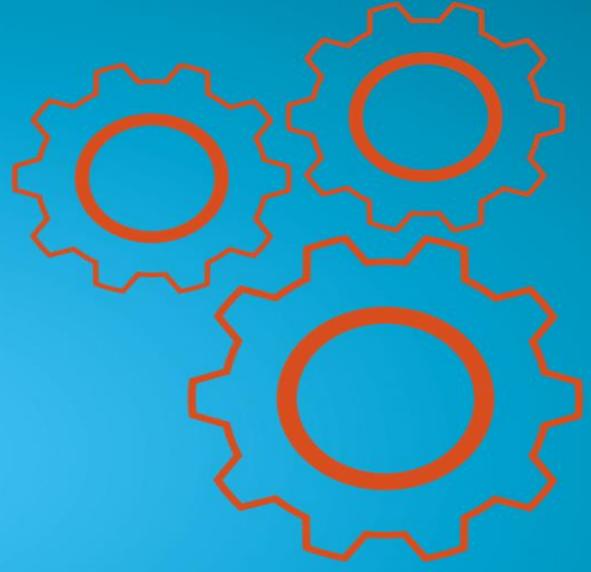


# TECHNICAL ONBOARDING FOR RDE V3.4



<https://denic-services.de>

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## Overview

This manual describes the onboarding process to our system through our **Control Center (CC)**. This is the second part, technical onboarding.

During the onboarding process, you will always have the menu on the left side with the next steps. A completed step has a checkmark. All steps must be completed.

## 1. Continue Email

After DocuSign is finished, the CC Admin will receive a Continue Email with a link to our CC. After login, the Technical Onboarding starts.

If you have a Back-end Provider/Operator you may ask him for assistance.

## 2. PGP Key

Here you may provide us your public PGP key. The key needs to be valid. Your PGP key is necessary for uploading a deposit successfully.

**PGP Key**

Please provide us your public PGP key. The key needs to be valid. Your PGP key is necessary for uploading a deposit successfully.

```

PGP Key
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: BCPG C# v1.6.1.0

mQENBGBkWi8BCACdUXhjsbwje2yAsOto/luWZsPkzywGb6erGo5VvrGjek3Ag8tU
5CRdIM/ZjRHWIOsCvLJVC3X/2a8Aqa6v5+vDdhlFEXF7BM2npxXZglxYbL0oJJYg+
1gTGUToRa [redacted] siHW/i793pqCqV
NbDfRtbH9 [redacted] in19l6ruWast51v
S3whlDgizp [redacted] aSq8ZH05W
Sz2jzd/sEKrcwM/7h7ORGCJHjkHHIP5ZS+gLVABEBAAGUATk8HAQQAQIABgUCYGRa
XwAKCRLFFVGgOF3GukY1CACO5gdRacsmBktmcUmV4hQ3UgNWIKQ8BLN1FvO3luze
6CvI4IOUloe9111xiGKRepdVjIXGU2hC0wBSVD8hQtLyGv5eCc0HAprVIM8cU0Z
    
```

Save

For creating a PGP Key we recommend to use GnuPG:

- <https://gnupg.org> (Linux)
- <https://www.gpg4win.org> (Windows)

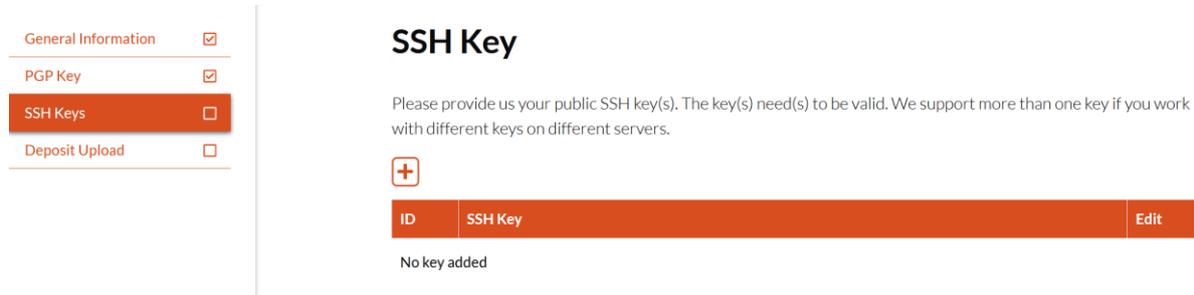
Validation period of at least five (5) years and length 2048 Bit.

