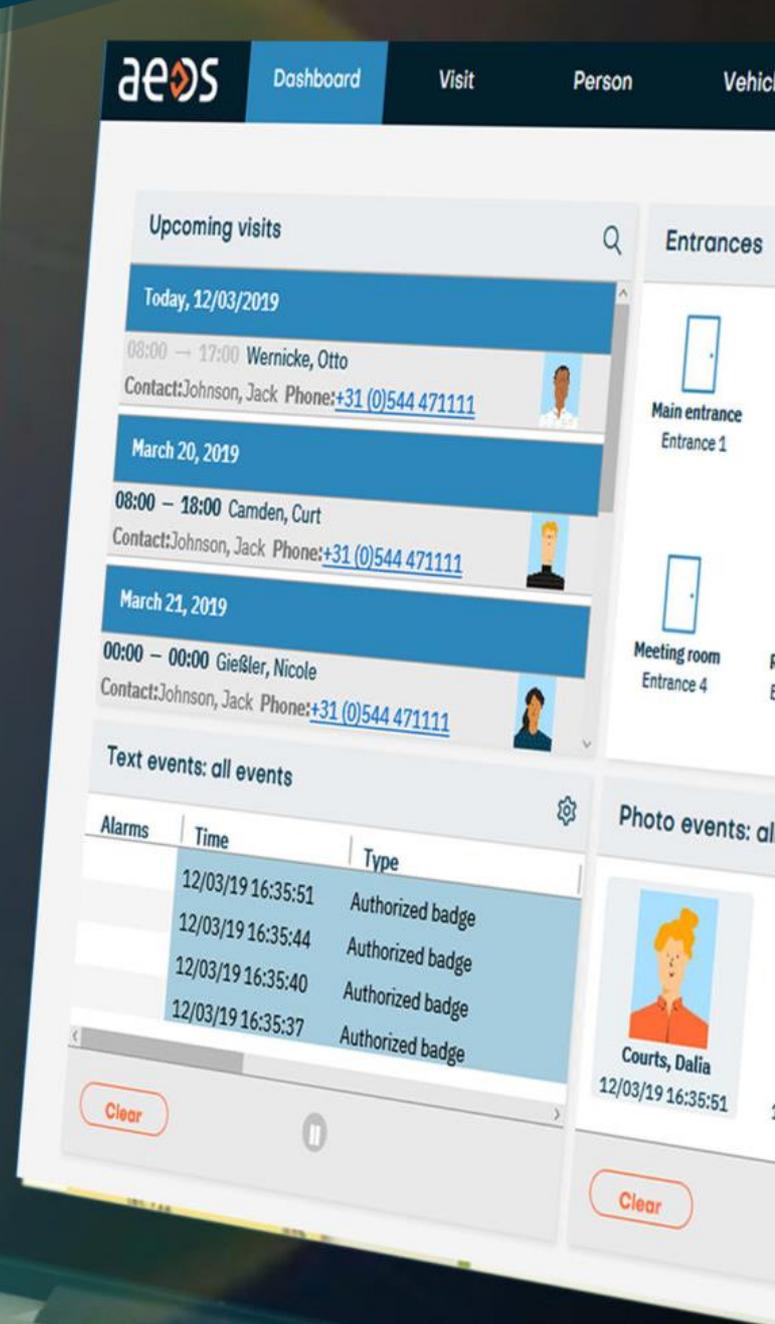


Setting up a SafeKit failover cluster with AEOS and SQL



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1. About this document

This manual presents the step-by-step installation for configuring a SafeKit (Evidian) failover cluster with AEOS and SQL Server.

The SafeKit failover cluster functionality ensures high availability of one or more services as well as synchronous replication.

The software solution allows:

- Synchronous real-time file replication
- Automatic restart of an application upon failure
- Automatic reintegration of a server after failure

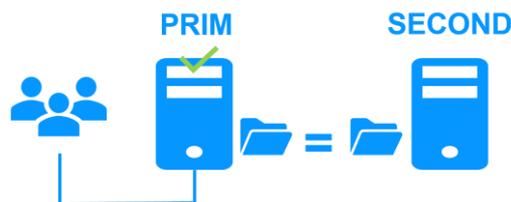
Version used in the documentation:

- AEOS 2021.2.4
- Windows Server 2016 Standard
- SQL Server 2016 Standard
- SafeKit (Evidian) version 8.2

Block diagram of the SafeKit mirror cluster:

- Step 1. Real-time replication:

Server A (PRIM) runs the AEOS and SQL application. Users are connected to a virtual IP address. Only modifications made by the application within files are continuously replicated across the network.



Replication is synchronous without data loss in the event of a failure unlike asynchronous replication.

You just need to configure the names of the directories to be replicated in SafeKit. There are no prerequisites on disk organization. Directories can be located on the system disk.

- Step 2. Automatic failover:

When server A fails, SafeKit switches the virtual IP address to server B and automatically restarts the AEOS and SQL application. The application finds the updated replicated files on server B.

The application continues its execution on server B by locally modifying its files which are no longer replicated to server A.



The failover time is equal to the failure detection time (30 seconds by default) and the application restart time.

- Step 3. Reintegration after failure:

When server A recovers from a failure (server A reintegration), SafeKit automatically resynchronizes the files of this server from the other server.

Only files modified on Server B while Server A is inactive are resynchronized.



The reintegration of server A is done without stopping the execution of the AEOS and SQL application on server B.

- Step 4. Return to normal:

After reintegration, the files are again in mirror mode as in step A. The system is in high availability with the AEOS and SQL application running on server B and with real-time replication of changes to server A.



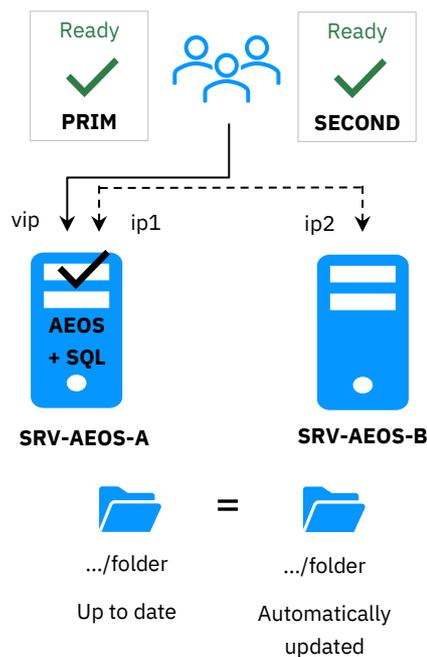
If the administrator wants his application to run on server A as a priority, he can execute a failover command, either manually at a convenient time or automatically by configuration.

Information source: [Nedap AEOS: the simplest high availability cluster between two redundant servers - Evidian](#)

2. Prerequisites

- The configuration must be at least the following:
 - Install AEOS + SQL Server on both servers (virtual machines or physical servers)
 - The installation directories must be identical between the two servers
 - Configure startup type of Windows AEOS and SQL Server to “Manual”
 - Provide disk storage of approximately 4GB for SafeKit in the system disk
 - AEOS licenses must have the “virtual IP address” cluster (mentioned in the documentation)
 - The license for SafeKit (without a license the software shuts down every 3 days)
- Define the network mapping as below (example):

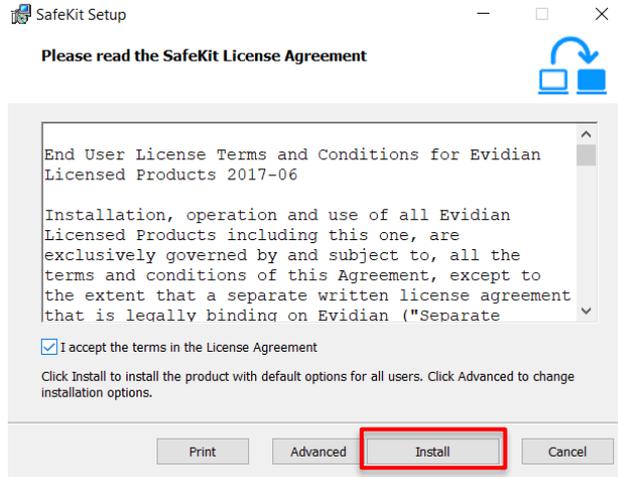
Network name (hostname)	IP Address	Feature
SRV-AEOS-A	192.168.1.101 (ip1)	AEOS + SQL
SRV-AEOS-B	192.168.1.102 (ip2)	AEOS + SQL
SRV-AEOS-A	192.168.1.101	SafeKit administration console
cls.nedap.fr	192.168.1.250 (vip)	Virtual IP Address (alias)



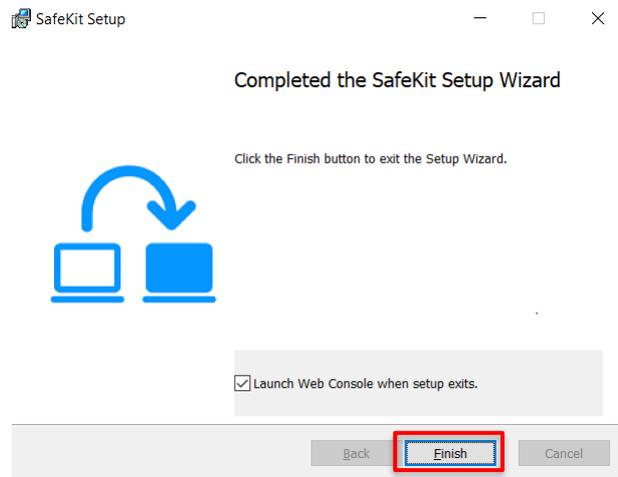
3. SafeKit

3.1. Servers A & B: Installation

- Start installation of the [safekit_windows_x86_x_x_x_x.msi](#) package
- Accept the terms in the License Agreement and click on the "Install" button



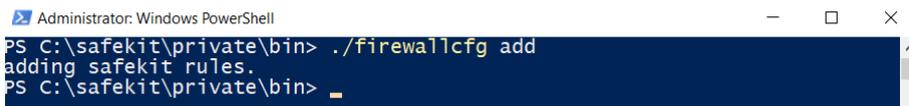
- Click on "Finish"



