



SPANKEY SSH KEY MANAGEMENT

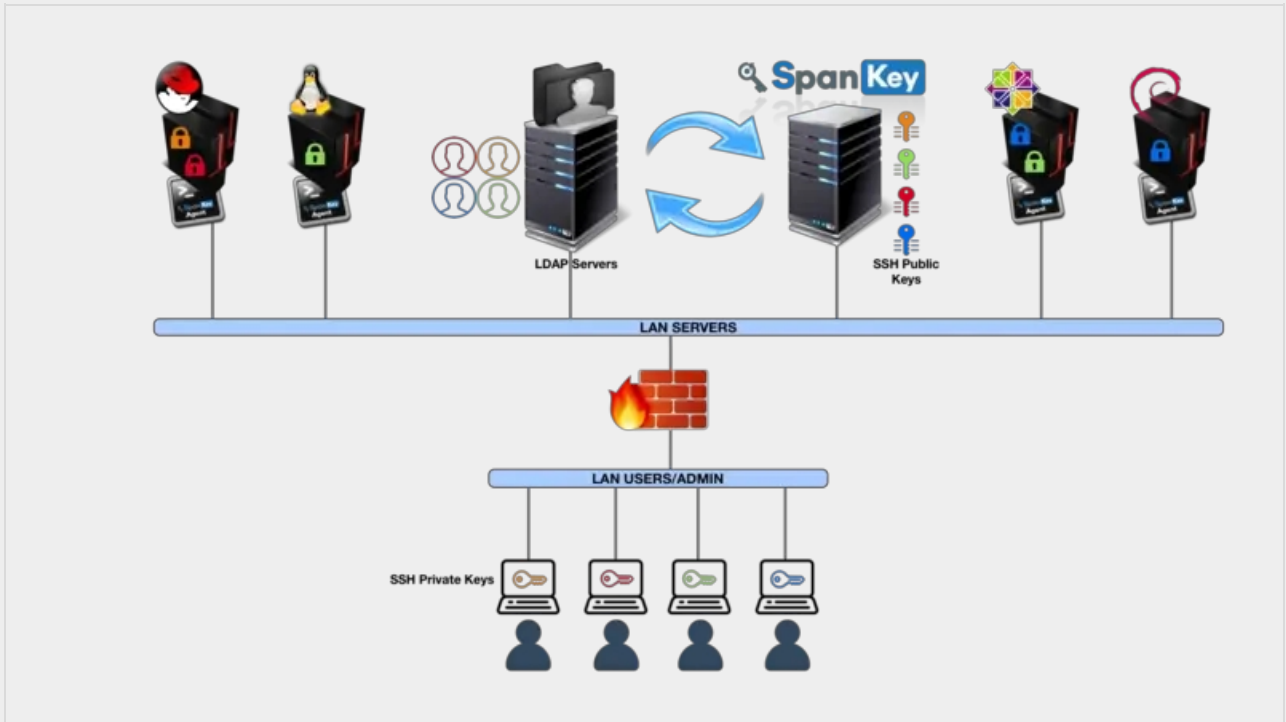
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SpanKey SSH Key Management

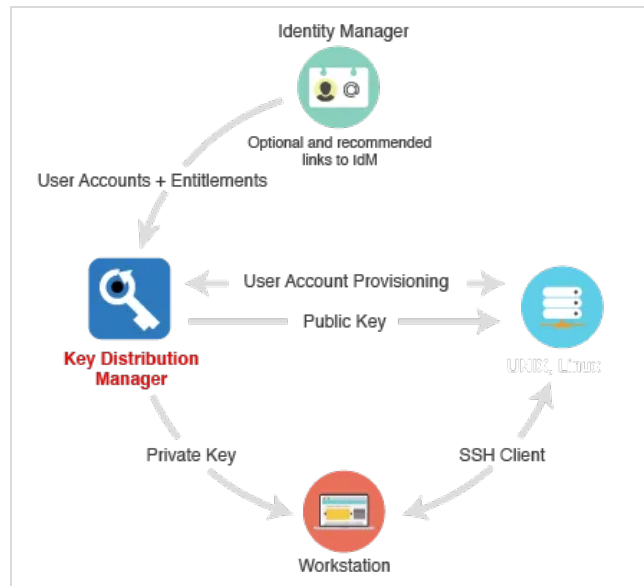
[PAM](#) [OpenSSH](#) [NSS](#)



1. Overview

SpanKey is a centralized SSH key server for OpenSSH, which stores and maintains SSH public keys in a centralized LDAP directory (i.e. Active Directory). With SpanKey there is no need to distribute, manually expire or maintain the public keys on the servers. Instead, the SpanKey agent is deployed on the servers and is responsible for providing the users' public keys on-demand. The SpanKey server provides per-host access control with "server tagging", LDAP access groups, centralized management from the RCDevs WebADM console, shared accounts, privileged users (master keys), recovery keys... It supports public key expiration with automated workflows for SSH key renewal (via Self-Services). For information on SpanKey, please visit [RCDevs Website](#). Additionally, you can also enable Multi-factor authentications (LDAP password, OTP and U2F validation are supported) after the SSH key validation process. The SSH key can also be configured on a smartcard device.

For this recipe, you will need to have WebADM installed and configured. Please, refer to [WebADM Installation Guide](#) and [WebADM Manual](#) before installing SpanKey server. SpanKey server should be installed on the WebADM server.



2. Packages Installation

Note - System Requirements

Version 2.2.0 of SpanKey Client is designed to run on Linux x86_64 with GLIBC >= 2.12. The package itself is almost but not fully standalone. To run it properly you must have the package 'net-tools' already installed on your machine, at least one WebADM server in version >=1.7.6 running OpenOTP and SpanKey server in version >=2.0.6 and at least OpenSSH 6.2 is needed.

2.1 RHEL & CentOS through RCDevs Repository

2.1.1 Add RCDevs Repository

On a RedHat, CentOS or Fedora system, you can use our repository, which simplifies updates. Add the repository:

```
yum install https://repos.rcdevs.com/redhat/base/rcdevs_release-1.1.1-1.noarch.rpm
```

Clean yum cache:

```
yum clean all
```

You are now able to install RCDevs packages on your system.

2.1.2 SpanKey Server Installation

```
yum install spankey
```

After the Spankey server installation, you need to restart WebADM services:

```
/opt/webadm/bin/webadm restart
```

To enable SpanKey web service, you need to log in on the WebADM GUI. Under **Applications** tab, click **Authentication** in category box and you should find **SSH Public Key Server (SpanKey)**. Click on **REGISTER** button.

2.1.3 SpanKey Client and NSCD Installation

The SpanKey client requires nscd and OpenSSH. NSCD is the Linux name service caching daemon which is required for caching NSS information on the Linux client. Without NSCD, any user or group ID resolution will trigger SpanKey NSS requests. Caching on the client side will prevent your servers from being overloaded with NSS requests.

```
yum install spankey_client nscd  
systemctl enable nscd
```

Note

Be aware that at least OpenSSH 6.2 is needed. (Added a sshd_config option AuthorizedKeysCommand to support fetching authorized_keys from a command in addition to (or instead of) from the filesystem.)

2.2 Debian & Ubuntu through RCDevs Repository

2.2.1 Add RCDevs Repository

On a Debian system, you can use our repository, which simplifies updates. Add the repository:

```
wget https://repos.rcdevs.com/debian/base/rcdevs-release_1.1.1-1_all.deb  
apt-get install ./rcdevs-release_1.1.1-1_all.deb
```

Clean apt cache:

```
apt-get update
```

You are now able to install RCDevs packages on your system with apt-get command.

2.2.2 SpanKey Server Installation

```
apt-get install spankey
```

After the Spankey server installation, you need to restart WebADM services:

```
/opt/webadm/bin/webadm restart
```

To enable SpanKey web service, you need to log in on the WebADM GUI. Under [Applications](#) tab, click [Authentication](#) in category box and you should find [SSH Public Key Server \(SpanKey\)](#). Click on [REGISTER](#) button.

2.2.3 SpanKey Client and NSCD Installation

```
apt-get install spankey-client nscd
```

The SpanKey client requires nscd and OpenSSH. NSCD is the Linux name service caching daemon which is required for caching NSS information on the Linux client. Without NSCD, any user or group ID resolution will trigger SpanKey NSS requests. Caching on the client side will prevent your servers from being overloaded with NSS requests.

Note

Be aware that at least OpenSSH 6.2 is needed. (Added a `sshd_config` option `AuthorizedKeysCommand` to support fetching `authorized_keys` from a command in addition to (or instead of) from the filesystem.) With Ubuntu servers, depending on your OS setup, you may need to install `libldap` as well.

2.3 Installation Using the Self-Installer

You first need to download the Spankey software package. You can download the latest package on the [RCDevs Website](#). Download and copy the SpanKey server self-installer package to your server. You can copy the package file to the server with WinSCP or SCP. Then connect via SSH to your server, uncompress and run the self-installer package with:

```
gunzip spankey-2.0.x-x.sh.gz  
bash spankey-2.0.x-x.sh
```

Follow the installer.

For the SpanKey client:

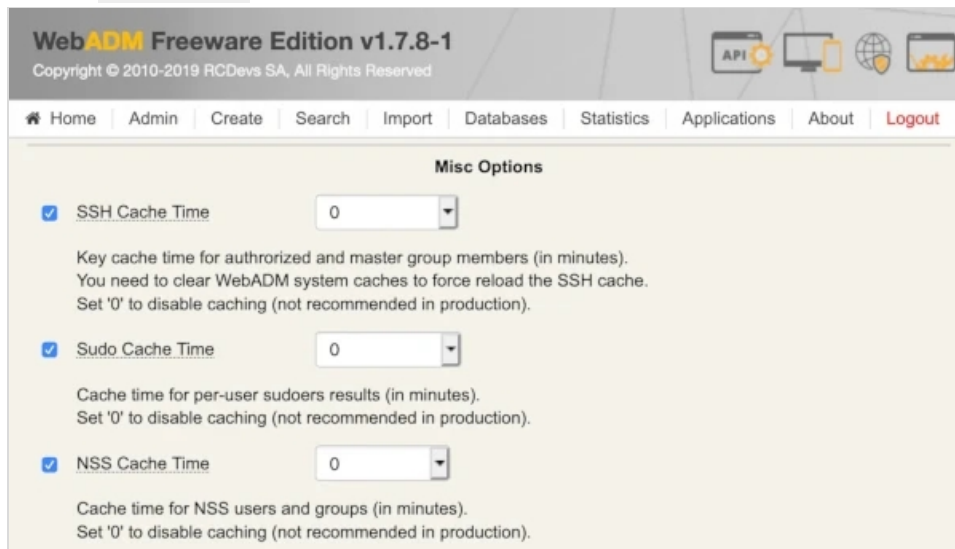
```
gunzip spankey_client-2.1.x.sh.gz  
bash spankey_client-2.1.x.sh
```

Follow the installer and don't forget to install the NSCD package.

3. Configurations

3.1 SpanKey Server

Once SpanKey server package is installed, you have to enable SpanKey service in WebADM. Go to the WebADM Administrator console, click on **Applications** tab > **Authentication** and click on **Register** button for **SSH Public Key Server**. The default configuration is ready and suited for most Linux environments, but for initial tests, it is recommended to click on **CONFIGURE** button and set the following options in SSH Public Key Server (SpanKey server):



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Home | Admin | Create | Search | Import | Databases | Statistics | Applications | About | Logout

Misc Options

- SSH Cache Time**
Key cache time for authorized and master group members (in minutes).
You need to clear WebADM system caches to force reload the SSH cache.
Set '0' to disable caching (not recommended in production).
- Sudo Cache Time**
Cache time for per-user sudoers results (in minutes).
Set '0' to disable caching (not recommended in production).
- NSS Cache Time**
Cache time for NSS users and groups (in minutes).
Set '0' to disable caching (not recommended in production).

This will disable server caching, generally helpful during configuration stage and tests.

Important note

For production server caching is highly recommended.



Server Policy

 SSH Key Format

RSA (Default) ▾

RSA is recommended because other key types cannot be exported for use with PuTTY.
ECC (Eleptic Curve) is a new standard which uses much smaller key sizes.
DSA support is limited to 1024 bit keys with SHA1 and is not recommended.

 RSA Key Length

2048 (Default) ▾

2048 bits is recomended for SSH usage.

 ECC Key Length

256 (Default) ▾

256 bits is recomended for SSH usage.

 Key Expiration

360 ▾

Time after which a software key expires and must be re-registered (in days).
Set '0' to disable the expiration on newly registered keys.

 Key Max Use

0 ▾

Maximum use count for a software SSH key before it must be re-registered.
Set '0' to disable the max use count on newly registered keys.

 Enable Offline Mode Yes No (default)

Cache authorized keys and NSS data for offline use when SpanKey server is down.

 Allow Password Change Yes No (default)

Allow self LDAP password change with the usual 'passwd' Linux command.
This feature will be implemented in SpanKey client v2.1.1.

 Require Extra Login Factors

OTP ▾

Enable additional multi-factor authentication with OpenOTP.
Note: SCP and non-interactive sessions support OTP with Push only.

 Allowed Local Users

Comma-separated list of users for which the usual SSH authorized keys files are allowed.
For these users both centrally-managed public keys and local authorized keys files can be used.

 Authorized Key File(s)

Comma-separated list of authorized keys file(s) on the SSH hosts for the local users.

- > The SSH Key format can be defined here.
- > RSA Key Length can also be settled here.
- > The SSH Key Lifetime can be adjusted too.
- > Send Self-Registration: This option can be enabled if you want to have a new self-registration request when the SSH key has expired.

- > Enable Offline Mode: Offline mode can be enabled in case of the SpanKey server is unavailable.
- > Require Extra Login Factors: An OTP validation can be added during the authentication workflow.

Some other settings can be enabled on Spankey server:

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Logout

UNIX Account Options

Create Home Directories Yes No (default)

Automatically create the user's home directory if not present.

Minimum UID Number

Users with UID number below the value are ignored.

Maximum UID Number

Users with UID number above the value are ignored.

Minimum GID Number

Groups with GID number below the value are ignored.

Maximum GID Number

Groups with GID number above the value are ignored.

Session & Monitoring Options

Record Session Data Yes No (default)

Stores the graphical terminal sessions in WebADM Record database. SCP and SFTP sessions cannot be recorded.

Record Audit Logs Yes No (default)

Stores Auditd events in WebADM Record database (commands and file events).

Commands Audit Rule

Auditctl rule configuration to be enforced with interactive sessions (user commands). Please check the Auditd Linux documentation for more details.

SCP/SFTP Audit Rule

Auditctl rule configuration to be enforced with non-interactive sessions (file operations).