### Accepted Algorithms

RIPEMD160withRSA	SHA256withECDSA	SHA512withECDSA
RIPEMD160withECDSA	SHA384withDSA	SHA256withRSA
RIPEMD256withRSA	SHA384withECDSA	SHA384withRSA
SHA256withDSA	SHA512withDSA	SHA512withRSA

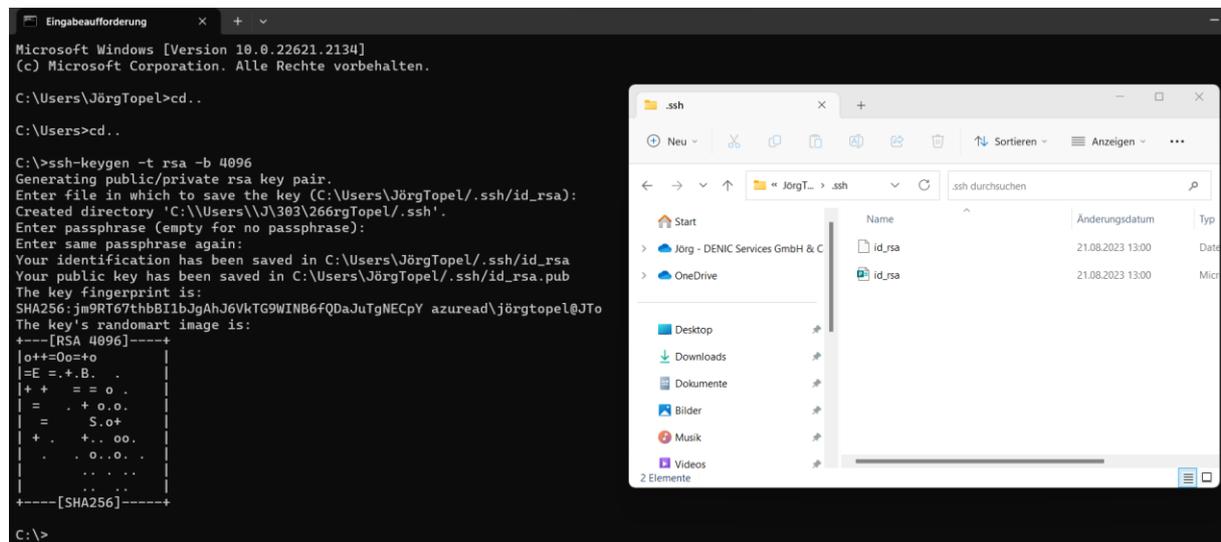
### 3. SSH Keys

Here you can add your public SSH key for logging in to our SFTP server. You may provide more than one key.



You can use ssh-keygen at the command line for creating the SSH Key.

As an example: `ssh-keygen -t rsa -b 4096`



### Server Upgrade or Changes

#### Requirements

If you experience trouble using the SSH Key after you have updated SFTP Servers, you can try to use some of this:

1. Generate a new key with the secure algorithm ed25519 and exchange the stored public key in the CSP. (Recommended)
2. If you want to continue using the old RSA key, you can change the `~/.ssh/config` to hard-activate the RSA algorithm again, see the Potentially-incompatible changes section in the release note on <https://www.openssh.com/txt/release-8.8>
3. Expand the SFTP command with the argument `-oPubkeyAcceptedAlgorithms+=ssh-rsa`, this will allow RSA support directly for this connection and the FTP connect should work again.