- Launch a powershell as administrator and goto c:\safekit\private\bin\ folder



- Run the following command to apply the firewall security rules: ./firewallcfg add



Setting up a SafeKit failover cluster with AEOS & SQL

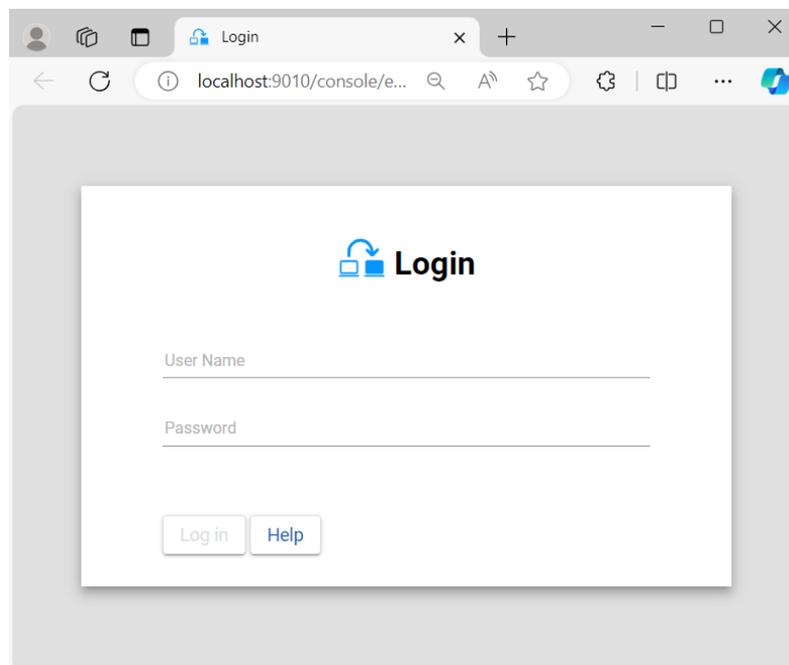
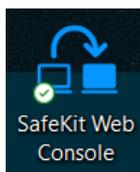
- Define the password for the "admin" account with: `./webservercfg -passwd your_password`

```
Administrator: Windows PowerShell
PS C:\safekit\private\bin> ./webservercfg -passwd your_password
Updating password for user admin
Adding password for user rcmdadmin
PS C:\safekit\private\bin>
```

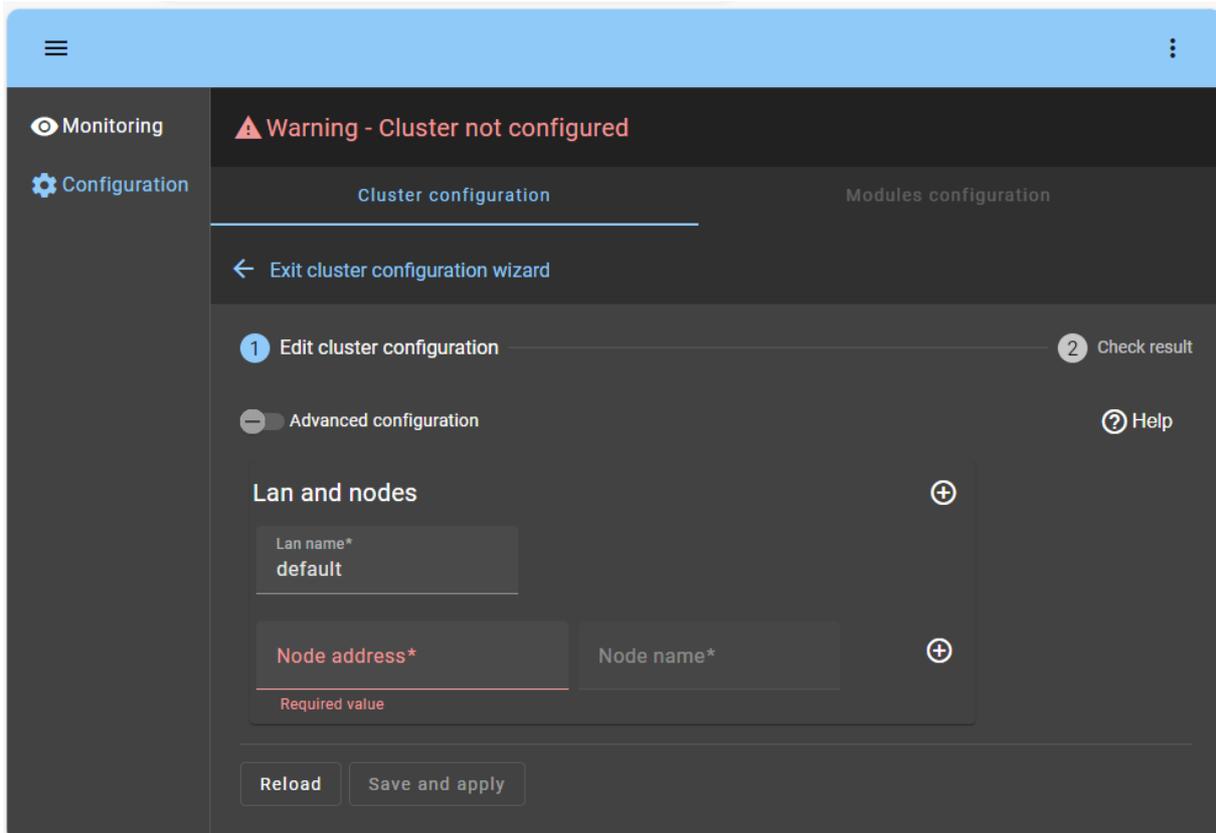
- Copy the module "[nedap.safe \(get it here\)](#)" (AEOS and SQL basic configuration) to the `C:\safekit\Application_Modules\generic\` folder.
- Copy the license file "license.txt" to the `c:\safekit\conf\` folder.

Three licensing modes are available:

- Without a license key, the software will shut down every 3 days
 - With a [one-month temporary license key](#)
 - With a definitive license linked to the machine (hostname and OS)
- Launch the "SafeKit Web Console" from the desktop shortcut. And login with admin and the password previously set.



- After authentication, the administration console appears

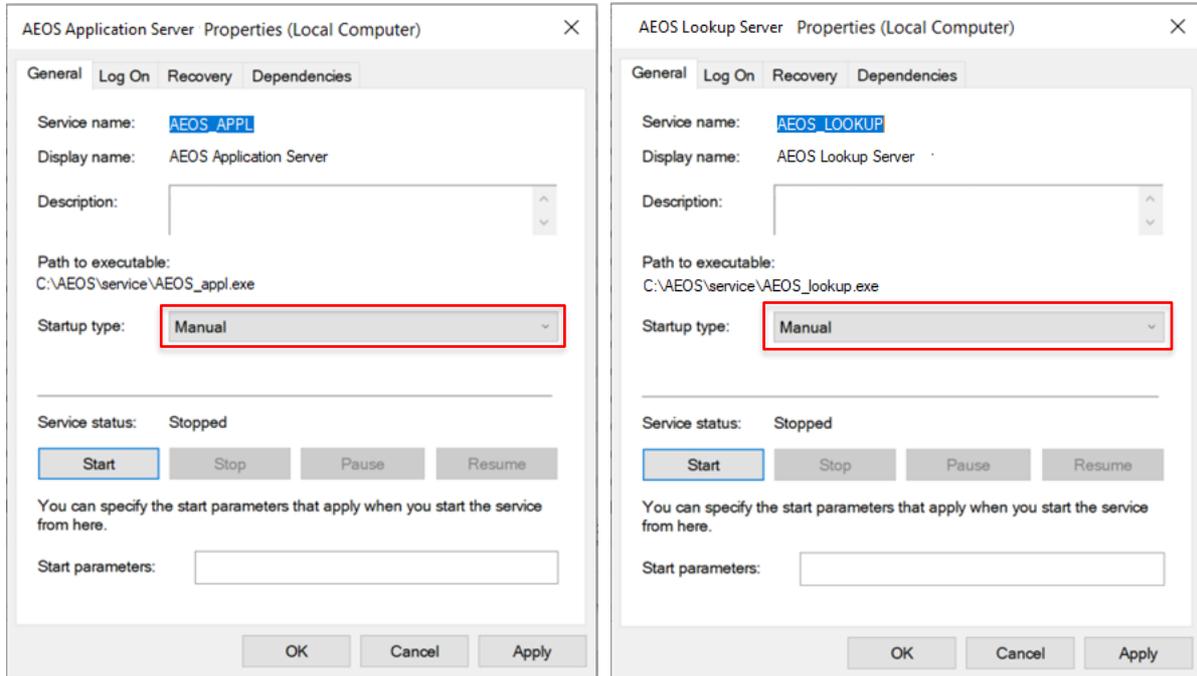


Important :

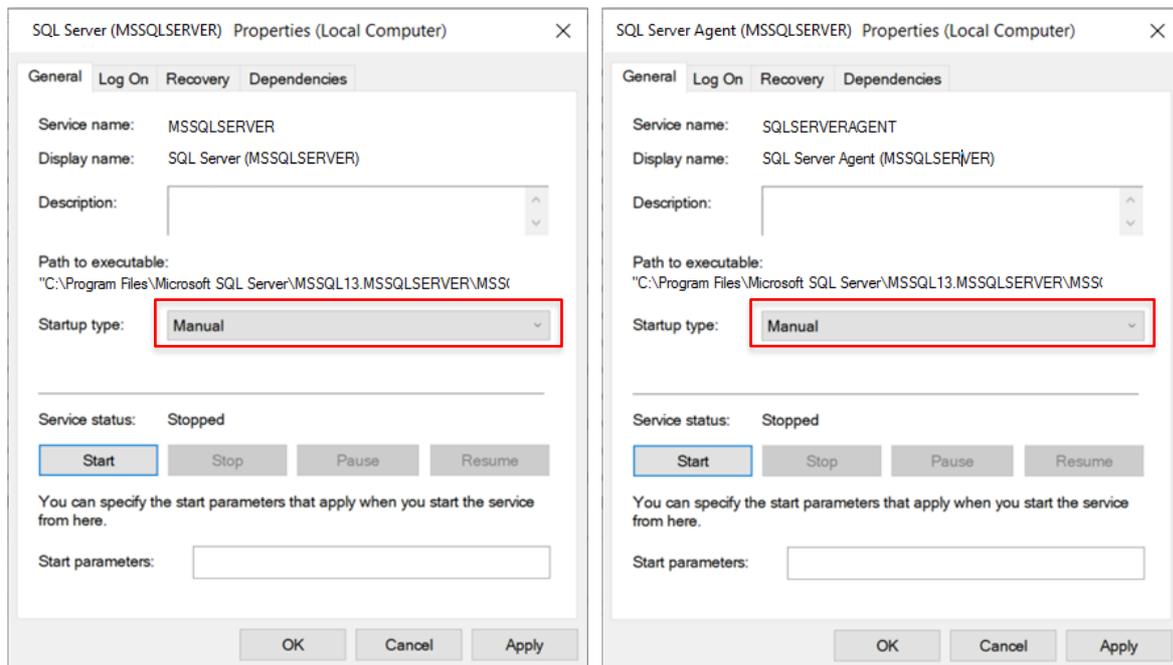
- Reproduce the installation operation on server B and set the same password.
- SafeKit configuration is only made from a single browser (for example: server A).

