

part of eex group



# Common Report Engine

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## 1. Introduction

The Common Report Engine (CRE) allows a centralized provision of reports and non-transactional files from multiple exchange markets.

The service is provided as an SFTP server and allows participants to easily retrieve all of their reports and non-transactional files from a single source.

This service is independent from the existing trading and clearing infrastructure, and participants can choose their preferred hardware platform and operating system.

Communication with the CRE is based on OpenSSH. The OpenSSH server authenticates users using the standard methods supported by the SSH protocol (<http://www.OpenSSH.com>).

All examples provided in this document refer to either the OpenSSH distribution or the PuTTY installable package for Windows.

### 1.1 SSH File Transfer Protocol

This document refers to “SFTP” in numerous instances. To avoid misunderstandings, “SFTP” stands for the SSH File Transfer Protocol as defined by the Internet Engineering Task Force (IETF - <http://tools.ietf.org/html/draft-ietf-secsh-filexfer-13>).

### 1.2 SSH/SFTP tools

While access to SSH based services is part of most Unix based distributions, PuTTY is an open source software that is available for MS Windows. It can be used to easily establish SSH and SFTP sessions (<http://www.putty.org>)

## 2. Setup Process

In general the setup process involves the following three steps:

1. *Generating an OpenSSH compliant public/private key pair*
2. *Creating a CRE user and uploading the public key in the DBAG Member Section*
3. *Logging into the CRE and downloading reports via SFTP client*

To provide a secure service, the OpenSSH authentication method is used. This method requires an OpenSSH compliant public/private key pair, which the participant has to generate. This process ensures that the participants authenticate themselves against the CRE. By using a key-based authentication method, no login passwords have to be transferred over the Internet at any time.

Step 1 is explained in section 2.1 and step 3 is explained in chapter 3. Step 2 can be done by members with access to the DBAG Member Section themselves as described in section 2.2. Members without access to the DBAG Member Section can request CRE user account creation via ECC Member Readiness by providing an application form (T06) which can be found on the ECC website ([https://www.ecc.de/ecc-en/access-to-ecc/admission-forms/technical\\_forms](https://www.ecc.de/ecc-en/access-to-ecc/admission-forms/technical_forms)) as well as the public key.

### 2.1 Generation process for public / private keys

For authentication by the CRE infrastructure public/private keys are used. The pair of keys must be generated by the member.

It is required to use a minimum of 2048 bits for the generated key. The key type should be set on the key algorithms RSA or DSA (RSA is faster in authentication). Once the parameters above are set the keys can be generated.

The key generation process will produce both the public and private keys. The public key should be displayed for pasting/exporting and is always one line of text.

Save the public key file and private key file for future use.

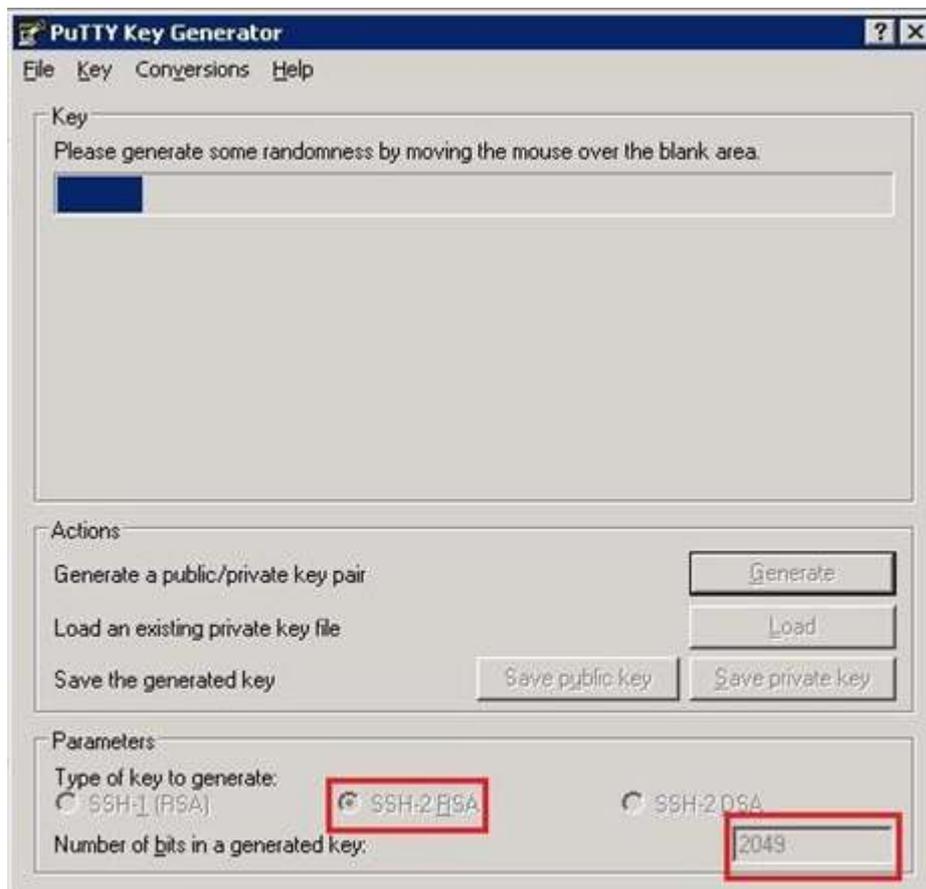
In no case should the private key be transferred over an insecure network, e.g. via e-mail, and it should always be kept only by the member.

