SNMP | F.SERVICE | F.USER | F.BOX | F.PRINT | F.OVERWRITE-ALL | F.CRYPT | F.HDD | F.RESET | F.TRUSTED-PASS | F.S/MIME |
|---|---------|--------------|-----------|--------|-------|---------|-----------------|---------|-------|---------|----------------|----------|
| FMT_MTD.1[9] | | | ● | | | | | | | | | |
| FMT_MTD.1[10] | ● | | | ● | | | | | | | | |
| FMT_MTD.1[11] | ● | | ● | | | | | | | | | |
| FMT_MTD.1[12] | ● | | | | | | | | | | | |
| FMT_MTD.1[13] | ● | | | ● | | | | | | | | |
| FMT_SMF.1 | ● | ● | ● | ● | ● | ● | | | | | | |
| FMT_SMR.1[1] | | | ● | | | | | | | | | |
| FMT_SMR.1[2] | ● | ● | | | | | | | | | | |
| FMT_SMR.1[3] | | | | ● | ● | ● | | | | | | |
| FMT_SMR.1[4] | | | | | ● | | | | | | | |
| FMT_SMR.1[5] | | | | ● | | | | | | | | |
| FMT_SMR.1[6] | | | | ● | | | | | | | | |
| FPT_RVM.1 | ● | ● | ● | ● | ● | ● | | | ● | | | |
| FPT_SEP.1 | ● | ● | ● | ● | ● | ● | | | | | | |
| FTA_SSL.3 | ● | | | ● | | | | | | | | |
| FTP_ITC.1 | | | | | | | | | | | ● | |
| FNEW_RIP.1 | | | | | | | ● | | | | | |
| FIA_NEW.1 | | | | | | | | | ● | | | |

8.3.1.2. Sufficiency

The TOE security functions for the TOE security functional requirements are described.

- **FCS_CKM.1**

FCS_CKM.1 regulates the various conditions of the encryption key generated along with the encryption of HDD, use of S/MIME function.

F.CRYPT generates the encryption key of 128bit by using KonicaMinolta HDD encryption key generation algorithm (SHA-1).

F.S/MIME generates the encryption key of 128bit, 192bit, or 256bit for AES by using the Pseudorandom number Generation Algorithm. Also, similarly, it generates the encryption key of 168bit for 3-Key-Triple-DES by using Pseudorandom number Generation Algorithm. Accordingly, this functional requirement is satisfied.

- **FCS_COP.1**

FCS_COP.1 regulates the various conditions of the encryption key that is generated along with the encryption of HDD.

F.S/MIME performs the data encryption by using 3-Key-Triple-DES with the encryption key of 168bit in the S/MIME function.

Also, it performs the encryption by using AES with the encryption key of 128bit, 192bit or 256bit. The encryption key that is used to encrypt the data is encrypted by using RSA with the encryption key of 1024bit, 2048bit, 3072bit or 4096bit.

Accordingly, this functional requirement is satisfied.

- **FDP.ACC.1[1]**

FDP_ACC.1[1] regulates the relationship between the subject controlled to the user box and the user box file which are the object, and the operation.

F.ADMIN performs the user box access control for the task of acting for the user to display the list of user box and back-up the user box file.

F.BOX performs the user box access control for the task of acting for the user to display the user box's list, and to print, transmit, download, move or copy the user box file.

Accordingly, this functional requirement is satisfied.

- **FDP_ACC.1[2]**

FDP_ACC.1[2] regulates the relationship between the subject controlled to the secure print file that is the object and the operation.

F.ADMIN performs the secure print file access control for the task of substituting the user to back up the secure print file.

F.PRINT performs the secure print file control for the task of substituting the user to display and print the list of secure print file.

Accordingly, this functional requirement is satisfied.

- **FDP_ACC.1[3]**

FDP_ACC.1[3] regulates the relationship between the subjects controlled to the HDD lock password object, Encryption passphrase object, SMTP server group object, DNS server group object and MFP address group object which are the object and the operation.

F.ADMIN performs the setting management access control for the task of substituting the user to set and restore SMTP server group object, DNS server group object and MFP address group object.

F.ADMIN-SNMP performs the setting management access control for the task of substituting the user to set SMTP server group object, DNS server group object and MFP address group object.

F.SERVICE performs the setting management access control for the task of substituting the user to set HDD lock password object and encryption passphrase object.

Accordingly, this functional requirement is satisfied.

- **FDP_ACF.1[1]**

FDP_ACF.1[1] regulates the regulation of relationship between the subject controlled to the user box and the user box file which are an object, and the operation.

F.ADMIN performs the user box access control to which the following rules are applied.

- It permits the administrator the list display operation of the user box on the occasion of the user box setting.
- It permits the administrator the back-up operation of the user box file.

F.BOX performs the user box access control to which the following rules are applied.

- It permits the user the list display of the user box (personal user box) that has a corresponding object attribute to user ID.
- It permits the user the operation of the user box file in the selected personal user box such as the print, the transmission, the download, the movement and the copy.
- It permits the user the list display operation of the user box (public user box) that sharing

is set.

- It permits the user who is permitted the use of a user box the operation of user box file in the selected public user box such as the print, the transmission, the download, the movement and the copy.
- It permits the user the list display of the user box (group user box) that has a corresponding object attribute to account ID.
- It permits the user the operation of the user box file in the selected group user box such as the print, the transmission, the download, the movement and the copy.

