Supercomputer Fugaku Startup Guide Version 1.11

RIKEN Center for Computational Science

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INTRODUCTION

1.1 The purpose of this document.

This document describes about the required settings to use Supercomputer Fugaku after finishing the account registration.

Please proceed the initial settings such as client following this document. After the initial settings, access to the Fugaku website (https://www.fugaku.r-ccs.riken.jp/en) and refer to the Users Guide.

1.2 Notation used in this document

• In command execution, the user terminal and login node to be operated are represented by a prompt.

Prompt	Control target
[terminal]	Means to execute the command at the user device
[_LNlogin]	Means to execute the command at the login node (Common)

• Home directory indicates with ~ (tilde).

1.3 About trademarks

Company names and product names in the text may be trademarks or registered trademarks of the respective companies. Other trademarks and registered trademarks are generally trademarks or registered trademarks of their respective companies. Please note that trademark names (TM, (R)) are not always added to system names, product names, etc., described in this document.

1.4 Change log

This indicates the update history of this document.

Version 1.11 February 25, 2025

- Added a sample Certificate Manager screen to "2.2.3 Installing the certificate to Chrome (Windows)".
- Added a note to "2.4.3 Accessing direction".

Version 1.10 September 4, 2024

• Added an explanation of the password when using the Mac keychain to "2.3 Accessing steps to the Fugaku website".

Version 1.09 December 12, 2023

• The name https://www.fugaku.r-ccs.riken.jp/en/ was changed from "the user portal" to "the Fugaku website".

Version 1.08 March 22, 2023

- Updated the puttygen screen examples in "2.4.1 Private key/Public key creation".
- Updated the PuTTY screen examples in "2.4.3 Accessing direction".

Version 1.07 March 15, 2023

• Added a reference page for using RSA keys to "2.4.1. Private key/Public key creation".

Version 1.06 June 22, 2022

• Added flow diagram to "2.1 Overview".

Version 1.05 June 6, 2022

• Indicates that we plan to ban the use of RSA in "2.4.1 Creating a Private/Public Key Pair".

Version 1.04 May 23, 2022

• Added a note about permissions to "2.4 login".

Version 1.03 April 6, 2022

• Added a note about using Chrome@Mac in "2.3 Accessing steps to the Fugaku website".

Version 1.02 April 3, 2022

• Added "2.4.6. E-mail distribution of Fugaku operation information".

Version 1.01 April 15, 2021

• Updated the description of "Client certificate pathphrase" in "2.2. Client Certification Installation"

Version 1.00 March 4, 2021

- Changed the host name of login node.
- Updated step 1 of "2.2.3. Installing the certificate to Chrome (Windows)"
- Updated of "2.4.2. Public key registration"

Version 0.2 November 27, 2020

- Added "Change log".
- Changed the note about browser in "2.3. Accessing steps to the Fugaku website".
- Updated step 5 of "2.4.2. Public key registration"

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CHAPTER TWO

SYSTEM USE

This section describes the basic items such as logging into the system, for use of Supercomputer Fugaku.

2.1 Overview

To use the Supercomputer Fugaku, you need to use Fugaku website and login node.

Here describes the installation procedure of client certificate which is required for using the Fugaku website, and the creation and registration procedure of SSH public key which is required to connect the login node.

The flow of setting is as follows:.



Item	Reference to
Client Certification Installation	Client Certification Installation
Private key/Public key creation	Private key/Public key creation
Public key registration	Public key registration
Terminal software settings	Login node (PuTTY)
Login	Login node (PuTTY)

2.2 Client Certification Installation

Client certificate is used when accessing to the Fugaku website. Please install to the browser which accesses to the Fugaku website.

This indicates how to install the required client certificate to access to the Fugaku website of Supercomputer Fugaku. This work is not required if installed the client certificate by refering to the Startup Guide.

Please prepare the followings before installing the client certificate.

- Client certificate :"user account name .p12" file
- Client certificate pathphrase

Client certificate

Once the account issue is compleded, the client certificate is sent via e-mail to the e-mail address you entered when applying. Please save the attached "local account name.p12" file to the device (e.g. PC) which installs the client certificate. To "local account name.p12" file, the client private key, the client certificate (a public key) and the route certificate of the client certificate issuing authority.

Client certificate pathphrase

The passphrase is sent in written form or PDF file separately from the client certificate. It will be required when installing the client certificate. Please store at the safe place.

This section describes the procedure for registering a client certificate on your PC.

Note: If you use a different browser than the specified browser, confirm the certificate management method of the browser yourself, and install the client certificate in the browser to be used.

2.2.1 Installing the certificate to Firefox (Windows)

This indicates how to install Firefox on Microsoft Windws. The difference may be seen depending on the version of Firefox. If the screen is different, please try with confirming the Firefox information.

1. Start Firefox and open [Option]. Click on [Privacy and Security]'s [Display certificate].

	₽	Options	× +	- 0	×
$\left(\boldsymbol{\leftarrow} \right)$	\rightarrow	C û	Sirefox about:preferences#privacy	III\ 🗉 🔮	≡
	⇔ @	General Home	Find in Options Find in Options Allow Firefox to send backlogged crash reports on your behalf Learn more		^
	ପ ଜ ଅ	Search Privacy & Security Sync	Security Deceptive Content and Dangerous Software Protection Image: Software Protection Image: Block dangerous and deceptive content Image: Block dangerous downloads Image: Block dangerous downloads Image: Block dangerous downloads Image: Block dangerous downloads		
	* ?	Extensions & Themes Firefox Support	Certificates When a server requests your personal certificate Select one automatically ● Ask you every time ✓ Query OCSP responder servers to confirm the current validity of certificates Security Devices		

2. Once the certificate manager is started, select [Your Certificates] and click on [Import...].

	Certificate	Manager		×
Your Certificates	People Servers	Authorities		
Certificate Name	Security Device	Serial Number	Expires On E	Ę
<u>v</u> iew <u>B</u> ac	кир Вас <u>к</u> ир Ан	I <u>mport</u> Delete.	 ОК	

🍯 Certificate File to Impo	prt			×
← → • ↑ <mark>□</mark> >	This PC > Desktop	ٽ ~		
Organize New fo	lder		1 1 1 1 1 1	□ ?
 Quick access Desktop Downloads Documents Pictures 	Name	Date modified	Type	Size
ConeDrive	p12	3/3/2020 11:59 AM	Personal Informati	5 KB
This PC File <u>r</u>	ame:p12	~	PKCS12 Files (*.p12;*.p	> ofx) ~
			<u>O</u> pen	Cancel

3. Client certificate: Select "local account name.p12" file and click on [Open].

4. Input the client passphrase to *Password* and click on *[OK]*.

Passwor	d Required - Mozilla Firefox	\times
?	Please enter the password that was used to encrypt this certificate back	up:
	OK Cancel	

Attention: If the client certificate passphrase is wrong it shows an error and cannot go forward.

