JPX Market Innovation & Research
Specification for connecting to
Data Feed Server

Version 3.1

December 11, 2023

JPX Market Innovation & Research, Inc.

This Specification will be applied on December 11, 2023.

Contents

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1. Purpose of this specification

This specification contains the necessary information in order to connect the user system to Data Feed Server (hereinafter referred to as "DFS") operated by JPX Market Innovation & Research, Inc. (hereinafter referred to as "JPXI") when using the services below.

 1)   Information provision service provided by JPXI
 2)   Information provision service provided by Japan Securities Clearing Corporation

DFS undertakes the operation to provide information concerning the above 1)〜2) services.
Regardless of the service you are using, system connection is made in accordance with this specification.

In addition, for details on provision frequency, provision time, file format, items on record, and such in each information provision service, please refer to the file specifications (file instructions) of each information provision service separately.

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2. Outline of DFS

Information provision is carried out by file transfer from the DFS to the user system.

2.1. File transfer protocol

The following three protocols are available as transfer protocol between the DFS and the user system. In any protocol, the user system becomes the terminal side (primary station in the FBAJ Protocol and a client in FTP connection).
It is not possible to use the same user ID for both FTP and SFTP through the Internet.
Also, it is not possible to connect from multiple clients using one user ID. When multiple connections are detected, all trial/sessions except the existing session are considered a duplicate access and disconnected (Retry might be deemed as the same behavior as the multiple connection). In addition, if there is no communication for 15 minutes after the session has been established, the session is forcibly disconnected. In these cases where the session was not disconnected successfully, please wait at least 15 minutes before trying to connect again.

1) File transfer through the communication procedure (hereinafter referred to as "the FBAJ Protocol") established by the Federation of Bankers' Associations of Japan (hereinafter referred to as "FBAJ")
・"FBAJ standard communication protocol/TCP/IP Protocol" (hereinafter referred to as "the FBAJ TCP/IP Protocol")

2) File transfer through FTP

3) File transfer through SFTP

2.2. Line of communication

In the case of the FBAJ TCP/IP Protocol, the arrownet is used as the communication line.
In the case of FTP/SFTP, the Internet or arrownet is used as the communication line.

Table below shows the combination of available protocols and lines.

	FBAJ TCP/IP	FTP	SFTP
Internet	-	○	○
arrownet	○	○	○

 * Depending on the files to be provided, available communication protocols and communication lines may be limited in some cases (statement on this is found in the file specifications). Please contact us for details.

 * When switching from arrownetFTP to arrownetSFTP, no application to arrownet is required.

3. Connection via FBAJ Protocol

3.1. Line of connection

arrownet is used for connecting lines between the DFS and the user system.

3.2. Communication procedure and speed

"The FBAJ TCP/IP Protocol"
arrownet is used for lines.

Communication speed of arrownet is compliant with the contract of arrownet.
For more details, please refer to the guideline of arrownet.

3.3. Configuration information

With respect to the various items necessary for connections as outlined below, JPXI will prepare "Configuration Sheet" for each user.

Item
Center confirmation code (on the user side)*
Center confirmation code (on the center side)
Password
File name (file ID)
File access key
Record size/block size
Frequency management
Multiple files transfer
Data compression
Recovery method
TTC control character (PC/standard)*

5020 is used for connection port when using the FBAJ TCP/IP Protocol.

* JPXI will provide the Center confirmation code (on the user side) and the TTC control character. However, these may be changed depending on the user side system specification.

IP address, and Subnet mask are as follows.

IP address	10.211.48.109
Subnet mask	255.255.254.0

* Reacquisition using "Re Access" in the FBAJ Protocol is available.
The FBAJ TCP/IP Protocol operation is described below.

Processing of start request message reception
・If there is a failed file, a start reply (or other error) is sent.
・If there is a file waiting for transmission, the file waiting for transmission is sent after the start reply (normal) is sent.
・If there is a failure and no file waiting for transmission, a start reply (no file) is sent.

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Processing of retransmission request message reception
・If there is a failed file, the failed file is sent.
・If there is a file that has already been sent, the file that has already been sent is sent.
・If there is a failure and no file has been sent, an error is returned.

4. Connection via FTP

4.1. Line of connection

Internet or arrownet is used for connecting lines between the DFS and the user system.

4.2. Telecommunications equipment

When using Internet or arrownet, network devices are required .