3.2. Server A & B: Changing startup type of Windows services

- Launch the Windows Services Manager and modify the “AEOS Application Server”, “AEOS Lookup Server” and “SQL Server (MSSQLSERVER)” services.
- Switch startup type of AEOS services to **manual**:



- Switch startup type of SQL services to **manual**:

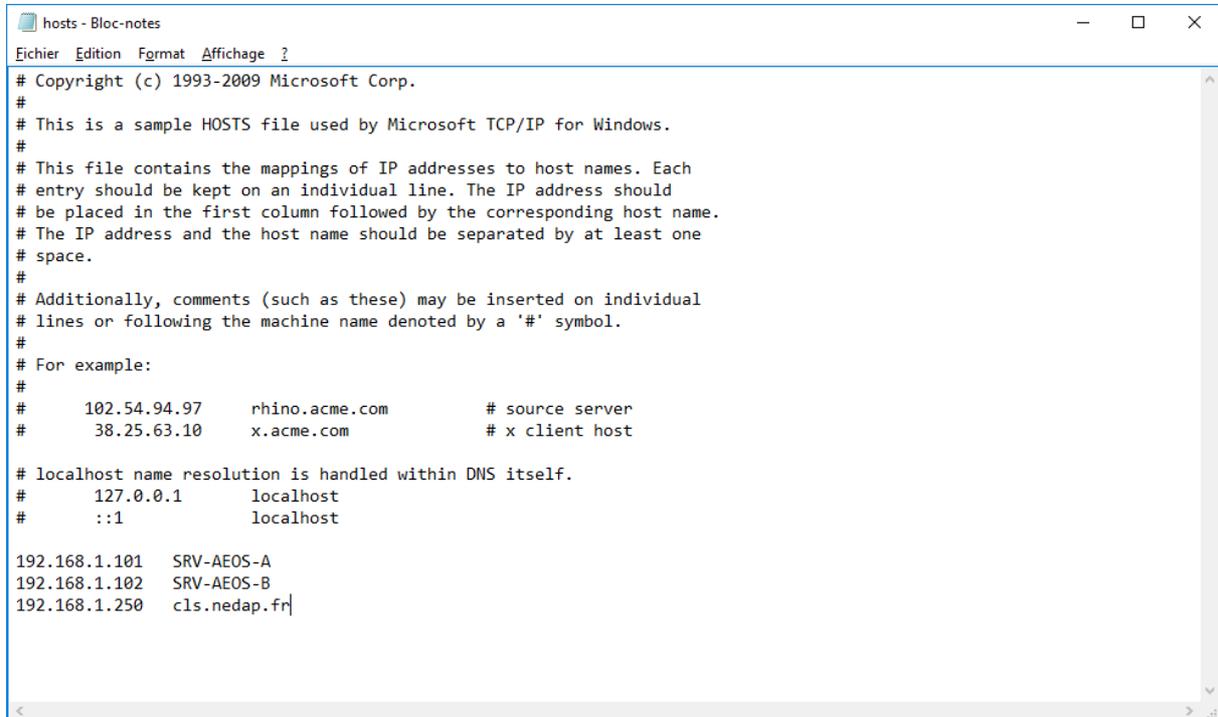


Important :

- Perform this step on both servers A & B

3.1. Server A & B: Configuring the hosts file

- In the absence of DNS, you must configure the local “DNS” of each machine (servers and client workstations)
- Go to the C:\Windows\System32\drivers\etc\ folder, open the hosts file and add the servers and virtual IP



```
hosts - Bloc-notes
Eichier  Edition  Format  Affichage  ?
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#       102.54.94.97    rhino.acme.com        # source server
#       38.25.63.10   x.acme.com           # x client host

# localhost name resolution is handled within DNS itself.
#       127.0.0.1     localhost
#       ::1          localhost

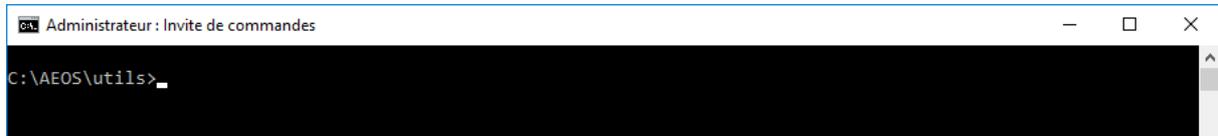
192.168.1.101  SRV-AEOS-A
192.168.1.102  SRV-AEOS-B
192.168.1.250  cls.nedap.fr
```

Important :

- Perform this step on both servers A & B

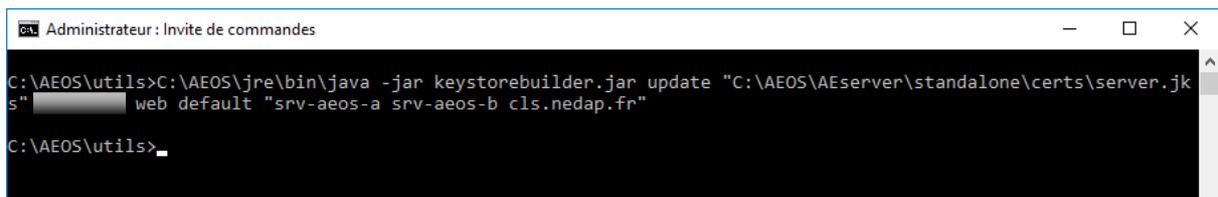
3.2. Serveur A & B: Editing AEOS certificates

- When using Nedap self-signed certificates, it is imperative to include the cluster in the DNS.
- Launch a command prompt as administrator from the c:\aeos\utils\ folder



```
Administrateur : Invite de commandes
C:\AEOS\utils>
```

- Run the following query: `C:\AEOS\jre\bin\java -jar keystorebuilder.jar update "C:\AEOS\AEserver\standalone\certs\server.jks" ***** web default "srv-aeos -a srv-aeos-b cls.nedap.fr"`



```
Administrateur : Invite de commandes
C:\AEOS\utils>C:\AEOS\jre\bin\java -jar keystorebuilder.jar update "C:\AEOS\AEserver\standalone\certs\server.jks" ***** web default "srv-aeos -a srv-aeos-b cls.nedap.fr"
C:\AEOS\utils>
```

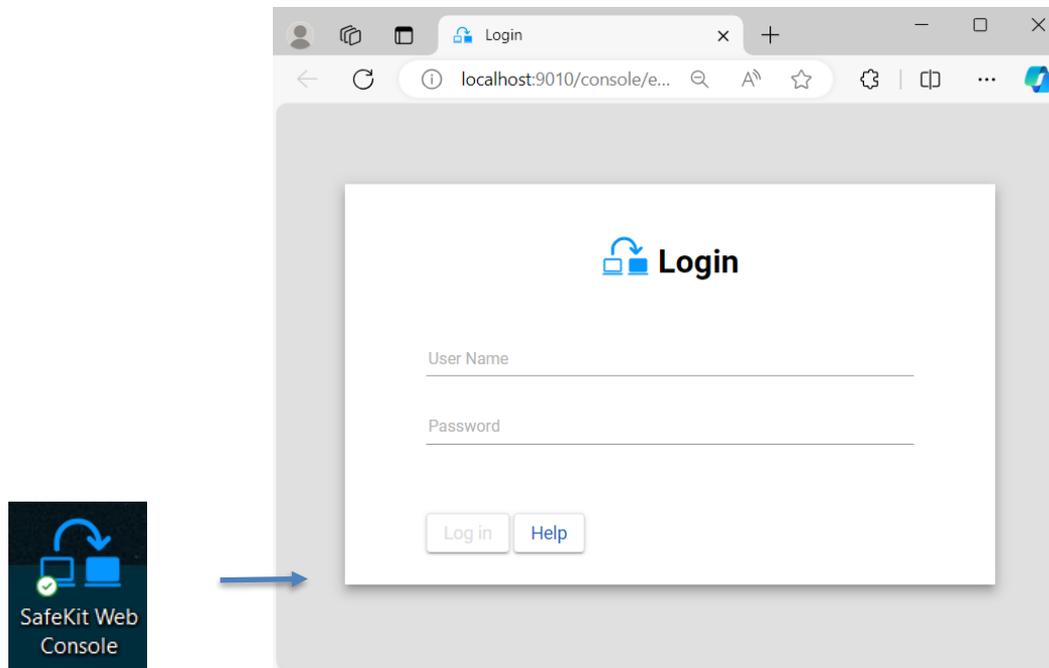
Note: If you are using your own authority please do not follow this step. On the other hand, the update must be done via a CSR.

