

# Yubikey

## SSH

### hira

```
.ssh
|-- authorized_keys
|-- conf.d
|   |-- hetzner.conf
|   |-- hollandpark.conf
|   |-- nsas.conf
|   |-- other.conf
|   `-- swissbit.conf
|-- config
|-- id_ecdsa_sk -> keys/old/id_ecdsa_sk
|-- id_ecdsa_sk-NSAS -> keys/old/id_ecdsa_sk-NSAS
|-- id_ecdsa_sk-NSAS.pub -> keys/old/id_ecdsa_sk-NSAS.pub
|-- id_ecdsa_sk-swissbit -> keys/old/id_ecdsa_sk-swissbit
|-- id_ecdsa_sk-swissbit.pub -> keys/old/id_ecdsa_sk-swissbit.pub
|-- id_ecdsa_sk.pub -> keys/old/id_ecdsa_sk.pub
|-- id_ed25519 -> keys/michel/id_ed25519-Michel-automation
|-- id_ed25519.pub -> keys/michel/id_ed25519-Michel-automation.pub
|-- id_ed25519_nsas -> keys/old/id_ed25519_nsas
|-- id_ed25519_nsas.pub -> keys/old/id_ed25519_nsas.pub
|-- id_ed25519_sk -> keys/michel/id_ed25519_sk_rk_YKc-Michel
|-- id_ed25519_sk.pub -> keys/michel/id_ed25519_sk_rk_YKc-Michel.pub
|-- id_rsa -> keys/michel/id_rsa_Michel-fallback
|-- id_rsa.pub -> keys/michel/id_rsa_Michel-fallback.pub
|-- keys
|   |-- hollandpark
|   |   |-- id_ed25519
|   |   |-- id_ed25519.pub
|   |   |-- id_ed25519_sk-YKc-Automation-Hollandpark
|   |   `-- id_ed25519_sk-YKc-Automation-Hollandpark.pub
|   |-- josephs
|   |   |-- id_ed25519_sk-YKc-Automation-Josepfs
|   |   `-- id_ed25519_sk-YKc-Automation-Josepfs.pub
|   |-- michel
|   |   |-- id_ecdsa_sk-ndc_YKa-Michel
|   |   |-- id_ecdsa_sk-ndc_YKa-Michel.pub
|   |   |-- id_ed25519-Michel-automation
|   |   |-- id_ed25519-Michel-automation.pub
|   |   |-- id_ed25519_sk-ndc_YKc-Michel
|   |   |-- id_ed25519_sk-ndc_YKc-Michel.pub
|   |   |-- id_ed25519_sk-rk_YKc-Michel-automation
|   |   |-- id_ed25519_sk-rk_YKc-Michel-automation.pub
|   |   `-- id_ed25519_sk_rk_YKc-Michel
```

```

|      |-- id_ed25519_sk_rk_YKc-Michel.pub
|      |-- id_rsa_Michel-fallback
|      `-- id_rsa_Michel-fallback.pub
|  |-- nsas
|      |-- id_ecdsa_sk-NSAS
|      |-- id_ecdsa_sk-NSAS.pub
|      |-- id_ed25519_sk_rk_YKc_NSAS
|      `-- id_ed25519_sk_rk_YKc_NSAS.pub
|  |-- old
|      |-- id_ecdsa_sk
|      |-- id_ecdsa_sk-NSAS
|      |-- id_ecdsa_sk-NSAS.pub
|      |-- id_ecdsa_sk-swissbit
|      |-- id_ecdsa_sk-swissbit.pub
|      |-- id_ecdsa_sk.pub
|      |-- id_ed25519
|      |-- id_ed25519.pub
|      |-- id_ed25519_nsas
|      `-- id_ed25519_nsas.pub
|  |-- schraubenscholz
|      |-- id_ed25519_sk-YKc-Automation-Scholz
|      `-- id_ed25519_sk-YKc-Automation-Scholz.pub
|  |-- swissbit
|      |-- id_ecdsa_sk-swissbit
|      `-- id_ecdsa_sk-swissbit.pub
|  `-- xecuro
|      |-- id_ed25519_sk_rk_YKc-xecuro
|      `-- id_ed25519_sk_rk_YKc-xecuro.pub
|-- known_hosts
|-- known_hosts.old
|-- old
|   |-- known_hosts
|   `-- known_hosts.old
|-- scripts
|   `-- sshfpngen
|-- sockets
`-- test

```

[~/.ssh/config](#)

```

#=====
=
# Global
#=====
=
include ~/.ssh/conf.d/nsas.conf
include ~/.ssh/conf.d/hetzner.conf
include ~/.ssh/conf.d/hollandpark.conf
include ~/.ssh/conf.d/swissbit.conf
include ~/.ssh/conf.d/other.conf
#=====