## 4. Deposit Upload

For Uploading you may use any SFTP application via terminal or client such as escrow-rde-client or FileZilla.

### 4.1. escrow-rde-client

```

config-rde-client-example-v1.0.0.yaml
1 # Your IANA id.
2 ianaID: 9999
3
4 # depositBaseDir - the directory where the depositfiles can be found
5 depositBaseDir: examples/deposits/rde
6
7 # runDir - the directory where the processed files will be located
8 runDir: deposit-run-rde
9
10 # compressAndEncrypt - if set to true, a hashfile of the depositfiles
11 # will be created and the files will be compressed and encrypted.
12 # set this to false if you just want to do validation of your files.
13 compressAndEncrypt: true
14
15 # uploadFiles - if set to true, the processed files will
16 # be uploaded to the escrow agent
17 uploadFiles: false
18
19 # multi - if set to true, all deposit files (except hash) are assumed
20 # to be part of a sequence of files. You need to add a sequence number
21 # at the end of the filename like "foobar_full_1.csv", "foobar_full_2.csv", ...
22 # Deposit files without a sequence number will not be processed when multi
23 # is active. Only the first file of the sequence should contain the header defini
24 multi: false
    
```

The client takes care of the following tasks:

- Validates the RDE deposits
- Creates hashfile over the content of delivery.
- Compresses, encrypt and sign the deposit files.
- Uploads the files to the Data Escrow Agent

Important things to remember

- Using the correct credentials and SFTP server
- Using the correct PGP keys
  - Using our public PGP key for encryption
  - Using your private PGP key for signing
- Using the correct SSH key (or password) for login

#### Managing more than one IANA ID?

If you're the Manager of more than one IANA ID, please take care to use the PGP Key for signing, which is stored within the profile for this IANA ID in the Control Center!

Please check at Login to the Control

Click here for the manual: [escrow-rde-client](#). The Client can be downloaded there as well.

#### 4.1.1. Data Escrow RDE Client Manual

##### Prerequisites

- Your Data Escrow Agent (DEA) must have set up your public PGP-Key- and your public SSH-key parts along with your account

The escrow-rde-client will need access to the following files:

- Your private (encrypted) PGP key to sign the deposit files
- Your private SSH key for authentication at the SFTP service
- The public PGP key of the Data Escrow Agent to encrypt the deposit files.

[Download the client.](#)

Download the client package for your platform (linux/windows) using the links above and extract it to a desired folder.

### Prepare the configuration file

- Generate a configuration file with `./escrow-rde-client -i`
- rename the generated configuration file to `config.yaml` (optional)
- edit the parameters in the configuration file

### Prepare your deposit files

- to upload a deposit for the **current day** the source filenames (.csv) can have any filename as long as the name includes full, inc and hdl (denoting full-deposit, incremental deposit and handle file)
- to upload a deposit for any past day, the filenames must follow this convention:

```
<IANAID>_RDE_<YYYY>-<MM>-<DD>_full.csv (or) <IANAID>_RDE_<YYYY>-<MM>-<DD>_inc.csv  
<IANAID>_RDE_<YYYY>-<MM>-<DD>_hdl.csv
```

Replace your IANA ID, and year/month/day.

### Splitted deposit files

Source files with more than 1 million rows or 1 gigabyte of size need to be splitted into a sequence of files. The consecutive sequence numbers start with 1 and are contained in the filename by the following convention:

```
<IANAID>_RDE_<YYYY>-<MM>-<DD>_full_#.csv (or) <IANAID>_RDE_<YYYY>-<MM>-<DD>_inc_#.csv  
<IANAID>_RDE_<YYYY>-<MM>-<DD>_hdl_#.csv
```

The symbol # is replaced by the corresponding sequence numbers. Only the first file should contain row headers, all other files just start with the successive content lines. To enable splitted deposits you need to update your configuration file:

```
multi: true
```

### Run the client

```
./escrow-rde-client -c config.yaml
```

You can additionally use the `-s` flag to only print the last validation error message. To print validation output directly to a file, add the following configuration line to your yaml config file:

```
logFile: /path/to/your/log/file
```

## Troubleshooting

This section discusses some known problems and possible solutions.