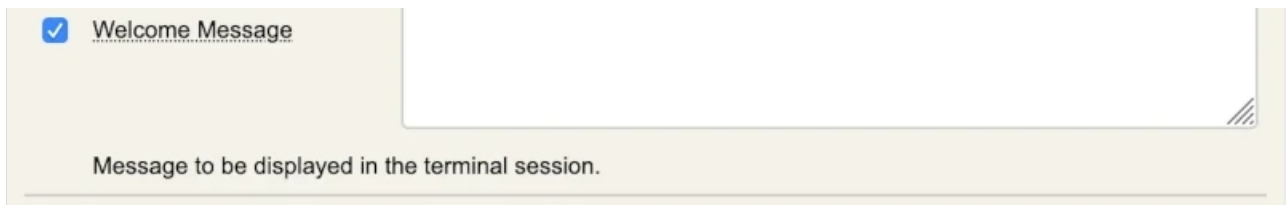
Max Session Time

Automatically close SSH sessions after the configured time (in minutes). Use '0' to disable automatic session expiration.

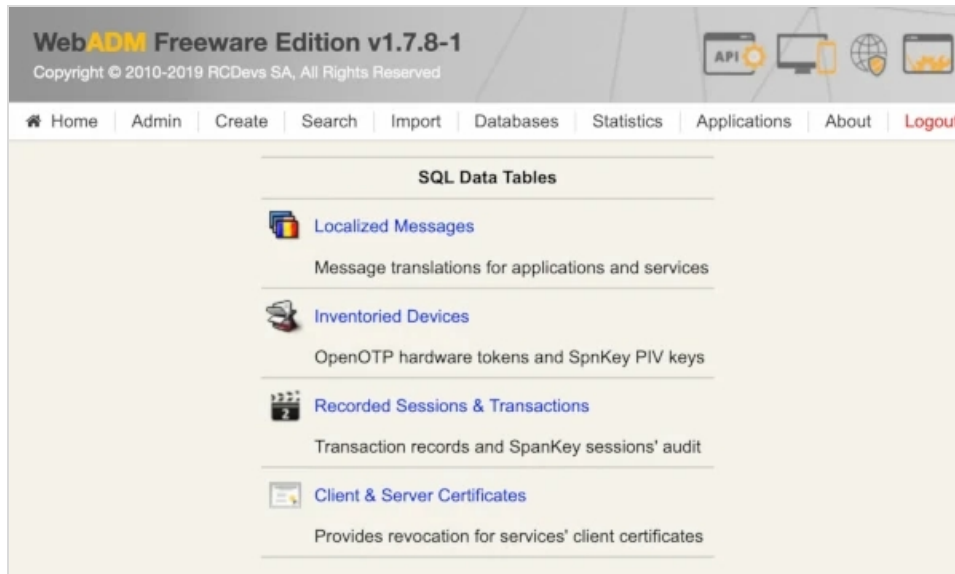
Screen Lock Time

Automatically lock SSH screen if idle for the configured time (in minutes). Use '0' to disable session lock time.

Welcome, SpanKey Tester!



- > Create Home Directory: If enabled, the user home directory will be automatically created during the first login if not present.
- > Max Session Time: This setting can be settled if you want to define a maximum session time.
- > Record Session Data: This is a new feature of SpanKey! This setting allows you to record and store in SQL database, terminal sessions, SFTP sessions. Sessions are replayable video which can be found in **Databases** tab > **Recorded Sessions** under WebADM Admin Console.



Under SSH Public Key Server configuration, you can find various configurations options to set access controls to your SSH key-based logins, such as Master Group, Backup Keys, Authorized Group, Tagging... Some of these settings are described in the chapter “Advanced Configuration”.

Important Note

Require client certificate for SpanKey client is highly recommended for production use!

Object Settings for cn=SpanKey,dc=WebSrvs,dc=WebADM**Web Service Settings** Disable WebSrv Yes No (default) Hide WebSrv Yes No (default)

Hide Web service from Web Services portal.

 Default Domain

This domain is automatically selected when no domain is provided.

 Enable Group Settings Yes (default) NoResolve application settings on user groups (direct and indirect).
Warning: Impacts performances. Require Client Policy Yes No (default)

If enabled, a Client Policy must be defined for all incoming requests.

 Require Client Certificate Yes No (default)

If enabled, requests must be authenticated with a client certificate.

 Allowed IP Addresses Comma-separated list of IP addresses with netmasks (ex: 192.168.1.0/24).
If not set then any client (incoming) IP is allowed. The localhost is always allowed. Default Language **⚠ Important Note**

If you enable this option, every SpanKey client who actually works without a client certificate will stop working. To solve this, you can generate a client certificate through WebADM Admin GUI > Admin tab > Issue Server or Client SSL Certificate and import the generated certificate in /opt/spankey/conf/ folder of your SpanKey client.









WebADM Server Administration

WebADM v1.7.8-1 (64bit) running on server rcvm8.rcdevs.local (192.168.3.217) in standalone mode. Currently handling 1 connection(s).





















Server Version Details: Apache/2.4.41 PHP/7.2.24 OpenSSL/1.1.1d
 Internal Server Time: 2019-11-07 12:11:28 Europe/Berlin (NTP check Ok)
 Hardware Modules: No HSM Connected
 WebADM Features: WebApps (Enabled), WebSrvs (Enabled), Manager (Enabled)

Active LDAP Server: LDAP Server (127.0.0.1) Active SQL Server: SQL Server (:::1)
 Active Session Server: Session Server (:::1) Active PKI Server: PKI Server (127.0.0.1)

 User Domains (1) Associate domain names with LDAP user search bases.	 Client Policies (0) Define custom policy settings for consumer applications.	 Access Devices (0) Hardware devices for badging and physical access control.
 LDAP Mount Points (0) Connect secondary LDAP servers to the tree view.	 LDAP Option Sets (1) Define LDAP tree constraints for your 'other' administrators.	 Administrator Roles (0) Create admin role templates for your 'other' administrators.

Licensing and Configurations

Runtime Actions

- | | |
|--|---|
|  Software License Details |  Download WebADM CA Certificate |
|  LDAP Server Details |  Download WebADM SSL Certificate |
|  LDAP Server Schema |  Issue Server or Client SSL Certificate |
|  Memory Usage Details |  Clear Admin Session Cache (1 KB)  |
|  Hardware Modules Details |  Clear WebADM License Cache  |
|  Remote Manager Interface |  Clear WebADM System Caches (243 KB)  |
|  Config Object Statuses |  Flush WebADM Session Data (846 KB)  |
|  WebADM Base Settings |  Reload WebADM Configurations |



Create Third-party SSL Server Certificate

You can use this form to issue a X.509 SSL certificate and private key for a third-party server or component. The certificate is generated with the provided information and signed by WebADM certificate authority.

Auto Confirm Mode

Enable Auto Confirm: Yes No ?

Auto Confirm Time:

Auto Confirm App:

Auto Confirm IPs: ?

Main information

Client Name or Description:

Certificate Type: ?

Restricted Application: ?

Certificate validity (in days): ?

Private Key Password (optional): ?

Additional information

Organization Name:

Organizational Unit:

Country Name: ?

Locality Name:

State or Province:

Street Address:

Email Address:



Create Third-party SSL Server Certificate

Creating private key... Success

Certificate details:

- commonName: **test.domain.com**
- description: **CLIENT:SpanKey**
- organizationName: **RCDevs**
- organizationalUnitName: **IT**
- countryName: **LU**
- localityName: **Belval**
- stateOrProvinceName: **Luxembourg**

Creating a certificate request based on the above details... Success

Calling WebADM CA for certificate request signing... Success

Private Key (PEM format):

```

-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEFAASCBCkcgwGsjAgEAAoIBAQCpwtKwmyAw7DOW
nmsxrmho9sZrin32wclDD4CEWdquqlQOinX8RjkyhB9+DIOSvIBrzPKNFdIt9Jtu
EiINv8fg+uXxYA8bSzfPoWEB9VtPm51U7lkJuvEYtQ4G7eBo4g5+YfJjMJWKNH8n
DA+xQiIimOg7GdZ89ES6mt7cX3ih5xcOpzcVlpPM84E4r9VdHR+lFOQ54LCsNeS1
4W/sDEXr56jynV4x2LWQxAPI+gtLaitEOKBwkm0df2aFpRtlP6K7fWF2AmUndpvl
87dmk/8hQMMFEwyZxMmACNiI7lTXBKJjyThjzH9lZGITudKXxYmcEVD2aD4h6oG7I
UowLthl3AgMBAACgqEBAlI5EeqOM7ZzybO1+SCFzo4bLwQ/hGZ2RX1TtJ+xDDVSx
5A3nledcxpSCS44sWJvBo/Iz6NYPzlhBg+NMDnYdqYwLOklmDmL2T4iPGyg0Alkd
9eV2dmIELAdjvKsR+BSN1k2uMh9UWQ5g3mrP3drUrJzIAHfauHkxk0095KVU0VKe
XzeuA88ae+iQvUL2zwKod1jyG4QAFNIga8Vy6QnuKzftQDaJH4qjUCsFRZJZTdpZ
EkXzCxjnu++apcs1Gnq2+49lbvK0Bv2o36XeeW3McF4FkxMyIcJWjIHVeCFabjAu
nWjYmNQNxeAsVQUNmreJs1FaA7222aqAODKnFw7bz5kCgYEA1XeAn4a8aFJidhiE
eKqdoaIW3OGxPujRjJub2dSvi2rKZFdCds7L+Q7BpXmzHcHN+CpVe23HDu+n2Dm5
/hVftnrJjCLTqngnigKu7U3KtCQ4qXBed4Sh8+bOdyTKDqKMQtssIHfTaUD/MLE
rQUJu0Hp09s85wTKkM6hKf8dB/sCgYEAY5X60B7bjF0TFY+Kaloefs491+wZQb5M
QCd/EC5foITXS7rfJu2AvMHsqeRhaOt+NRdhpPqRvS1Y2ppYBZ3P5rbYFARRz8M
Ca7HQqaFkz3NgCAhjiHxPiBTvrTz/NjesCNkOdc8RYHBj0dn+Q4hjIUU8sDbPmZ
ik4ZUsDQG7UCgYB67gfPVns3pIG9VlcrWi3OwBzke0BkVxTi7I/5zuaM5iHJqGqo
eqyyL9JKok3EjDA+ArrdPnFk45SIC65VaRctZoacwg2c9PboHmV4WTzwjdiHkyOD
tojBeaBasn/975PqiIEf7Yf88qZC+CAU93rEMNAkzfProjG5NJVQN33zcwKBgECd

```

Certificate (PEM format):

```

-----BEGIN CERTIFICATE-----
MIIDTzCCAjegAwIBAgIBCDANBgkqhkiG9w0BAQsFADArMRIwEAYDVQQDDA1XZWJB
RE0gQ0ExFTATBgNVBAoMDFJDREVWUy5MT0NBTDAAeFw0xOTExMDcxMTElMzhaFw0y
MDExMDYxMTElMzhaMIGEMRwGfYDVQQDDA90ZXN0LmRvbWVWpbi5jb20xZmZAVBGNV
BA0MDkNUSUVOVdpTcGFuS2V5MQ8wDQYDVQQKDAZSQ0RldnMxZCzAJBgNVBAsMAklU
MQswCQYDVQQGEwJMVTETPMA0GA1UEBwwGQmVudmFsczMRMwEYDVQQIDApMdXh1bWJv
dXJnMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAgcLSsJsgMowzlp5r
Ma5oaPbGa4p99sHNXQ+AhFnarqpUDopl/EY5MoQffgyDkryAa8zyjXwyLfSbbhIo
jVfHxvrl8WAPG0s3z6FhAfVbT5udVO5ZCbrxGLUOBu3gaOIOfmHyYzCVijr/JwwP
sUIiIpjquxnWfPREupre3F94oecXDqc3FdaTzPOBOK/VXR0fpXzkOeJQRDXkteFv
7AxF6+eo8pleMdikMQD4voLS2orRdpAvpJtHX9mhaUbZT+iu3lhdgJlJ3ab9f03
TJP/IUDDBRMMmcTJgAjYou5U1wSiY8k4Y8x/dwriE7nS12JnBFQ9mg+IeqBuyFKM
C04ddwIDAQABoyQwIjALBgNVHQ8EBAMCA4gwEwYDVR0lBAwwCgYIKwYBBQUHAWIw
DQYJKoZIhvcNAQELBQADggEBAK76jV3RbGu97E2z4ohhEPfun2MekJ2FpObmuRxx
TDt4dGfXshWlUzowEQFdy5w/wqEScknciKKqIsv0RwtZVWQjzuG0gswyD6FbojYM
R7vV8Rcbs904G+2101H5PlCmWqSMV4qpCc5anM/Tgxf7T5n/gnzP5icZ3ClHdq
49GDDGH+kPZV1Pj0cRW7cAxsZl0qW0FjHMYQr20oMPn0RjOLDvn7v15DY+J/AKfw
+ar0JU9der7UwkJhn5TOj06ehN8LGakHYp2rpx5jDEX2EHG7BjIsc28JtWfcsQoG
1slCyQM8H4sUZClQlyEr6D/UfMBoGYL+83WDoQ8NPx6JRks=
-----END CERTIFICATE-----

```

Download Cert & Key File Ok

3.2 SpanKey Client

The SpanKey client consists of two components activated at setup time.

- › SSH component - provides a user login with public keys stored within a directory server (Active Directory, OpenLDAP, Open Directory...).
- › NSS component - provides a native mapping of your directory users and groups to those in Linux.

3.2.1 SpanKey Client Setup Script

At the end of the installation of the SpanKey package, run the following command to launch setup wizard:

`/opt/spankey/bin/setup`. The wizard will prompt you for the details similar to below:

```
root@ubuntu18-client:~# /opt/spankey/bin/setup
Setup has already been run for this installation. Overwrite (y/n)?: y
Overwriting...
Enter one of your running WebADM node IP or hostname []: 192.168.3.217
Do you want to enable SpanKey Client for OpenSSH server (y/n)? [N]: y
Do you want to enable SpanKey Client NSS plugin (y/n)? [Y]: y
Do you want to register SpanKey Client logrotate script (y/n)? [Y]: y
Do you want SpanKey Client to be automatically started at boot (y/n)? [Y]: y

Primary OpenOTP service URL is: 'https://192.168.3.217:8443/spankey/'
Secondary OpenOTP service URL is: 'NONE'
Enable SpanKey Client for OpenSSH server: 'YES'
Enable SpanKey Client NSS plugin: 'YES'
Register SpanKey Client logrotate script: 'YES'
SpanKey Client must be automatically started at boot: 'YES'

Do you confirm (y/n)?: y

Applying SpanKey Client settings from default configuration files... Ok
Retrieving WebADM CA certificate from host '192.168.3.217'... Ok
The setup needs now to request a signed 'SpanKey' client certificate.
This request should show up as pending in your WebADM interface and an administrator must accept it.
Waiting for approbation...
```

At this step, you have to log in on the WebADM Administration GUI to approve the SSL certificate request.