4.3. Configuration information

With respect to the various items necessary for connections as outlined below, JPXI will prepare "Configuration Sheet" for each user.
In FTP, an active mode and passive mode can be used.
Standard 20020, 20021 are used for FTP port.

Item
Host name when connecting to the Internet :   tmi.tse.reference.arrowfront.jp
User ID/Password
File name
Transfer mode (text/binary)

For connendtions in passive mode, the data transfer port will randomly respond between "50000 and 65535".

【PASSIVE mode】
Control connection:Client(any)⇒JPXI system(port 20021).
Data connection:Client(any)⇒JPXI system(port 50000 to 65535)(JPXI system side notifies the port used).
【ACTIVE mode】
Control connection:Client(any)⇒JPXI system(port 20021).
Data connection:JPXI system(20020 port)→Access client (any)(establish connection from JPXI system side).

For using internet

Communications are not encrypted in FTP. Please note that there is a possibility of information leakage to a third party through Internet path generally.
When connecting to the Internet, the global IP address of the connection point where the user system is connected to the Internet should be informed us. DFS identifies the user with this IP address. For

this reason, a fixed global IP address must be assigned from a Internet Service Provider. (If you would like to connect to DFS from multiple connection points for backup purpose, the global IP address for all of those connecting points should be informed us.)
　Please use a host name (domain name) when connecting to DFS. JPXI may change the global IP address of DFS without prior notice.

For using arrownet

IP address, and Subnet mask are as follows:

IP address	10.211.48.109
Subnet mask	255.255.254.0

For configuration information necessary to use arrownet, please refer to the guideline of arrownet.

5. Connection via SFTP

5.1. Line of connection

Internet or arrownet is used for connecting lines between the DFS and the user system.

5.2. Telecommunications equipment

When using Internet or arrownet, network devices are required.

5.3. Configuration information

JPXI will prepare "Configuration Sheet" for each user regarding the following item.
Standard 20022 is used for SFTP port.

Item
Host name when connecting to the Internet : tmi.tse.reference.arrowfront.jp
User ID
File name

　　　When connecting to the Internet, the global IP address of the connection point where the user system is connected to the Internet should be informed us. As DFS identifies the user with this IP address, a fixed global IP address must be assigned from a Internet Service Provider. (If you would like to connect to DFS from multiple connection points for backup purpose, the global IP address for all of those connecting points should be informed to TSE.)
　　　Please use a host name (domain name) when connecting to DFS. TSE may change the global IP address of DFS without prior notice.

For using arrownet

IP address, and Subnet mask are as follows:

IP address	10.211.48.109
Subnet mask	255.255.254.0

For configuration information necessary to use arrownet, please refer to the guideline of arrownet.

  When using SFTP through the Internet, a public key is required.
JPXI requires users to submit a public key to us after generating it with a private key.
  Public keys are stored with the following naming rule. When replacing the public key, please rename the file using the following naming rule. (For new SFTP connections, please submit an arbitrary file name as we ask you to create a public key before your ID is provided.)

Public Key
USER ID_keys

When the user ID is "USER0001", the public key will be "USER0001_keys".

  Please generate the public key in OpenSSH format. (Only RSA encryption format can be registered. Not accepted in SECSH format or DSA encryption format.)
  An example of the OpenSSH format is as follows.（A line feed is required at the end of the character string.） Only one public key can be registered for each FTP user ID.

(example)   ssh-rsa AAAAB3NzaC1yc2EAAAABJQAAA/W1jndOv/～～

                Only SSH version 2 is available. (SSH version 1 is not available)
                The maximum key length is 4096 bits.

(NG example) ---BEGIN SSH PUBLIC KEY---
                Subject：staff
                Comment： "1024-bit dsa, staff@client-pc, Thu Mar 3 20XX 00:00:00 +09\
                AAAAB3NzaC1yc2EAAAABJQAAA/W1jndOv/～～

6. File to be provided

6.1. Information on the file to be provided

For information provided through DFS, please refer to the file specifications of each information provision service.

6.2. File to be provided

(1) File format
File format is subject to each information provision service.
Please refer to the file specifications of each information provision service.

(2) Character code
In principle, all files are provided the shift JIS code file. For more information, please refer to the file specifications of each information provision service.