Accordingly, this functional requirement is satisfied.

● **FDP_ACF.1[2]**

FDP_ACF.1[2] regulates the regulation of the relationship between the subject controlled to the secure print file which is the object, and the operation.

F.ADMIN performs the secure print file access control to which the following rules are applied.

- It permits the administrator the backup operation of the secure print file.

F.PRINT performs the secure print file access control to which the following rules are applied.

- It permits the user the list display operation of the secure print file.
- It permits the printing operation of the selected secure print file to the user who is allowed to use the secure print file.

Accordingly, this functional requirement is satisfied.

● **FDP_ACF.1[3]**

FDP_ACF.1[3] regulates the regulation of the relationship between the subject controlled to the HDD lock password object, the encryption passphrase object, the SMTP server group object, the DNS server group object and the MFP address group object that are the object, and the operation.

F.ADMIN performs the setting management access control to which the following rules are applied.

- It permits the administrator the setting, the back-up and the restoration of the HDD lock password object and the encryption passphrase object.
- It permits the administrator the setting and the restoration operations of the SMTP server group object, the DNS server group object and the MFP address group object.

F.ADMIN-SNMP performs the secure print file access control to which the following rules are applied.

- It permits the administrator the setting operation of the SMTP server group object, the DNS server group object and the MFP address group object.

F.SERVICE performs the setting management access control to which the following rules are applied.

- It permits the service engineer the setting operation of the HDD lock password object and the encryption passphrase object (initialization operation).

Accordingly, this functional requirement is satisfied.

● **FIA_AFL.1[1]**

FIA_AFL.1[1] regulates the action for the authentication failure to the service engineer authentication. In the service engineer authentication for accessing the service mode or changing the service code, when the authentication failure of failure frequency threshold (1-3

times) that the administrator set is detected, F.SERVICE logs off from the service mode authentication status and locks the authentication function.

F.RESET clears the failure frequency and releases the lock status after the secret lock release function is executed and CE authentication lock time passes, by the reboot of TOE with the power supply turned OFF and ON.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[2]**

FIA_AFL.1[2] regulates the action of the authentication failure to the administrator authentication. In the administrator authentication for accessing the administrator mode or changing the administrator password, when the authentication failure of failure frequency threshold (1-3 times) that the administrator set is detected, F.ADMIN logs off from the authentication status to the administrator mode and locks the authentication function.

F.RESET clears the failure frequency and releases the lock status, after the administrator authentication lock time passes by the reboot of TOE with the power supply turned OFF and ON.

Moreover, F.SERVICE clears the authentication failure frequency and releases the lock status by the lock release function that is available in the service mode.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[3]**

FIA_AFL.1[3] regulates the action for the authentication failure to the administrator authentication when accessing to the MIB object by using SNMP. In the authentication using the SNMP password for accessing to the MIB object, when the authentication failure of failure frequency threshold (1-3 times) that the administrator set is detected, F.ADMIN-SNMP denies the access to the MIB object and locks an authentication function.

F.RESET releases the lock status by the reboot of TOE by turning OFF and ON the power supply that clears the times of failure in each authentication function.

F.ADMIN clears the authentication failure frequency and releases the lock status by the lock release function that is available in the administrator mode.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[4]**

FIA_AFL.1[4] regulates the action for the authentication failure to the authentication of the user. In the user authentication for accessing of user or changing the user password by user, when the authentication failure of failure frequency threshold (1-3 times) that the administrator sets is detected, F.USER logs off if it's under the authentication status and locks the authentication function of the concerned user from then on.

Accordingly, this functional requirement is satisfied.

F.ADMIN clears the authentication failure frequency and releases the lock status by the lock release function that is available in the administrator mode.

- **FIA_AFL.1[5]**

FIA_AFL.1[5] regulates the action for the authentication failure to the authentication of the user permitted the use of the secure print file. In the authentication of a user permitted the use of the secure print file, when the authentication failure of failure frequency threshold (1-3 times) that an administrator sets is detected, F.PRINT denies the access to the secure print

file and locks an authentication function.

F.ADMIN clears the authentication failure frequency and releases the lock status by the lock release function that is available in the administrator mode.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[6]**

FIA_AFL.1[6] regulates the action for the authentication failure to the authentication of the user permitted the use of the public user box. In the authentication for accessing the public user box and changing a public user box password, when the authentication failure of failure frequency threshold (1-3 times) that an administrator sets is detected, F.BOX logs off if it's under authentication and locks an authentication function.

F.ADMIN clears the authentication failure frequency and releases the lock status by the lock release function that is available in the administrator mode.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[7]**

FIA_AFL.1[7] regulates the action for the authentication failure to the account authentication. In case that the account authentication is operated when the user accesses, the authentication failure of failure frequency threshold (1-3 times) that the administrator sets is detected, so that F.USER locks the authentication function of the concerned account from then on.

F.ADMIN clears the authentication failure frequency and releases the lock status by the lock release function that is available in the administrator mode.

Accordingly, this functional requirement is satisfied.

- **FIA_AFL.1[8]**

FIA_AFL.1[8] regulates the action for the authentication failure to the various authentication on the panel.

F.SERVICE rejects all input receipts from a panel when the authentication failure is detected in the authentication of service engineer for accessing the service mode.

F.ADMIN rejects all input receipts from a panel when the authentication failure is detected in the administrator authentication for accessing the administrator mode.