Hello Admin ([cn=admin,o=Root](#))

Connected as **Super Administrator** to [rcvm8.rcdevs.local](#) ⓘ

Application Status

MFA Authentication Server: **Ok** (v1.4.6-4)
SMS Hub Server: **Ok** (v1.1.5)
SSH Public Key Server: **Ok** (v2.0.6-1)
OpenID & SAML Provider: **Not Registered**
Secure Password Reset: **Ok** (v1.0.15-1)
User Self-Service Desk: **Ok** (v1.1.11-1)
User Self-Registration: **Ok** (v1.1.11-1)

Configurations Objects

User Domains: 1 (Details)	Mount Points: 0 (Details)
Client Policies: 0 (Details)	Access Devices: 0 (Details)
Option Sets: 1 (Details)	Admin Roles: 0 (Details)

Context & Permissions

Administration Level: **Expert**
Login Context: [o=Root](#) ([Details](#))
Tree Root Context: **Auto**

Created Objects: **All**
Allowed Configs: **All**
Allowed Databases: **All**
Managed Databases: **All**
Allowed Logfiles: **All**

Applied Option Sets: [o=root](#) ([Details](#)) ([Edit](#))

Login Context Options

Unicity Context: [o=root](#)
WebADM Quotas: **Disabled**

[WebADM] [2019-11-07 12:18:33] [[rcvm8.rcdevs.local](#)] **New pending server/client certificate requests (1)** ⓘ

[Click Here For Details](#)

Click on the red button at the end of the home page. On the next screen, you can show the SSL certificate request is pending:

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API | Home | Admin | Create | Search | Import | Databases | Statistics | Applications | About | Logout

SSL Certificate Requests

Find below the pending certificate requests send to the WebADM certificate generation API.
Found 1 pending server SSL certificate requests:

Hostname	Type	Source	Received	Expires In	Application	Status	Action
ubuntu18-client	Client	192.168.3.104	12:11:33	274 secs	SpanKey	Pending	Accept Reject

Ok

[WebADM] [2019-11-07 12:18:33] [rcvm8.rcdevs.local] **New pending server/client certificate requests (1)**
Click Here For Details

Click on the Accept button and the Spankey-client setup will continue.

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SSL Certificate Requests

Find below the pending certificate requests send to the WebADM certificate generation API.
Found 1 pending server SSL certificate requests:

Hostname	Type	Source	Received	Expires In	Application	Status	Action
ubuntu18-client	Client	192.168.3.104	12:11:33	252 secs	SpanKey	Accepted	Accept Reject

Ok

```
Waiting for approbation... Ok
Updating entry 'client_id' in file '/opt/spankey/conf/spankey.conf'... Ok
Updating file '/etc/ssh/sshd_config'... Ok
Updating file '/etc/nsswitch.conf'... Ok
Updating file '/etc/pam.d/common-account'... Ok
Registering SpanKey Client service...
Registering SpanKey Client service... Ok
Adding logrotate script... Ok
```

SpanKey Client has successfully been setup.

IMPORTANT: Do not forget to perform the following actions before you exit this session:

- Start SpanKey (/opt/spankey/bin/spankey start)
- Restart 'sshd'
- Restart 'nscd'

```
root@ubuntu18-client:~#
```

The configuration of the SpanKey client is done, you have to restart sshd, nscd and spankey-client:


```
root@ubuntu18-client:~# systemctl restart sshd
root@ubuntu18-client:~# systemctl restart nscd
root@ubuntu18-client:~# systemctl start spankey
```

SpanKey client setup is done.

3.2.2 SpanKey Client silent installation

Since WebADM 1.7.1, a new feature is now available for the automatic certificate approval. This setting can be useful when you massively deploy SpanKey Client. To enable this feature, log in on the `WebADM Admin GUI > Admin tab >`

`Runtime Actions > Issue Server or Client SSL Certificate > Auto Confirm Mode`.



Create Third-party SSL Server Certificate

You can use this form to issue a X.509 SSL certificate and private key for a third-party server or component. The certificate is generated with the provided information and signed by WebADM certificate authority.

Auto Confirm Mode

Enable Auto Confirm: Yes No ?

Auto Confirm Time: ?

Auto Confirm App: ?

Auto Confirm IPs: ?

Main information

Server Hostname (FQDN):

Certificate Type: ?

Certificate validity (in days): ?

Private Key Password (optional): ?

Additional information

Alternative Name(s): ?

Organization Name:

Organizational Unit:

Country Name: ?

Locality Name:

State or Province:

Street Address:

Email Address:

In the Auto Confirm mode, you can specify the time, application and the clients IPs where auto confirms will work. On the previous screenshot, I have configured the auto confirm valid 30 minutes for every Spankey clients coming from the network 192.168.3.0/24. To enable the auto-confirm, switch the **Enable Auto Confirm** button to **Yes**. The auto confirm is now

enabled.

The SpanKey client can now be installed silently. Once the package is installed, run the following command to run the SpanKey Client setup with your parameters.

- > `192.168.3.117` is my WebADM/SpanKey server IP,
- > `my_client_id` is the client_id value configured in `/opt/spankey/conf/spankey.conf`
- > `ENABLE_SSH__DEFAULT=Y` is to enable SpanKey_client for OpenSSH (by default, this setting is set to `No` for other scenarios)

```
root@ubuntu18-client:~# /opt/spankey/bin/spankey stop
Stopping SpanKey Client... Ok
root@ubuntu18-client:~# ENABLE_SSH__DEFAULT=Y ENABLE_SUDO__DEFAULT=Y /opt/spankey/bin/setup
silent 192.168.3.217 my_client_id
  Primary OpenOTP service URL is: 'https://192.168.3.217:8443/spankey/'
  Secondary OpenOTP service URL is: 'NONE'
  Enable SpanKey Client for OpenSSH server: 'YES'
  Enable SpanKey Client NSS plugin: 'YES'
  Register SpanKey Client logrotate script: 'YES'
  SpanKey Client must be automatically started at boot: 'YES'

Applying SpanKey Client settings from default configuration files... Ok
Retrieving WebADM CA certificate from host '192.168.3.217'... Ok
The setup needs now to request a signed 'SpanKey' client certificate.
This request should show up as pending in your WebADM interface and an administrator must accept it.
Waiting for approbation... Ok
Updating entry 'client_id' in file '/opt/spankey/conf/spankey.conf'... Ok
Updating file '/etc/ssh/sshd_config'... Ok
Updating file '/etc/nsswitch.conf'... Ok
Updating file '/etc/pam.d/common-account'... Ok
Registering SpanKey Client service...
Registering SpanKey Client service... Ok
Adding logrotate script... Ok

SpanKey Client has successfully been setup.

IMPORTANT: Do not forget to perform the following actions before you exit this session:
- Start SpanKey (/opt/spankey/bin/spankey start)
- Restart 'sshd'
- Restart 'nscd'

root@ubuntu18-client:~#
```

The configuration of the SpanKey client is done, you have to restart sshd, nscd and Spankey client:

```
root@ubuntu18-client:~# /opt/spankey/bin/spankey start;systemctl restart sshd;systemctl restart nscd
Starting SpanKey Client...
Starting daemon 'rcdevs-spankeyd'... Ok
root@ubuntu18-client:~#
```

4. Advanced Configurations

4.1 SpanKey Client

4.1.1 Files and Folders

SpanKey client is installed under `/opt/spankey/` folder.

Find below the SpanKey client software installation file structure and important files.

- > `/opt/spankey/bin/` : Location for SpanKey service binaries and startup scripts.
 - > `spankey` : SpanKey executable control script for starting and stopping the service process. To start SpanKey from the command line, issue `./spankey start`. To stop SpanKey, issue `./spankey stop`.
 - > `setup` : Initial SpanKey setup script run by the self-installer. The setup can be re-run manually at any time.
- > `/opt/spankey/doc/` : Location for spankey documentation resources.
- > `/opt/spankey/conf/` : Location for SpanKey configuration files.
 - > `spankey.conf` : Main configuration file. Defines the basic SpanKey client parameters.

```
##-##-##-#
#
# SpanKey's main configuration file.
#
##-##-##-#
#
# The entry below tells the daemon where the log file must be.
# At the very early stage (when the daemon started but did not read yet this configuration file)
# logs are sent to the standard output. Anyway, since the launcher script use a redirection, you won't
even see them.
#
log_file      /opt/spankey/logs/spankeyd.log
#
# When log level is set to 'Normal', all components will log both errors and warnings only.
# 'Verbose' will make all components just log everything.
#
log_level     Normal
#
#
```

```
#-#-#-#
```

```
#-#-#-#
```

```
#
```

```
# Where to produce the daemon's pid file.
```

```
#
```

```
#pid_file      /opt/spankey/temp/spankeyd.pid
```

```
#
```

```
#
```

```
#-#-#-#
```

```
#-#-#-#
```

```
#
```

```
# The daemon needs this CA file to trust SpanKey servers it will talk to.
```

```
#
```

```
ca_file        /opt/spankey/conf/ca.crt
```

```
#
```

```
#
```

```
#-#-#-#
```

```
#-#-#-#
```

```
#
```

```
# An optional client certificate and password spankeyd will use to communicate with SpanKey servers.
```

```
#
```

```
client_cert_file /opt/spankey/conf/spankey.pem
```

```
#client_cert_password PaSsWoRd
```

```
#
```

```
#
```

```
#-#-#-#
```

```
#-#-#-#
```

```
#
```

```
# The section below contains a list of backend servers the daemon should connect to.
```

```
# It must contains one or two target OTP server.
```

```
# Any additional server in the list will just be ignored.
```

```
#
```

```
server_urls {
```

```
url1 https://192.168.3.117:8443/spankey/
```

```
#url2 https://<server2>:8443/spankey/
```

```
}
```

```
#
```

```
#
```

```
#-#-#-#
```

```
# # # #
```

```
#-#-#-#
#
# How spankeyd will relay request to the WebADM backend.
# - "balanced" means the request will be balanced between server 1 and server 2 in a round-robin
fashion.
# - "ordered" means server 2 is kept as a hot spare in case the primary server stops answering requests
properly.
#
#server_policy    BaLaNcEd
#
#
#-#-#-#

#-#-#-#
#
# The default domain name to pass when the requester only provided a username.
# It typically overrides the default domain in the SpanKey server configuration.
#
#default_domain_name Default
#
# To let backends know how to extract fields 'domain' and 'username' correctly from the username
string the client entered.
#
#domain_separator  \\
#
#
#-#-#-#

#-#-#-#
#
# A comma separated list of tags from which boolean expressions attached to policies will be
checked on backends.
# Further details about such boolean expressions on the servers side can be found at the following
URL:
#
# https://docs.rcdevs.com/howtos/spankey/spankey/
#
#requested_tags    TAG1,TAG2
#
#
#-#-#-#

#-#-#-#
#
# User settings (better configure settings in client policies).
# Fixed list of SpanKey policy settings to be passed via the SpanKey API.
```

```

#
#user_settings      SpanKey.KeyExpire=10
#
#
#-#-#-#

#-#-#-#
#
# The client identifier to be sent to OpenOTP servers along authentication requests.
# This allows to apply per client contextual policies on the WebADM server while running an
authentication workflow.
#
client_id           my_client_id
#
#
#-#-#-#

#-#-#-#
#
# The SOAP request TCP timeout is by default 30.
# Just keep it as it unless you really understand all the possible consequences a change could have.
#
#soap_timeout       30
#
#
#-#-#-#
#
#
#-#-#-#

```

- > `/opt/spankey/lib/` : Location for SpanKey system libraries.
- > `/opt/spankey/libexec/` : Location for SpanKey system executables.
- > `/opt/spankey/logs/` : Location for log files produced by SpanKey client.
- > `/opt/spankey/temp/` : Location for SpanKey temporary data files. Under this directory, you will find service PID files.

4.1.2 SpanKey Client and Auditd

Since Spankey client v2.1.0 and SpanKey server v2.0.4-1, you can use Auditd with SpanKey. Auditd will allow you to record executed commands, SCP actions (copy, remote execution) in WebADM record database. To enable Auditd with SpanKey client, the auditd packages must be installed and running on the target machine.

If this is not installed yet, you can install it with these commands:

- > for CentOS/RHEL OS: `yum install audit`

> for Debian OS: `apt-get install auditd`

If you install auditd after the installation of Spankey Client, you can copy the configuration file needed by auditd to activate audit for SpanKey Client. This file is available in `/opt/spankey/lib/audisp_plugin.conf` and must be copied in:

> `/etc/audisp/plugins.d/spankey.conf` for Debian OS

> `/etc/audit/plugins.d/spankey.conf` for CentOS/RHEL OS

By default, Auditd for SpanKey client is disabled. To enable it, after the Spankey client installation and configuration, edit the following file:

```
/etc/audisp/plugins.d/spankey.conf
```

```
# This file controls the configuration of the SpanKey Client plugin.  
# It simply takes events and forwards them to the SpanKey daemon.
```

```
active = no  
direction = out  
path = /opt/spankey/libexec/audisp_plugin  
type = always  
#args =  
format = string
```

Change the `active` setting from `no` to `yes` :

```
# This file controls the configuration of the SpanKey Client plugin.  
# It simply takes events and forwards them to the SpanKey daemon.
```

```
active = yes  
direction = out  
path = /opt/spankey/libexec/audisp_plugin  
type = always  
#args =  
format = string
```

To changes takes effect, a restart of spankey client is required. Logs are now sent to auditd and auditd forwards logs to SpanKey client daemon. The daemon will forward logs to SpanKey server.

```
systemctl restart spankey
```


⚠ Important Note

Be aware, if you enable Auditd with SpanKey then all Auditd rules that have been set before on that machine will be erased. Therefore, if you are using your own Auditd rules for monitoring your machine then you can not use SpanKey with the **Record Audit Logs** feature.

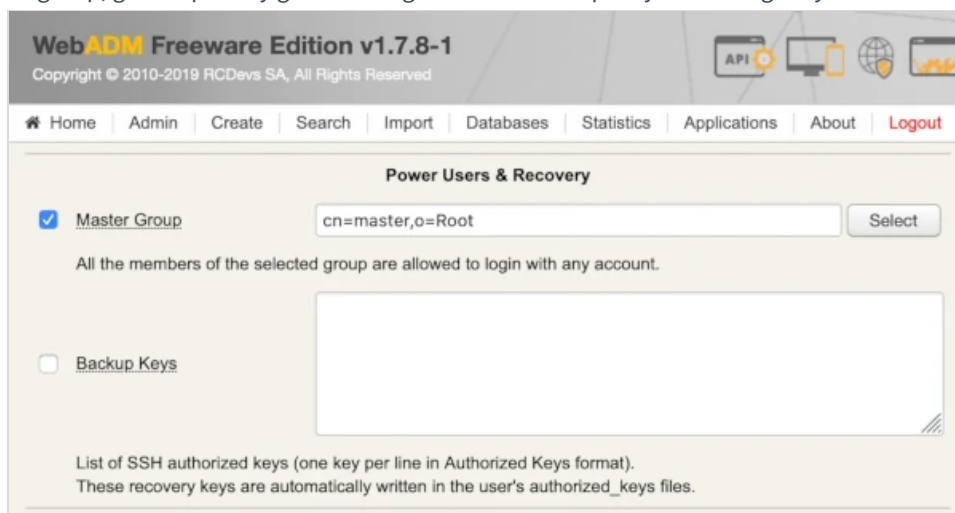
Please refer to step **4.2.7 Audit logs and SSH Sessions recording** of this documentation to enable auditd logs on the SpanKey server side and to know how to consult recorded logs.