5. Confirm if the client certificate is registered.

		Certificate	Manager			
Your Certifica	ites Peo	ple Servers	Authorities	;		
/ou have certific	ates from the	se organizations t	hat identify you			
Certificate Nan	ne Se	ecurity Device	Serial Num	ber	Expires On	E
✓ RIKEN Center	for Co					
	Sof	tware Security De	evi		all the second	
	D					
<u>V</u> iew	<u>B</u> ackup	Bac <u>k</u> up All	I <u>m</u> port	<u>D</u> elete		

6. Select [Authorities] and from the list, select "RIKEN R-CCS" and click on View....

		×			
Your Certificates People You have certificates on file that	Servers	Authoriti	ies		
Certificate Name		Security Dev	vice		E₽.
QuoVadis Root CA 1 G3		Builtin Object	Token		^
QuoVadis Root CA 2 G3		Builtin Object	Token		
QuoVadis Root CA 2		Builtin Object	Token		
QuoVadis Root CA 3		Builtin Object	Token		
✓ RIKEN Center for Computation	nal Science				
RIKEN R-CCS		Software Secu	urity Device		
✓ SECOM Trust Systems CO.,LTD).				
Security Communication Ro	ootCA2	Builtin Object	Token		
✓ SECOM Trust.net					~
<u>V</u> iew <u>E</u> dit Trust	I <u>m</u> port	E <u>x</u> port	Delete or Distrust		
				ОК	

7. Please confirm if the certificate's Fingerprints is (SHA-1): EEED846F FC733A73 328F4561 39BDB995

D5174BBC.

Coptions X about ce	tificate × +	-		×
\leftrightarrow \rightarrow C \textcircled{about} Firefox about	it:certificate?cert=MIIEjDCCA3SgAwIBAgIJAJZ7a3qmLMujMA0GCSqGSIb3DQEBCwUAMIGJℕ	\ 🗉	۲	≡
Not Before	2/27/2020, 10:45:20 AM (Japan Standard Time)			^
Not After	3/31/2036, 10:45:20 AM (Japan Standard Time)			
Public Key Info				
Algorithm	RSA			
Key Size	2048			
Exponent	65537			
Modulus	C1:A8:60:B7:F5:29:69:D9:E4:18:AA:60:2D:F5:12:41:F5:59:F6:8B:99:97:D7:BE:AA:AD:0A:BE:EC:75:78:C0:F5:9C:9E:	F4:EF:		
Miscellaneous				
Serial Number	00:96:7B:6B:7A:A6:2C:CB:A3			
Signature Algorithm	SHA-256 with RSA Encryption			
Version	3			
Download	PEM (cert) PEM (chain)			
Finance state				
Fingerprints SHA-256				
SHA-1	EF-ED:84/6E-EC-73:34/73:32:8E-45:61:39:RD:R9:95:D5:17:4R:RC			
JIA				
Basic Constraints				
Certificate Authority	Yes			
Subject Key ID				
Key ID	97:E9:81:97:45:53:E3:FB:CB:09:47:E3:1C:7A:BE:61:B3:80:A5:61			
Authority Key ID	07-F0-94-07-4E-52-F2-FD-CD-00-47-F2-4C-7A-DF-64-D2-90-4E-64			
Key ID	31.E3.01.31.43.33.E3.FD.CD.03.41.E3.1C.1A.DE.01.D3.00.A3.01			

8. Next, set the password to be entered when using the client certificate. Click on Security Devices....

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	.⊅ Find	in Options
🔆 General	Allow Firefox to make personalized extension recommendations Lear	n more
♪ Home	Allow Firefox to install and run studies View Firefox studies	
	Allow Firefox to send backlogged crash reports on your behalf	Learn more
入 Search		
Privacy & Security		
3	Security	
Sync 🗸	Deceptive Content and Dangerous Software Protection	
	✓ Block dangerous and deceptive content Learn more	
	Block <u>d</u> angerous downloads	
	\checkmark Warn you about unwanted and uncommon software	
	Certificates	
	When a server requests your personal certificate	
	<u>S</u> elect one automatically	
	Ask you every time	
	Query OCSP responder servers to confirm the current validity of	View <u>C</u> ertificates
Extensions & Themes	Certificates	Security <u>D</u> evices

9. Once device manager is started, select Software Security Device and click on Change password.

Device Manager						
Security Modules and Devices	Details	Value	Log I <u>n</u>			
 NSS Internal PKCS #11 Module 	Status	Not Logged In	Les Out			
Generic Crypto Services	Description	PSM Private Keys	Log <u>O</u> ut			
Software Security Device	Manufacturer	Mozilla.org	Change Password			
✓ Builtin Roots Module	HW Version	3.50	Load			
NSS Builtin Objects	FW Version	0.0	Load			
	Label	Software Security Device	<u>U</u> nload			
	Manufacturer	Mozilla.org	Enable FIPS			
	Serial Number	000000000000000	LINDIG THE			
	HW Version	0.0				
	FW Version	0.0				
			ОК			

10. Set any password required when using the client certificate, click on OK.

Change Master Password			×
Security Device: under	fined		
Current password:			
New password:	••••		
New password (again):	••••		
Password quality meter			
	OK	Cancel	

11. After registering the password, close Device Manager. This is the end of setting the password when using the client certificate. The password set here is used when using the client certificate.

2.2.2 Installing the certificate on Firefox (Mac)

1. Start Firefox, then click [Preferences...] from menu.



2. Click [View certificates...] in Privacy and security tab.

Ś	Fire	efox	File	Edit	View	History	Bo	ookm	arks	Tools	Window	w H	Help											Q		A	Mo	n 17:46			Q :	Ξ
• •	•		🛱 Pro	eferences		>	×	+																								
¢	\rightarrow	G	۵			O Firefox	x a	about	prefera	ancesă	privacy															ជ			lii\	ī	۲	≡
																		Q	. Find i	in Pre	ference	3										
	¢	Gen	eral			Secu	urit	1V																								
	۵	Hon	ne			Decer	eptiv	ve C	onter	nt and	Dange	erou	ıs So	oftwa	re Pro	otect	ion															
	Q	Sea	rch			J Blo	lock	k dan	gerous	and o	leceptive	e cor	nten	t Lear	n more	е																
[Priv	acy &	Securi	ty	✓ ✓	И И И	Block Varn	dange you ab	rous d oout ur	ownload wanted	ds and	unce	ommor	n softw	vare																
	C	Syn	С																													
						Certif When a Se	ifica a s ielec	ates erver ct one	reque autor	sts yo natica	ur perso Ily	onal o	certi	ficate																		
	* ?	Exter Firef	nsions ox Supp	& Them	es	Qu ce	uery ertifi	y OC	SP res	ponde	r servers	s to o	conf	irm the	e curre	ent va	lidity of		v s	/iew (Gecur	Certific	ates ices										

3. Once certificate manager started, select [Your certificate] then click [Import...].

		Ce	rtificate M	Manager			
You	ır Certificat	es	People	Serve	rs A	uthorities	
You have certifica Certificate Nam	ites from th	ese orga Security [inizations Device	that identify y	rou umber	Expires On	E
View	Backup	Backu	ıp All	Import	Delete		
View	Backup	Backu	ıp All	Import	Delete		ОК

4. Select the "local account name.p12" file saved on your computer, click [Open].



5. Input the passphrase of the obtained client certificate to Password area, click [OK].



Attention: If the client certificate passphrase is incorrect, an error is displayed and you cannot proceed to the next screen.