F.USER rejects all input receipts from a panel when the authentication failure is detected in the user authentication for the access of user from a panel. Moreover, it rejects all input receipts from a panel when the authentication failure is detected in the account authentication from a panel.

F.BOX rejects all input receipts from a panel when the authentication failure is detected in the authentication for accessing to the public user box from a panel.

F.PRINT rejects all input receipts from a panel when the authentication failure is detected in the authentication of a user permitted the use of the secure print file.

These series of operation is released automatically in five seconds.

Accordingly, this functional requirement is satisfied.

- **FIA_ATD.1**

FIA_ATD.1 regulates the security attribute related by the user.

F.BOX assigns user box ID to the task of substituting the user.

F.PRINT assigns the internal control ID of the secure print to the task of substituting the user.

F.USER assigns account name (account ID) to the task of substituting the user.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[1]**

FIA_SOS.1[1] regulates the quality of the administrator password and the CE password.

F.ADMIN verifies the quality of the administrator password that is composed of ASCII code (0x21-0x7E, except 0x22 and 0x2B) in total of 92 characters by eight digits, is not composed of one kind of character and does not correspond to the value currently set.

F.SERVICE verifies the quality of CE password and the administrator password that is composed of ASCII code (0x21-0x7E, except 0x22 and 0x2B) in total of 92 characters with eight digits, is not composed of one kind of characters and does not correspond to the value currently set.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[2]**

FIA_SOS.1[2] regulates the quality of the SNMP password.

F.ADMIN verifies that the quality of the SNMP password (Privacy password, Authentication password) is composed of ASCII code (0x20-0x7E) in total of 95 characters by eight or more digits. F.ADMIN-SNMP also verifies that the quality of the SNMP password (Privacy password, Authentication password) is composed of ASCII code (0x20-0x7E) in total of 95 characters with eight or more digits.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[3]**

FIA_SOS.1[3] regulates the quality of the user password.

F.ADMIN verifies that the quality of the user password is composed of ASCII code (0x20-0x7E) in total of 95 characters by eight or more digits. Also it verifies that the first 8 characters are not composed of one kind of characters. F.USER verifies that the quality of the user password is composed of ASCII code (0x20-0x7E) in total of 95 characters by eight or more digits. Also it verifies that the first 8 characters are not composed of one kind of characters. Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[4]**

FIA_SOS.1[4] regulates the quality of the HDD lock password and the encryption passphrase.

F.ADMIN verifies that the quality of the HDD lock password and the encryption passphrase is composed of ASCII code (0x21-0x7E, except 0x22, 0x28, 0x29, 0x2C, 0x3A, 0x3B, 0x3C, 0x3E, 0x5B, 0x5C, 0x5D) in total of 83 characters by 20 digits, is not composed of one kind of characters and does not correspond to the value currently set.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[5]**

FIA_SOS.1[5] regulates the quality of the secure print password.

F.ADMIN verifies that the quality of the secure print password and the user box password is composed of ASCII code (0x21-0x7E, except 0x22 and 0x2B) in total of 93 characters by eight digits and is not composed of one kind of characters.

F.BOX verifies that the quality of the secure print password and the user box password is composed of ASCII code (0x21-0x7E, except 0x22 and 0x2B) in total of 93 characters by eight digits and is not composed of one kind of characters.

F.PRINT verifies that the quality of the secure print password and the user box password is composed of ASCII code (0x21-0x7E, except 0x22 and 0x2B) in total 93 characters by eight digits and is not composed of one kind of characters.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[6]**

FIA_SOS.1[6] regulates the quality of the session information.

F.ADMIN verifies that a space quality is more than 10^{10} as the quality of session information.

F.BOX verifies that a space quality is more than 10^{10} as the quality of session information.

F.USER verifies that a space quality is more than 10^{10} as the quality of session information.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.1[7]**

FIA_SOS.1[7] regulates the quality of the account password and the user box password. .

F.ADMIN verifies that the quality of the user box password or the account password is composed of ASCII code (0x20-0x7E) in total of 95 characters by eight digits. And it verifies that the first 8 characters are not composed of one kind of characters.

F.BOX verifies that the quality of the user box password is composed of ASCII code (0x20-0x7E) in total of 95 characters by eight digits. And it verifies that the first 8 characters are not composed of one kind of characters.

Accordingly, this functional requirement is satisfied.

- **FIA_SOS.2**

FIA_SOS.2 regulates the generation of session information and its quality.

F.ADMIN generates the secrets that are the space quality of 10^{10} or more to session information in the administrator authentication.

F.BOX generates the secrets that are the space quality of 10^{10} or more to session information in the user box authentication.

F.USER generates the secrets that are the space quality of 10^{10} or more to session information in the user authentication.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[1]**

FIA_UAU.2[1] regulates the authentication of the service engineer.

F.SERVICE authenticates that the user who accesses the service mode by using the CE password is the service engineer.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[2]**

FIA_UAU.2[2] regulates the authentication of the administrator.

F.ADMIN authenticates that the user who accesses the administrator mode by using the administrator password is the administrator.

F.ADMIN-SNMP authenticates that the user who accesses the MIB object by using the SNMP password (Privacy password, Authentication password) is the administrator.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[3]**

FIA_UAU.2[3] regulates the authentication of the User.

F.USER authenticates that the user is the user who is registered by using the user password that is set to each user.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[4]**

FIA_UAU.2[4] regulates the authentication of the authorized user to use the secure print file.