4.2 SpanKey Server

Below are described some of the most relevant SSH Public Key Server configuration options.

4.2.1 Master Group

In SpanKey you can define master groups where the members of the group are considered as super users and can use their SSH key to access any other SpanKey account. A master group can be configured in SpanKey global configuration or in a client policy. To configure a master group, go on SpanKey global configuration or client policy and configure your Master Group.



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Power Users & Recovery

Master Group

All the members of the selected group are allowed to login with any account.

Backup Keys

List of SSH authorized keys (one key per line in Authorized Keys format).
These recovery keys are automatically written in the user's authorized_keys files.

For example, my master group is **cn=master,o=Root** and the member of this group is my **cn=admin,o=Root** who has a public key enrolled on his account:

Register / Unregister SSH Public Key for **cn=admin,o=Root**

A 2048 Bits RSA public key is already registered for user and is **VALID**.
 The key does not have an expiration date and will not automatically expire!
 The key does not have a maximum usage count.

Public Key:

```
-----BEGIN PUBLIC KEY-----
MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAAuJC0pf0axy8SqsQBe0My
IohNPu93XlBXSchIcc/O8WC+sSlepDuleQpthmZlno1RYbIGMf2fPzKlgXkiULqd
IbnteIpVtfgG2Gwq6dZd+//MsNndSeE13ddcoIr2TELT9fPeY6pEmGoNRRbNewoG
N7gtGLPS2w3LmihQa2t00Qzmm1+e0SPavOAQqcy2dBltQb8RgZIsveJioXYGx7xl
7XwvGHVq/CW+YaYHfX0HBAoqkcCPigLN7E4EbAlc0mIs9WGehOCRgGwfm3YE4zs+
QB3BlmcctpJ2XevrED8vfWHwWCGTcyC2BeCO6PeLAEDIgzjgtnMjLIxvViGkizU
DQIDAQAB
-----END PUBLIC KEY-----
```

Authorized Key:

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC4kLSl/RrHLxKqxAF7QzIiE0+73deUFdJyEh
xz87xYL6xKV6kO6V5Cm2GZmWejVfhsGyX
/Z8/MrWBeSJQup0huel4ilW1+obYbCrp1137
/8yw2d1J4TXdllygIvZMQtP1895jqkSYag1FFs17CgY3uCOYs9LbDcuaKFBra3TRDOa
bX57RI9q84BCpzLZ0GW1BvxGBkiy94mKhdgbHvGXtfc8YdWr8Jb5hpgd9fQcECiqRwI
+KAs3sTgRsDVzSaWz1YZ6E4JGAbB+bdgTjOz5AHcGWZxy2knZd6+sQPy99YfBYI2NzL
ILYF4I7o94sAQMiD00C2cyMsjG9WIYqLNQN admin
```

Key Format:

RSA

Key Length:

2048 Bits

Remove

Cancel

That means the admin account is able to log in on every account with his own private key. The public key of the admin account is added to every user account. If I call the `authorized_key` command for different users I should see the administrator public key and the public key of the user:

```
root@ubuntu18-client:~# /opt/spankey/libexec/authorized_keys test-user
environment="ONE_TIME_AUTHENTICATION_TOKEN=05ACC1D2CCA3A0D1A5965CBC2A005745",command=
user",environment="SPANKEY_DOMAIN=Default" ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQACkNsiQ1GxzOxMuLjiqZfjnv3i3VDHR+leMdPa51TPsbUvIOax8/d+Hky
test-user@Default
environment="ONE_TIME_AUTHENTICATION_TOKEN=05ACC1D2CCA3A0D1A5965CBC2A005745",command=
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC4kLSl/RrHLxKqxAF7QzIiE0+73deUFdJyEhxz87xYL6xKV6kO6V5Cm2
admin@Default
root@ubuntu18-client:~#
```

We can see 2 public keys for test-user account, his own public key and admin's public key.

```
root@ubuntu18-client:~# /opt/spankey/libexec/authorized_keys yoann
environment="ONE_TIME_AUTHENTICATION_TOKEN=CF5E2C485BAC8310B6164DEF325F7397",command="
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQACvcgZSZaG0yskKUPI18bzYshdqyNxBEUKOSSCJINvBn5BrY1TogFvU83
yoann@Default
environment="ONE_TIME_AUTHENTICATION_TOKEN=CF5E2C485BAC8310B6164DEF325F7397",command="
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC4kLSI/RrHLxKqxAF7QzIIE0+73deUFdJyEhxz87xYL6xKV6kO6V5Cm2
admin@Default
root@ubuntu18-client:~#
```

It's the same for yoann's account...

Now, trying to log in with test-user and Yoann's account with the admin's private key:

```
$ ssh -i admin.pem test-user@192.168.3.104

Welcome, SpanKey Tester!

Session recording is enabled.
Audit logs recording is enabled.
Session lock idle time is 5 minutes.
Session's max duration is 30 minutes.

test-user@ubuntu18-client:~$ whoami
test-user
test-user@ubuntu18-client:~$ pwd
/home/test-user
test-user@ubuntu18-client:~$ exit
exit

>>>> Session's duration was aprox 11 seconds <<<<

Connection to 192.168.3.104 closed.
$
```

```
$ ssh -i admin.pem yoann@192.168.3.104
```

Welcome, SpanKey Tester!

```
Session recording is enabled.  
Audit logs recording is enabled.  
Session lock idle time is 5 minutes.  
Session's max duration is 30 minutes.
```

```
yoann@ubuntu18-client:~$ whoami  
yoann  
yoann@ubuntu18-client:~$ pwd  
/home/yoann  
yoann@ubuntu18-client:~$ exit  
exit
```

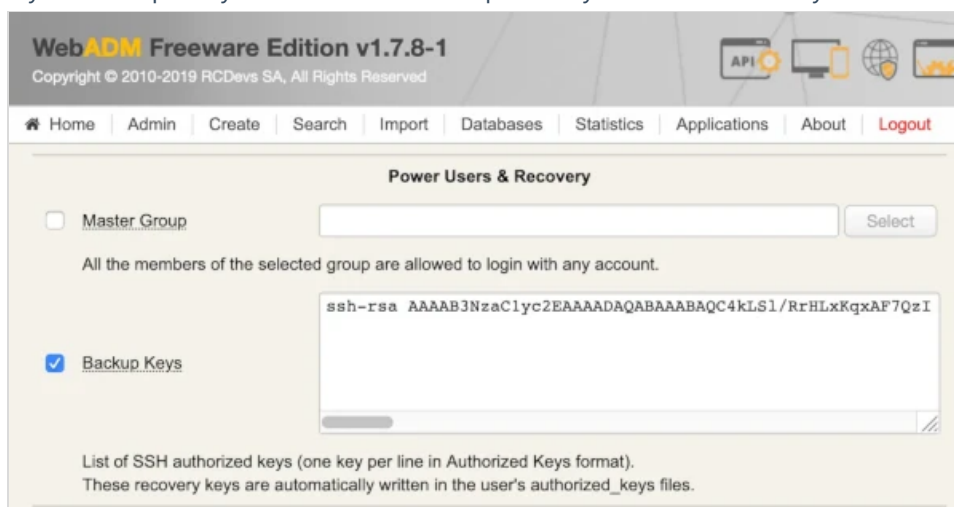
```
>>>> Session's duration was aprox 7 seconds <<<<
```

```
Connection to 192.168.3.104 closed.  
$
```

4.2.2 Backup/Recovery Keys

By default, the SpanKey agents will erase users' `authorized_keys` file at runtime to prevent users from adding rogue public keys. If recovery keys are configured, then these keys are automatically written to the user's `authorized_keys` file, for recovery purposes (to be used in the event where SpanKey client cannot communicate with the SpanKey server).

To configure a backup key, go on the WebADM Admin GUI, click on **Applications** tab, in **Authentication** category, you can find **SSH Public Key Server**, click on **CONFIGURE** button. You are now in SpanKey server configuration. Find the **Power Users & Recovery** section, check the box **Backup Keys** and put the public key to have an access on the target server even if SpanKey client or SpanKey server is down. Put the public key in the authorized key format here:



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Power Users & Recovery

Master Group

All the members of the selected group are allowed to login with any account.

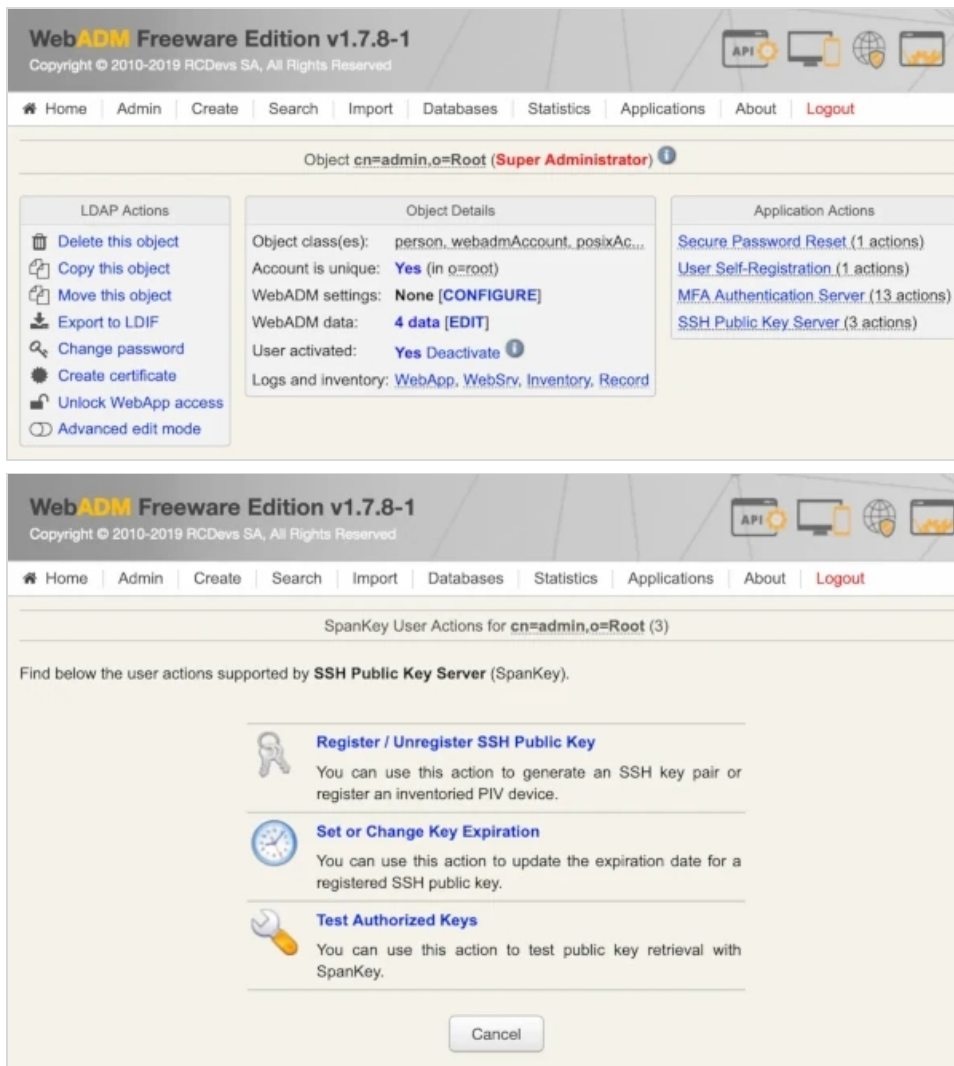
Backup Keys

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQ4kLS1/RrHLxKqxAP7QzI
```

List of SSH authorized keys (one key per line in Authorized Keys format).
These recovery keys are automatically written in the user's `authorized_keys` files.

That means the private key associated with this public key will be able to log in on the target server even if SpanKey server or SpanKey client is down.

The public key can be found when you click on the user on the left tree, in **Application Actions** box, click on **SSH Public Key Server** and **Register/Unregister SSH Public Key**.



I can see the public key enrolled for this user in SSH key format and in authorized key format.



Register / Unregister SSH Public Key for cn=admin,o=Root

A 2048 Bits RSA public key is already registered for user and is **VALID**.
 The key does not have an expiration date and will not automatically expire!
 The key does not have a maximum usage count.

Public Key:

```
-----BEGIN PUBLIC KEY-----
MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAEuJC0pf0axy8SqsQBe0My
IohnPu93X1BXSchIcc/O8WC+sSlepDuleQpthmZlnolRYbIGMf2fPzKlgXkiULqd
IbnteIpVtfgG2Gwq6dZd+//MsNndSeE13ddcoIr2TELt9fPeY6pEmGoNRRbNewoG
N7gtGLPS2w3LmihQa2t00Qzmm1+e0SPavOAQqcy2dBltQb8RgZIsveJioXYGx7xl
7XwvGHVq/CW+YaYHfX0HBAoqkcCPigLN7E4EbAlc0mls9WGehOCRgGwfm3YE4zs+
QB3BlmcctpJ2XevrED8vfWHwWCGTcyyC2BeCO6PeLAEDIgzjgtnMjLIxvViGkizU
DQIDAQAB
-----END PUBLIC KEY-----
```

Authorized Key:

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC4kLSl/RrHLxKqxAF7QzIiiE0+73deUFdJyEh
xz87xYL6xKV6kO6V5Cm2GZmWejVFhsgYx
/Z8/MrWBeSJQup0hue14ilWl+obYbCrp1137
/8yw2dlJ4TXdllygivZMQtP1895jqkSYag1FFs17CgY3uCOys9LbDcuaKFBra3TRDOa
bX57RI9q84BCpzLZ0GW1BvxGBkiy94mKhdgbHvGXtfc8YdWr8Jb5hpgd9fQcECiqRwI
+KAs3sTgRsDVzSaWz1YZ6E4JGAbB+bdgTjOz5AHcGWZxy2knZd6+sQPy99YfBYIZNzL
ILYF4I7o94sAQMiDOOC2cyMsjG9WIYqLNQN admin
```

Key Format:

Key Length:

Now, we will do a test to see if the backup key is returned by the authorized key command for the yoann user on a SpanKey client:

```
root@ubuntu18-client:~# /opt/spankey/libexec/authorized_keys yoann
environment="ONE_TIME_AUTHENTICATION_TOKEN=D9F5CBD96A8872A396CCADA246FFE1BB",command=
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQACvcgZSZaG0yskKUPI18bzYshdqyNxBEUKOSSCJINvBn5BrY1TogFvU83
yoann@Default
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC4kLSl/RrHLxKqxAF7QzIiiE0+73deUFdJyEhxz87xYL6xKV6kO6V5Cm2
root@ubuntu18-client:~#
```

As you can see, yoann user has his own public key returned by SpanKey server and the Admin recovery key previously configured.

```
$ ssh -i admin.pem yoann@192.168.3.104
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-33-generic x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/advantage

* Canonical Livepatch is available for installation.
- Reduce system reboots and improve kernel security. Activate at:
  https://ubuntu.com/livepatch

320 packages can be updated.
0 updates are security updates.