6. Confirm that the client certificate has been registered, click [OK] and close the certificate manager. This completes the client certificate installation process.



7. Next, set the password to be entered when using the client certificate. Click Security device....

Ś.F	irefox	r File	Edit	View	History Bookmarks Tools Window Help) 🖗	12 A	Tue 11:41	-	Q	Ξ
		🔆 Pri	eferences		× +				1.0		
€→	G	Û			Firefox about;praferances#privacy Q. Find in Preferences				III\ U		=
¢	Ge	neral			Security						
6	Ho	me			Deceptive Content and Dangerous Software Protection						
С	Sea	arch			✓ Block dangerous and deceptive content Learn more						
a 2	Priv Syr	vacy &	Securi	ty	 Block dangerous downloads Warn you about unwanted and uncommon software 						
					Certificates When a server requests your personal certificate Select one automatically Ask you every time Query OCSP responder servers to confirm the current validity of View Certificates						
1	Exte	ensions fox Sup	& Them port	es	Certificates						

8. Once device manager starts, select Software Security Devicethen click Change password....

	Device Ma	nager	×
Security Modules and Devices	Details	Value	Log In
 NSS Internal PKCS #11 Module 	Status	Ready	
Generic Crypto Services	Description	PSM Private Keys	Log Out
Software Security Device	Manufacturer	Mozilla.org	Change Password
✓ Builtin Roots Module	HW Version	3.50	
NSS Builtin Objects	FW Version	0.0	Load
	Label	Software Security Device	Unload
	Manufacturer	Mozilla.org	
	Serial Number	000000000000000	Enable FIPS
	HW Version	0.0	
	FW Version	0.0	
			ОК

9. Set an arbitrary password required when using a client certificate, click OK.

Security Device: unde	fined
Current password:	(not set)
New password:	
New password (again):	
Password quality meter	
C	Cancel OK

10. Click OK.

Security Device: und	efined
Current password:	(not set)
New password:	•••••
New password (again):	
Password quality meter	
(Cancel OK

11. Click *OK* and close devicce manager. This completes the password setting procedure when using a client certificate.



2.2.3 Installing the certificate to Chrome (Windows)

This indicates how to install Chrome on Microsoft Windows. The difference may be seen depending on the version of Chrome. If the screen is different, please try with confirming the Chrome information.

1. Start Chrome and open [Settings]. Click on [Privacy and security]'s [Security].

	Se	ttings ×	+						-	C]	×
←	\rightarrow	Chrome chro	me://se	ettings,	/priv	Vacy	☆	0	9	*	θ	:
	Setti	ngs				Search settings						
	<u>.</u>	You and Google	^	Pri	vac	y and security						ľ
() 	Autofill Safety check			Î	Clear browsing data Clear history, cookies, cache, and more	•					
(9	Privacy and security			٩	Cookies and other site data Third-party cookies are blocked in Incognito mode	•					
6	₽	Appearance			_	Populity		-				
(Q	Search engine			0	Security Safe Browsing (protection from dangerous sites) and other security settings	•					
Ē	=1	Default browser			-+	Site Settings		1				
(U	On startup			1	Controls what information sites can use and show (location, camera, pop-ups, and more)	•					
۵	∖dvar	nced 🔺		Ap	pea	rance						
¢	₽	Languages			The	me						
1	<u>+</u>	Downloads			Ope	en Chrome Web Store	Z					
-	ŧ	Accessibility			Sho	w home button	0					
	2	System			Dis	abled						

2. Click on [Manage certificates].

🌣 Se	ttings - Security × +				-	[2	×
\leftarrow	Chrome chrome://settin	ngs/secu	urity	☆	0	*	θ	:
Sett	ings		Search settings					
: 1	You and Google		Help improve security on the web for everyone Sends URLs of some pages you visit, limited system information, and some page content to Google, to help discover new threats and protect everyone on the web.					
ଡ ତ	Safety check Privacy and security		Warn you if passwords are exposed in a data breach Chrome periodically checks your passwords against lists that have been published online. When doing this, your passwords and usernames are encrypted, so they can't be read by					
ଜ ୦	Appearance Search engine Default browser	0	anyone, including Google. When you sign in to your Google Account, this teature is turned on. No protection (not recommended) Does not protect you against dangerous websites, downloads, and extensions. You'll still get Safe Browsing protection, where available, in other Google services, like Gmail and Search.					
Ċ	On startup	Adva	anced					ļ
Advar	nced 🔺	Use This	secure DNS setting is disabled on managed browsers					
<u>+</u>	Downloads	Man Man	age certificates age HTTPS/SSL certificates and settings	Ø				
† 3	Accessibility System	Goo Safe	gle Advanced Protection Program guards the personal Google Accounts of anyone at risk of targeted attacks	Ø				

3. Click on [Manage imported certificates from Windows].

0	Certificate Manag	ger	
	Local certificates	Your certificates	
1	Your certificates	Client certificates are certificates that identify you to other servers.	
0	Chrome Root Store	Windows	
		View imported certificates from Windows	•
		Manage imported certificates from Windows	Ľ

4. Once certification manager is started, select [Personal] and click on [Import...].

Certificates				×
I <u>n</u> tended purpose:	<all></all>			\sim
Personal Other Peo	ple Intermediate Cert	ification Author	ities Trusted Roo	t Certification
Issued To	Issued By	Expirati	Friendly Name	
			-	
-			-	
-			100	
Import E	port <u>R</u> emove	9		<u>A</u> dvanced
- Certificate intended p	ourposes			
End ypung File Syste				View
				<u>C</u> lose

5. Once certificate import wizard is opened, click on [Next].

← 🛛 😺 Certificate Import Wizard	×
Welcome to the Certificate Import Wizard	
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.	
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.	
To continue, click Next.	
<u>N</u> ext Can	cel

6. Click on [Browse...].

÷	F Certificate Import Wizard	×
	File to Import Specify the file you want to import.	
	Eile name:	
	Note: More than one certificate can be stored in a single file in the following formats: Personal Information Exchange- PKCS #12 (.PFX,.P12)	
	Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B) Microsoft Serialized Certificate Store (.SST)	
	Next Cance	9 1