F.PRINT authenticates that the user is the authorized user to use the secure print file by using the secure print password that is set to each file.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[5]**

FIA_UAU.2[5] regulates the authentication of the authorized user to use the public user box.

F.BOX authenticates that the user is the authorized user to use the public user box by using the user box password that is set to each user box.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.2[6]**

FIA_UAU.2[6] regulates the authentication of the account.

When the method of the account authentication is the method not synchronized, F.USER certifies the user who is permitted the use of the account with an account password that is set for each account.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.6**

FIA_UAU.6 regulates the re-authentication for the important operation such as changing a password.

F.ADMIN re-authenticates the administrator at the operation for the change of the administrator password. Along with the change operation of the HDD lock password and encryption passphrase, by collating the registered HDD lock password and registered encryption passphrase, it re-authenticates the administrator who has known each of confidential information.

F.SERVICE re-authenticates the service engineer at the operation of the change of the CE password.

Accordingly, this functional requirement is satisfied.

- **FIA_UAU.7**

FIA_UAU.7 regulates the return of "*" as the feedback under the authentication.

F.ADMIN returns "*" for each character for entered administrator password from the panel in the authentication and re-authentication of administrator, and prevents a direct display of the administrator password.

F.SERVICE returns "*" for each character for the entered CE password from the panel in the authentication and re-authentication of the service engineer, and prevents a direct display of the CE password.

F.PRINT returns "*" for each character for the entered secure print password from the panel in the authentication of the authorized user who can use the secure print file, and prevents the direct display of the secure print password.

F.USER returns "*" for each character for the entered user password from the panel in the authentication of the user, and prevents a direct display of the user password.

Moreover, it returns "*" for each character for the entered account password from the panel in the authentication of the account, and prevents a direct display of the of the account password.

F.BOX returns "*" for each character for the entered user box password from the panel in the authentication of the user who is permitted the use of the public user box, and prevents a direct display of the user box password.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[1]**

FIA_UID.2[1] regulates the identification of the service engineer.

F.SERVICE identifies the user who accesses the service mode is a service engineer.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[2]**

FIA_UID.2[2] regulates the identification of the administrator.

F.ADMIN identifies the user who accesses the administrator mode is an administrator.

F.ADMIN-SNMP identifies the user, who accesses the MIB object, is an administrator.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[3]**

FIA_UID.2[3] regulates the identification of the user.

F.USER identifies the user who is registered by the user ID that is set to each user.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[4]**

FIA_UID.2[4] regulates the identification of the user who is permitted the use of the secure print file.

F.PRINT identifies a user who is permitted the use of the secure print file by selecting the secure print file as an operation target.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[5]**

FIA_UID.2[5] regulates the identification of the user who is permitted the use of the public user box.

F.BOX identifies the user who is permitted the use of the public user box by selecting the user box as the operation target.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[6]**

FIA_UID.2[6] regulates the identification of the account.

F.USER identifies as a registered account by the account ID that is set for each account, when the method of the account authentication is the method not synchronized.

Accordingly, this functional requirement is satisfied.

- **FIA_UID.2[7]**

FIA_UID.2[7] regulates the identification of the external server.

F.USER identifies the external server which is accessed for the inquiry of user information when the external server authentication is selected for the user authentication method.

Accordingly, this functional requirement is satisfied.

- **FIA_USB.1**

FIA_USB.1 regulates the security attribute association to subject that substitutes the user.

F.PRINT associates the "secure print internal control ID" of the concerned secure print file to the task of substituting the user when authenticated for the access to the secure print file.

F.BOX associates the "User Box ID" of the concerned user box or the concerned user box file to the task of substituting the user when authenticated for the access to the user box or the user box file.

F.USER associates the "Account ID" to the task of substituting the user in the case that the account authentication is the method not synchronized when authenticated for the account and in the case that the account authentication is the synchronized method when authenticated for the user.

Accordingly, this functional requirement is satisfied.

- **FMT_MOF.1[1]**

FMT_MOF.1[1] regulates the behavior management of the enhanced security function.

F.ADMIN provides the settings of the enhanced security function in the administrator mode, and manages the stop operation of the concerned function. In addition, although it is possible to change the back-up data acquired by back-up operation and to set off the Enhanced Security function as a result of performing the restoration operation, F.ADMIN limits the back-up and restoration operation only to the administrator. Although the execution of the HDD logical format and the overwrite deletion function of all area makes the Enhanced Security setting invalid, F.ADMIN permits the operation only to the administrator.

F.SERVICE offers the HDD logical format function, HDD physical format function, the HDD installation setting function and the initialization function to make the Enhanced Security function invalid in the service mode along with execution and manages the setting-off operation of the Enhanced Security function.

Accordingly, this functional requirement is satisfied.

- **FMT_MOF.1[2]**

FMT_MOF.1[2] regulates the behavior management of the Trusted Channel function, the S/MIME function, the user authentication and the SNMP password authentication.

F.ADMIN offers a setting function of the user authentication function, a setting function of the encryption method of the Trusted Channel function, a setting function of the encryption method of the S/MIME function in the administrator mode, and permits the setting of the operational mode for each function.

F.ADMIN-SNMP permits the administrator who is authenticated by the SNMP password the setting operation of the SNMP password authentication.

Accordingly, this functional requirement is satisfied.