*** System restart required ***
Last login: Thu Nov  7 12:50:10 2019 from 192.168.3.233
yoann@ubuntu18-client:~$ exit
logout
Connection to 192.168.3.104 closed.
$
```

Below are the logs from the SpanKey server side for the authorized key request:

```
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] New spankeyAuthorizedKeys SOAP request
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] > Username: yoann
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] > Client ID: my_client_id
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Registered spankeyAuthorizedKeys request
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Resolved LDAP user: cn=yoann,o=Root
(cached)
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Found user fullname: yoann
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Found 25 user settings:
EnableLogin=Yes,X11Forwarding=Yes,PortForwarding=Yes,AgentForwarding=Yes,PTYAllocation=Yes,Backup
[1 Items],AllowKeyFiles=No,KeyFiles=.ssh/authorized_keys,MinUID=500,MinGID=100,MailSubject=SSH
Access Notification
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Found 1 user data: PublicKey
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Found 2048 bits RSA public key
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Returning 1 authorized public key
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Returning 1 backup public key
[2019-11-07 13:02:19] [192.168.3.104] [SpanKey:DDVPRKKE] Sent success response
```

4.2.3 Shared Account/Authorized Group

Authorized Groups operate on the principle of a shared account. Shared accounts are a common practice in Enterprise use of SSH. A shared account (i.e. 'webmaster' user) is a system account which is used concurrently by several administrators. In

SpanKey you can transform any generic LDAP user into a shared SSH account simply by linking this account to a 'shared access LDAP group'. Then all the members of that group can gain access to the shared account with their own SSH key. For example, my shared account is `webmaster` and I want to allow access to `webmaster` account by `IT` group members.

Member of this group are test-user and yoann accounts:

The screenshot displays the WebADM Freeware Edition v1.7.8-1 interface. The header includes the product name and version, copyright information, and navigation icons for API, mobile devices, and a globe. A navigation menu at the top contains links for Home, Admin, Create, Search, Import, Databases, Statistics, Applications, About, and Logout. The main content area is titled 'Object cn=IT,o=Root' with an information icon. It is divided into two panels: 'LDAP Actions' and 'Object Details'. The 'LDAP Actions' panel lists: Delete this object, Copy this object, Move this object, Export to LDIF, Add members, and Advanced edit mode. The 'Object Details' panel shows: Object class(es): groupOfNames, Account is unique: Yes (in o=root), and Group activated: No Activate Now! Below these panels are three form sections: 'Object Name' with a text input 'IT' and a 'Rename' button; 'Add Attribute (3)' with a dropdown 'Description / Note' and an 'Add' button; and 'Add Extension (2)' with a dropdown 'UNIX Group' and an 'Add' button. A 'Group Member' section contains two entries: 'cn=test-user,o=Root' and 'cn=yoann,o=Root', each with a 'Goto' button and a checkbox. At the bottom, a blue bar contains 'Apply Changes', 'Re-Encrypt', and 'Delete Selected' buttons.

After that, I click on my `webmaster` account on the left tree. In `Object Details` box, I click on `CONFIGURE` button.

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API | [Icons]

Home | Admin | Create | Search | Import | Databases | Statistics | Applications | About | Logout

Object **cn=webmaster,o=Root** ⓘ

LDAP Actions

- Delete this object
- Copy this object
- Move this object
- Export to LDIF
- Change password
- Create certificate
- Unlock WebApp access
- Advanced edit mode

Object Details

Object class(es): `webadmAccount, person, posixAc...`

Account is unique: **Yes** (in `o=root`)

WebADM settings: **None** [CONFIGURE]

WebADM data: **None** [EDIT]

User activated: **Yes** Deactivate ⓘ

Logs and inventory: [WebApp](#), [WebSrv](#), [Inventory](#), [Record](#)

Application Actions

- [Secure Password Reset](#) (1 actions)
- [User Self-Registration](#) (1 actions)
- [MFA Authentication Server](#) (13 actions)
- [SSH Public Key Server](#) (3 actions)

Object Name: Rename

Add Attribute (12): ▼ Add

Login Name [\[add values\]](#)

Last Name [\[add values\]](#)

UID Number

GID Number

Home Directory

Login Shell [\[delete attribute\]](#)

Apply Changes | Re-Encrypt | Delete Selected

Choose SpanKey application and in **Shared Account** section, I configure my **IT** group like below:

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API | [Icons]

Home | Admin | Create | Search | Import | Databases | Statistics | Applications | About | Logout

Shared Account

Authorized Group Select

All the members of the selected group are allowed to login with this shared account.
For shared accounts on tagged servers, both the shared account and the members must be tagged.

Access Restrictions

Allowed Server Tags

Comma-separated list of allowed server tags.

Session & Monitoring Options

Record Session Data Yes (default) No

Now, I'm able to log into my SpanKey_client with Yoann private key on the shared account `webmaster`:

```
$ ssh -i yoann.pem webmaster@192.168.3.104
```

```
Welcome, SpanKey Tester!
```

```
Session recording is enabled.
```

```
Audit logs recording is enabled.
```

```
Session lock idle time is 5 minutes.
```

```
Session's max duration is 30 minutes.
```

```
webmaster@ubuntu18-client:~$ whoami;pwd;exit
```

```
webmaster
```

```
/home/webmaster
```

```
exit
```

```
>>>> Session's duration was aprox 11 seconds <<<<
```

```
Connection to 192.168.3.104 closed.
```

```
$
```

Logs on the SpanKey server side:

```
New spankeyNSSInfo SOAP request
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] > Database: user
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] > Name: webmaster
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] > Client ID: my_client_id
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] Registered spankeyNSSInfo request
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] Found posix user 'cn=webmaster,o=Root'
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:VAWOC62C] Sent success response
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] New spankeyAuthorizedKeys SOAP request
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] > Username: webmaster
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] > Client ID: my_client_id
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Registered spankeyAuthorizedKeys request
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Resolved LDAP user: cn=webmaster,o=Root
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Found user fullname: webmaster
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Found 25 user settings:
```

```
EnableLogin=Yes,X11Forwarding=Yes,PortForwarding=Yes,AgentForwarding=Yes,PTYAllocation=Yes,Allowe
```

```
[1 Items],AllowKeyFiles=No,KeyFiles=.ssh/authorized_keys,MinUID=500,MinGID=100,MailSubject=SSH
```

```
Access Notification
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Allowed group 'IT' with 2 member public
```

```
keys
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Returning 2 authorized public keys
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Returning 1 backup public key
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:YFNR98A0] Sent success response
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] New spankeyNSSList SOAP request
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] > Database: group
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] > Client ID: my_client_id
```

```
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] Registered spankeyNSSList request
```

```

[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] Registered spankeySessionStart request
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] Could not find any NSS group
[2019-11-07 15:15:55] [192.168.3.104] [SpanKey:P38WICLQ] Sent success response
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] New spankeySessionStart SOAP request
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Username: webmaster
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Identity: yoann
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Server: ubuntu18-client
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Command: /bin/bash
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Terminal: Yes
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Client ID: my_client_id
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] > Source IP: 192.168.3.233
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Registered spankeySessionStart request
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Resolved LDAP user: cn=yoann,o=Root
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Resolved LDAP groups: it
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Started transaction lock for user
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Found user fullname: yoann
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Found 21 user settings:
WelcomeText=Welcome, SpanKey
Tester!,MaxSessionTime=30,LockSessionTime=5,RecordSessions=Yes,RecordAuditLogs=Yes,CreateHomedir
Access Notification,TermAuditRule=-a always,exit -S execve,FileAuditRule=-a always,exit -S all -F dir=/ -F
perm=rwa,EnableLogin=Yes
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Found 1 user data: LoginCount
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Updated user data
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Started interactive terminal session of ID
xPSH6Ayly58fEc6S on ubuntu18-client valid for 600 seconds
[2019-11-07 15:15:56] [192.168.3.104] [SpanKey:8NJGQVC2] Sent success response

```

4.2.4 TAGs

All hosts managed by SpanKey Server can be tagged in the SpanKey client configuration. For example, all web servers could be tagged with the acronym «WEB» in the configuration file of SpanKey client. Then you can add this Tag for all Webmaster accounts to ensure SSH access to every web server. To configure a Tag, click on a user account and in the section **Object Details** there is WebADM Settings. Click on the **CONFIGURE** button. Go on the SpanKey application and there are the options Allowed Server Tags.

TAGs can be configured on an LDAP account or an LDAP group. To set a tag on an account or a group, go on the WebADM Admin GUI, click on your account/group, in the **Object Details** box, you can find WebADM settings, click on **CONFIGURE**. In applications box on the left, select SpanKey. You are now in SpanKey configuration for your user or your group. In **Access Restriction** category, check the box **Allowed Server Tags** and configure your TAGs. On my side, I configured **web** TAG for my test-user.

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Object **cn=test-user,o=Root**

LDAP Actions	Object Details	Application Actions
<ul style="list-style-type: none">Delete this objectCopy this objectMove this objectExport to LDIFChange passwordCreate certificateUnlock WebApp accessAdvanced edit mode	<p>Object class(es): webadmAccount, person, posixAc...</p> <p>Account is unique: Yes (in o=root)</p> <p>WebADM settings: None [CONFIGURE]</p> <p>WebADM data: 6 data [EDIT]</p> <p>User activated: Yes Deactivate</p> <p>Logs and inventory: WebApp, WebSrv, Inventory, Record</p>	<ul style="list-style-type: none">Secure Password Reset (1 actions)User Self-Registration (1 actions)MFA Authentication Server (13 actions)SSH Public Key Server (3 actions)

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Access Restrictions

Allowed Server Tags

Comma-separated list of allowed server tags.

Session & Monitoring Options

Record Session Data Yes (default) No

Stores the graphical terminal sessions in WebADM Record database.
SCP and SFTP sessions cannot be recorded.

Record Audit Logs Yes (default) No

Stores Auditd events in WebADM Record database (commands and file events).

Now, I just have to TAG my servers where SpanKey client is configured. TAG should be configured in `/opt/spankey/conf/spankey.conf`.

```
root@ubuntu18-client:~# vi /opt/spankey/conf/spankey.conf
#-#-#-#
#
# spankeyd's main configuration file.
#
...

#-#-#-#
#
# A comma separated list of tags from which boolean expressions attached to policies will be
checked on backends.
# Further details about such boolean expressions on the servers side can be found at the following
URL:
#
# https://docs.rcdevs.com/howtos/spankey/spankey/
#
#         requested_tags    web
#
#
#-#-#-#

...

#
#
#-#-#-#
```

Please, restart SpanKey Client after editing the configuration file.

```
root@ubuntu18-client:~# /opt/spankey/bin/spankey restart
Stopping SpanKey Client.... Ok
Starting SpanKey Client...
Starting daemon 'rcdevs-spankeyd'... Ok
root@ubuntu18-client:~#
```

After tagging my server, I perform a login with an account which has the same TAG configured.

```
$ ssh -i test-user.pem test-user@192.168.3.104
```

```
Welcome, SpanKey Tester!
```

```
Session recording is enabled.
```

```
Audit logs recording is enabled.
```

```
Session lock idle time is 5 minutes.
```

```
Session's max duration is 30 minutes.
```

```
test-user@ubuntu18-client:~$ whoami;pwd;exit
```

```
test-user
```

```
/home/test-user
```

```
exit
```

```
>>>> Session's duration was aprox 6 seconds <<<<
```

```
Connection to 192.168.3.104 closed.
```

```
$
```

See below the result of the authentication:

```
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] New spankeyAuthorizedKeys SOAP request
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] > Username: test-user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] > Tags: web
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] > Client ID: my_client_id
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Registered spankeyAuthorizedKeys request
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Checking SpanKey built-in freeware license
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] License Ok (1/5 client hosts)
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Resolved LDAP user: cn=test-user,o=Root
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Resolved LDAP groups: it
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Found user fullname: test-user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Found 25 user settings:
EnableLogin=Yes,X11Forwarding=Yes,PortForwarding=Yes,AgentForwarding=Yes,PTYAllocation=Yes,Allowe
[1 Items],BackupKeys=[1
Items],AllowKeyFiles=No,KeyFiles=.ssh/authorized_keys,MinUID=500,MinGID=100,MailSubject=SSH
Access Notification
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Found 1 user tags: WEB
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Found 3 user data:
PublicKey,KeyExpire,KeyState
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Found 4096 bits RSA public key
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Public key expires 2020-05-30 11:00:00 (205
days)
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Public key can be used 497 more times
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Validated authorization for server tag 'WEB'
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Returning 1 authorized public key
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Returning 1 backup public key
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:NE71POJT] Sent success response
```

```
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Sent success response
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] New spankeySessionStart SOAP request
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Username: test-user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Identity: test-user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Server: ubuntu18-client
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Command: /bin/bash
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Terminal: Yes
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Client ID: my_client_id
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] > Source IP: 192.168.3.233
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Registered spankeySessionStart request
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Resolved LDAP user: cn=test-user,o=Root
(cached)
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Resolved LDAP groups: it
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Started transaction lock for user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Found user fullname: test-user
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Found 18 user settings:
WelcomeText=Welcome, SpanKey
Tester!,MaxSessionTime=30,LockSessionTime=5,RecordSessions=Yes,RecordAuditLogs=Yes,CreateHomedir
Access Notification,TermAuditRule=-a always,exit -S execve,FileAuditRule=-a always,exit -S all -F dir=/ -F
perm=rwa
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Found 2 user data: LoginCount,KeyState
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Updated user data
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Started interactive terminal session of ID
auUYDYJYqkLnHnzn on ubuntu18-client valid for 600 seconds
[2019-11-07 15:26:25] [192.168.3.104] [SpanKey:7PGUMU19] Sent success response
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:l8MNHORW] New spankeySessionUpdate SOAP request
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:l8MNHORW] > Session: auUYDYJYqkLnHnzn
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:l8MNHORW] > Stop: Flagged
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:l8MNHORW] > Data: 195 Bytes
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:l8MNHORW] > Logs: 1010 Bytes
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:7PGUMU19] Found terminal session started 2019-11-07
15:26:25
[2019-11-07 15:26:35] [192.168.3.104] [SpanKey:7PGUMU19] Sent success response
```

It works well for the test-user, I will try now an authentication with the account Yoann which doesn't have the `web` TAG.