7. Change the file type to [*Personal Information Exchange*(*.*pfx*,*.*p12*)].

Open			×
\leftarrow \rightarrow \checkmark \uparrow 🛅 > This PC > Documents >	ٽ ~		nents
Organize Vew folder		a —— a —— a ——	• 🔳 🕐
Desktop 🖈 ^ Name	Date modified	Туре	Size
🖶 Downloads 🖈		The second se	1
🗎 Documents 🖈			
📰 Pictures 🖈			
A company to the state of the s	1	the states	
A Association of the second se		-	
A new Control of the Association			
A fight			
OneDrive			
🔄 This PC			
😻 Network 🗸 🧹			>
File <u>n</u> ame:	~	Personal Informatio	n Exchange 🖂
		X.509 Certificate (*.o	cer:*.crt)
	L	Personal Informatio	n Exchange (*.pfx; [*] (*.stl)

8. Select "user account name.p12" file and click on [Open].

💿 Open				×
\leftarrow \rightarrow \checkmark \uparrow	> This PC > Desktop >	ٽ ~)
Organize 🔹 Nev	v folder			
📃 Desktop	* ^ Name	Date modified	Туре	Size
🖊 Downloads	*		10.000	
Documents	*	production of the later.		
Pictures	*			
A second state	 A set of the set of	statistic statistic		
I description	a institute			
	1.1.1.1.1.1.1.1			
	a second s			
OneDrive	A 1999 A		-	
This DC	.p12	3/3/2020 11:59 AM	Personal Informati	5 KB
This PC	Transfer to an an arrive and the	100000-0000		
Intwork 🥩 Network	× <			>
F	ile name: Lp12	~	Personal Information	Exchange ~
			<u>O</u> pen	Cancel

9. After setting a file name, click on [Next].

\leftarrow	F Certificate Import Wizard	×
	File to Import Specify the file you want to import.	
	Eile name: C:¥p12Browse	
	Note: More than one certificate can be stored in a single file in the following formats: Personal Information Exchange- PKCS #12 (.PFX,.P12)	
	Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B) Microsoft Serialized Certificate Store (.SST)	
	Next: Cance	2

10. Input the client certificate passphrase to *Password* and check the import option *[Enable Strong privat key protectin.* then click on *[Next]*.

~	F Certificate Import Wizard	×
	Private key protection To maintain security, the private key was protected with a password.	
	Type the password for the private key.	
	Password:	
	Import options: Enable strong private key protection. You will be prompted every time the private key is used by an application if you enable this option.	
	Mark this key as exportable. This will allow you to back up or transport your keys at a later time.	
	Protect private key using virtualized-based security(Non-exportable)	
	Next Cance	21

Attention: If the client certificate pass phrase is wrong it shows an error and cannot go forward.

11. Check Automatically select the certificate store based on the type of certificate and click on [Next].

F Certificate Import Wizard	
Certificate Store Certificate stores are system areas where certificates are kept.	
Windows can automatically select a certificate store, or you can specify a location for the certificate.	
Automatically select the certificate store based on the type of certificate	
\bigcirc Place all certificates in the following store	
Certificate store:	
Personal Browse	
<u>N</u> ext Cano	e

12. Click on [Finish].

~	Certificate Import Wizard	×
	Completing the Certifica	te Import Wizard
	The certificate will be imported after you	click Finish.
	You have specified the following settings	
	Certificate Store Selected Automatical	y determined by the wizard
	Content PFX	¥ 012
	File Name C.+ Users+	÷.µ12
		<u>Einish</u> Cancel

13. The "Importing a new private exchange key" screen will be displayed continuously, click on [Set Security Level].



14. Check [High] and click on [Next].



15. Set the password and click on [Finish].

Create a Password			×
	Create a password t	o protect this item.	
	Create a new passw Password for:	ord for this item. CryptoAPI Private Key	
	Password: Confirm:		
	< Back	Einish Cance	el 🛛

16. Click on [OK].



17. Click on [OK].



18. If a security warning is issued, confirm that the Thumprint is (SHA-1): EEED846F FC733A73 328F4561 39BDB995 D5174BBC and click on *[Yes]*.



19. Installation of client certificate is all done.

Certificates				×
I <u>n</u> tended purpose:	<all></all>			\sim
Personal Other Peop	le Intermediate Certific	ation Authori	ties Trusted Root	Certification •
Issued To	Issued By RIKEN R-CCS	Expirati	Friendly Name	
Import	port <u>R</u> emove			Advanced
 Certificate intended p 	urposes			View
				<u>C</u> lose

2.2.4 Installing the certificate to Chrome (Mac)

This indicates how to install Chrome on Mac. At macOS, the client certificate is managed at "Key chain access".

1. Client certificate: Double click "user account name.p12" file. The password input screen is show first. Enter the client certificate pass phrase and click on *[OK]*.

Password:	assword for "p12":	
		IN
Show password	Show password	
Cancel OK	Cancel OK	

Attention: If the client certificate pass phrase is wrong it shows an error and cannot go forward.

^{2.} Open "Key chain access" screen and double click on the server certificate (RIKEN R-CCS) that issused the client certificate.

•••		Keychain Access				
Click to lock th	e login keychain.				Q Sear	ch
Keychains if login Local Items System System Roots	Certificate Ro Ex S	KEN R-CCS ot certificate authority pires: Monday, March 31, 2036 10:45:20 Japan Sta "RIKEN R-CCS" certificate is not trusted	ndard Time			
	Name	^	Kind	Expires		Keychain
		0	certificate	M 01	2020 40:45:20	login
Category						
All Items All Items Passwords Secure Notes My Certificates Keys						
📴 Certificates						
	+ i Copy		2 items			

3. Click on "Route certificate authority" - "Trust" and from the list of "When using this certificatie", select "Always trust" and close the screen.

	RIKEN R-CCS
Certificate Continue Certificate Continue Certificate Root Expiri Certificate Root Expiri Certificate	EN R-CCS certificate authority es: Monday, March 31, 2036 10:45:20 Japan Standard Time IKEN R-CCS" certificate is not trusted
When usi	ng this certificate 🗸 Use System Defaults ?
Secure Soc Secu	ckets Layer (SSL Always Trust Never Trust Ire Mail (S/MIME) no value specified 🗸
Extensible Auth	nentication (EAP) no value specified
IP	Security (IPsec) no value specified ᅌ
	Code Signing no value specified
	Time Stamping no value specified
X.	509 Basic Policy no value specified ᅌ
▼ Details	act Name
Comm	on Name RIKEN R-CCS
Domain Co	mponent r-ccs
Domain Co	mponent riken
Domain Co	mponent_in

4. You will be prompted for your Mac administrator username and password to reflect the change in trust settings. Input these and click on [Update setting].