6.3. FTP/SFTP Directory Structure

(1) Directory Structure

Target data	Storage Destination
Data of the day	/data/〔Provided file directory name *〕/ Provided File*
The recent data (Daily file)	/archives/archive01/YYYYMMDD/ Provided File *
The recent data (Other than Daily file)	/archives/archive02/YYYYMMDD/ Provided File *

* For the provided file directory name and provided file name, please refer to Confirmation Sheet that we send later than this document (or when the setting for the new request is completed).

```
/
    data/ (On the day data provision area)

        [Provided File Directory Name*]

            [Provided File Name*]


    archives/ (The recent data provision area)

        archive01/                          archive02/

            YYYYMMDD/                            YYYYMMDD/

                [Provided File Name*]                [Provided File Name*]
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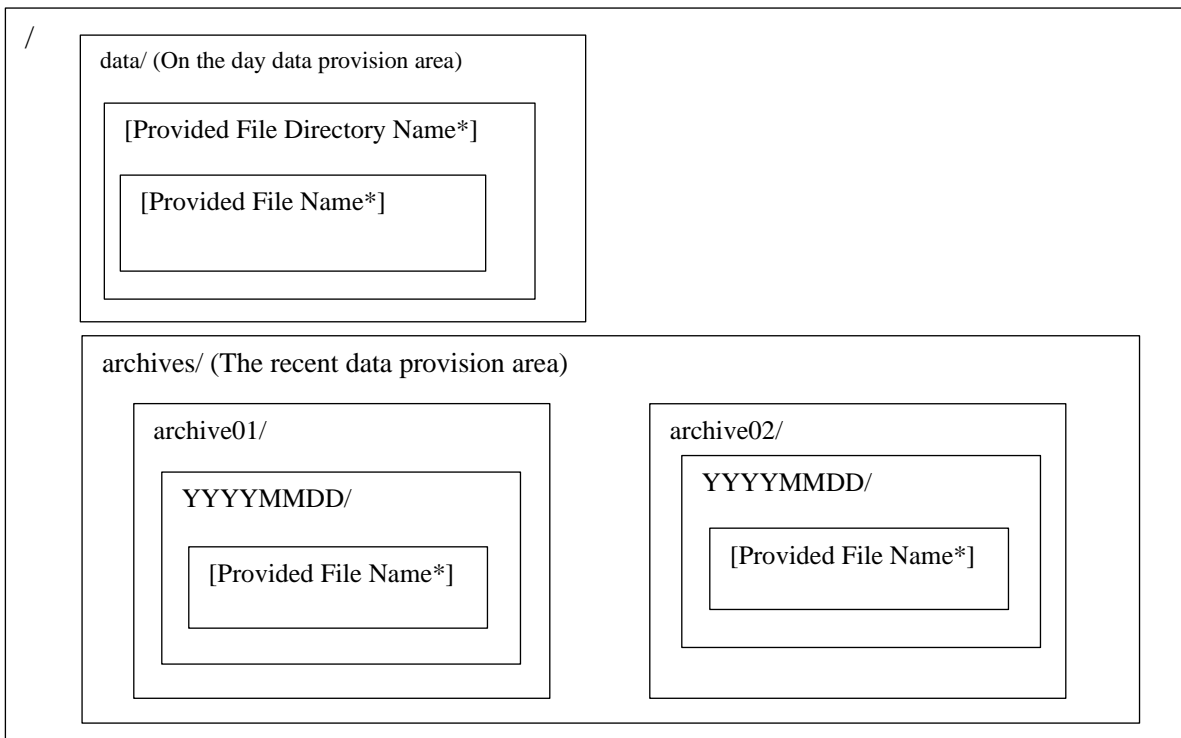
6.4. Provision frequency and provision time

(1)   Operating time of DFS

The operating time of DFS is 24/7.

・However, the file will not be updated on non-business days. In addition, the service may be
stopped after notifying the user about maintenance.

This system provides Data of the day and The recent data.
(However, in the case of the FBAJ TCP/IP Protocol, The recent data is not applicable.)

(2)   File provision time/period

The file provision time differs for each file. For details, please check the Confirmation Sheet. The
file provision period differs depending on the provision area as follows.

(a) On the day data provision area

We provide data of the day in this area. The provision period is from the file provision start time
to the deletion time. You can get the file for times within the file provision period. File deletion
time is from 8:00 am to 8:30 am. (Refer to the deletion image)

Deletion image
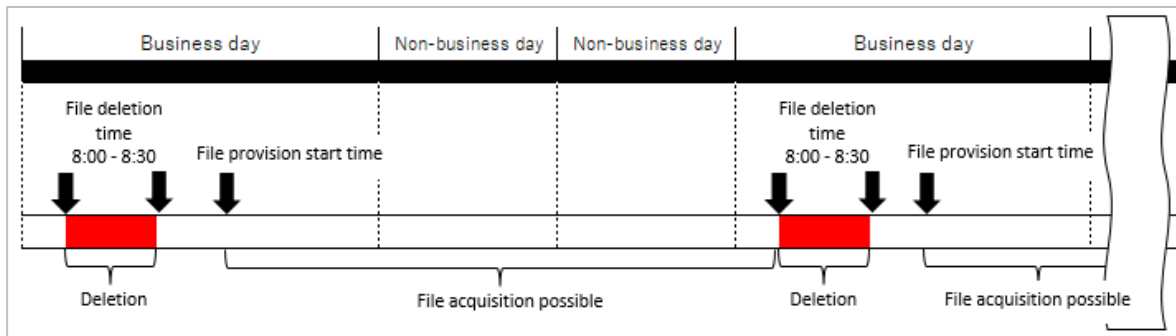
The file timestamp will change as follows depending on the times of file acquisitions.

File acquisition timing	Time stamp
Until the first acquisition	Placement time of each file
After the first acquisition	The first acquisition time
On or after the further acquisitions	**No change**（The first acquisition time）

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(b) The recent data provision area

We provide data of the day and the recent data. The scope of providing the recent data varies depending on the frequency of the file provision. The details are as follows in principle.

1) - 1 Files provided every business day : Files for the past 7 days(including non-business days), including files delivered on the same day, are stored in the recent data area (archive01).

1) – 2 Files provided weekly, biweekly, and monthly : Files for the past 31 days(including non-business days), are stored in the recent data area (archive02).

Files that exceed the above range will be deleted at the time each file is provided on the day.
The files of ths day will be saved for both "Data of the day "and "The recent data" directries respectively at the same timing. In addition, the directories of each file name existing in archive01, archives02 will be deleted together with the directory of the corresponding date after all the files in the date are acquired.
Please note that you can only get the file for the recent data once.
If you want to re-acquire the file for the recent data, refer to 7.3. File reacquisition and contact 8. Contact (2) Enquiries about system operations, system failure and file reacquisition, etc..

7. Operation at system failure

7.1. During system failure

When a failure(s) occur in DFS, we will notify you it via e-mail.
We will also notify when the failure is recovered. Please obtain the file then.

7.2. Information error

If there is an error in the information provided, we will notify the effect and the correction information to the users who receive the information via e-mail.

7.3. File reacquisition