Important:

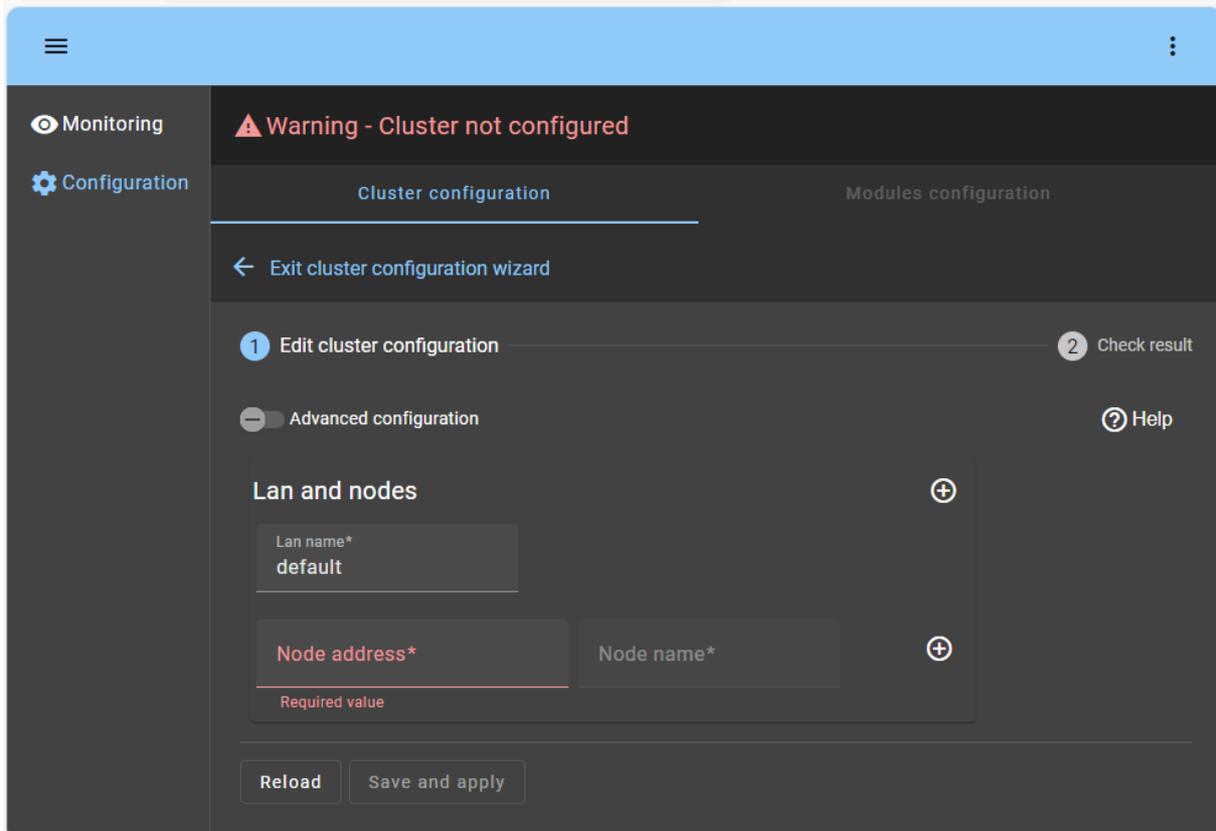
- Perform this step on both servers A & B

3.3. Server A: Configuration of the failover cluster

- Launch the "SafeKit Web Console" from the desktop shortcut. And login with admin and the password set during installation.



- After authentication, the administration console appears



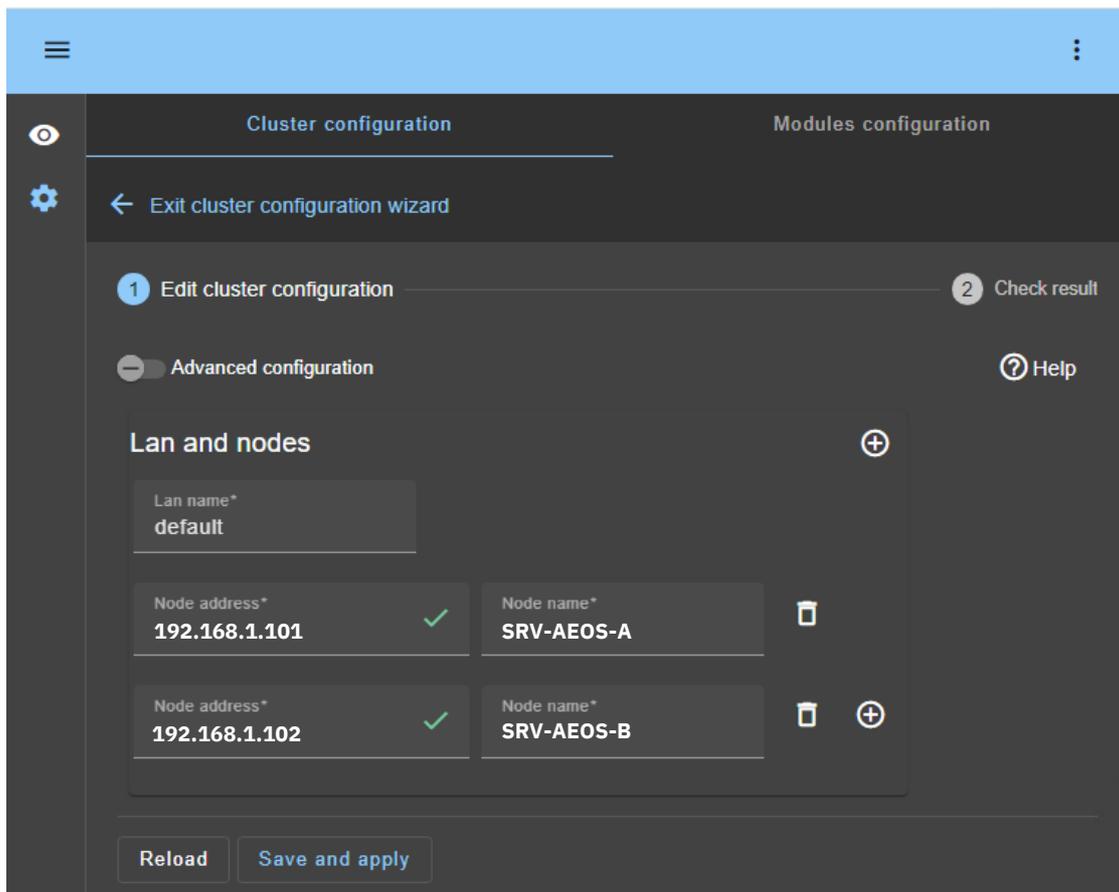
3.3.1. Node addresses

- Enter IP address of Server A in "Node address" and then press Tab key to fill "Node name"
- Click on + and do the same with Server B.

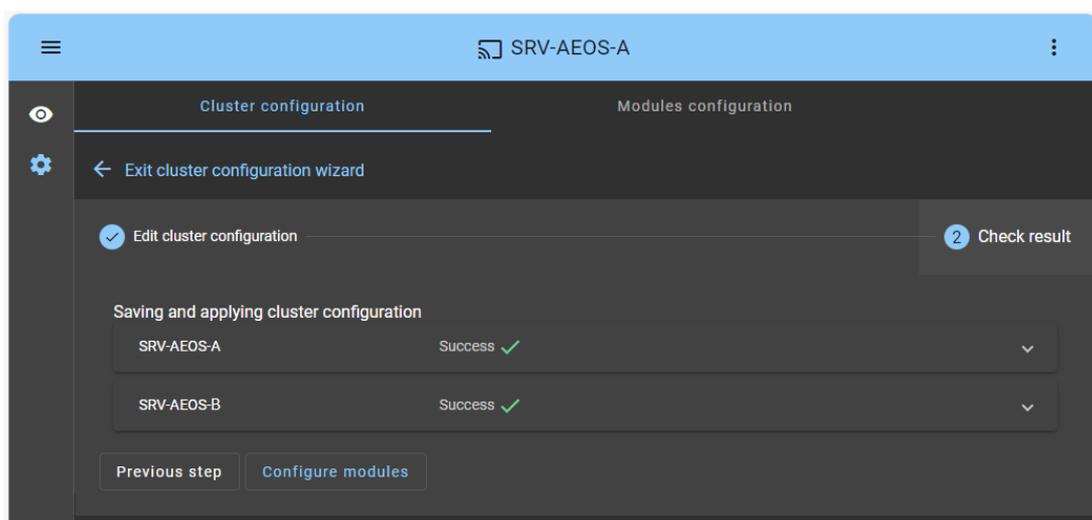
Note: Red color indicates a connection error.

Setting up a SafeKit failover cluster with AEOS & SQL

- Click on "Save and apply" to save the cluster configuration (on both servers).