You are making changes to your Certificate Trust Settings. Enter your password to allow this.			
User Name:			
Password: 0000000			
Cancel Update Settings			

5. On the "Keychain Access" screen, hold down the Control key and click the client certificate (the local account name is shown in the name field), select [*New identify preference*]

••	•	Keychain Access				
	Click to lock the log	gin keychain.	Q Se	arch		
ing ing ing ing ing ing ing ing	Keychains ogin Local Items System System Roots	Certificate Subset of the standard Time This certificate is valid				
		Name Kind Date Modified	Expires	Keychain		
		P <key> public key</key>		login		
		ekey> private key		login		
		Apple Persistent State Encryption application password Yesterday, 13:34		login		
		Chrome Safe Storage application password Yesterday, 18:35		login		
		🛴 com.apple.ids2cb5c-AuthToken application password Mar 13, 2020 17:06	:55	login		
		🛴 com.apple.scokmarksagent.xpc application password Yesterday, 17:37		login		
		Cartificate		login		
	Category	New Identity Preterence		login		
A A	All Items	Copy " 3, 2020 17:06	:54	login		
ha F	Passwords	keeping ids: identity-ry-pair-sig Delete " " 3, 2020 17:06	:54	login		
<u> </u>	Secure Notes	ds: identity-rsa-private- 3, 2020 17:06	:54	login		
	Av Certificates	keeping ids: identity-rsa-public- Export " 3, 2020 17:06	:54	login		
@ v	(ave	ki ids: unregistege-protec 3, 2020 17:06	:54	login		
ij r		Wessage Encryption Key Get Info		login		
	Jertificates	Wessage Encryption Key Evaluate "1 1 1"		login		
		WiMessage Signing Key public key		login		
		WiMessage Signing Key private key		login		
		MetadataKeychain application password Mar 13, 2020 17:10:	.43	login		
		RIKEN R-CCS certificate	Mar 31, 2036 10:45:20	login		
		Loss Satari Session State Key application password Yesterday, 16:57		login		
		+ i Copy 20 items				

6. To "Location or Email Address:", input "https://www.fugaku.r-ccs.riken.jp/" and click on [Add].

www.fugak	u.r-ccs.riken.jp			
Enter the location (URL) or email address for which a certificate is required.				
a				
Certificate:				

7. With the same steps, register "https://api.fugaku.r-ccs.riken.jp/".

Location or E	mail Address:			
fugaku.r-ccs.riken.jp				
Enter the location (URL) or email address for which a certificate is required.				
Certificate: (Select the prefe	rred certificate for the location or address specified above. Cancel Add			

8. Confirm if "https://www.fugaku.r-ccs.riken.jp/" and "https://api.fugaku.r-ccs.riken.jp/" 's "Identify preference" is registered to "Key chain access" and close the screen. Installation is all done.

2.3 Accessing steps to the Fugaku website

This indicates how to access to the Fugaku website.

1. Open the browser and acces to the following URL. https://www.fugaku.r-ccs.riken.jp/en

Note:

- The Fugaku website has been tested on Mozilla Firefox and Google Chrome. If you are using other browsers and you have problems with the operation, please use a browser which operation has been confirmed. In addition, when using Microsoft Internet Explorer, it is confirmed that abnormal termination occurs with *Public key registration*.
- To prevent vulnerabilities, the Fugaku website prohibits SSL connections and accepts only TLS 1.2 and 1.3 connections. Depending on the settings of your browser, you may not be able to connect, so please change the settings appropriately to use TLS 1.2 or later as follows.

[Setting change direction on Firefox]

- 1. Enter **about: config** on the address bar and press an enter key.
- 2. Search with security.tls.version.
- 3. Confirm that *security.tls.version.max* is 4 (enable by TLS 1.3).
- 4. If the value is less than 4, set the value of 4.
- 2. Once the client certificate selection diarogue is shown, select the using local account's client certificate.

• The example of Firefox diarogue

User Identification Request	×				
This site has requested that you identify yourself with a certificate:					
www.fugaku.r-ccs.riken.jp:443					
Organization: "RIKEN"					
Issued Under: "National Institute of Informatics"					
Choose a certificate to present as identification:					
	\sim				
Details of selected certificate:					
Issued to: DC=jp,DC=riken,DC=r-ccs,O=RIKEN Center for Computational Science,CN= Serial number:	^				
Valid from					
Key Usages: Signing,Key Encipherment					
Science,DC=jp,DC=riken,DC=r-ccs,CN=RIKEN R-CCS					
Remember this decision					
OK Cancel					

• The example of Chrome diarogue

Subject	Issuer	Serial	
-	RIKEN R-CCS	100	
-			

- 3. In the password input dialog, enter the password of the private key registered when the client certificate was installed. If you're using macOS Keychain, enter the Keychain password.
 - The example of Firefox diarogue

Password	d Required - Mozilla Firefox X	
?	Please enter your master password.	
	•••••	
	OK Cancel	

• The example of Keychain (macOS)

Enter the keychain password (usually the same as your computer login password).

	Google Chrome wants to sign using key "privateKey" in your keychain. To allow this, enter the "login" keychain password.				
	Password:				
?	Always Allow Deny Allow				

Note: If you are repeatedly prompted to enter a password for the keychain when using Chrome on your Mac, click "Always Allow" in the password input dialog.

4. If the client certificate is successfully authenticated, the following screen will be displayed.

Supercomputer Fugaku			Japanea Frigink
Operation Status	Important Info	ormation	
In Operation Fugaku Operation Status	Aug. 28, 2024	Operation	Login Node Maintenance (Intel oneAPI Toolkit Update) (8/28 10:00 - 17:00)(Completed) 😥
	Information		
Ser Users	Sep 3, 2024	Failure	[Satellite Fugaku] Unable to login to login node (Sep 3rd)
Open OnDemand	Sep 2, 2024	Event	Online Seminar about Performance TUNING on Fugaku for Beginners (Optimization Methods of CPU Performance 2)
User Portal	Sep 2, 2024	Bug	When a vector subscript appears in the selector of the ASSOCIATE construct, Fortran compiler may terminate abnormally
Application	Sep 2, 2024	Failure	The output of the -m option of the accountd command was incorrect.
About use	Sep 2, 2024	Failure	Occurrence of inaccessibility and poor response at login nodes and jobs due to a file system failure(vol0003).
Contact	Aug 30, 2024	Failure	There were issues with the LD_LIBRARY_PATH and C_INCLUDE_PATH environment variables on the Login- nodes and CSGW-nodes.
	Aug 30, 2024	Operation	September 2024 Medium-scale job execution period(09/04 15:00 - 09/08 15:00)
📰 Fugaku	Aug 30, 2024	Event	System Maintenance information [2024/10]
System configuration	Aug 28, 2024	Operation	Login Node Maintenance (Intel oneAPI Toolkit Update) (8/28 10:00 -17:00)(Completed) 🖉
Resource group	Aug 28, 2024	Operation	Emergency Maintenance (August 28, 2024 18:00-19:00 JST)(Completed)
Accounting adjustment rate	Aug 28, 2024	Operation	Occurrence of poor response at login nodes and jobs due to a file system maintenance(vol0005) ${\cal O}$
The status of node hour usage	Aug 26, 2024	Operation	[Satellite Fugaku] Network Maintenance Information (Sep 4th-5th)
	Aug 26, 2024	Operation	August 2024 Medium-scale job execution period(08/23 15:00 - 08/27 15:00)(Completed) 🕄
	Aug 21, 2024	Operation	August 2024 Large-scale job execution period(08/20 15:00 - 08/23 15:00)(Completed) 🤔

2.4 Login

Loggin to to Supercomputer Fugaku by using local account, logging to login node with using SSH Version2 (Publick key authentication).