If the file acquisition time has passed without being able to acquire the file as usual due to a user system failure, please contact 8. Contact (2) Enquiries about system operations, system failure and file reacquisition, etc..

In addition, as described in 6.4. Provision frequency and provision time (2) File provision time/period for FTP/SFTP, DFS stores files for the last 7 days or business days within 31 days, including files provided on the day.
Please acknowledge that we may not be able to meet your request for files before that time.

* For inquiries when the file cannot be obtained, we would appreciate it if you could contact us with the acquisition time and error message.

8. Contacts

(1) Enquiries about this specification

JPX Market Innovation & Research, Inc.
Client Service Department
Telephone: +81-50-3377-7831
Email: tminfo@jpx.co.jp

(2) Enquiries about system operations, system failure and file reacquisition, etc.

JPX Market Innovation & Research, Inc.
IT Service Department Officer of System Operation
Telephone: +81-50-3819-1050
 (Office hours: Operating time as defined in 6.3 (1))

(3) Enquiries about system specifications

JPX Market Innovation & Research, Inc.
IT Business Department
E-mail：tmi-contact@jpx.co.jp

9. Revision

Date	Version	Details
May 24, 2005	1.0	First edition
April 3, 2006	1.1	"8. Contacts" phone number was modified.
June 7, 2006	1.2	>Adding Information provision service of account balance of foreign stocks. >Adding items that can be adjusted with users in "3.4 Configuration Information." >Adding that passive mode can be used in "4. Connection via FTP." >Adding e-mail service for urgent notice from TSE in "7.1 During System Failure."
October 1, 2007	1.3	"8.Contacts" for system operation/system failure was updated.
May 26, 2008	2.0	**>At 3.3. Speed of connection and 4.2. Telecommunications equipment, adding that "**If the communication method simultaneously utilizing B channels of ISDN (multiple channels) is selected, 128 kbps can be achieved . Terminal adapter can not be used for the connection, in the case of multiple channels." **> At 5.1. ISDN connection and authentication method,adding that "**In this connection, CCP compression setting can not be used. In the case of multiple channels, channel addition has to be set by way of line utilization monitoring." **> At 6.3. Provision frequency and provision time,deleting that "**The following hours are outside of the system operating time. 11:00am – 12:00pm (noon) on weekdays (Japan Standard Time; same for the followings.) **>At 8. Contacts,** phone number was modified.
July 7, 2008	2.1	**>At 5.1. ISDN connection and authentication method, adding that** "and the authentication of single direction is adapted in CHAP**." "** **> At 6.3. Provision frequency and provision time, adding at the bottom that** Also it is necessary to set "Re Access(*)" in the second times. (The file can't be accessed in "Access" in the second times.) (*)"Re Access" is the condition which requires the transmission of a message.
July 29, 2013	2.2	**>At 4.4 Things to note when connected through the Internet, changing** the host name. **>At 5.1. ISDN connection and authentication method, adding that "**In the case of multiple channels, you have to submit your telephone number to be recognized by DFS.**"** **>At 7.1. During system failure, deleting that "**If using internet, changing the connecting point to back-up server makes quick obtaining of the file possible**".**

Date	Version	Details
September 30, 2013	2.3	**Adding information about SFTP to the following parts.** 2.1. File transfer protocol 2.2. Line of communication 5. Connection via SFTP 7.2. File to be provided
May 1, 2015	2.4	**Adding information about arrownet to the following parts.** 2.2. Line of communication 3.1. Line of connection 3.2. Telecommunications equipment 3.3. Speed of connection 4.1. Line of connection 4.2. Telecommunications equipment 4.3. Configuration information **Adding information about the format of the public key to "5.3. Configuration information".**