It is highly recommended to protect your key file with a passphrase of your choice. This will encrypt the private key when it is saved in a secure location on the local machine. Using passphrases for batch SSH-keys requires familiarity with the SSH-agent authentication subsystem. Members should be aware that the use of strong encryption methods and encrypted SSH-keys is advisable but will raise administration efforts and system complexity.

To generate an SSH public/private key various freeware tools are available for download from the Internet, such as PuTTY or OpenSSH. Please note that due to OpenSSH limitations, X.509 certificates are not supported by the CRE.

## 2.2 Example for key generation using PuTTY key generator (MS Windows)

- Make sure to have the latest stable version of PuTTYgen.
- Set key parameters type and bit number as shown below.
  - *Please note: In some rare cases one key bit gets lost. The DBAG Member Section requires at least a 2048 bit key to be uploaded. To avoid problems please generate a 2049 bit key.*
- Follow the instructions on the screen and move the mouse over the blank area for a while.

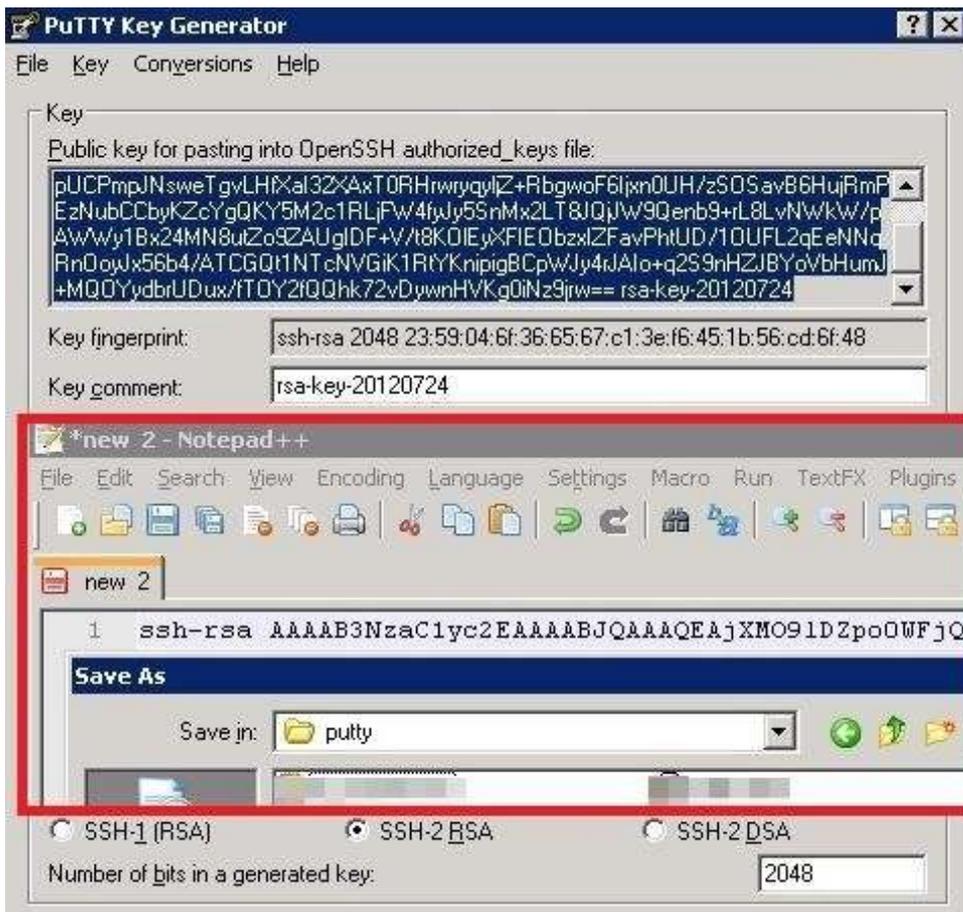


- The private key must be accessible for the member’s SFTP client in order to log in successfully. By clicking the buttons “Save public key”/”Save private key”, members can save their private and public keys in the PuTTY format for further use with the PuTTY tools or WinSCP.



## 2.2.1 Public Key for the CRE

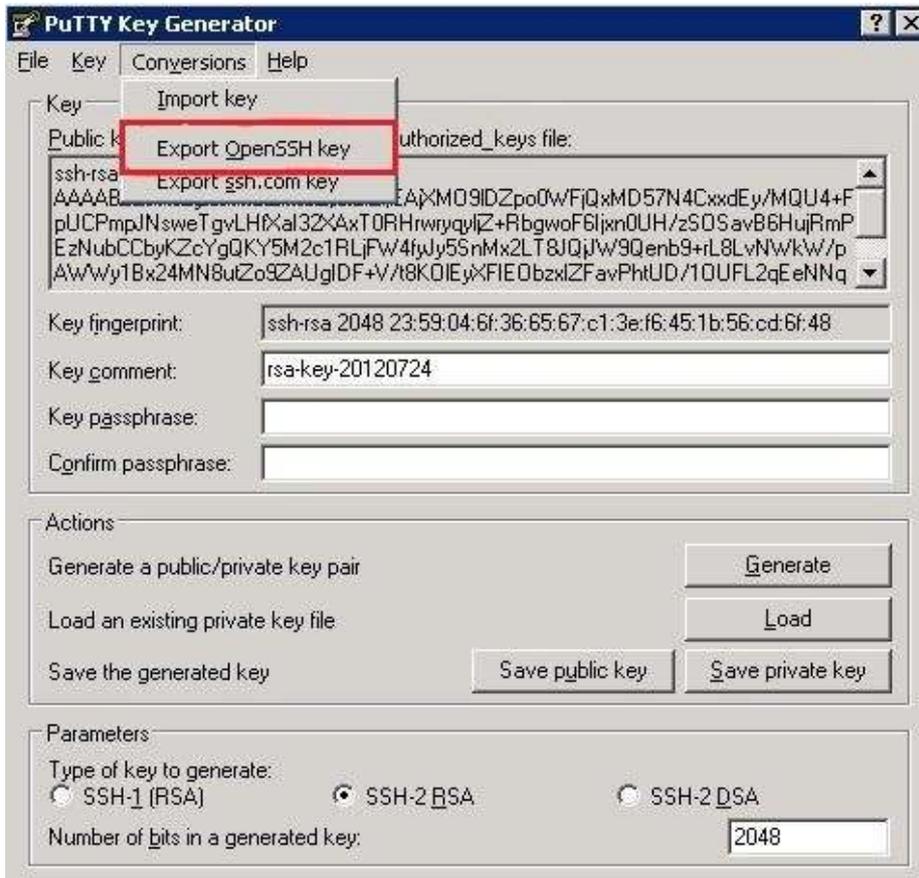
- Copy the marked text from PuTTY key generator to a text editor and save it as a .txt file.
- Make sure that this is one line with no “end of line” at the end.
- **Only public OpenSSH keys in this format can be used for the CRE.**



Public key needs to be saved for upload (screenshot from tool PuTTY KeyGen and Notepad++)

## 2.2.2 Private Key

- The private key must be accessible for the SFTP client of the member in order to log in successfully. The menu item marked in Figure 3 will save the OpenSSH private key for future use.