Create an SSH key pair (public key and private key) on the user terminal in advance and register the public key from the Fugaku website screen. Register only the public key. When a private key is registered, processing such as temporary suspension of login may be performed as a security measure.

Note: If you change the permissions of the following directories and files under the home directory of the login node, you will not be able to login using ssh.

- home directory permission (700)
- ~/.ssh directory permission (700)
- ~/.ssh/authorized_keys permission (600)

Do not change these permissions.

2.4.1 Private key/Public key creation

To use Supercomputer Fugaku, create the pair of private key and public key on the user device. Recommended creating type is from following.

- Ed25519
- ECDSA (NIST P 521)
- RSA (Key long more than 2048bit) : For how to use RSA keys, refer to "Operation change regarding ssh access to login nodes" on the Fugaku website.

This section describes the procedure for creating key pair (public key / private key) of Ed25519 using UNIX/Linux (OpenSSH) and Windows (puttygen). To use puttygen, it is necessary to install the terminal emulator PuTTY in advance.

- Unix/Linux/Mac (OpenSSH)
- Windows (PuTTYgen)

Unix/Linux/Mac (OpenSSH)

Execute a command **ssh-keygen** on the user's device, create a private / public key pair.

- 1. Start terminal and execute a command ssh-keygen.
 - If Mac(OS X), start Terminal(*Application* → *Utility* → *Terminal*) and execute a command **ssh-keygen**.
 - If UNIX/Linux, start terminal emulator and execute a command ssh-keygen.

```
[terminal]$ ssh-keygen -t ed25519
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/username/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase): # Enter passphrase
Enter same passphrase again: # Re-enter the same passphrase
Your identification has been saved in /home/username/.ssh/id_ed25519.
Your public key has been saved in /home/username/.ssh/id_ed25519.pub.
The key fingerprint is:
```

(continues on next page)

(continued from previous page)

```
SHA256:khbWyIyUqMnyjK10k7818EivKbQLNgP3vyhjYBgvif8 namehostname
The key's randomart image is:
+--[ED25519 256]--+
L
   . . .
  ...+ 0
Т
|.0 . * .
=.
    . 0
|=@
      + S
@0% . .
|=%.= .
| *=0 =
|+=+=Eo.
+----[SHA256]----+
```

Note:

- Set a passphrase that is difficult for others to guess, just like a password. Please be sure to set a passphrase. We recommend a passphrase length of at least 15 characters.
- Once execute ssh-keygen, two types are created: a private key (id_ed25519) and a public key (id_ed25519.pub) on . ssh directory under the home directory. Register the public key (id_ed25519.pub) using the Fugaku website.

Windows (PuTTYgen)

Create a private / public key that can be used with PuTTY / WinSCP with puttygen.

1. Start puttygen.

Select "EdDSA" for type of key and select "Ed25519 (255 bits)" to generate, then click "Generate".

😴 PuTTY Key Generator	×
<u>File K</u> ey Con <u>v</u> ersions <u>H</u> elp	
Key No key.	
Actions	
Generate a public/private key pair <u>G</u> enerate	
Load an existing private key file	
Save the generated key Save public key Save private key	
Parameters	
Type of key to generate: ○ RSA ○ DSA ○ ECDSA ● EdDSA ○ SSH-1 (RSA)	
Curve to use for generating this key: Ed25519 (255 bits)	×.

2. Move the mouse cursor randomly.

ving the mouse ove	r the blank area.	
		<u>G</u> enerate
		<u>G</u> enerate Load
	Save p <u>u</u> blic key	<u>G</u> enerate Load ∑ave private key
	Save pyblic key	<u>G</u> enerate Load Save private key
0.0000	Save pyblic key	Generate Load Save private key
	ving the mouse ove	ving the mouse over the blank area.

3. Save the public key.

Copy the displayed contents on "Public key for pasting in to OpenSSH authorized_keys file:" to the clip board (It is recommended to paste on the notepad).

Register the contents pasted on the clip board (Public key) using the Fugaku website.

PuTTY Key Generator		×
<u>File Key Conversions Help</u>		
Key Public key for pasting into OpenSSH authorized keys ssh-ed/25519	file:	
Key fingerprint: ssh-ed25519 255 SHA256: Key gomment: eddsa-key-20 Key passphrase:		
Generate a public/private key pair		<u>G</u> enerate
Load an existing private key file		Load
Save the generated key	Save p <u>u</u> blic key	Save private key
Parameters Type of key to generate: O RSA O DSA O EC Curge to use for generating this key:	DSA 🔘 EdDSA	○ SSH-1 (RSA) Ed25519 (255 bits) ~

4. Input a passphrase to both "*Key passphrase*" and "*Confirm passphrase*". After inputting, click "*Save private key*" and save the private key. Remember your passphrase because it is required to log in to the login node.

😴 PuTTY Key Gene	erator				×
<u>F</u> ile <u>K</u> ey Con <u>v</u> ersi	ons <u>H</u> elp				
Key <u>P</u> ublic key for pastin ssh-ed25519	s into OpenSSH autho	rized_keys file:			^
Key fingerprint:	ssh-ed25519 255 SH	A256:4			
Key <u>c</u> omment:	eddsa-key-20				
Key p <u>a</u> ssphrase:			•••		
Confirm	•••••	•••••	000		
Actions					
Generate a public/p	rivate key pair			<u>G</u> enerate	
Load an existing priv	ate key file			Load	
Save the generated	key		Save p <u>u</u> blic key	Save private key	
Parameters					
Type of key to gene	rate: O DSA	O ECDSA	🖲 EdDSA	O SSH-1 (RSA)	
Cur <u>v</u> e to use for ge	nerating this key:		E	d25519 (255 bits)	~

Attention: Set a passphrase that is difficult for others to guess, just like a password. Please be sure to set a passphrase. We recommend a passphrase length of at least 15 characters.