### Crashes due to out-of-memory errors

Out-of-memory errors can cause the application to crash without further error messages. If you run low on memory during computation, consider activating the file system cache in the configuration file:

```
useFileSystemCache: true
```

This will drastically reduce the amount of memory required but also increases computation time.

You can report problems with this tool via e-mail to [escrow@denic-services.de](mailto:escrow@denic-services.de)

### Example data

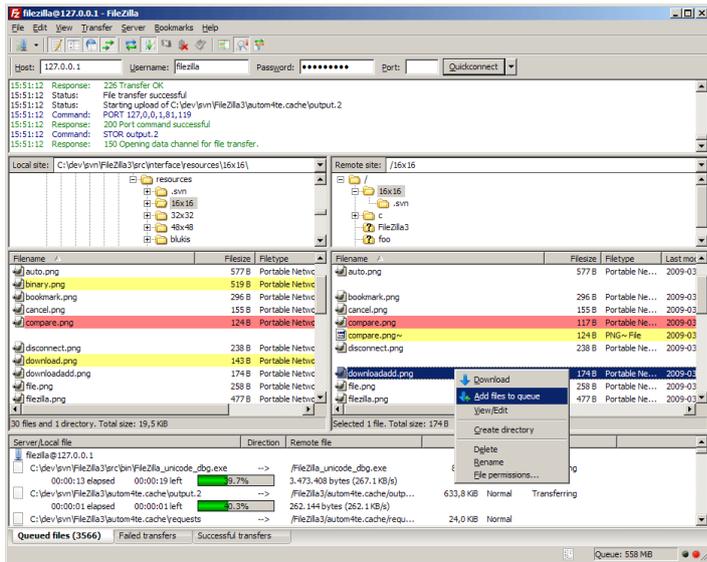
Single-file full deposit, with handle references, *full.csv*. These examples may be splitted according the conventions of multi-file deposits (see above).

```
"domain","ns1","ns2","ns3","ns4","expiration_date","rt-handle","tc-handle","ac-handle","bc-handle","prt-handle","ptc-handle","pac-handle","pbc-handle"
"foobar0.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-30
12:30:45","foo-123","foo-123","foo-123","foo-123","foo-123","foo-123","foo-123"
"foobar1.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-08-
30T12:30:45Z","foo-123","foo-123","foo-123","foo-123","foo-123","foo-1235","foo-123","foo-
123" "foobar2.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-
30T12:30:45Z","foo-123","foo-123","foo-123","foo-123 foo-1234","foo-123","foo-1235","foo-
123","foo-123" "foobar3.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-
30 12:30:45","foo-123","foo-1234","foo-123","foo-123 foo-1235",,,,
"foobar4.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-30
12:30:45","foo-123","foo-1234","foo-123","foo-123",,,,
```

Handles used in the example data above, *hdl.csv*:

```
"handle","name","address","state","zip","city","country","email","phone","fax" "foo-123","Foo
Bar","At Home 123","Foostate",12345,"Foocity","Fooland","foo@bar.test","+555.123-345-123",0
"foo-1234","Alice Bob","742 Evergreen
Terrace","Foostate","12345","Foocity","Fooland","alice@bar.test","+555.123-345-678","0" "foo-
1235","Bob Alice","Escaped ""Quote"" Street
42","Barstate","54321","Barcity","Barland","bob@bar.test","+555.123-345-345","0"
```