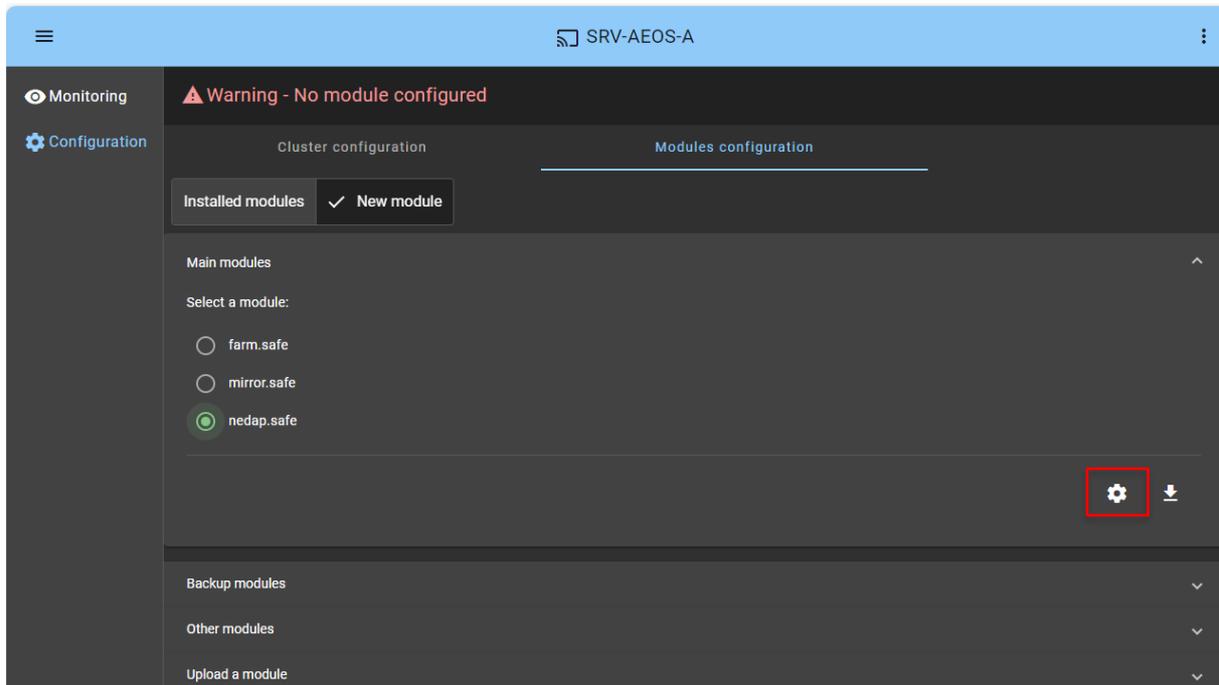


- Check result.

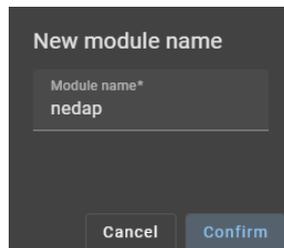


3.3.2. nedap.safe configuration

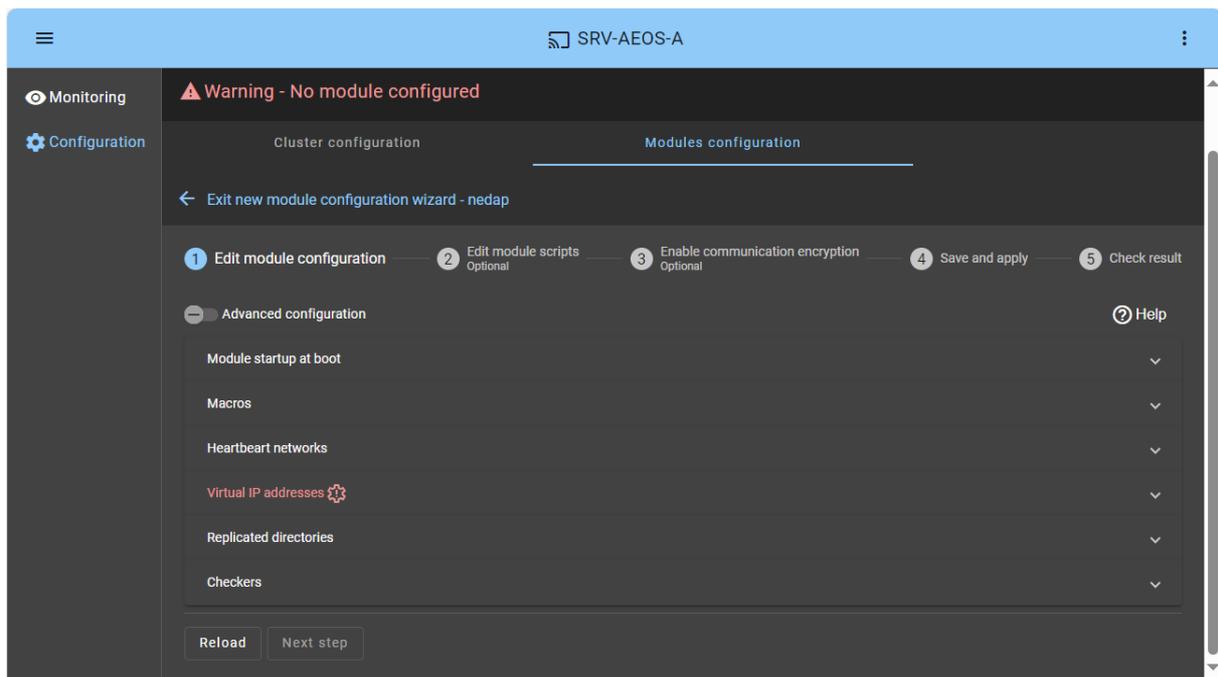
- Click on "Modules configuration" tab → "New module" button → nedap.safe. And click on the configure icon.



- Define a module name and "Confirm" (example nedap).

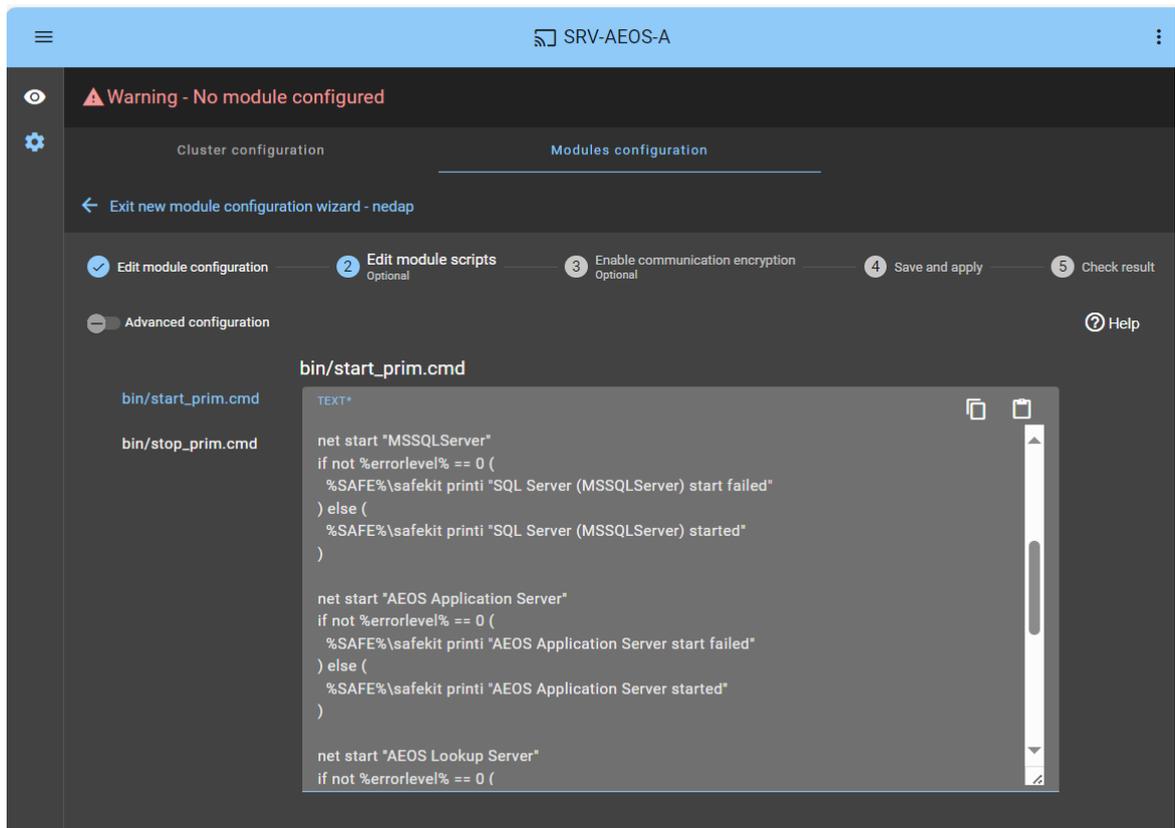


- Configure module parameters.



- Module startup at boot: Startup type: Automatic, Startup delay: 0
- Heartbeat networks: default
- Virtual IP addresses: 192.168.1.250
- Replicated directories: define SQL & AEOS directories (example):
 - SQL Log: C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\Log
 - SQL Data: C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\DATA
 - AEOS Configuration: C:\AEOS\data\aeomon\configurations
- Checkers → Processes/services:
 - AEOS_appl.exe process
 - sqlservr.exe process