- **FMT_MOF.1[3]**

FMT_MOF.1[3] regulates the behavior management and the stop operation management of the account authentication function.

F.ADMIN offers a setting function of the account authentication function in the administrator mode and permits the operation of a setting of the operational mode of each function and a stop function of the account authentication.

Accordingly, this functional requirement is satisfied.

- **FMT_MSA.1[1]**

FMT_MSA.1[1] regulates the management of the user attribute of user box (When user ID is set).

F.ADMIN permits the change operation of the user attribute that is set to the user box in the administrator mode. Also, F.ADMIN permits the administrator the back-up and restoration operation, so that it is possible to change the back-up data which is acquired by the back-up operation and to change the user attribute of the user box as a result of restoration.

In addition, when a user concerned owns a personal user box by the deletion operation of registered user, the user box is changed to the public user box.

F.BOX permits the authenticated user the change of the user attribute of the user box where the user ID of the user concerned is set.

Accordingly, this functional requirement is satisfied.

- **FMT_MSA.1[2]**

FMT_MSA.1[2] regulates the management of the user attribute of user box (When public is set).

F.ADMIN permits the administrator the back-up and restoration operation, so that it is possible to change the back-up data which is acquired by the back-up operation and to change the user attribute of the user box as a result of restoration.

F.BOX permits the change of the user attribute of the user box where the public is set to the authenticated user who is permitted the use of the public user box.

Accordingly, this functional requirement is satisfied.

- **FMT_MSA.1[3]**

FMT_MSA.1[3] regulates the management of the user attribute of the user box (When the account ID is set).

F.ADMIN permits the change operation of the user attribute that is set to the user box in the administrator mode. Also F.ADMIN permits the administrator the back-up and restoration operation, so that it is possible to change the back-up data which is acquired by the back-up operation and to change the user attribute of the user box as a result of restoration.

In addition, when a user concerned owns a group user box by the deletion operation of registered user, the user box is changed to the public user box.

F.BOX performs the authenticated user to change the user attribute of the group user box that is set the account ID of the concerned user to the user attribute of the user box and corresponds with the belonging account of user whom the account ID was authenticated.

Accordingly, this functional requirement is satisfied.

- **FMT_MSA.3[1]**

FMT_MSA.3[1] regulates the default value of the user attribute that is the security attribute

given when the user box is generated.

F.ADMIN sets "public" to the user attribute of the user box as a default value in the user box registration operation that is executed in the administrator mode. User is permitted the change this to any value (user ID or account ID of the registered user).

F.BOX sets "public" to the user attribute of the user box as a default value in the user box registration operation that is executed by the authenticated user. User is permitted the change this to any value (user ID or account ID of the registered user).

In addition, when the job which is stored to the user box which specifies the unregistered user box is performed, the "User ID" of the user who executes the job concerned is set as a default value and is stored to the unregistered user box. (The case of the specifying the unregistered user box cannot change the user attribute because there is no timing to set an initial value where the default value is changed.)

Accordingly, this functional requirement is satisfied.

FMT_MSA.3[2]

FMT_MSA.3[2] regulates the secure print internal control ID that is set at the time of registration of secure print file.

F_PRINT grants the secure print internal control ID that is identified uniquely to the concerned secure print file at the time of registration of secure print file.

Accordingly, this functional requirement is satisfied.

● **FMT_MTD.1[1]**

FMT_MTD.1[1] regulates the management of the user password.

When "Machine authentication" is selected as the method of the user authentication, F.ADMIN offers the registration operation of the user password regarding the user registration in the administrator mode. In addition, F.ADMIN permits the administrator the back-up and restoration operation, so that it is possible to change the back-up data which is acquired by back-up operation and to register the user password as a result of performing the restoration operation.

Accordingly, this functional requirement is satisfied.

● **FMT_MTD.1[2]**

FMT_MTD.1[2] regulates the management of the user password.

When "Machine authentication" is selected as the method of the user authentication, F.ADMIN offers the change of the user password registered in the administrator mode. In addition, F.ADMIN permits the administrator back-up and restoration operation, so that it is possible to change the back-up data which is acquired by back-up operation and to change the user password as a result of performing the restoration operation.

When "Machine authentication" is selected as the method of the user authentication, F.USER permits the authenticated user the change of user's own password.

Accordingly, this functional requirement is satisfied.

● **FMT_MTD.1[3]**

FMT_MTD.1[3] regulates the management of a user ID, a SNMP password, the panel auto logoff time, the failure number of times threshold, the setting data of the external server authentication, a secure print password, a account ID, a account password, the S/MIME certificate, the transmission address data, the setting data of the trusted channel function,

the belonging account of user and the administrator authentication lock time.

F.ADMIN permits the operation to change the SNMP password, the panel auto logoff time, the setting data of authentication failure frequency threshold, the setting data of the external server authentication, the account ID, the account password, the S/MIME certificate, the transmission address data, the setting data of the trusted channel function, the belonging account of user and the administrator authentication lock time in the administrator mode. In addition, F.ADMIN permits the administrator the back-up and restoration operation, and so it is possible to change the back-up data which is acquired by back-up operation, and to change user ID, a SNMP password, the panel auto logoff time, the failure number of times threshold, a secure print password, the setting data of the external server authentication, the account ID, the account password, the S/MIME certificate, the transmission address data, the setting data of the trusted channel function, the belonging account of user and the administrator authentication lock time as a result of performing the restoration operation.