5. Input a file name for storing the private key to "*File name*(N)", click "*Save*(S)". The private key is stored.



2.4.2 Public key registration

- Registration using Fugaku website
- Additional registration of public key

Registration using Fugaku website

1. Log in to the Fugaku website(https://www.fugaku.r-ccs.riken.jp/en), then click [User Portal] from menu.

upercomputer Fi	ідаки			Jaco Eng
Operation Status	a	i要なお知ら	ŧ	
In Operation	Schedule	ec. 25, 2020	Operation	Rearrangement of file system towards the start of shared use, and request for data movement.
	æ	知らせ		
Tor Users	м	ar 4, 2021	Operation	Notice of User Portal Design Change
User Portal	м	ar 4, 2021	Operation	Compute nodes available
140mm July	м	ar 4, 2021	Operation	Large scale job execution period
Application	м	ar 4, 2021	Operation	Compute nodes available
About use	м	ar 4, 2021	Operation	Large scale job execution period
Contact	м	ar 4, 2021	Operation	Compute nodes available
	м	ar 4, 2021	Failure	Occurrence of inaccessibility at login nodes and jobs due to a file system failure.(Resolved)
= Eugaku	Fe	eb 26, 2021	Operation	Start using Prepost environment.
System configuration	м	ar 3, 2021	Failure	Occurrence of inaccessibility at login nodes and jobs due to a file system failure.(Resolved) Resolved Updated
Job class	м	ar 2, 2021	Event	Euraku user briefing Lindated

2. Click [Publickey registration] from menu.

×		Fugaku User Portal	*	
		User information		
		User ID	prod. non.	
ġ.	Access history	Group ID	Sec. 12	
	Disk accounting	Home Directory	No. 1 August 1999	1
8	Disk accounting	Login Shell	NAME .	
₩	Job accounting	Belonging Group Name	Table Ta	
	● term			
	monthly	Project Name	E- B	
Ê	Job status	Project ID	the second se	
\$	Job status transition history	Term(Start Date - End Date)	X2000 X200	
₽	Publickey registration	End Date of The Grace Term	X1-94	
		Project Manager Name		

3. Copy and paste the public key to be used to "Publickey registration" area.



- 4. Click [Register].
- 5. Confirm the contents, then click [Register].

×	Fugaku User Portal
A 1000	Publickey Registration
	Please confirm the following terms before you register the pu
Ccess history	- You must not put ssh private keys in the front-end servers. - If you put private keys in the front-end servers, you will the serverse in the servers in the serverse in the se
Disk accounting	the Fugaku computer for security purpose. - Not only orlyate keys for the Fugaku computer, all ssh priv
Job accounting	are prohibited.
term monthly	If you accept the terms above, click OK to continue to the re
	<pre>if you cannot accept, flick cancel to exit.</pre>
 Deb status 	Register
Job status transition history	Attr Please make sure that the browser you are using has been tested. If the problem does not improve, please contact
Publickey registration	the support desk • Attention point of input Please searce to a 20 Abit the leasth of the least
	The public key will be additionally written into the current file. (If there is no file, a new file is created.)

6. "Registration has been completed." is displayed on the screen, then the public key registration process is completed.

×	Fugaku User Portal 😤
2 1000	Publickey Registration Depending on file system conditions, public key registration can take alog time. Please note.
Access history	
Disk accounting	Registration has been completed.
Job accounting	Please press the OK button. You can continue to register another public key.
● term	
monthly	ок
Job status	Register
Dob status transition history	Attention point of input
Publickey registration	 Please make sure that the browser you are using has been tested. If the problem does not improve, please contact the support desk Attention point of implications.
	Please generate the 2048bit the length of the key. The public key will be additionally written into the current file. (If there is no file, a new file is created.)

Note: Only one public key can be registered per operation. For the second and subsequent operations, additional registration is required. If you want to register two or more public keys, repeat the same operation.

7. Error message will be shown if the registered public key is not correct. Confirm the public key and proceed the operation again.

×		Fugaku User Portal	*
		Publickey Registration	
		Depending on file system conditions, public key registration can take alog time. Please note.	
66		an estilati anan (angel al) e al (decana) al da single-	
8			
₩	Job accounting		
	● term		
	 monthly 		
Ê		(FBBOR 1	
Э	Job status transition history	[ErrorCode] : 380012 [Message] : Error Code [380012]	
P	Publickey registration		
		Register	

Additional registration of public key

This section describes the procedure for registering additional public keys in the login node. There are a method of registering additionally using the Fugaku website and a method of editing the file directly by logging in to the login node. This section shows how to edit a file on the login node.

1. Edit ~/.ssh/authorized_keyson login node.

```
[_LNlogin]$ vi ~/.ssh/authorized_keys
Press [i] key to enter vi editor insert mode.
Click the right mouse button and paste the contents of .ssh / id_rsa.pub.
Press the [esc] key, enter [wq!], and press the [Enter] key.
```

2. Change permission of private key registered authorized_keys.

```
[_LNlogin]$ chmod 600 ~/.ssh/authorized_keys
```

2.4.3 Accessing direction

This indicates how to access to Supercomputer Fugaku.

To login to the login node, execute the steps of "*Private key/Public key creation*" and it is required that the public key is registered to login node.

Program development (Creating program/Compiling) and job controlling (Job submission/Job status display/Job deleting) are proceeded from login node.

- Login node
- Login node (PuTTY)

Login node

Access by the following host name from the user device

Host name : login.fugaku.r-ccs.riken.jp

This indicates the execution example of **ssh** command.

[Public key authentication]

- 1. When the first loggin in, the confirmation message about registering the host key (Are you sure you want to continue connecting) is displayed. Enter "yes".
- 2. Specify **ssh**'s option -X to enable X11 Forwarding function when connecting to the login node.

- 3. Specify **ssh**'s -A to enable SSH Agent-forwarding function when connecting to the login node.
- 4. Operating the multiple device's login node. About home area (/home) and deta area (/data), share with the each login node. It is the same with the language software environmet.

Note: If you *created the key pair* by entering the file name of the key file, specify the file name of the key file in the -i option of the **ssh** command.

[terminal]\$ ssh -i key_filename username@login.fugaku.r-ccs.riken.jp

Login node (PuTTY)

This indicates how to login to the login node with using Windows (PuTTY).

Start PuTTY. Set the private key which stored in the user device.
 Click on [*Browse*] from [*Connection*] → [*SSH*] → [*Auth*] → [*Credentials*].

Select the pribate key created with puttygen.

🔀 PuTTY Configuration	×
Category: 	Credentials to authenticate with Public-key authentication Private key file for authentication: Certificate to use with the private key. Plugin to provide authentication responses Plugin command to run
-TTY -X11 ~	<u>O</u> pen <u>C</u> ancel

2. Select [Session].

To [Host Name(or IP address)], enter login node host name. To save the set contents, input the name to save to [Saved Sessions] and click on [Save]. From the second logging in, select the saved name and cick [Load].

PuTTY Configuration	on	? ×
PuTTY Configuration	on	? × Basic options for your PuTTY session Specify the destination you want to connect to Host Name (or IP address) Port login.fugaku.r-ccs.riken.jp 22 Connection type: Raw Telnet Rlogin SSH Serial Load, save or delete a stored session Saved Sessions login.fugaku Default Settings Load Save Delete
Kex Host keys Cipher Auth GSSAPI TTY	▼ Help	Close window on e <u>x</u> it: O Always O Never O Only on clean exit Open Cancel

3. To enable X11 forwarding function when connecting to the login node, before click [Open], open [Connection] \rightarrow [SSH] \rightarrow [X11] and put the check to [Enable X11 forwarding].