- Module scripts: to personalize if necessary (adding services for example)



```
bin/start_prim.cmd

TEXT*

net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

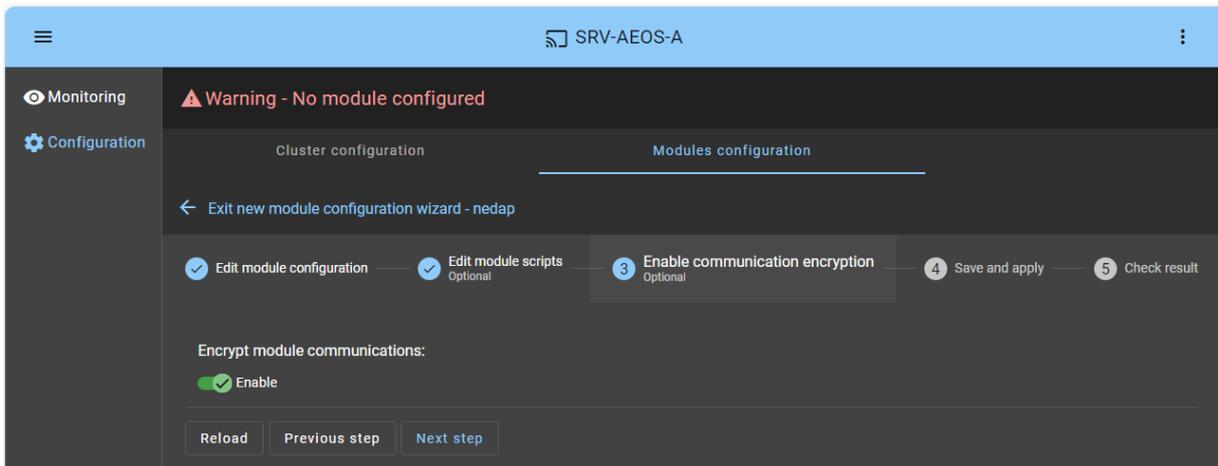
rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

start_prim.cmd

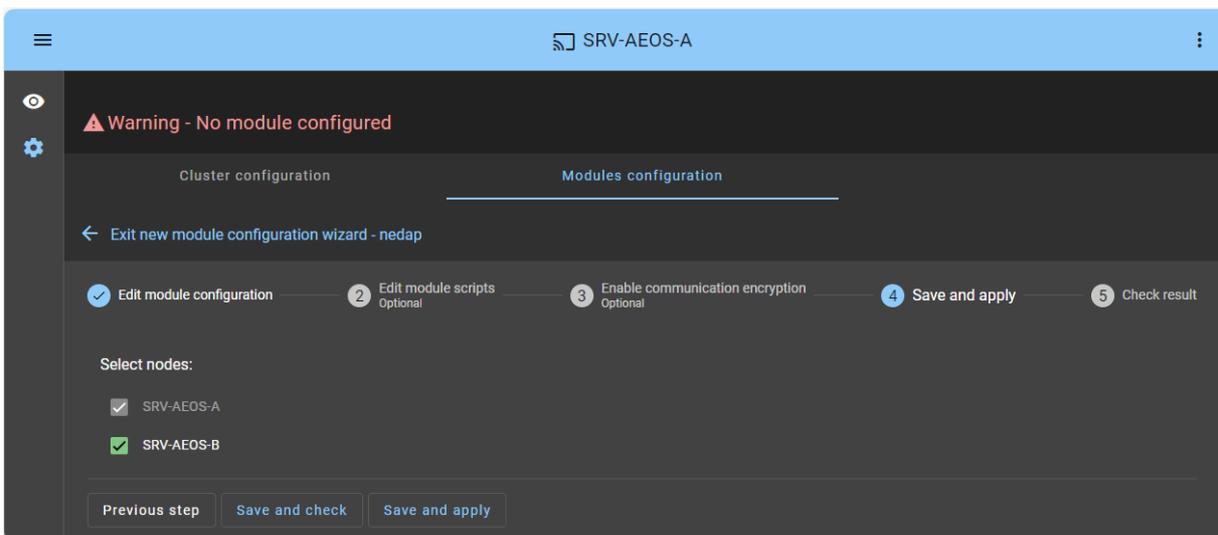
```
bin/stop_prim.cmd
TEXT*
%SAFE%\safekit printi "Stopping AEOS Application Server"
net stop "AEOS Application Server"
%SAFE%\safekit printi "Stopping AEOS Lookup Server"
net stop "AEOS Lookup Server"
rem %SAFE%\safekit printi "Stopping AEOS aepu service"
rem net stop "AEOS aepu service"
rem %SAFE%\safekit printi "Stopping NSI_Service"
rem net stop "NSI_Service"
rem %SAFE%\safekit printi "Stopping NSX_Service"
rem net stop "NSX_Service"
rem %SAFE%\safekit printi "Stopping AppVision Service"
rem net stop "AppVision Service"
%SAFE%\safekit printi "Stopping SQL Server (MSSQLSERVER)"
sc.exe config "MSSQLSERVER" start= disabled
net stop "MSSQLSERVER" /Y
```

stop_prim.cmd

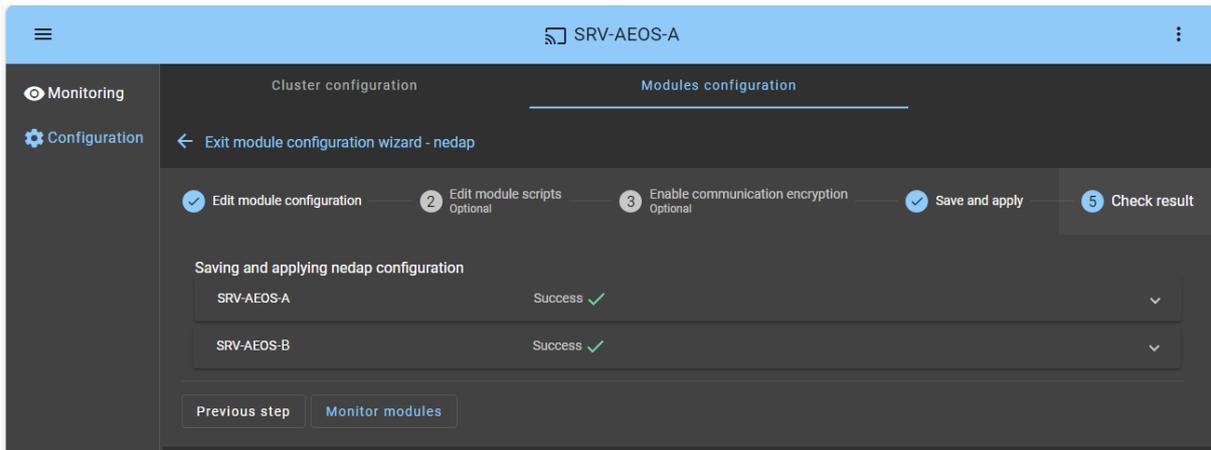
- Encryption: keep the default "Enable" value



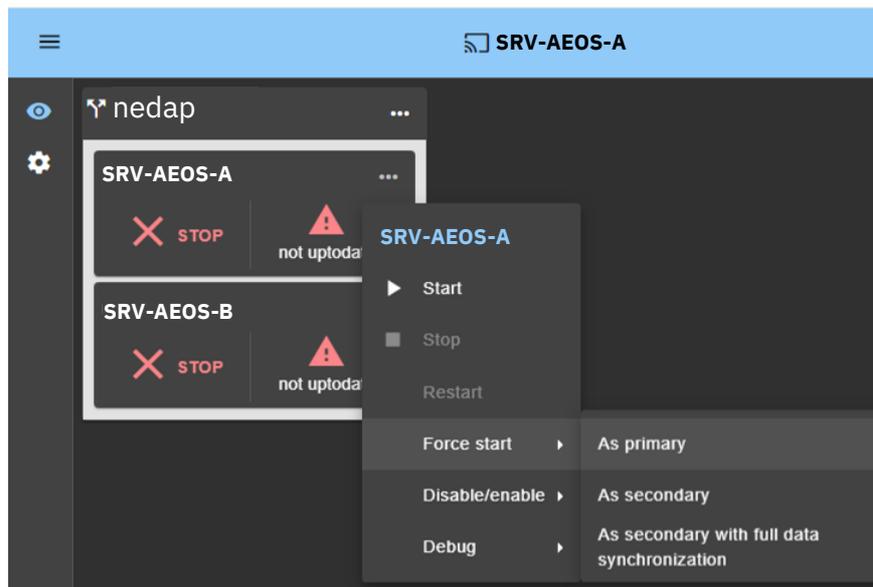
- Click on "Save and apply" to configure the module on both nodes.



- Check result: the result must be success on both nodes.



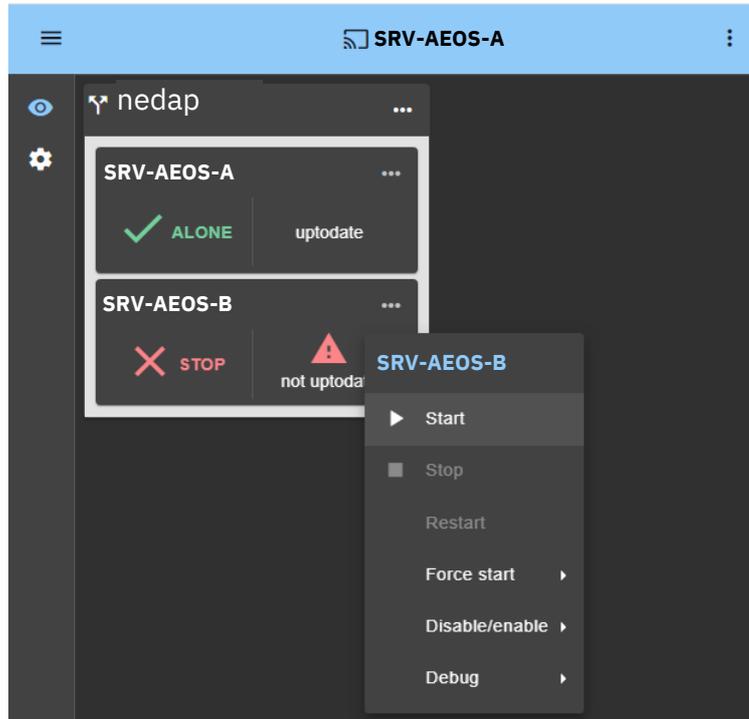
- Go in the monitoring and start server A as primary server (server A is supposed to be the server with the up-to-date data).



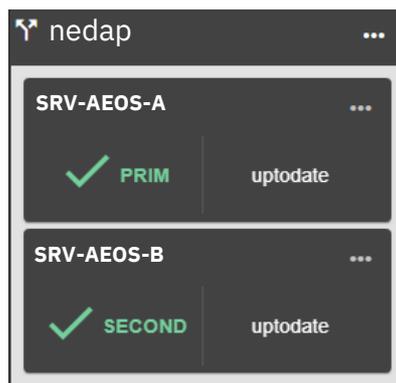
Note: Server B can be chosen if its data is more recent than server A.

Setting up a SafeKit failover cluster with AEOS & SQL

- Wait for the server to move from **WAIT** (orange) state to **ALONE** (green).
Note: Check the server A log (by clicking on SRV-AEOS-A) if **ALONE** (green) is not reached.
- Start server B.



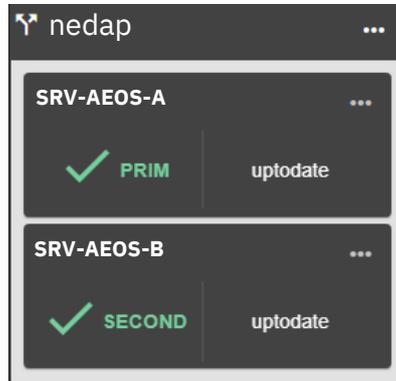
- Server B will stay in the **SECOND** (orange) state while resynchronizing replicated folders. And ends in the state **SECOND** (green).
Note: Check the server B log (by clicking on SRV-AEOS-B) to see resynchronization progress.



3.4. Cluster validation

3.4.1. Check service states

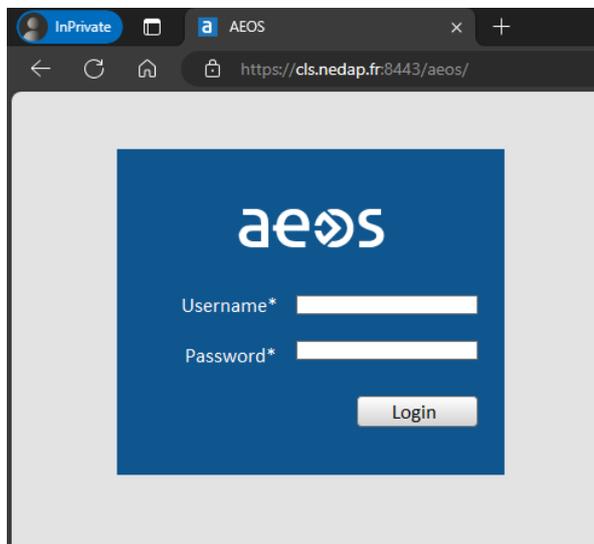
- Initial cluster state



- Windows service states:

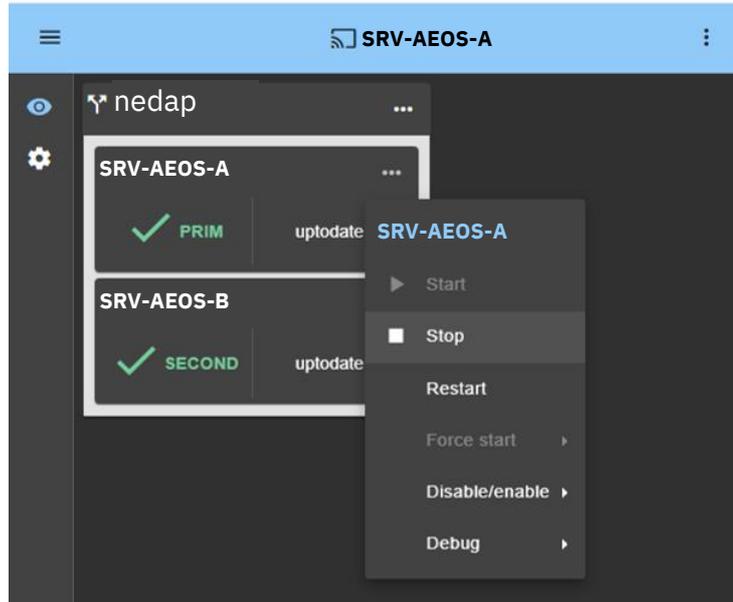
Service name	SRV-AEOS-A	SRV-AEOS-B
AEOS Application Server	Started	Stopped
AEOS Lookup Server	Started	Stopped
SQL Server (MSSQLSERVER)	Started	Stopped

- Validate that AEOS is working on server A by connecting to the cluster URL (virtual IP) <https://cls.nedap.fr:8443/>

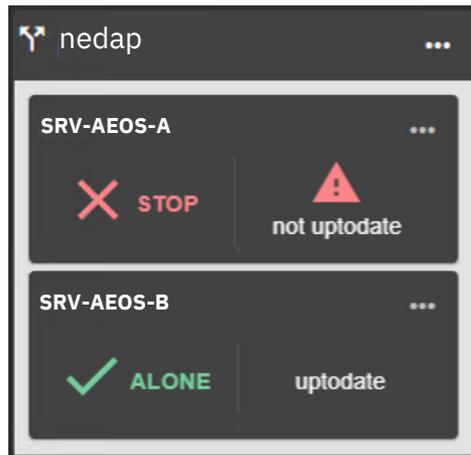


3.4.2. Manual failover

- Stop server A from the contextual menu by clicking on Stop



- Server B should go into **ALONE** (green) state and server B into **STOP** (red) state.

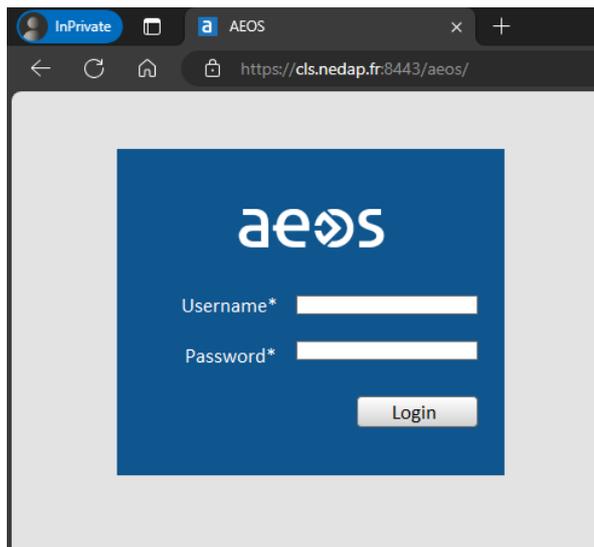


Setting up a SafeKit failover cluster with AEOS & SQL

- Windows service states:

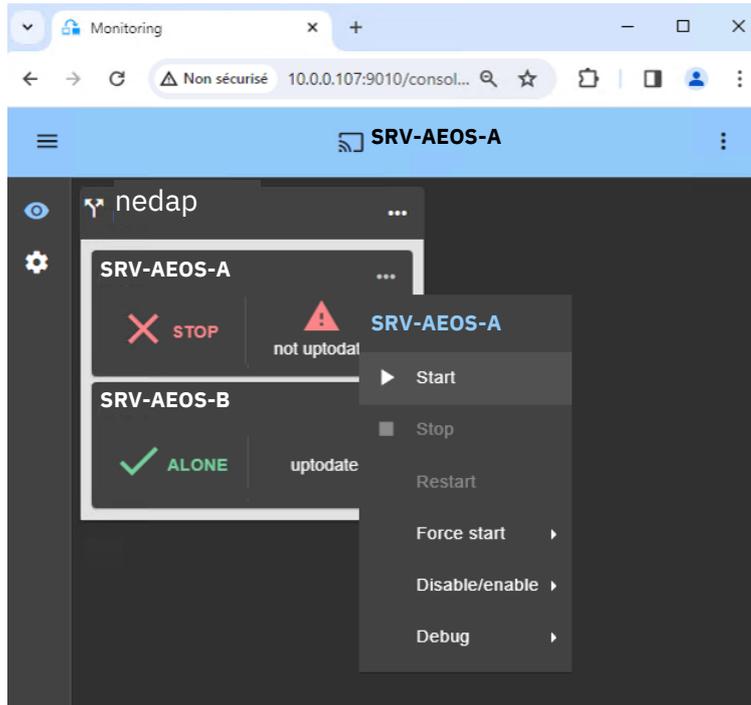
Service name	SRV-AEOS-A	SRV-AEOS-B
AEOS Application Server	Stopped	Started
AEOS Lookup Server	Stopped	Started
SQL Server (MSSQLSERVER)	Stopped	Started

- Validate that AEOS is working on server B by connecting to the cluster URL (virtual IP)