F.ADMIN-SNMP permits the change operation of the SNMP password to the administrator authenticated by the SNMP password.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[4]**

FMT_MTD.1[4] regulates the management of the user box password.

F.ADMIN permits the change operation of the user box password that is set to the public user box in the administrator mode. In addition, F.ADMIN permits the administrator the back-up and restoration operation, and so it is possible to change the back-up data which is acquired by back-up operation, and to change the user box password as a result of performing the restoration operation.

F.BOX permits the change operation of the user box password to the authenticated user as the user who is permitted the use of the user box concerned.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[5]**

FMT_MTD.1[5] regulates the management of the user box password.

F.ADMIN permits the registration operation of the user box in the administrator mode, that is, the registration operation of the user box password that is set to the public user box. In addition, F.ADMIN permits the administrator the back-up and restoration operation, and so it is possible to change the back-up data which is acquired by back-up operation, and to register the user box password as a result of performing the restoration operation.

F.BOX permits the authenticated user the registration operation of the user box, that is, the registration operation of the user box password that is set to the public user box.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[6]**

FMT_MTD.1[6] regulates the management of the administrator password.

F.ADMIN permits the change operation of the administrator password in the administrator mode. It is possible to change the CE authentication lock time as a result of performing the back-up and the restoration operation.

F.SERVICE permits the change operation of the administrator password in the service mode.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[7]**

FMT_MTD.1[7] regulates the management of the SNMP password, the User password, the User box password, the Secure Print password and the account password.

F.ADMIN permits the administrator the back-up and restoration operation, and so it is possible to browse the SNMP password, the User password, the User box password, the Secure Print password and the account password by means of the back-up data which is acquired by back-up operation.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[8]**

FMT_MTD.1[8] regulates the management of the Secure print password.

F.PRINT permits the registration of the secure print password to the user along with the registration of the secure print file.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[9]**

FMT_MTD.1[9] regulates the management of the CE password and the CE authentication lock time.

F.SERVICE permits the change operation of the CE password and the CE authentication lock time in the service mode.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[10]**

FMT_MTD.1[10] regulates the management of the user ID.

F.ADMIN permits the registration of the user ID in the administrator mode.

F.USER registers the user ID of the authenticated user, when the "External server authentication" is selected for the user authentication method and if the user who succeeds in the user authentication is not registered in the MFP. (This is equal to the registration to an external server.)

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[11]**

FMT_MTD.1[11] regulates the management of the administrator password and the SNMP password.

F.ADMIN permits the initialization operation of the administrator password and the SNMP password, that is performed along with the execution of the overwrite deletion operation of all area in the administrator mode.

F.SERVICE permits the initialization operation of the administrator password and the SNMP password, which is performed along with the execution of the initializing function in the service mode.

Accordingly, this functional requirement is satisfied.

- **FMT_MTD.1[12]**

FMT_MTD.1[12] regulates the management of the account ID, the account password, the S/MIME certificate, the transmission address data and the setting data of the trusted channel function.

F.ADMIN permits the registrations operation of the account ID, the account password, the S/MIME certificate, the transmission address data and the setting data of the trusted channel function in the administrator mode.

Accordingly, this functional requirement is satisfied.

● **FMT_MTD.1[13]**

FMT_MTD.1[13] regulates the management of the belonging account.

F.ADMIN permits the registration setting operation of the belonging account related with the user in the administrator mode.

F.USER sets the concerned account as the belonging account of user by the authentication success when a user is authenticated as the user who is permitted the use of the account in the account authentication.

Accordingly, this functional requirement is satisfied.

● **FMT_SMF.1**

FMT_SMF.1 specifies the security management function.

F.ADMIN provides the following security management functions.

- Operation setting function of user authentication function
- Operation setting function of account authentication function
- Operation setting function of trusted channel function (Encryption method setting, etc.)
- Operation setting function of S/MIME function (Encryption method setting, etc.)
- Setting function of authentication failure frequency threshold
- Back-up and restoration function

It consequentially corresponds to the inquiry function of the following TSF data.

- SNMP password
- User password
- User box password
- Secure Print password
- Account password

It also corresponds to the modification function of the following TSF data.

- SNMP password
- User password
- User box password
- Secure print password
- Account password
- User ID
- User attribute of the user box
- Panel auto log-off time
- Operational setting data of the Enhanced Security function
- Authentication failure frequency threshold of the authentication operation prohibited function
- Account ID
- S/MIME certificate
- Transmission address data
- Setting data of the Trusted Channel function
- Belonging Account of user
- CE authentication lock time

- Administrator authentication lock time
- Stop function of the Enhanced Security function
 - Operational setting function of the Enhanced Security function
 - HDD logical format function
- Registration/Modification function of the user attribute of the user box
- Modification function of the administrator password
- Registration/Modification function of the user box password
- Registration function of the User ID
- Registration/Modification function of the User password when "Machine authentication" is selected as the method of the user authentication
- Modification function of the SNMP password (Privacy password and Authentication password)
- Operational setting function of the SNMP password authentication function
- Setting function of the Panel auto logoff time
- Registration/Modification function of the account ID and the account password
- Registration/Modification function of the S/MIME certificate
- Registration/Modification function of the transmission address data
- Registration/Modification function of the setting data of the Trusted Channel function
- Registration/Modification function of the belonging account related with a user
- Modification function of the administrator authentication lock time
- Lock release function

This offers the following authentication functions.