🔀 PuTTY Configurat	tion		\times
Putty Configurat Category: Window Appearance Behaviour Translation Selection Colours Onnection Data Proxy SSH Kex Host keys Cipher Auth TTY	^	Options controlling SSH X11 forwarding X11 forwarding State	×
X11 Tunnels Bugs More bugs Serial Telnet Rlogin	*		
About		<u>Open</u> <u>C</u> ancel	

4. To enable Agent-forwarding function when connecting to the login node, before click [Open], open [Connection] → [SSH] → [Auth] and put the check to [Allow agent forwarding].

🔀 PuTTY Configurat	ion		×
Category: 		Options controlling SSH authentication Options controlling SSH authentication Display pre-authentication banner (SSH-2 only) Bypass authentication entirely (SSH-2 only) Disconnect if authentication succeeds trivially Authentication methods Attempt authentication using Pageant Attempt TIS or CryptoCard auth (SSH-1)	
SSH 		Attempt "keyboard-interactive" auth (SSH-2) Other authentication-related options	
Telnet Rlogin	~		
About		<u>O</u> pen <u>C</u> ancel	

- 5. Click on [Open]. It starts connecting to the login node.
- 6. When the first login, about the host key registration, the confirmation screen will be shown. Click on "Yes(Y)".

PuTTY Se	curity Alert	×	
	The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is. The server's rsa2 key fingerprint is: ssh-rsa 2048 26:f4:9b:02:42:58:86:d1:8e:12:c0:f6:c2:56:c9:4d If you trust this host, hit Yes to add the key to PuTTY's cache and carry on connecting. If you want to carry on connecting just once, without adding the key to the cache, hit No. If you do not trust this host, hit Cancel to abandon the connection.		1) Click the Yes button.∞
- 0	Yes No Cancel Help		

8. Input local account name and pass phrase and loging to the login node.

```
login as: username # Enter a local.

→account

Authenticating with public key "imported-openssh-key"

Passphrase for key "imported-openssh-key": passphrase # Enter a pass.

→phrase

Last login: Tue Mar 27 09:57:12 2018 from xxx.xxx.xxx

login$
```

2.4.4 File transfer method

Files can be transferred via the login node using the file transfer program (scp/sftp) installed on the user terminal. You can use login.fugaku.r-ccs.riken.jp for transfer.

Use of protocols (ftp/r commands) that are vulnerable to security is prohibited.

For file transfer, the procedure for "*Private key/Public key creation*" must be performed, and the public key must be registered on the login node.

- File transfer (sftp)
- *File transfer (scp)*
- Windows (WinSCP)

File transfer (sftp)

1. **sftp** command execution example

```
[terminal]$ sftp username@login.fugaku.r-ccs.riken.jp
Enter passphrase for key '/home/groupname/username/.ssh/id_rsa': # input_
→passphrase
sftp>
```

2. File transfer example (put)

3. File transfer example (get)

File transfer (scp)

1. scp example of command execution is shown below. (From terminal to login node)

```
[terminal]$ scp local_file username@login.fugaku.r-ccs.riken.jp:remote_

→ file
Enter passphrase for key '/home/groupname/username/.ssh/id_rsa': # Input_

→ passphrase
[terminal]$
```

2. scp example of command execution is shown below. (Login node to terminal)

```
[terminal]$ scp username@login.fugaku.r-ccs.riken.jp:remote_file local_

→ file
Enter passphrase for key '/home/groupname/username/.ssh/id_rsa': # Input_

→ passphrase
[terminal]$
```

Windows (WinSCP)

For Windows, use a file transfer program such as WinSCP to transfer the file to the login node. An example of connection with WinSCP is shown below.

- 1. Start WinSCP and select [New Site].
- 2. Enter the host name of the login node (login.fugaku.r-ccs.riken.jp) to "Host name".
- 3. Enter the user name to "User name".
- 4. Click [Advanced...].

🖺 Login		- 🗆 X
New Site	Session <u>F</u> ile protocol: SFTP ~	
	<u>H</u> ost name: login.fugaku.r-ccs.riken.jp	Po <u>r</u> t number:
	User name: Passwo	ord:
	<u>S</u> ave ▼	A <u>d</u> vanced ▼
<u>T</u> ools ▼ <u>M</u> anage ▼	🔁 Login 🔽 C	lose Help

5. Set the private key file's name of putty in [Private key file] of [Authentication], then click [OK].

Advanced Site Settings		?	×
Environment Directories Recycle bin Encryption Shell Connection Proxy Tunnel SSH Kev exchange Authentication Bugs Note	Bypass authentication entirely Authentication options Attempt authentication using Pageant Attempt 'keyboard-interactive' authentication Respond with password to the first prompt Attempt TIS or CryptoCard authentication (SSH-1) Authentication parameters Allow agent forwarding Private key file: ppk Display Public Key GSSAPI Attempt GSSAPI authentication Allow GSSAPI gredential delegation		
<u>C</u> olor ▼	OK Cancel	<u>H</u> e	elp

6. Click [Save] and save the settings.

🖺 Login		- 🗆 X
New Site	Session File protocol: SFTP Host name: login.fugaku.r-ccs.riken.jp User name: Save Save	Po <u>r</u> t number: 22 - ssword: A <u>d</u> vanced
<u>T</u> ools ▼ <u>M</u> anage ▼	Login 🔽	Close Help

7. Select the saved setting, then click [Login] to connect.

🐴 Login		- 🗆 X
New Site	Session <u>F</u> ile protocol: <u>SFTP</u> <u>Host name:</u> login.fugaku.r-ccs.riken.jp <u>U</u> ser name: <u>P</u> assword: <u>J</u> uster <u>I</u> uster Index Inde	Po <u>r</u> t number: 22 A <u>d</u> vanced
<u>T</u> ools ▼ <u>M</u> anage ▼	Login ▼ Close	Help

8. After the connection is completed, a screen similar to explorer will be displayed, and you can transfer files by dragging and dropping them.

2.4.5 Login shell

Login shell is /bin/bash.

2.4.6 E-mail distribution of Fugaku operation information

An operation information mail is delivered to Fugaku account (uid).

In order to receive the mail, the user must register the forwarding destination mail address. (If you do not register, the mail is discarded.)

We will send you an email about the following operation information. The content of distribution will be gradually expanded.

- Information of jobs affected by a system failure.
- Operation information
- Others

[How to register your e-mail address]

Create a ".forward" file in the user's home directory and register the email address that you want to receive. Examples of ".forward" and filtering configurations will be in the FAQ.

```
[_LNlogin]$ vi ~/.forward
*****@*****.com
```