<https://cls.nedap.fr:8443/>

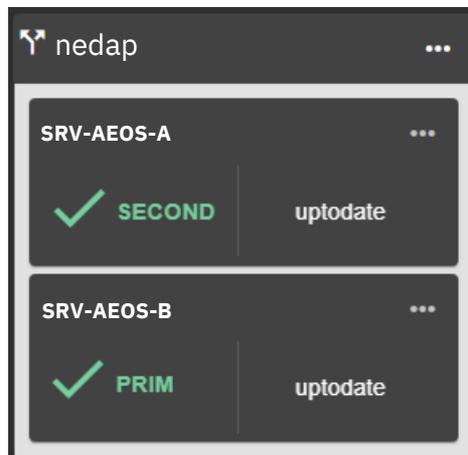


Setting up a SafeKit failover cluster with AEOS & SQL

- If all the tests are correct, start server A using its contextual menu.

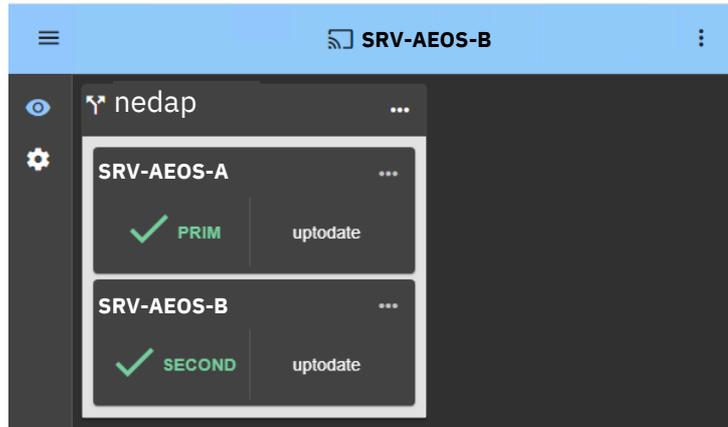


- Server A will stay in the **SECOND** (orange) state while resynchronizing replicated folders. And ends in the state **SECOND** (green). The cluster is then operational again.

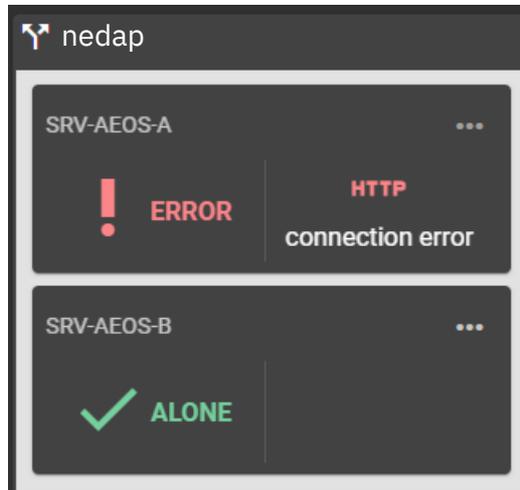


3.4.3. Server failure

- Start the console on server B. Before the outage, the initial status of the servers is:



- Server A suffered a power outage (for example), server B takes over automatically without user action.

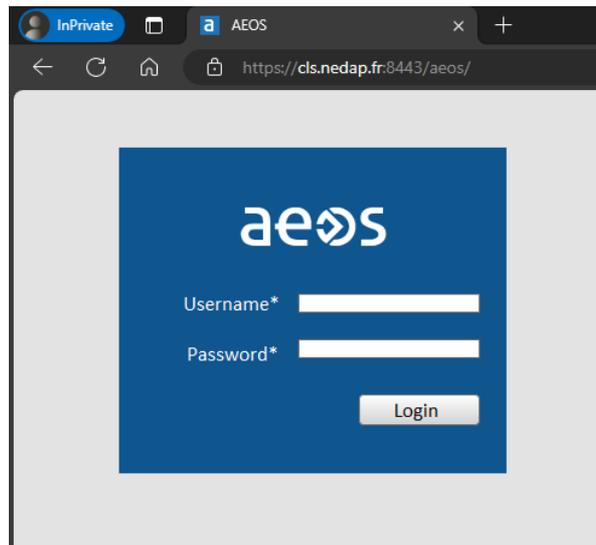


- Windows service states:

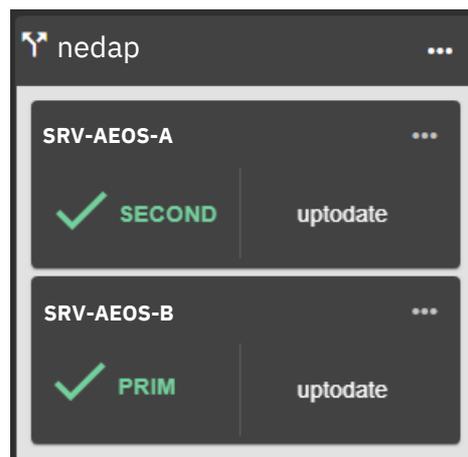
Service name	SRV-AEOS-A	SRV-AEOS-B
AEOS Application Server	Hardware failure	Started
AEOS Lookup Server	Hardware failure	Started
SQL Server (MSSQLSERVER)	Hardware failure	Started

Setting up a SafeKit failover cluster with AEOS & SQL

- Validate that AEOS is working on server B by connecting to the cluster URL (virtual IP) <https://cls.nedap.fr:8443/>



- Following the reboot of server A, server A is automatically reconnected and synchronized. It then becomes the secondary server.



3.5. Activation of HTTPS

Securing the web console

See "Securing the SafeKit web service" in the SafeKit User's Guide

Protocol and user authentication	Optional role management						
<p>Default: HTTP and user admin with password authentication</p> <p>HTTP or HTTPS</p> <p>User authentication with</p> <ul style="list-style-type: none"> o Apache files (default) o LDAP/AD authentication o OpenID Connect authentication 	<p>Default: Admin role</p> <table border="1"> <tr> <td>Admin role</td> <td> <ul style="list-style-type: none"> o All rights o Configuration ⚙️ and Monitoring 📊 </td> </tr> <tr> <td>Control role</td> <td> <ul style="list-style-type: none"> o Monitoring and control rights only 📊 </td> </tr> <tr> <td>Monitor role</td> <td> <ul style="list-style-type: none"> o Monitoring rights only 📊 o Actions on modules (start, stop...) are prohibited </td> </tr> </table>	Admin role	<ul style="list-style-type: none"> o All rights o Configuration ⚙️ and Monitoring 📊 	Control role	<ul style="list-style-type: none"> o Monitoring and control rights only 📊 	Monitor role	<ul style="list-style-type: none"> o Monitoring rights only 📊 o Actions on modules (start, stop...) are prohibited
Admin role	<ul style="list-style-type: none"> o All rights o Configuration ⚙️ and Monitoring 📊 						
Control role	<ul style="list-style-type: none"> o Monitoring and control rights only 📊 						
Monitor role	<ul style="list-style-type: none"> o Monitoring rights only 📊 o Actions on modules (start, stop...) are prohibited 						

HTTPS (1/2)

See "HTTPS setup using an external PKI" in the SafeKit User's Guide

1 Example of a cluster

https for the console

- o https://s1.x.com:9453
- o https://s2.x.com:9453



S1 https for global command

- o https://10.0.0.10:9453
- o https://10.0.0.11:9453
- o https://11.0.0.10:9453
- o https://11.0.0.11:9453