Saving the OpenSSH private key for future use (screenshot of PuTTY key generator)

## 2.3 Creating a CRE user and uploading the public key

Before the CRE can be accessed, a CRE user account has to be set up and the OpenSSH public key has to be uploaded in the DBAG Member Section.

Members with access to the DBAG Member Section can set up their CRE user accounts in the DBAG Member Section and upload the public key themselves. CRE user accounts are created as follows:

Go to Member Section (<https://member.eex.com>) → Technical Connection → Technical User Administration → Report Engine User → Create User

**Report Engine User**

CRE (Common Report Engine) is a service Production, Simulation and Advanced Simu

Information: Please do not add more !

When new data is entered for reports, be available on the CRE for download after the daily data transport from po

	Create User	Delete User
User ID		
1036540_000001		
1036540_000002		
1036540_000003		
1036540_000004		
1036540_000005		

- Technical Connection
- Membership
- Incident Tickets
- Requests & Configuration
- Monitors and Statistics
  - Connection Monitors
  - Roundtrip Statistics Values
  - Roundtrip Statistics
  - TCP/IP Roundtrip Statistics
  - Realtime Backend Event Log
  - Broadcast Latency Report
  - X-Chart
  - Special Monitors
- Technical User Administration**
- Download Agent
- EurexOTC Clear FpML Account
- T7 GUIs
- FIXML Account
- Eurex Clearing GUIs
- Network Configuration
- Eurex Repo Certificates
- Enhanced Risk Solution Account
- Margin Calculator API Account
- Report Engine User**

A new input screen will be opened where all necessary user information needs to be entered:

- Report User Information (it is recommended to fill the MemberID in the description field)
- Report Engine Configuration → add access to the environments and markets (EUREX Production and EUREX Simulation)
- Network Data (optional)
- Certificates → add the public key you created at the start. A new window will pop up showing the validity. Tick “Always valid” and press “Add certificate”.

A more detailed explanation can be found in the EUREX CRE guide, section 3.2 (<http://www.eurexclearing.com/clearing-en/technology/eurex-release14/system-documentation?frag=861460>).

After uploading, the DBAG Member Section generates a User ID which is needed later on to log in to the CRE.

Members must wait for the configuration data (users, keys, markets, etc) to be transferred to the CRE database. Usually this process takes place in the late evenings, depending on the end-of-day batch processes.

In general, access to the CRE will be after 2 business days, whereas changes to existing users will take effect on the next day.

Members without access to the DBAG Member Section have to send the T06 form and e-mail the OpenSSH public key (.txt file) to ECC Member Readiness. ECC Member Readiness will instruct EEX Customer Connectivity to set up the CRE user account and to upload the public key. After successful upload of the public key, EEX Customer Connectivity will send the UserID via email to the member.

### 3. Connection to the Common Report Engine

The following connectivity options are possible to connect to the CRE in order to retrieve reports:

- Internet (native)
- Leased Line

Leased lineThe CRE does not offer any interactive SSH sessions nor any kind of browser access. Members may use an SFTP client of their choice to access the CRE server and download their reports.

To log into the CRE the following information needs to be entered in the used SFTP client:

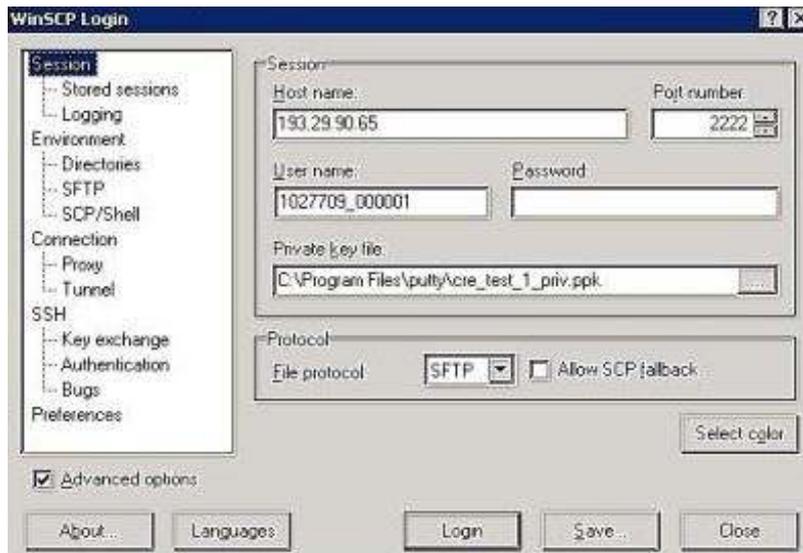
- the User ID which has been generated by successfully setting up a new user in the Member Section and
- the IP Address (host name) of CRE (see below)
- the private ssh key fitting to the public key uploaded in the DBAG member section

The IP's used for access to the CRE are shown in the table below.

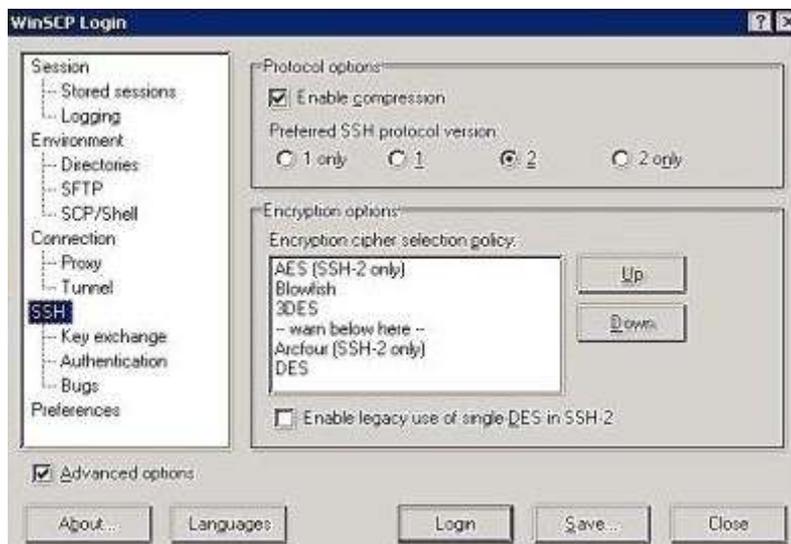
CRE infrastructure IP address			Port	
Leased Line		Internet	Public	Private
A	B			
193.29.90.67	193.29.90.99	193.29.90.132	2221	2222

### 3.1 MS Windows example using WinSCP

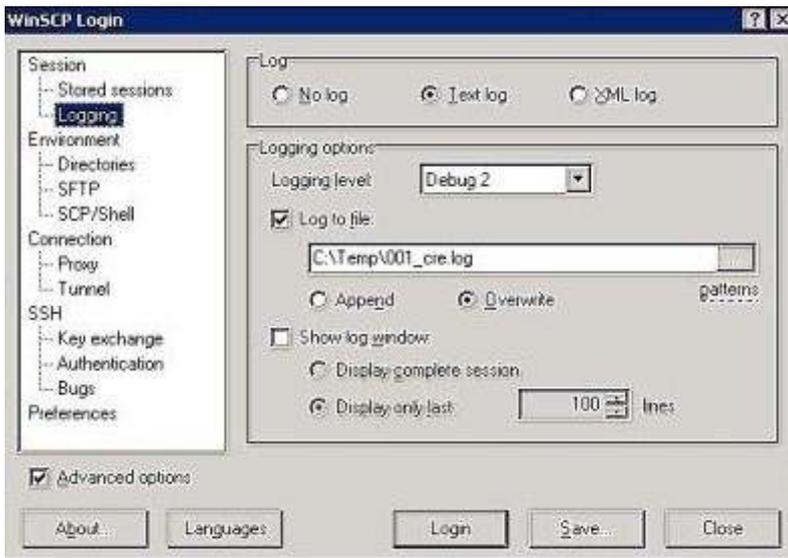
WinSCP is an open source free SFTP client, SCP client, FTPS client and FTP client for MS Windows. Its main function is file transfer between a local and a remote computer. Beyond this, WinSCP offers scripting and basic file manager functionality<sup>3</sup>. The following screenshots show the necessary settings. Please select “Advanced options” in order to see all required options.