```

```

=
# Global
#=====
=
Host *
    LogLevel QUIET
    ControlMaster auto
    ControlPath ~/.ssh/sockets/%r@%h:%p      # automatically add ssh
keys to running ssh agent (mkdir -p ~/.ssh/sockets)
    ControlPersist yes                        # keep connections open
indefinitely, even after logging out
    ForwardAgent yes                          # ssh -A host # on the command line
    VerifyHostKeyDNS no                       # Specifies whether to verify the
remote key using DNS and SSHFP
    AddKeysToAgent yes
    TCPKeepAlive yes
    Compression yes
    StrictHostKeyChecking no
    VersionAddendum none
    UpdateHostKeys yes
    # IdentitiesOnly yes
    PreferredAuthentications publickey,password
    # HostKeyAlgorithms +ssh-rsa
    # PubkeyAcceptedKeyTypes +ssh-rsa
    # Ensure KnownHosts are unreadable if leaked - it is otherwise
easier to know which hosts your keys have access to.
    HashKnownHosts yes
    # Host keys the client accepts - order here is honored by OpenSSH
    HostKeyAlgorithms ssh-ed25519-cert-v01@openssh.com,ssh-rsa-cert-
v01@openssh.com,ssh-ed25519,ssh-rsa,ecdsa-sha2-nistp521-cert-
v01@openssh.com,ecdsa-sha2-nistp384-cert-v01@openssh.com,ecdsa-sha2-
nistp256-cert-v01@openssh.com,ecdsa-sha2-nistp521,ecdsa-sha2-
nistp384,ecdsa-sha2-nistp256
    KexAlgorithms curve25519-sha256@libssh.org,ecdh-sha2-nistp521,ecdh-
sha2-nistp384,ecdh-sha2-nistp256,diffie-hellman-group-exchange-sha256
    MACs hmac-sha2-512-etm@openssh.com,hmac-sha2-256-
etm@openssh.com,umac-128-etm@openssh.com,hmac-sha2-512,hmac-
sha2-256,umac-128@openssh.com
    Ciphers chacha20-poly1305@openssh.com,aes256-
gcm@openssh.com,aes128-gcm@openssh.com,aes256-ctr,aes192-ctr,aes128-ctr

```

## Generating key with a yubikey

Recomendation:

```
ssh-keygen -t ed25519-sk -O application=ssh:YKc-Michel-ndc -O verify-
required -O user=michel
```

This will generate a non discoverable key that used for signing the generated (ided25519sk) So in order to login to an other system, the private key (ided25519sk) and the non discoverable key (on Yubikey) is needed, beside the Yubikey pin and the passphrase.

```
ssh-keygen -t ed25519-sk -O resident -O application=ssh:YKc-Michel -O
verify-required -O user=michel
```

This key can be downloaded from the Yubikey.

```
ssh-keygen -t ed25519-sk -O resident -O application=ssh:YKc-Automation-
Michel -O user=michel -O no-touch-required -C "Michel Pelzer (Automation)-
mp@nsas.de"
```

This key requires the presens of the Yubikey, but does not need to be touched. (authorizedkeys) need the no-touch-required in front of the public key. `<file plain ~/.ssh/authorizedkeys></file>`

[~/.ssh/authorized\\_keys](#)

```
# Michel
no-touch-required sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIEawzv7L8w9eetH03oc8XHuc02g
X/MCmr3sUDHH8opKVAAGXNzaDpZS2MtQXV0b21hdGlvbi1NaWNoZWw= Michel Pelzer
(Automation)- mp@nsas.de
sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIEvFa/NonVU0voRRsx151bAJxjg
ckXC3sLqUb/kdQP9TAAADnNzaDpZS2MtTWljaGVs Michel Pelzer - mp@nsas.de
sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIJ2Za0UMRtm+LwEGEmug1QNoBEo
V/0xDmCRpAXsqNfXAAADnNzaDpZS2MtTWljaGVs Michel Pelzer - mp@nsas.de
# NSAS
sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIDp7SK9FxZJUQW+jz2ciChN7SwT
6SdmovhLUlBLzhIkRAAADHNzaDpZS2MtTlNBuW== NSAS - Network System Access
Solutions
sk-ecdsa-sha2-nistp256@openssh.com
AAAAInNrLWVjZHNhLXNoYTItbmlzdHAyNTZAb3BlbnNzaC5jb20AAAAIbmlzdHAyNTYAAAB
BBPneb67QG6/Z2BdcCBvZgiXVeJd4ZGAAXgEoCx2aSbbegqSj1rSW9m2jkdRnwrQix//Jfb
lvLOG/pXXQZJzPkHcAAAEc3No0g== NSAS-U2F
```

## Hollandpark

[~/.ssh/authorized\\_keys](#)

```
no-touch-required sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAILgcVr1j1obm0QVHS29DlJttRuK
ovDbyjzeWjPBgtd0pAAAAEnNzaDpZS2MtS29lbmlnLW5kYWw= koenigd Yubikeyc
no-touch-required sk-ssh-ed25519@openssh.com
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIJtU9G6KM0eWrNBdzuCoFyhPMRs
```

```
dXHwIzbLyqQIMLwtnAAAAEHNzaDpZS2MtYmFuay1uZGM= Bank  
no-touch-required sk-ssh-ed25519@openssh.com  
AAAAGnNrLXNzaC1lZDI1NTE5QG9wZW5zc2guY29tAAAAIIkqDyKEdyAFTL6M9J8/xjMn6Mq  
Uzxuw3r7y79Q8DMGHAAAAEHNzaDpZS2MtVGhlby1uZGM= Theo
```

## Listing key on a Yubikey

```
ykman fido credentials list
```

## Deleting key on a Yubikey

```
ykman fido credentials delete ssh:YKc-Automation-Michel
```

## Downloading keys from a Yubikey

```
ssh-keygen -K
```

## TOTP

### ykman

List

```
ykman --reader yubico oath accounts
```

Add

```
ykman --reader yubico oath accounts add "NAME"
```

## FIDO2

Set Pin

```
ykman fido access change-pin --new-pin 511111
```

Change Pin

```
ykman fido access change-pin --pin 123456 --new-pin 511111
```

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