- Authentication function in the access to the MIB object
- Authentication function in the access to the Public user box
- Authentication function in the access to the secure print
- User authentication function
- Account authentication function

F.ADMIN-SNMP offers security functions.

- Modification function of the SNMP password (Privacy password and Authentication password)
- Operational setting function of the authentication of SNMP password

F.SERVICE offers the following security management functions.

- Modification function of the CE password
- Lock release function of the administrator authentication
- Modification function of the CE authentication lock time
- Modification function of the administrator password
- Initialization function of the administrator password
 - Initialization function
- Initialization function of the SNMP password (Privacy password and Authentication password)
 - Initialization function
- Stop function of the Enhanced Security function
 - HDD logical format function
 - HDD physical format function
 - HDD installation setting function
 - Initialization function

F.USER offers the following security management functions.

- Modification function of user's own user password when "Machine authentication" is selected as the method of the user authentication
- Automatic registration of the User ID for an unregistered user in MFP by the External server when the "External server authentication" is selected as the method of the user authentication
- Registration function of the account name when the account name is unregistered in the case that the account authentication method is the method not synchronized.

F.BOX offers the following security management functions.

- Modification function of the user attribute of the user box
 - Modification of a personal user box by the user (User ID ⇒ Public or Other User ID or Account ID)
 - Modification of a public user box by the user who is permitted the use of the public user box (Public ⇒ User ID or Account ID)
 - Modification of a group user box by the user who is permitted the use of the group user box (Account ID ⇒ Public or User ID or Other Account ID)
- Overwrite function of the default value of the user attribute of the user box
- Registration/Modification of the user box password
- Automatic registration of a personal user box by the stored job in the user box that specifies unregistered user box by the user.

F.PRINT offers the following security management functions.

- Registration of the Secure Print password

F.ADMIN and F.OVERWRITE-ALL offer the following security management functions.

- Stop function of the Enhanced Security function
 - Overwrite deletion function of all area
- Initialization of the administrator password
 - Overwrite deletion function of all area
- Initialization of the SNMP password (Privacy password and Authentication password)
 - Overwrite deletion function of all area

Accordingly, this functional requirement is satisfied.

● **FMT_SMR.1[1]**

FMT_SMR.1[1] regulates the role as the service engineer.

F.SERVICE recognizes the user who is authenticated by the CE password as a service engineer.

Accordingly, this functional requirement is satisfied.

● **FMT_SMR.1[2]**

FMT_SMR.1[2] regulates the role as an administrator.

F.ADMIN recognizes the user who is authenticated by the administrator password as an administrator.

F.ADMIN-SNMP recognizes the user who is authenticated by the SNMP password (Privacy password and Authentication password) as an administrator.

Accordingly, this functional requirement is satisfied.

● **FMT_SMR.1[3]**

FMT_SMR.1[3] regulates the role as a user.

F.USER recognizes the user who is authenticated by the user password as a user.

The user who is authenticated as a user by F.USER is recognized as a user similarly by succeeding to F.BOX and F.PRINT.

Accordingly, this functional requirement is satisfied.

- **FMT_SMR.1[4]**

FMT_SMR.1[4] regulates the role as a user who is permitted the use of the user box.

F.BOX recognizes the user who is authenticated by the user box password as the authorized user who can use the public user box.

Accordingly, this functional requirement is satisfied.

- **FMT_SMR.1[5]**

FMT_SMR.1[5] regulates the role as an external server.

F.USER recognized the reference to the user information as an external server when it is under the external server authentication.

Accordingly, this functional requirement is satisfied.

- **FMT_SMR.1[6]**

FMT_SMR.1[6] regulates the role as a user who is permitted the use of the account.

F.USER recognizes as a user who is permitted the use of the account by the account name of the user concerned when the user authenticated in the case that the account authentication method is the synchronized method. It recognizes as a user who is permitted the use of the account when the account authenticated in the case of the account authentication method not synchronized.

Accordingly, this functional requirement is satisfied.

FPT_RVM.1

FPT_RVM.1 regulates to support that a corresponding TSP execution function must be called before each TOE security function is permitted to start its operation.

F.ADMIN definitely activates "Administrator authentication function" of which performance is indispensable, before the use of various functions that can be performed only by administrator is permitted.

F.ADMIN-SNMP definitely activates "Administrator authentication function" of which performance is indispensable, before the use of network functions that can be performed only by administrator is permitted.

F.SERVICE definitely activates "Service engineer authentication function" of which performance is indispensable, before the use of various functions that can be performed only by the service engineer is permitted.

F.USER definitely activates "User authentication function" of which performance is indispensable, before the use of various functions that can be performed only by the user is permitted. It surely starts "Account authentication function" when the user access, in the case that the account authentication method is the synchronized authentication method and in the case that the account name is not registered to the user in the method not synchronized.

F.BOX definitely activates "Authentication function by the user box password" of which performance is indispensable, before the use of various functions that can be performed only by the authorized user who can use the public user box is permitted.

F.PRINT definitely activates "Authentication function by the secure print password" of which performance is indispensable, before the use of various functions that can be performed only

by the authorized user who can use the secure print is permitted.

F.HDD definitely activates "Validity verification function of HDD" of which performance is indispensable, before writing HDD is permitted when HDD lock function is activated.

Accordingly, this functional requirement is satisfied.