```
$ ssh -i yoann.pem yoann@192.168.3.104
```

See below the result of the authentication:

```
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] New spankeyAuthorizedKeys SOAP request
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] > Username: yoann
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] > Tags: web
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] > Client ID: my_client_id
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Registered spankeyAuthorizedKeys request
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Resolved LDAP user: cn=yoann,o=Root
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Resolved LDAP groups: it
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Found user fullname: yoann
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Found 25 user settings:
EnableLogin=Yes,X11Forwarding=Yes,PortForwarding=Yes,AgentForwarding=Yes,PTYAllocation=Yes,Backup
[1 Items],AllowKeyFiles=No,KeyFiles=.ssh/authorized_keys,MinUID=500,MinGID=100,MailSubject=SSH
Access Notification
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Found 1 user data: PublicKey
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Found 2048 bits RSA public key
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] Account is missing authorization for server
tag 'WEB'
[2019-11-07 15:28:23] [192.168.3.104] [SpanKey:KC92H6FJ] No authorized public key found
[2019-11-07 15:28:24] [192.168.3.104] [SpanKey:KC92H6FJ] Sent failure response
```

As you can see, the authentication failed because the account is missing an authorization for server TAG `web`.

Several TAGs can be requested and expressions similar to boolean expressions can be built. Found below, how to build TAGs expressions:

Request TAG1 AND TAG2:

> TAG1,TAG2

Request TAG1 OR TAG2:

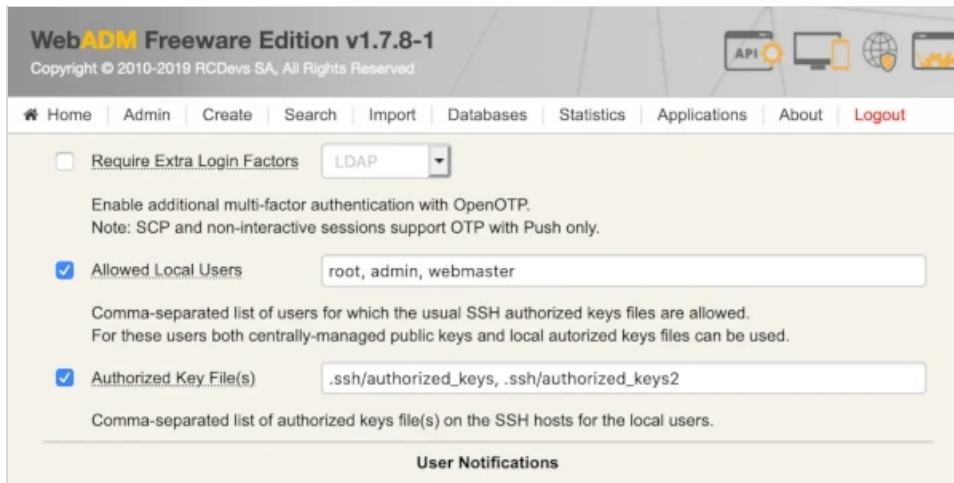
> (TAG1|TAG2)

Request TAG1 AND TAG2 OR TAG3:

> TAG1,(TAG2|TAG3)

4.2.5 Allow local users and local Authorized Keys File(s) usage

The SpanKey server allows you to configure local users who will be able to use the local authorized keys file(s) configured. In the SpanKey server configuration, you will find the following setting under Server Policy:



Configure your users who are able to use the local authorized keys file(s) first and after that, configure the authorized keys file(s) that your users will be able to use for local login.

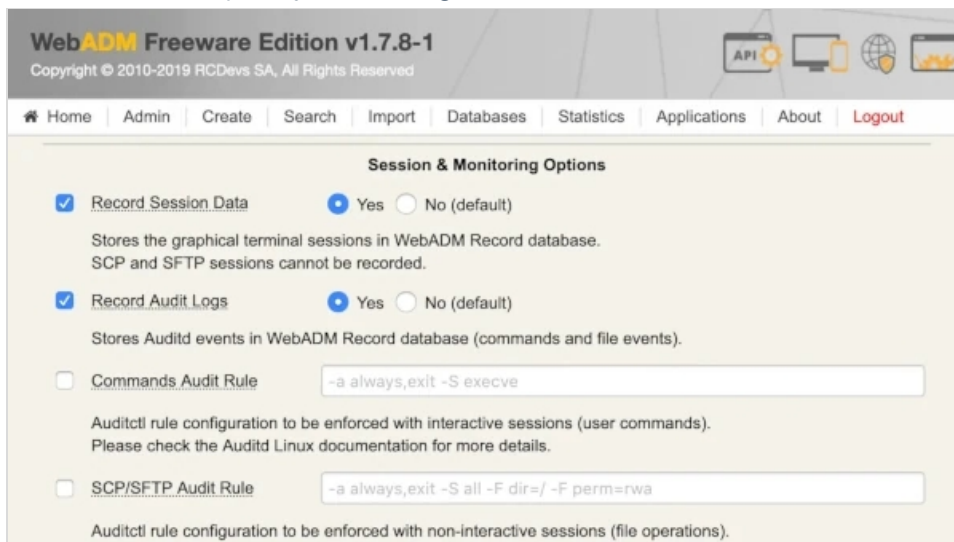
4.2.6 Audit logs and SSH Sessions recording

For security audit, Spankey provide 2 kinds of audit logs.

The first one is the graphical session recording. All SSH sessions can be recorded and that allow you to replay every SSH sessions at any moment through the WebADM Admin interface. The **Record Session Data** setting must be enabled for session recording.

Another kind of audit is the **Record Audit Logs**. The setting will allow you to store audit event (commands and file events) in the WebADM Record databases.

These 2 settings can be enabled under SpanKey Server configuration:



Recorded sessions and audit logs can be replayed under **WebADM Admin GUI > Databases > Recorded Sessions**

WebADM Freeware Edition v1.7.8-1
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Home Admin Create Search Import Databases Statistics Applications About Logout

Database Viewer for Recorded Sessions & Transactions (18 results out of 18 record items)

Filters (0)

Application: Equals: Add Filter

This Minute This Hour Today This Week This Month

Display Options: Retrieve max: 1000 Page results: 35 Refresh

Log Actions: Delete selected items Re-encrypt all records Statistics as CSV / XML Draw source map

Statistic Options: Show first: ALL Group by: None

Database Pruning: Delete log entries older than: 6 Month Clean

<input type="checkbox"/>	Application	Client	Start Time	Stop Time	User DN	User IP	Host IP	Session ID	Type	Size	Action
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 15:26:25	2019-11-07 15:26:35	cn=test-user.o=Root	192.168.3.233	192.168.3.104	7PGUMU19	AUDIT	1 KBytes	View
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 15:26:25	2019-11-07 15:26:35	cn=test-user.o=Root	192.168.3.233	192.168.3.104	7PGUMU19	TERM	195 Bytes	View
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 15:15:56	2019-11-07 15:16:10	cn=yoann.o=Root	192.168.3.233	192.168.3.104	8NJGQVC2	AUDIT	2 KBytes	View
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 15:15:56	2019-11-07 15:16:10	cn=yoann.o=Root	192.168.3.233	192.168.3.104	8NJGQVC2	TERM	199 Bytes	View
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 12:50:10	2019-11-07 12:50:20	cn=admin.o=Root	192.168.3.233	192.168.3.104	2NKRR872	AUDIT	993 Bytes	View
<input type="checkbox"/>	SpanKey	my_client_id	2019-11-07 12:50:10	2019-11-07 12:50:20	cn=admin.o=Root	192.168.3.233	192.168.3.104	2NKRR872	TERM	215 Bytes	View
<input type="checkbox"/>	SpanKey	SpanKey	2019-11-07 11:41:07	2019-11-07 11:41:08	cn=test-user.o=Root	192.168.3.233	192.168.3.104	TPCXDAXA	AUDIT	910 Bytes	View
<input type="checkbox"/>	SpanKey	SpanKey	2019-11-07 11:41:07	2019-11-07 11:41:08	cn=test-user.o=Root	192.168.3.233	192.168.3.104	TPCXDAXA	TERM	82 Bytes	View
<input type="checkbox"/>	SpanKey	SpanKey	2019-11-07 11:40:57	2019-11-07 11:41:08	cn=test-user.o=Root	192.168.3.233	192.168.3.104	JDWTGOTD	AUDIT	923 Bytes	View
<input type="checkbox"/>	SpanKey	SpanKey	2019-11-07 11:40:57	2019-11-07 11:41:08	cn=test-user.o=Root	192.168.3.233	192.168.3.104	JDWTGOTD	TERM	123 Bytes	View

Under the Recorded Sessions databases, 2 types of record are available:

- > **TERM** : This is a graphical session record
- > **AUDIT** : This is the command and file events record

Click on view button to see the recorded sessions/logs

Other information like client, Session duration, User DN, User IP, Host IP and Session ID are also useful here.

This is an example of auditd logs available through WebADM Admin GUI under databases > Recorded Sessions. Click on **View** button on an **AUDIT** log type to consult auditd logs:

```
[2019-11-07 15:26:25] [3385] Executed command '/bin/bash' (pid 82610) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3385] > Event 'execve' returned success with code 0
[2019-11-07 15:26:25] [3386] Executed command 'groups' (pid 82618) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3386] > Event 'execve' returned success with code 0
[2019-11-07 15:26:25] [3387] Executed command '/bin/sh /usr/bin/lesspipe' (pid 82620) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3387] > Event 'execve' returned success with code 0
[2019-11-07 15:26:25] [3388] Executed command 'basename /usr/bin/lesspipe' (pid 82621) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3388] > Event 'execve' returned success with code 0
[2019-11-07 15:26:25] [3389] Executed command 'dirname /usr/bin/lesspipe' (pid 82623) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3389] > Event 'execve' returned success with code 0
[2019-11-07 15:26:25] [3390] Executed command 'dircolors -b' (pid 82625) in '/home/test-user' as 500:100
[2019-11-07 15:26:25] [3390] > Event 'execve' returned success with code 0
[2019-11-07 15:26:32] [3391] Executed command 'whoami' (pid 82628) in '/home/test-user' as 500:100
[2019-11-07 15:26:32] [3391] > Event 'execve' returned success with code 0
```

4.2.7 Sudoers Policy Plugin

Since SpanKey Client for Linux v2.2.0 and SpanKey Server v2.0.5-1, you can use Sudo Commands with SpanKey. There is an advanced section that you may use in WebADM to apply the full syntax of the sudoers file (global options, global aliases and rules). Then, the rules coming from Spankey policies (global, user, and client policy) will be appended. So the priority order of the rules are:

1. Client policy
2. User policy
3. Global policy
4. Rules from the advanced section

Run the following command `sudo -V` to check if SpanKey sudoers policy plugin has been successfully loaded:

```
$ ssh -i centos7 centos7@192.168.3.120
```

```
Welcome to SpanKey SSH Server.  
This is a demonstration by RCDEVs SA.
```

```
Session recording is enabled.  
Audit logs recording is enabled.  
Session lock idle time is 10 minutes.  
Session's max duration is 30 minutes.
```

```
[centos7@centos7-client ~]$ sudo -V  
Sudo version 1.8.23
```

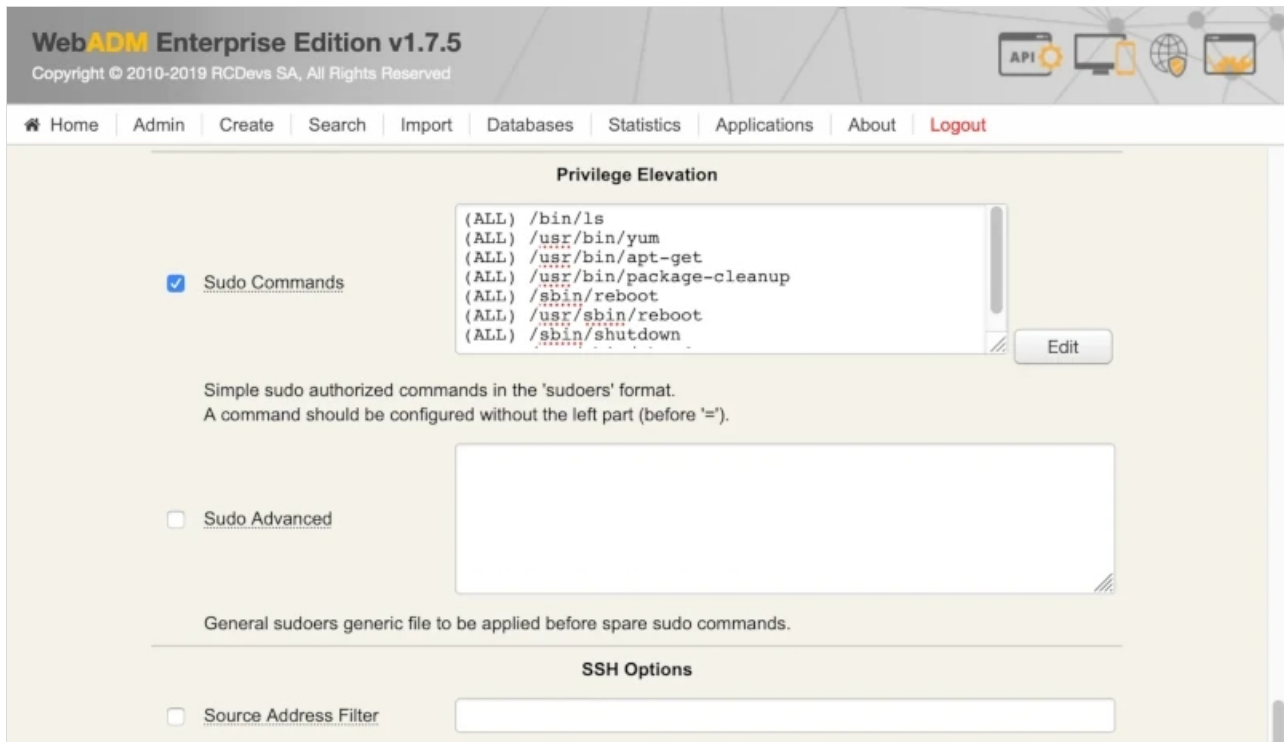
```
SpanKey sudoers policy plugin version 2.3.0  
Copyright 2010-2019 RCDevs SA, All rights reserved.
```

```
Sudoers file grammar version 46  
Sudoers I/O plugin version 2.3.0  
[centos7@centos7-client ~]$ exit  
exit
```

```
>>>> Session's duration was aprox 6 seconds <<<<
```

```
Connection to 192.168.3.120 closed.  
$
```

Authorized sudo commands can be set in [WebADM GUI](#) > [Applications](#) >
[SSH Public Key Server \(SpanKey\) v2.0.5-1](#) > [Configure](#) > [Privilege Elevation](#):



Run the following command `sudo -l` to check the rights and the set of rules:

```
$ ssh -i centos7 centos7@192.168.3.120
```

```
Welcome to SpanKey SSH Server.
This is a demonstration by RCDEVSA.
```

```
Session recording is enabled.
Audit logs recording is enabled.
Session lock idle time is 10 minutes.
Session's max duration is 30 minutes.
```

```
[centos7@centos7-client ~]$ sudo -l
```

```
User centos7 may run the following commands on centos7-client:
```

```
(ALL) /bin/lis
(ALL) /usr/bin/yum
(ALL) /usr/bin/apt-get
(ALL) /usr/bin/package-cleanup
(ALL) /sbin/reboot
(ALL) /usr/sbin/reboot
(ALL) /sbin/shutdown
(ALL) /usr/sbin/shutdown
```

```
[centos7@centos7-client ~]$ exit
exit
```

```
>>>> Session's duration was aprox 4 seconds <<<<
```

```
Connection to 192.168.3.120 closed.
```

```
$
```

4.2.8 Change Password Remotely

In a Spankey installation, Users can now change their LDAP account password with the `passwd` command when the option is enabled in Spankey Server configuration. The setting is named `Allow Password Change` and must be set to `Yes` to benefit that feature from Spankey Clients :

```
 Allow Password Change  Yes  No (default)
Allow self LDAP password change with the usual 'passwd' Linux command.
This feature will be implemented in SpanKey client v2.1.1.
```

```
ubuntu20.04:~$ passwd

Changing password for Spankey_user.
Old password:*****
New password: *****
Retype new password: *****

passwd: Password changed.
```

The new password provided must meet the LDAP password policies. No other password policies are applied.

4.3 OpenSSH

The SpanKey client setup script asks us during the setup if we want to enable SpanKey for OpenSSH and we reply `Yes` to this question.

This action involves changing `/etc/ssh/sshd_config` configuration file. The script edit the following parameters:

```
AuthorizedKeysCommand /opt/spankey/libexec/authorized_keys
AuthorizedKeysCommandUser root
PermitUserEnvironment yes
UsePAM yes
```

Depending on the SSHd version, you might need to use `AuthorizedKeysCommandRunAs` instead of `AuthorizedKeysCommandUser`. Restart SSHd if you change the configuration.