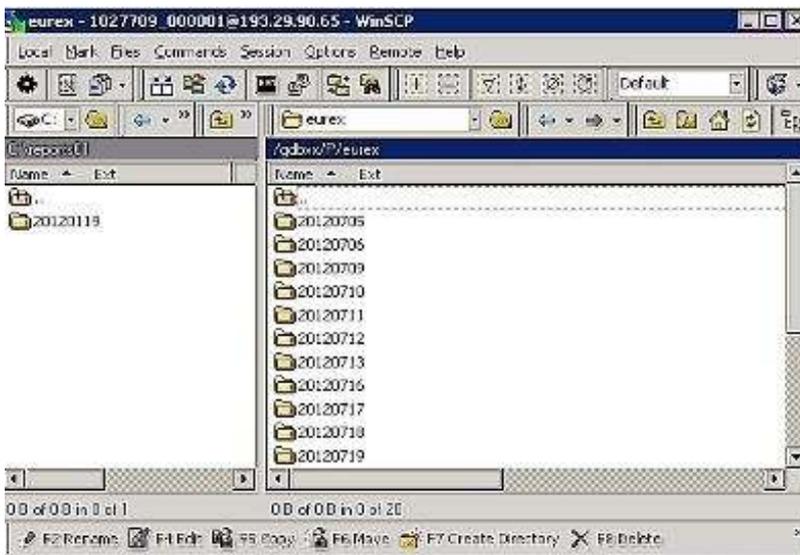
Input screen required in order to log in to the CRE



Enable compression for SSH transfer.



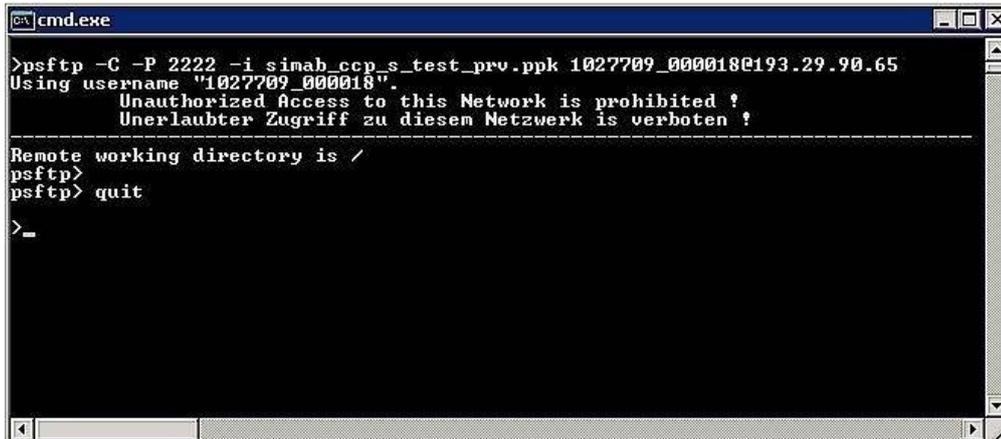
Enable logging for WinSCP.



Successful login to CRE member section with WinSCP

### 3.2 MS Windows example using PSFTP

PSFTP belongs to the PuTTY tools mentioned above. It provides a command line SFTP client that uses PuTTY key format. It offers script capabilities as well.



```
cmd.exe
>psftp -C -P 2222 -i simab_ccp_s_test_prv.ppk 1027709_000018@193.29.90.65
Using username "1027709_000018".
    Unauthorized Access to this Network is prohibited !
    Unerlaubter Zugriff zu diesem Netzwerk is verboten !
-----
Remote working directory is /
psftp>
psftp> quit
>_
```

Successful login to CRE member section with PSFTP