- **FPT_SEP.1**

FPT_SEP.1 regulates maintaining of security domains for protecting against interference and tampering by subjects who cannot be trusted and regulates separating of security domains of subjects.

F.ADMIN maintains the administrator authentication domain that is provided various functions permitted to operate only by administrator, and it does not permit the interference by the unauthorized subject.

F.ADMIN-SNMP maintains the administrator authentication domain that is provided various functions permitted to operate only by the administrator who is authenticated with the SNMP password, and it doesn't permit the interference by the unauthorized subjects.

F.USER maintains the user authentication domain that is provided various functions permitted to operate only by the authenticated user, and it doesn't permit the interference by the unauthorized subject.

F.BOX maintains the user box authentication domain that is provided various functions permitted to operate only by the authorized user who can use the public user box by the authentication of the user box password, and it doesn't allow the interference by the unauthorized subject.

F.PRINT maintains the secure print file authentication domain that is provided various functions permitted to operate only by a user who is permitted to use the secure print file by the authentication of the secure print password, and it doesn't allow the interference by the unauthorized subject.

F.SERVICE maintains the service engineer authentication domain that is provided various functions permitted to operate only by the service engineer, and it doesn't allow the interference by the unauthorized subject.

Accordingly, this functional requirement is satisfied.

- **FTA_SSL.3**

FTA_SSL.3 regulates the forced termination of a session to an administrator accessing from a panel.

F.ADMIN logs off automatically if the "panel auto log-off time" elapses from the last operation at the time of access from the panel by the administrator, and denies the access to the administrator authentication domain.

F.USER logs off automatically if the "panel auto log-off time" elapses from the last operation at the time of access from the panel by the administrator, and denies the access to the user authentication domain.

Accordingly, this functional requirement is satisfied.

- **FTP_ITC.1**

FTP_ITC.1 regulates the Trusted Channel.

F.TRUSTED-PASS generates the Trusted Channel by SSL/TSL responding to the request from the Trusted IT product, and protects the communication data of the secure print file, the

user box file or the image file that becomes the user box file in secure.
Accordingly, this functional requirement is satisfied.

- **FNEW_RIP.1**

FNEW_RIP.1 regulates that the object and the TSF data, that are targeted in the explicit deletion operation can not be restored.

F.OVERWRITE-ALL deletes the user box file, the secure print file, the on-memory image file, the stored image file, the remaining image file, the image related file, the transmission address data file, the user ID, the user password, the user box password, the secure print password, the remaining TSF data, the account ID, the account password and the S/MIME certificate by performing the overwrite deletion to all area of HDD by means of the specified method of overwrite deletion.

In addition, it initializes the NVRAM administrator password and the SNMP password, and sets OFF the operations of the HDD lock function and the Encryption function.

Moreover, it deletes the setting data of the Trusted Channel function.

Accordingly, this functional requirement is satisfied.

- **FIA_NEW.1**

FIA_NEW.1 regulates the user identification before TSF takes any action to the user.

F.HDD provides the function to check the HDD status if HDD lock password is set, and if the HDD lock password is not set, it doesn't perform the process of writing and reading to HDD.

Accordingly, this functional requirement is satisfied.

8.3.2. Rational for TOE Security Strength of Function

The TOE security functions having a probabilistic/permutational mechanism are as follows.

- ① Administrator password authentication mechanism offered by F.ADMIN
- ② CE authentication mechanism offered by F.SERVICE
- ③ Secure print password authentication mechanism offered by F.PRINT
- ④ User box password authentication mechanism offered by F.BOX
- ⑤ SNMP authentication mechanism offered by F.ADMIN-SNMP
- ⑥ User authentication mechanism offered by
- ⑦ HDD Lock password collation mechanism offered by F.ADMIN
- ⑧ Encryption Passphrase collation mechanism offered by F.ADMIN
- ⑨ Account Authentication mechanism offered by F.USER

It used the password composed from ①&② an 8-digits and 92 kinds of character, ③ an 8-digits and 93 kinds of character, ⑤&⑥ an 8-digits and 95 kinds of character, ④&⑨ an 8-digits and 95 kinds of character, and ⑦&⑧ an 20-digits and 83 kinds of character. Among these, ① ~ ⑥, ⑨ locks the authentication function by the continuous three times of authentication failure by operating the authentication operation prohibition function.

The ①, ④ and ⑥ use the session information secretly in access via network. The secrets use the value of 1010 or more that is generated by TOE. Moreover, it uses the session information with the value of 10¹⁰ or more that is given externally.

Accordingly, as claimed in Section 6.2, the strength of function of mechanisms adequately

satisfies the SOF-Basis, and it is consistent with the minimum strength of function: SOF-Basic that is claimed for the TOE security functional requirement for the security strength of function, stipulated in item 5.1.2.

8.3.3. Mutually Supported TOE Security Functions

The TOE security functional requirements that are satisfied by a combination of IT security functions that are identified in the TOE summary specifications, are as shown in the text regarding the rationale in the section of 8.3.1.

8.3.4. Rationale for Assurance Measures

The required document for the evaluation assurance level EAL3 is covered by the reference document shown in the assurance measures described in Section 2. The TOE security assurance requirements are satisfied through development, test condition, vulnerability analysis, the development environment control, configuration management, life cycle management, and delivery procedures in accordance with the document provided as the assurance measures, as well as the preparation of a proper guidance document.

8.4. PP claims rationale

There is no PP that is referenced by this ST.