```
service sshd restart
```

4.4 NSS Provider

4.4.1 RHEL & CentOS

The SpanKey client setup script asks us during the setup if we want to enable SpanKey for NSCD and we reply **Yes** to this question.

This action involves changing `/etc/nsswitch.conf` configuration file.

The script edit the following parameters:

```
passwd: files spankey nscd
shadow: file nscd
group: files spankey nscd
```

Restart NSCD to apply the configuration:

```
service nscd restart
```

4.4.2 Debian & Ubuntu

The SpanKey client setup script asks us during the setup if we want to enable SpanKey for NSCD and we reply **Yes** to this question.

This action involves changing `/etc/nsswitch.conf` configuration file.

The script edits the following parameters:

```
passwd: compat spankey
shadow: compat
group: compat spankey
```

4.4.3 getent passwd/group tests

To check if your LDAP users are well returned on your spankey_client, you can use the following command:

```
getent passwd
```

This command should return all LDAP accounts allowed for this host. An LDAP account can be returned only if the account is extended to UNIX. Please refer to step [5.0 Users/Groups Management](#) to know how to activate/extend an LDAP account for SpanKey usage.

```
[root@webadm temp]# getent passwd
```

```
##### The following accounts are local accounts
```

```
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:./:/sbin/nologin
dbus:x:81:81:System message bus:./:/sbin/nologin
polkitd:x:999:998:User for polkitd:./:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
avahi-autoipd:x:170:170:Avahi IPv4LL Stack:/var/lib/avahi-autoipd:/sbin/nologin
postfix:x:89:89:./var/spool/postfix:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/ssh:/sbin/nologin
admin:x:1000:1000:admin:/home/admin:/bin/bash
nscd:x:28:28:NSCD Daemon:./:/sbin/nologin
systemd-bus-proxy:x:998:996:systemd Bus Proxy:./:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:./:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd daemon:/dev/null:/sbin/nologin
webadm:x:997:995:./opt/webadm:/bin/bash
mysql:x:27:27:MariaDB Server:/var/lib/mysql:/sbin/nologin
ntp:x:38:38:./etc/ntp:/sbin/nologin
tcpdump:x:72:72:./:/sbin/nologin
radiusd:x:95:95:radiusd user:/var/lib/radiusd:/sbin/nologin
spankey:x:996:1001:SpanKey Client System User:/opt/spankey:/sbin/nologin
```

```
##### The following accounts are LDAP accounts
```

```
Administrateur:x:1111:111:./home/administrateur:/bin/bash
quick:x:500:100:./home/quick:/bin/bash
yoann:x:1010:100:./home/yoann:/bin/bash
test-user:x:500:100:./home/test-user:/bin/bash
```

Note

« getent passwd » command may take few seconds to yield results.

After the `getent passwd` command, you should have the following result in `/opt/webadm/logs/webadm.log` (server side) if the command has worked successfully:

```
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] New spankeyNSSList SOAP request
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] > Database: user
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] > Client ID: my_client_id
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] Registered spankeyNSSList request
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] Found 4 posix users
[2018-05-22 17:11:25] [192.168.3.178] [SpanKey:AFA5ES1I] Sent success response
```

To check if your LDAP groups are well returned on your spankey client machine, you can use the following command:

```
getent group
```

Note that only activated LDAP groups will be returned with this command. Please refer to step [5.0 Users/Groups Management](#) to know how to activate/extend an LDAP group for SpanKey usage.

```
[root@we2yo tmp]# getent group
```

```
#### The following groups are local groups
```

```
root:x:0:
bin:x:1:
daemon:x:2:
sys:x:3:
adm:x:4:
tty:x:5:
disk:x:6:
lp:x:7:
mem:x:8:
kmem:x:9:
wheel:x:10:
cdrom:x:11:
mail:x:12:postfix
man:x:15:
dialout:x:18:webadm
floppy:x:19:
games:x:20:
tape:x:30:
video:x:39:
ftp:x:50:
lock:x:54:
audio:x:63:
nobody:x:99:
users:x:100:
avahi-autoipd:x:170:
```

```
utmp:x:22:
utempter:x:35:
ssh_keys:x:999:
input:x:998:
systemd-journal:x:190:
systemd-bus-proxy:x:997:
systemd-network:x:996:
dbus:x:81:
polkitd:x:995:
dip:x:40:
tss:x:59:
postdrop:x:90:
postfix:x:89:
chrony:x:994:
sshd:x:74:
mysql:x:993:
webadm:x:1000:
ldap:x:55:
slocate:x:21:
nscd:x:28:
tcpdump:x:72:
cgred:x:992:
docker:x:991:
radiusd:x:990:
toto:x:1003:
apache:x:48:
stapusr:x:156:
stapsys:x:157:
stapdev:x:158:
```

```
#### The following groups are LDAP groups
```

```
Administrateurs de l'entreprise:x:100:Administrateur
Admins du domaine:x:101:Administrateur,yoann,vagrant
ITWeb:x:103:vagrant
Invités du domaine:x:110:
testgroup:x:100:testadfs,vagrant
webadm admins:x:102:yoann
yotesting:x:10000:
```

After the `getent group` command, you should have the following result in `/opt/webadm/logs/webadm.log` (server side) if the command has worked successfully:

```
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] New spankeyNSSList SOAP request
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] > Database: group
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] > Client ID: my_client_id
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] Registered spankeyNSSList request
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] Found 7 NSS groups
[2019-04-15 14:49:33] [192.168.3.178] [SpanKey:GMXOP188] Sent success response
```

4.4.4 Name Service Cache Daemon (NSCD)

In Linux, user and group information is often cached by NSCD (Name Service Cache Daemon). This can result in failed SpanKey login right after the installation or after creating a new user since the user is not available in the cache yet.

To resolve this issue, you can wait for the cache to be refreshed on its own, or flush the NSCD cache on your server.

To clear NSCD cache files, invalidate the passwd and group cache:

```
[root@centos8-client ~]# nscd --invalidate=passwd
[root@centos8-client ~]# nscd --invalidate=group
```

⚠ Important Note

Be aware, there are limitations on cache timeouts with how NSCD works with `nss_ldap` and `nss-pam-ldapd`. This can result in failed SpanKey login. To resolve this issue, activate the `paranoia` and set the `restart-interval` in the following NSCD configuration file `/etc/nscd.conf`.

4.5.2 SpanKey Client

Install the SpanKey Client.

```
[root@centos8 ~]# yum install spankey_client-2.2.3-1.x86_64.rpm
Last metadata expiration check: 0:15:33 ago on Mon 11 Oct 2021 10:24:45 AM CEST.
Dependencies resolved.
```

```
=====
Package                Architecture  Version      Repository      Size
=====
Upgrading:
spankey_client         x86_64       2.2.3-1      @commandline    3.2 M
```

```
Transaction Summary
=====
```

```
Upgrade 1 Package
```

```
Progress: 100%
Total size: 3.2 M
Is this ok [y/N]: y
Downloading Packages:
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
  Running scriptlet: spankey_client-2.2.3-1.x86_64 1/2
  Upgrading      : spankey_client-2.2.3-1.x86_64 1/2
  Running scriptlet: spankey_client-2.2.3-1.x86_64 1/2

A pre-upgrade instance of the daemon is still running. Do not forget to restart it if you wish all changes to
apply...

  Running scriptlet: spankey_client-2.2.0-1.x86_64 2/2
  Cleanup          : spankey_client-2.2.0-1.x86_64 2/2
warning: file /opt/spankey/lib/libxml2.so.2.9.9: remove failed: No such file or directory
warning: file /opt/spankey/lib/libspankey.so.1.0.20: remove failed: No such file or directory
warning: file /opt/spankey/lib/libnss_spankey.so.2.3.0: remove failed: No such file or directory

  Running scriptlet: spankey_client-2.2.0-1.x86_64 2/2
  Verifying        : spankey_client-2.2.3-1.x86_64 1/2
  Verifying        : spankey_client-2.2.0-1.x86_64 2/2
Installed products updated.

Upgraded:
  spankey_client-2.2.3-1.x86_64

Complete!

[root@centos8 ~]# reboot
```

Run the following command to launch setup wizard: `/opt/spankey/bin/setup`. Enable the SpanKey Client for OpenSSH server and the NSS plugin.

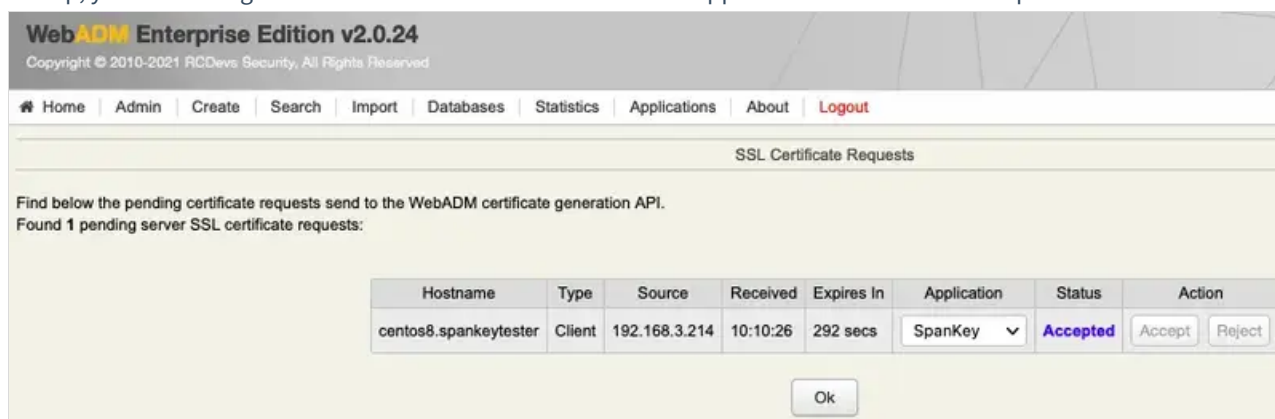
```
[root@centos8 ~]# /opt/spankey/bin/setup
Setup has already been run for this installation. Overwrite (y/n)?: y
Overwriting...
Enter one of your running WebADM node IP or hostname []: 192.168.4.149
Do you want to enable SpanKey Client for OpenSSH server (y/n)? [N]: y
Do you want to enable SpanKey Client NSS plugin (y/n)? [Y]: y
Do you want to register SpanKey Client logrotate script (y/n)? [Y]: y
Do you want SpanKey Client to be automatically started at boot (y/n)? [Y]: y
```

```
Primary OpenOTP service URL is: 'https://192.168.4.149:8443/spankey/'
Secondary OpenOTP service URL is: 'NONE'
Enable SpanKey Client for OpenSSH server: 'YES'
Enable SpanKey Client NSS plugin: 'YES'
Register SpanKey Client logrotate script: 'YES'
SpanKey Client must be automatically started at boot: 'YES'
```

```
Do you confirm (y/n)?: y
```

```
Applying SpanKey Client settings from default configuration files... Ok
Retrieving WebADM CA certificate from host '192.168.4.149'... Ok
The setup needs now to request a signed 'SpanKey' client certificate.
This request should show up as pending in your WebADM interface and an administrator must accept it.
Waiting for approbation...
```

At this step, you have to log in on the WebADM Administration GUI to approve the SSL certificate request.



The screenshot shows the WebADM Administration GUI interface. At the top, it says "WebADM Enterprise Edition v2.0.24" with a copyright notice. Below that is a navigation menu with items like Home, Admin, Create, Search, Import, Databases, Statistics, Applications, About, and Logout. The main content area is titled "SSL Certificate Requests" and contains a message: "Find below the pending certificate requests send to the WebADM certificate generation API. Found 1 pending server SSL certificate requests:". Below this message is a table with the following data:

Hostname	Type	Source	Received	Expires In	Application	Status	Action
centos8.spankeytester	Client	192.168.3.214	10:10:26	292 secs	SpanKey	Accepted	Accept Reject

Below the table is an "Ok" button.

```
Waiting for approbation... Ok
Updating entry 'client_id' in file '/opt/spankey/conf/spankey.conf'... Ok
Updating file '/etc/ssh/sshd_config'... Ok
Updating file '/etc/nsswitch.conf'... Ok
Updating file '/etc/pam.d/system-auth'... Ok
Updating file '/etc/pam.d/password-auth'... Ok
Registering SpanKey Client service...
Registering SpanKey Client service... Ok
Adding logrotate script... Ok
```

SpanKey Client has successfully been setup.

IMPORTANT: Do not forget to perform the following actions before you exit this session:

- Start SpanKey (/opt/spankey/bin/spankey start)
- Restart 'sshd'
- Restart 'nscd'

```
[root@centos8 ~]# reboot
```

Verify that the SpanKey Client is running.

```
[root@centos8 ~]# systemctl status spankey
● spankey.service - SpanKey Client
   Loaded: loaded (/usr/lib/systemd/system/spankey.service; enabled; vendor preset: disabled)
   Active: active (running) since Mon 2021-10-11 10:52:31 CEST; 3min 2s ago
   Process: 1188 ExecStart=/opt/spankey/bin/spankey start (code=exited, status=0/SUCCESS)
  Main PID: 1274 (rcdevs-spankeyd)
     Tasks: 15 (limit: 11284)
    Memory: 14.0M
   CGroup: /system.slice/spankey.service
           └─1274 /opt/spankey/libexec/rcdevs-spankeyd
             └─1275 spankeyd-worker

Oct 11 10:52:26 centos8.spankeytester systemd[1]: Starting SpanKey Client...
Oct 11 10:52:29 centos8.spankeytester spankey[1188]: Starting SpanKey Client...
Oct 11 10:52:31 centos8.spankeytester spankey[1188]: Starting daemon 'rcdevs-spankeyd'... Ok
Oct 11 10:52:31 centos8.spankeytester systemd[1]: Started SpanKey Client.
[root@centos8 ~]# /opt/spankey/bin/spankey status
SpanKey Client is running with PID 1275 1274.
```

Verify that the nsswitch configuration file has been modified by adding spankey.