September 6, 2015	2.5	>**At 8. Contacts (2) Enquiries about system operations, system failure and file reacquisition, etc.** phone number was modified as follows. Telephone: +81-50-3819-1050
June 25, 2018	2.6	>**At 1. Purpose of this specification, the following is added.** 4)Information provision service provided by Osaka Exchange for flexible options. >**At 5. Connection via SFTP, the description of "5.1. Line of connection" and 5.3. Configuration information are clarified.**
August 23, 2021	2.7	**3.3 Speed of connection** ・Add IP address "10.211.48.109" **4.3 Configuration information** ・Add IP address "10.211.48.109" ・Change port 　Before: standard 20,21 　After: 20020,20021 **4.4 Things to note when connected through the Internet** ・Change host name 　Before: ftp.tmi.tse.or.jp 　After: tmi.tse.reference.arrowfront.jp **5.4 Things to note when connected through the Internet** ・Change port 　Before: standard 20,21 　After: 20020,20021 ・Change host name 　Before: ftp.tmi.tse.or.jp 　After: tmi.tse.reference.arrowfront.jp **6.3 Provision frequency and provision time** ・(1) Operating time of DFS(Changes regarding the number of times files can be acquired, the period of provision, etc.)

Date	Version	Details
		Before: The following hours are outside of the system operating time. From 5:00am on a non-business day (following a business day) to 5:00am on a business day (following a non-business day). After: The operating time of DFS is 24/7. Add (1) Data of the day and (2) Data of the latest past. **6.4 Composition of directory** ・See page7 **7.3. File reacquisition** ・See page8 **8. Operation at system failure** ・(2) Enquiries about system operations, system failure and file reacquisition, etc. Reference item number correction ・Add (3) Enquiries about system specifications * 6. The dial-up setting for ISDN connection described in ver2.60 has been deleted due to abolition.
August 23, 2021	2.8	Improve to clarify the description **3.3. Configuration information** Add Subnet mask "255.255.254.0" **4.2. Telecommunications equipment** is improved. **4.3. Configuration information**, the following is improved. ・Host name when connecting to the Internet ・For using internet ・For using arrownet **4.4. Things to note when connected through the Internet** Delete the section **5.3. Configuration information,** the following is improved. ・Host name when connecting to the Internet **5.4. Things to note when connected through the Internet** Delete the section **6.2. File to be provided** (2) Character code, the following is deleted. the FBAJ TCP/IP Protocol, FTP and SFTP procedure **6.3. Provision frequency and provision time** (1) Operating time of DFS, the following is added. (However, in the case of the FBAJ TCP/IP Protocol, (2) The recent data is not applicable.) **6.4 FTP/SFTP Composition of directory** ・Change the section name Before: **6.4 Composition of directory** After: **6.4 FTP/SFTP Composition of directory** ・(1) Composition of directory, Storage Destination is changed. The recent data (Daily file) Before: /archive/archive01/YYYYMMDD/ Provided File After: /archives/archive01/YYYYMMDD/ Provided File The recent data (Other than Daily file) Before: /archive/archive02/YYYYMMDD/ Provided File After: /archives/archive02/YYYYMMDD/ Provided File

Date	Version	Details

April 4,2022	2.90	Changed corporate name, JPX Market Innovation & Research, Inc.
		
		1.Purpose of this specification
		 Changed Tokyo Stock Exchange Co., Ltd. to JPX Soken Co., Ltd.
		
		※The part described as TSE will be changed to JPX Research Institute.
		
		2.Outline of DFS
		2.1. File transfer protocol
		・Add the following.
		 Also, it is not possible to connect from multiple clients using one user ID. The existing session would be disconnected when the server detects the trial of the multiple connection (Retry might be deemed as the same behavior as the multiple connection). If you detect such disconnection, please try to connect again after waiting at least 15 minutes.
		