## 4.2. FileZilla



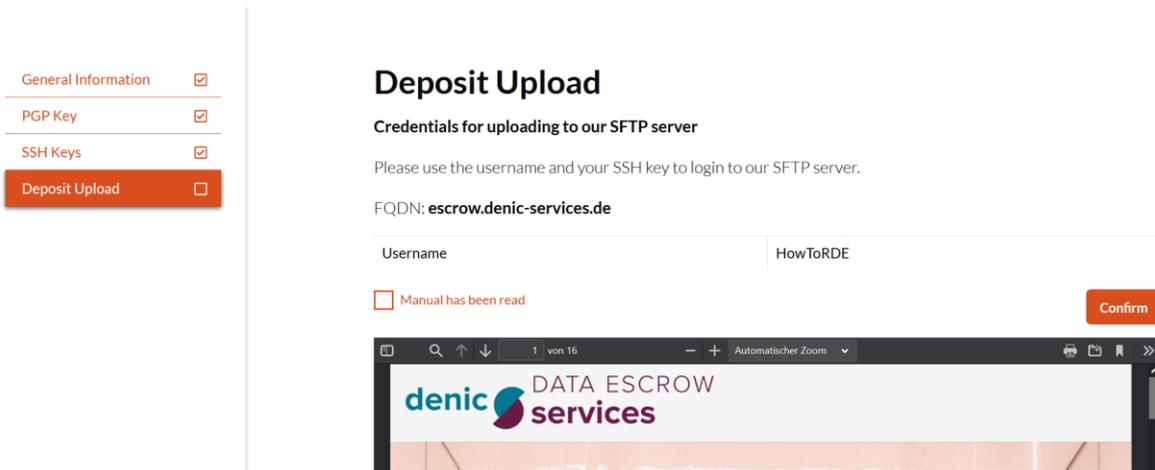
<https://filezilla-project.org>

The number of simultaneous connections must be set to 1. How to set it in FileZilla:

“Transfer Settings” → “Limit number of simultaneous connections” and set to 1.

## 5. SFTP Credentials

On this page you will find your SFTP credentials as well as information about deposits, preparation and upload. Please do not forget to check the checkbox, that you have read this manual.



## 5.1. Technical Onboarding completion

As soon as you flag the box and click on “Confirm” you completed the Technical Onboarding. Please go ahead and enter the Control Center in daily business. This step is necessary to view your success for the next steps.

Note: We offer a third manual for the CC in daily business.

## Thank you!

You have successfully completed the onboarding.

All of your information is saved in our systems and you are ready to start uploading your deposits.

For further questions please contact our Support: [escrow@denic-services.de](mailto:escrow@denic-services.de).

To access the Control Center, please Log out now, and re-login.

[Enter Customer Service Portal](#)

## 5.2. Deposit preparation

Please prepare your deposit files according to the official ICANN specifications:

[ICANN RDE Specifications.](#)



Please take care on the **new Specifications**, released on Aug. 21. 2024

We’ve created a separate website with additional information and a separate HowTo.

Please visit <https://welcome-rde.denic-services.de/rde-specs-2024>

!We **highly recommend** using full deposit, including the handle references.

Single-file full deposit, with handle references, *full.csv*. These examples may be splitted according the conventions of multi-file deposits (see above).

```
"domain","ns1","ns2","ns3","ns4","expiration_date","rt-handle","tc-handle","ac-handle","bc-handle","prt-handle","ptc-handle","pac-handle","pbc-handle"
"foobar0.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-30
12:30:45","foo-123","foo-123","foo-123","foo-123","foo-123","foo-123","foo-123","foo-123"
"foobar1.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-08-
30T12:30:45Z","foo-123","foo-123","foo-123","foo-123","foo-123","foo-1235","foo-123","foo-
123" "foobar2.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-
30T12:30:45Z","foo-123","foo-123","foo-123","foo-123 foo-1234","foo-123","foo-1235","foo-
123","foo-123" "foobar3.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-
30 12:30:45","foo-123","foo-1234","foo-123","foo-123 foo-1235",,,,
"foobar4.test","ns1.dns.test","ns2.dns.test","ns3.dns.test","ns4.dns.test","2018-05-30
12:30:45","foo-123","foo-1234","foo-123","foo-123",,,,
```