```
[root@centos8 ~]# cat /etc/nsswitch.conf
# Generated by authselect on Thu Apr  8 15:07:44 2021
# Do not modify this file manually.
```

```
# If you want to make changes to nsswitch.conf please modify
# /etc/authselect/user-nsswitch.conf and run 'authselect apply-changes'.
#
# Note that your changes may not be applied as they may be
# overwritten by selected profile. Maps set in the authselect
# profile takes always precedence and overwrites the same maps
# set in the user file. Only maps that are not set by the profile
# are applied from the user file.
#
# For example, if the profile sets:
# passwd: sss files
# and /etc/authselect/user-nsswitch.conf contains:
# passwd: files
# hosts: files dns
# the resulting generated nsswitch.conf will be:
# passwd: sss files # from profile
# hosts: files dns # from user file
```

```
passwd: spankey sss files systemd
group: spankey sss files systemd
netgroup: sss files
automount: sss files
services: sss files
```

```
# Included from /etc/authselect/user-nsswitch.conf
```

```
#
# /etc/nsswitch.conf
#
# An example Name Service Switch config file. This file should be
# sorted with the most-used services at the beginning.
#
# The entry '[NOTFOUND=return]' means that the search for an
# entry should stop if the search in the previous entry turned
# up nothing. Note that if the search failed due to some other reason
# (like no NIS server responding) then the search continues with the
# next entry.
#
# Valid entries include:
#
# nisplus Use NIS+ (NIS version 3)
# nis Use NIS (NIS version 2), also called YP
# dns Use DNS (Domain Name Service)
# files Use the local files in /etc
# db Use the pre-processed /var/db files
# compat Use /etc files plus *_compat pseudo-databases
# hesiod Use Hesiod (DNS) for user lookups
# sss Use sssd (System Security Services Daemon)
# [NOTFOUND=return] Stop searching if not found so far
```

```
#
# 'sssd' performs its own 'files'-based caching, so it should
# generally come before 'files'.

# To use 'db', install the nss_db package, and put the 'db' in front
# of 'files' for entries you want to be looked up first in the
# databases, like this:
#
# passwd:  db files
# shadow:  db files
# group:   db files

shadow:   files sss

hosts:    files dns myhostname

bootparams: files

ethers:   files
netmasks: files
networks: files
protocols: files
rpc:      files

publickey: files

aliases:  files
```

Finally, do a test SpanKey login.


```
[spankey_tester@spankeytester ~]$ ssh -i templates/LO_u1/keys/CentOS8_em2u2vmk  
CentOS8_em2u2vmk@192.168.4.136
```

```
Session recording is enabled.  
Audit logs recording is enabled.  
Session lock is disabled.  
Session's max duration is unlimited.
```

```
Mon Oct 11 12:04:45 CEST 2021  
CentOS Linux release 8.4.2105  
12:04:45 up 3 min, 3 users, load average: 0.54, 0.94, 0.45  
OpenSSL 1.1.1g FIPS 21 Apr 2020  
OpenSSH_8.0p1, OpenSSL 1.1.1g FIPS 21 Apr 2020  
Sudo version 1.9.5p2
```

```
SpanKey sudoers policy plugin version 2.3.3  
Copyright 2010-2021 RCDevs SA, All rights reserved.
```

```
Sudoers file grammar version 48  
Sudoers I/O plugin version 2.3.3  
Sudoers audit plugin version 2.3.3  
User centos8_em2u2vmk may run the following commands on centos8:  
(ALL) /bin/lis  
-rw-----. 1 root root 2.2K Oct 11 11:48 /root/.bash_history  
bash-4.4$ exit  
exit
```

```
>>>> Session's duration was aprox 2 seconds <<<<  
Connection to 192.168.4.136 closed.
```

5. Users/Groups Management

5.1 Users Management (Activation)

To enable your LDAP users to be propagated as Linux accounts, and to work with the SpanKey, they must be extended with “Unix Account” object class. This is done in the WebADM graphical interface (can be done as a batch jobs as well) as follows:

1. Choose LDAP account that you like to extend.
2. Make sure the account is a WebADM account. If not, you must first extend the account with WebADM object class.
3. Choose WebADM Account in Add Selector. Click **Add**.
4. Choose UNIX Account in the Add Extension selector. Click **Add**.

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Object **cn=test-user,o=Root**

LDAP Actions

- Delete this object
- Copy this object
- Move this object
- Export to LDIF
- Change password
- Create certificate
- Unlock WebApp access
- Advanced edit mode

Object Details

Object class(es): [webadmAccount](#), [person](#)

Account is unique: **Yes** (in o=root)

WebADM settings: **None** [CONFIGURE]

WebADM data: **None** [EDIT]

User activated: **Yes** Deactivate

Logs and inventory: [WebApp](#), [WebSrv](#), [Inventory](#), [Record](#)

Application Actions

- [Secure Password Reset](#) (1 actions)
- [User Self-Registration](#) (1 actions)
- [MFA Authentication Server](#) (13 actions)
- [SSH Public Key Server](#) (3 actions)

Object Name: test-user Rename

Add Attribute (11): Description / Note Add

Add Extension (1): UNIX Account Add





Login Name: test-user [add values]

Last Name: test-user [add values]

Apply Changes | Re-Encrypt | Delete Selected

5. Enter the following information and click **Proceed**. Click on **Extend Object**.

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API    

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Add Extension **UNIX Account** to cn=test-user,o=Root

In order to add the objectclass **UNIX Account** you must specify at least **3** new mandatory attribute(s).

Mandatory attributes

UID Number

GID Number

Home Directory





Optional attributes

Login Shell

General Information


Description / Note

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API    

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Add Extension **UNIX Account** to cn=test-user,o=Root

The object will be extended with the objectclass **UNIX Account**. 
The following 4 new attribute(s) will be added during extension.

Attribute	Value
UID Number	<u>500</u>
GID Number	<u>100</u>
Home Directory	<u>/home/test-user</u>
Login Shell	<u>/bin/bash</u>

Now, the LDAP Account is extended for UNIX Authentication.

Within the extended LDAP object, click on SSH Public Key Server (Actions box) to generate an SSH Private Key for the user:

1. In Application Action box, click on **SSH Public Key Server (3 actions)**, and select the first item **Register / Unregister SSH Public Key**.



Object cn=test-user,o=Root ⓘ

LDAP Actions

- Delete this object
- Copy this object
- Move this object
- Export to LDIF
- Change password
- Create certificate
- Unlock WebApp access
- Advanced edit mode

Object Details

Object class(es): [webadmAccount](#), [person](#), [posixAc...](#)

Account is unique: **Yes** (in o=root)

WebADM settings: **None** [CONFIGURE]

WebADM data: **None** [EDIT]

User activated: **Yes Deactivate** ⓘ

Logs and inventory: [WebApp](#), [WebSrv](#), [Inventory](#), [Record](#)

Application Actions

- [Secure Password Reset](#) (1 actions)
- [User Self-Registration](#) (1 actions)
- [MFA Authentication Server](#) (13 actions)
- [SSH Public Key Server](#) (3 actions)

Register / Unregister SSH Public Key
Set or Change Key Expiration
Test Authorized Keys

Object Name: Rename

Add Attribute (12): Add

Login Name [\[add values\]](#)

Last Name [\[add values\]](#)

UID Number

GID Number

Home Directory

Login Shell [\[delete attribute\]](#)

Apply Changes | Re-Encrypt | Delete Selected



SpanKey User Actions for `cn=test-user,o=Root` (3)

Find below the user actions supported by **SSH Public Key Server** (SpanKey).



Register / Unregister SSH Public Key

You can use this action to generate an SSH key pair or register an inventoried PIV device.



Set or Change Key Expiration

You can use this action to update the expiration date for a registered SSH public key.



Test Authorized Keys

You can use this action to test public key retrieval with SpanKey.

Cancel

2. Configure your preferred Key Format and Key Length.
3. Configure key expiration (optional).
4. Click on **Register**.



Register / Unregister SSH Public Key for cn=test-user,o=Root

You can use this form to create a new SSH private key. Please click 'Register' to start generating your key pair.

Warning: Only RSA private keys can be exported as PPK file for use with PuTTY.

Username:



- Generate a new SSH key private key
- Register a hardware key (Inventoried)
- Import an existing public key (RSA only)

Key Format:

Key Length:

Expiration:

Max Usage:

Your Public and Private Key are now generated by SpanKey server. Choose the format of the Private Key (OpenSSH or Putty) and click on Download Private Key button.

Register / Unregister SSH Public Key for `cn=test-user,o=Root`

The following private key can be used with your SSH client(s). Note that it will not be available anymore after quitting this page. Please copy the private key block below or click the 'Download' button to save the private key file.

Private Key:

```
-----BEGIN PRIVATE KEY-----
MIIJQwIBADANBgkqhkiG9w0BAQEFAASCCS0wggkqAgEAAoICAQCkNsIq1GxzOxMu
LJiqZfJnvr3i3VDHR+leMdPa5lTPSbUvIOax8/d+HkyrokDH3IBxH3C37tQNdTwM
Yhw/kpxZ6L/gtWkkTk0ligDPURk8wbEQ5JGA0sFnbvxSk4wwgHA7JAiIQZ4e4th
gRIzPu0OzbFsbbycq8R9dEYvEcd3Qk1GP6dooihrI19ps7VaXm7HT7twUZHS9a
I2itoB4S8ulex0hpvUF2EgXU8q49K3s9MmOe7+1KUFVLZxAO2P78RGrQVp/nOLqr
OScdc9rBgOKKTDYkwhrgI1hl1WqMIdbEUaTtfeouE+uNeY6zcjDRpURxQefVCqi8
823wJ83qG6DSUdnITSRDjdIN1S1Fb9wKrJMm367b0pODqI1gt9iXn9i12Vyq0xds
KRppUeDiVTgXBafqmGQcM0zvBDchL9jF3tvJC/ahYzhaoJai8QDHSUngQnpGhzKq
FyjOGThhNqDGRsc4lcH/PmpbnNPlufuJ57eRPDkLO96FyUlyRVhsVwrSpjALKV/a
3Nl3BcK9On5yOf4NVZdiznlU17X93jIQHw5wGLUuBqL4r7CFyBXKU8c9qndrMur0
wRV8PJGt6JocndDFv2M2CKXIEKncvj9EYEC4TSoHe0atB/qNn8ArCLETuMyBfB85
pBesrYyc79F95GwBkHctPyKQTID6wIDAQABAoICAEExisF5mv5x1t7emoBPiesp
AWgS2NDUzS0/0/kvuy3VuKQfV/R1rJU7aHm7dzqrK2QmLOJDwTdm0S0k60Pea0PX
cS/qZzho2sFu9Qnte+89EpEm1TiwqZks4xmtMgVDOarO/uSar/N/CTktKF4nJPq7
OornHL/BMxzuzwFptCeU4hPGXdsjrSWvLxIU0z+/K/UNScmj+5kEDQn2tyklH8Vsz
jfsxzqQq2os7OEeqtcP9XPFfMqFsQKuRcl45RiR019YrjdXerkaEP32+oQr6I3kR
U7KvnztPVKA7SKK89IK7jgJxBdJ0ftAv5xX61PfbjZ8YykoGTahXyVD3YAq/j8m5
33GUwrqkN5NNbq2B/F+mpeEcJ7AhpQ83yZjrsTOgGxCsS7dhC+qPNblgIlX+JnQu
hly438UH3LdDm+thZAini/UvW3uhjcLq27Zr+bHYifaigViGzqnfkAdmzrk1KOU
Mq9VnRQB1FTccQ8Gu3V9DlJimp6fJ23b33sq7u4jJD102oQPxkpTMYTSlnzXT0EL
8NY79W2xn76gX+mr7Yphrv49Zrnz/tIfMDP914LgbRra0rz3wZxxkVJJdpdcVl/tV
UD+W01S3wLOjBLK3jvM4hYXR1Ppfa6jl8AbLL+lv8XQJERC2fQjAmlvFSJDgN/z+
5q3C5XSpAyVSxlmKpL6hAoIBAQDW8vreJZ3zzfaAcVHSuAi2Ow+pYmY1UPR0UhJ1
-----END PRIVATE KEY-----
```

Export Format:

 PuTTY & OpenSSH (ZIP)
 PuTTY (PPK)

Export Password:

 OpenSSH (PEM)[Download Private Key](#)[Ok](#)**Note**

Register or Unregister of SSH Key can also be done through WebADM User Self-Services UI.

Now you can use the generated private key with your LDAP account, through SSH client or Putty and on any server where SpanKey Client is installed on. Without needing to deploy the user's public keys in authorized_keys files. To test, connect with your private key on a server managed by SpanKey client, like below:

```
$ chmod 400 test-user.pem
$ ssh -i test-user.pem test-user@192.168.3.104
```

```
Welcome to SpanKey SSH Server.
This is a demonstration by RCDEVS SA.
```

```
Session recording is enabled.
Audit logs recording is enabled.
Session lock idle time is 5 minutes.
Session's max duration is 30 minutes.
```

```
test-user@ubuntu18-client:~$ exit
exit
```

```
>>>> Session's duration was aprox 8 seconds <<<<
```

```
Connection to 192.168.3.104 closed.
$
```

5.2 Groups Management (Activation)

To enable your LDAP groups to be propagated as Linux groups, and to work with the SpanKey, it must be extended with “Unix Group” object class. This is done in the WebADM graphical interface (can be done as a batch jobs as well) as follows:

1. Choose LDAP group that you like to extend.
2. Choose UNIX Group in the Add Extension selector. Click **Add**.
3. Enter the required information and click **Proceed**. Click on **Extend Object**.

Now, the LDAP group is extended for UNIX usage.

5.3 Active Directory Permissions

If you are working with Active Directory and during the UNIX extension you have a failure, it's probably due to rights permissions. That means your super_admin doesn't have enough rights to add the UNIX class to the user and/or to write values on UNIX attributes. To fix it, login on the Active Directory server and run the following command through Powershell:

```
dsacls "CN=Users,DC=test,DC=local" /I:T /G 'TEST\webadm_admins:WPRP;objectClass'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;gidnumber'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;uidnumber'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;unixhomedirectory'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;loginshell'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;description'
dsacls "cn=users,dc=test,dc=local" /I:T /G 'TEST\webadmadmin:WPRP;gecos'
```


Note that `cn=users,dc=test,dc=local` is the user search base defined in WebADM Local Domain, `TEST` is my NetBIOS domain name and `webadmadmin` is my `super_admin` account.

For writing on AD administrators, rights previously settled are not enough because AdminSDHolder overwrites these rights every hour. So we need also to apply these rules on AdminSDHolder object and wait one hour that it's applied on all admin users and groups of the domain:

```
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G
'TEST\webadm_admins:WPRP;objectClass'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G
'TEST\webadmadmin:WPRP;gidnumber'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G
'TEST\webadmadmin:WPRP;uidnumber'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G
'TEST\webadmadmin:WPRP;unixhomedirectory'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G 'TEST\webadmadmin:WPRP;loginshell'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G
'TEST\webadmadmin:WPRP;description'
dscls "CN=AdminSDHolder,CN=System,DC=test,DC=local" /I:T /G 'TEST\webadmadmin:WPRP;gecos'
```

6. Video Tutorial



Play Video on Youtube

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