		3.3. Configuration information
		・Add the following.
		  ※Reacquisition using "Re Accese"in the FBAJ Protocol is not available.。
		
		  Add the following explanation.
		・For connendtions in passive mode, the data transfer port will randomly respond between "50000 and 65535".
		
		【PASSIVE mode】
		・Control connection:Client(any)⇒JPXI system(port 20021).
		Data connection:Client(any)⇒JPXI system(port 50000 to 65535)(TSE system side notifies the port used).
		・ 【ACTIVE mode】
		Control connection:Client(any)⇒JPXI system(port 20021).
		Data connection:JPXI system(20022 port)→Access client (any)(establish connection from JPXI TSE system side).
		
		(2)Connection via SFTP
		・Add notes.
		  Not accepted in SECSH format.
		
		6.3 Provision frequency and provision time
		・Add the following.
		①Data of the day
		The directory with the file name remains even after the file is acquired.
		
		②The recent data
		The files of ths day will be saved for both "Data of the day"and "Data of the day "and "The recent data" directries respectively at the same timeing. In addition, the directories of each file name existing in archives02 will be deleted together with the directory of the corresponding date after all the files in the date are acquired.
		
		8.Contacts
		  Changed the company name.
		  (1) JPX Market Innovation & Research, Inc.
		  (2) JPX Market Innovation & Research, Inc.
		    IT Service Depertmentt

Date	Version	Details
		(3) JPX Market Innovation & Research, Inc. IT Development Department

September 30, 2023	3.0	1. Purpose of this specification
		Delete the following services
		3) Information provision service provided by Japan Securities Depository Center, Inc. for balance of foreign stocks.
		
		2. Outline of DFS
		2.1. File transfer protocol
		Modify as the following
		・When multiple connections are detected, all but the existing session is considered a duplicate access and disconnected
		・In addition, if there is no communication for 15 minutes after the session has been established, the session is forcibly disconnected.
		・In these cases where the session was not disconnected successfully,
		
		2.2. Line of communication
		・Add arrownetSFTP to available protocols
		・Add the following
		  * When switching from arrownetFTP to arrownetSFTP, no application to arrownet is required.
		
		3. Connection via FBAJ Protocol
		3.3. Configuration information
		・Added explanation of file reacquisition by retransmission request message in FBAJ TCP/IP protocol.
		
		5. Connection via SFTP
		5.1. Line of connection
		5.2. Telecommunications equipment
		・Add about arrownet
		5.3. Configuration information
		・Add arrownet connection
		・Modify as the following
		  Public keys are stored with the following naming rule. When replacing the public key, please rename the file using the following naming rule. (For new SFTP connections, please submit an arbitrary file name as we ask you to create a public key before your ID is provided.)
		
		・Add the following
		  ・Only RSA encryption format can be registered.
		  ・DSA encryption format (as unaccepted format)
		  ・The maximum key length is 4096 bits.

Date	Version	Details
		Change the order of 6.3 and 6.4 6.4. Provision frequency and provision time (2) File provision time/period (a) On the day data provision area (b) The recent data provision area On the day data provision area, change the specification that files remain available for times within the file provision period and introduced a file deletion process. 7. Operation at system failure 7.3. File reacquisition ・Implement contents review 8. Contacts (3) Enquiries about system specifications ・Change the Department name as "IT Business Department"
December 11,2023	3.1	6.4. Provision frequency and provision time (2) File provision time/period Add explanation that the timestamp will change depending on the number of file acquisitions.