### 5.2.1. Further Instructions on deposit preparation

1. Please see section 4.1.18. Your deposit must be accompanied by a hash file. The hash file must contain the hash sum of the domain files before the files have been compressed and signed/encrypted. As stated in the specifications:

*"Each line shall consist of the hash value for one file, followed by whitespace, followed by the name of the file."*

Please note, DENIC Services requires SHA-256 hash sums. Example of hash.txt data format:

```
c58fcf{...hashcontent...}3d2e5c4ba74 $account_iana_id_c_RDE_$account_date_modified_full_1.csv
c58fcf5{..hashcontent...}2e5c4ba74 $account_iana_id_c_RDE_$account_date_modified_hdl_1.csv
```

2. All file names must appear in the format specified in section 4.1.21: [IANA ID]\_RDE\_[YYYY-MM-DD]\_[full/inc/hdl/hash]\_[#] According to the specifications, your files must be named as follows:

```
$account_iana_id_c_RDE_$account_date_modified_full_1.csv
$account_iana_id_c_RDE_$account_date_modified_hdl_1.csv
$account_iana_id_c_RDE_$account_date_modified_hash.txt
```

The "full\_1" file must contain the number of the domain records. To comply with the format specified for the use of handles, the header row must appear as follows:

```
"domain_name","nameservers","expiration_date","rt_handle","tc_handle","ac_handle","bc_handle"
```

The "hdl\_1" file must contain the complete contact information for each handle ID used for the domains in the "full\_1" file. The header row must appear as follows:

```
"handle","name","address","state","zip","city","country","email","phone","fax"
```

In the examples above, a proper abbreviation has been used as stated in Section 4.1.14:

*"The first field in the header row shall be the domain name (or handle in the handle definition file). Unambiguous abbreviations may be used. Field names referring to the registrant shall be prefixed with the string 'rt-' (e.g., 'rt-fax'); field names referring to the administrative contact shall be prefixed with the string 'ac-' (as in 'ac-name'); field names referring to the technical contact shall be prefixed with the string 'tc-' (as in 'tc-country'), and field names referring to a billing contact shall be prefixed with 'bc-' (as in 'bc-phone)'"*

In case you have more than one handle contact in the same role (rt, ac, tc or bc), two different syntaxes are supported:

- Include all handles concatenated with spaces under the regular field name, e.g.:

tc-handle

HANDLE1 HANDLE2

- Use separate field names for each handle contact with the syntax roleprefix-N-fieldname, e.g.: tc-1-handle, tc-2-handle

To comply with section 4.1.13, the decimal character has been replaced with the underscore character:

*"The header shall clearly designate the data contained within the corresponding fields. Field names in the header row shall be composed of the following characters: lower case 'a' through lower case 'z', upper case 'A' through upper case 'Z', decimal digits '0' through '9', the ASCII underscore character ('\_'), and the ASCII hyphen ('-'). Field names must begin with a letter. No other characters are allowed; in particular, embedded spaces, punctuation characters, or other special characters are not allowed."*

To comply with section 4.1.6, the field for "contact.tld" has been removed.

To comply with section 4.1.5 and to support delivery of beneficial user information in case of privacy or proxy services, we suggest usage of the following additional fields

```
"prt_handle","ptc_handle","pac_handle","pbc_handle"
```

which can be added at the end of the mandatory escrow records. The referenced handles must obviously appear in the handle file.

We strongly recommend using the aforementioned header field names. Otherwise, you are obliged to comply with section 4.1.15. Usage of undocumented header field names may lead to unexpected results in case of an ICANN audit.

3. After you have created your files, the full and hdl files must be compressed first with gzip compression:

```
Output= $account_iana_id_c_RDE_$account_date_modified_full_1.csv.gz  
Output=$account_iana_id_c_RDE_$account_date_modified_hdl_1.csv.gz
```

4. After the files have been compressed, you must sign and encrypt the compressed files. Please sign first with your private key and then encrypt with DENIC's public key. Signature and encryption should be done in the same pass.

```
Output= $account_iana_id_c_RDE_$account_date_modified_full_1.csv.gz.gpg  
Output= $account_iana_id_c_RDE_$account_date_modified_hdl_1.csv.gz.gpg
```

5. You must upload all files to your SFTP account with DENIC Data Escrow Services. Please note that the session-close-event is used as a trigger to determine the completeness of the deposit, so make sure to upload all files through the same sftp connection/session.

```
$account_iana_id_c_RDE_$account_date_modified_full_1.csv.gz.gpg  
$account_iana_id_c_RDE_$account_date_modified_hdl_1.csv.gz.gpg  
$account_iana_id_c_RDE_$account_date_modified_hash.txt
```

You must use our public production key to encrypt the deposit:

[DENIC Services RDE public PGP Key.](#)

### 5.3. Deposit upload to DENIC Services SFTP server

Please use the provided credentials for uploading to our SFTP server.

Protocol: SFTP

FQDN/Host: Please use escrow.denic-services.de for storage in EU

FQDN/Host: Please use escrow.denic-services.com for storage in USA

Username: RDE-{your IANA ID}, e.g., RDE-9999

Password: Your SSH key (or password)

Please note:

These are only example credentials. You can find your credentials later in the CC as soon as you completed the Technical Onboarding part.

## 6. Successful First Deposit

When the Technical Onboarding has been completed you can upload your first full deposit to our SFTP server.

As soon as you uploaded it successfully, we will be starting the obligated first RDAP Audit for the delivered deposit. Please take care on section 6.1, RDAP Audit. After the successful audit our reporting to ICANN will start.

### 6.1 RDAP Audit

Please bear in mind that your first deposit always must be audited by Denic Services. This audit may only be done using RDAP Service with the RDAP Server which you have listed on the [IANA Website](#). Please assure that we can audit 20 randomly selected domains per IANA ID in a row, and the RDAP Server is responding and answering with the data which are used in the deposit. RDAP query limitations may result in a failed audit.

### 6.2 ICANN reporting

**Remember that you must keep uploading deposits to your current Data Escrow Agent until the Final Transition Notice from ICANN arrives (see below).**

## 7. Final Transition Notice

After ICANN validates your successful upload to our servers, they will send a Final Transition Notice. From that point on the DEA change is completed and we are your Data Escrow Agent.

You can stop delivering deposits to your old Data Escrow Agent now.

Congratulations!

## I - Contact and Support



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## Change History

Version	Date	Author	The change	Release
		DENIC	Publish: Further Instructions	DENIC
2	8 Nov. 2019	Fabio Trotta	Creation Revision	
2.6		Fabio Trotta		Stefan Pattberg
1	23 Apr. 2021	Fabio Trotta	Creation Revision	Dilek Imseytöglu
1.0.1 beta	7 May 2021	Fabio Trotta		
1.0.1	7 May 2021	Fabio Trotta		Dilek Imseytöglu
3	21 Aug. 2023	Ralf Schneider, Jörg Topel	Creation Revision	Ralf Schneider
3.0.1	11 Oct. 2023	Jörg Topel	Correction PGP key validation period	Ralf Schneider
3.1.0	Nov. 15. 2023	Ralf Schneider	Added information on SSH Key usage and requirements	Ralf Schneider
3.1.1	Nov. 24. 2023	Ralf Schneider	Added Description on File Format	Ralf Schneider
3.2.0	Dec. 05. 2023	Ralf Schneider	Clarification on Hash Sum	Ralf Schneider
3.2.1	Jan. 12. 2024	Ralf Schneider/ Claudia Klukas	Clarification RDAP, recommendation one full file incl. hdl,	Ralf Schneider