```
SAFEVAR/cluster/cluster.xml
<lan name="default">
  <node name="s1" addr="10.0.0.10"/>
  <node name="s2" addr="10.0.0.11"/>
</lan>
<lan name="private">
  <node name="s1" addr="11.0.0.10"/>
  <node name="s2" addr="11.0.0.11"/>
</lan>
```

2 Enterprise PKI provides 3 X509 certificate files in PEM format



Check that ca.crt contains

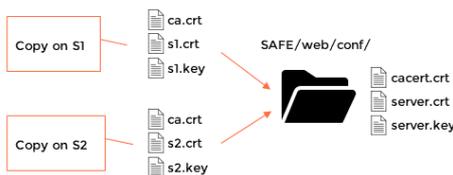
- o the root CA
- o all intermediates/subordinates CA

Check the Subject Alternative Name

- o S1 SAN = s1.x.com, 10.0.0.10, 11.0.0.10
- o S2 SAN = s2.x.com, 10.0.0.11, 11.0.0.11

HTTPS (2/2)

3 Install files on S1 and S2



4 Check certificates on S1 and S2

- o cd SAFE/web/bin, checkcert -t CA, checkcert -t server

5 Switch SafeKit to https on S1 and S2

- o Copy SAFE/web/conf/httpd.webconsolessl.conf in SAFE/web/conf/ssl/
- o Run SAFE/safekit webserver restart
- o Run SAFE/safekit firewallcfg add

On Linux:

- o chown safekit:safekit
- o chmod 0440

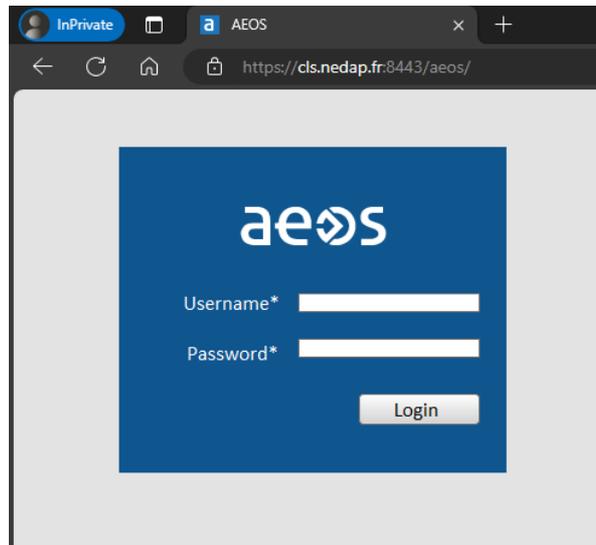
More information: [SafeKit User's Guide \(evidian.com\)](https://www.evidian.com/SafeKit-User's-Guide) / 11. Securing the SafeKit web service

4. Configuration of client and hardware components

4.1. AEOS Classic and Dashboard

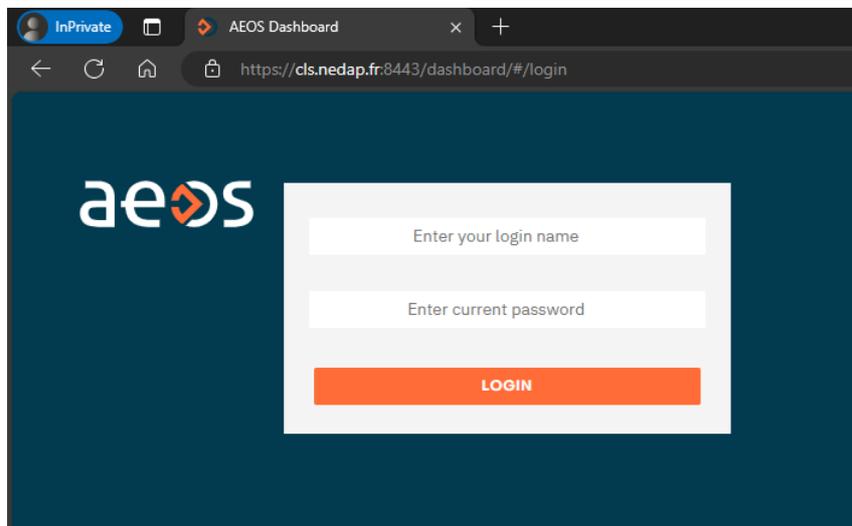
AEOS Classic:

- Create a web shortcut on the client with the following URL:
<https://cls.nedap.fr:8443/aeos/> to allow a connection to the primary server



AEOS Dashboard :

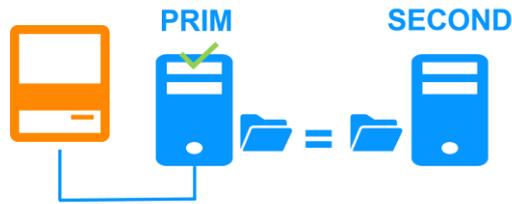
- Create a web shortcut on the client with the following URL:
<https://cls.nedap.fr:8443/dashboard/> to allow a connection to the primary server



Note: Before, the "hosts" file of the client workstation must be filled in with the name and Virtual IP.

4.2. Virtual AEPUs "client"

- Virtual AEPUs as a client on the network:



- Restart a setup and define the cluster name in AEOS server name

Setup - NEDAP AEpu
— □ ×



Enter the name of the AEOS Server
Name of the server where AEOS is installed.

Please specify the value, then click Next.

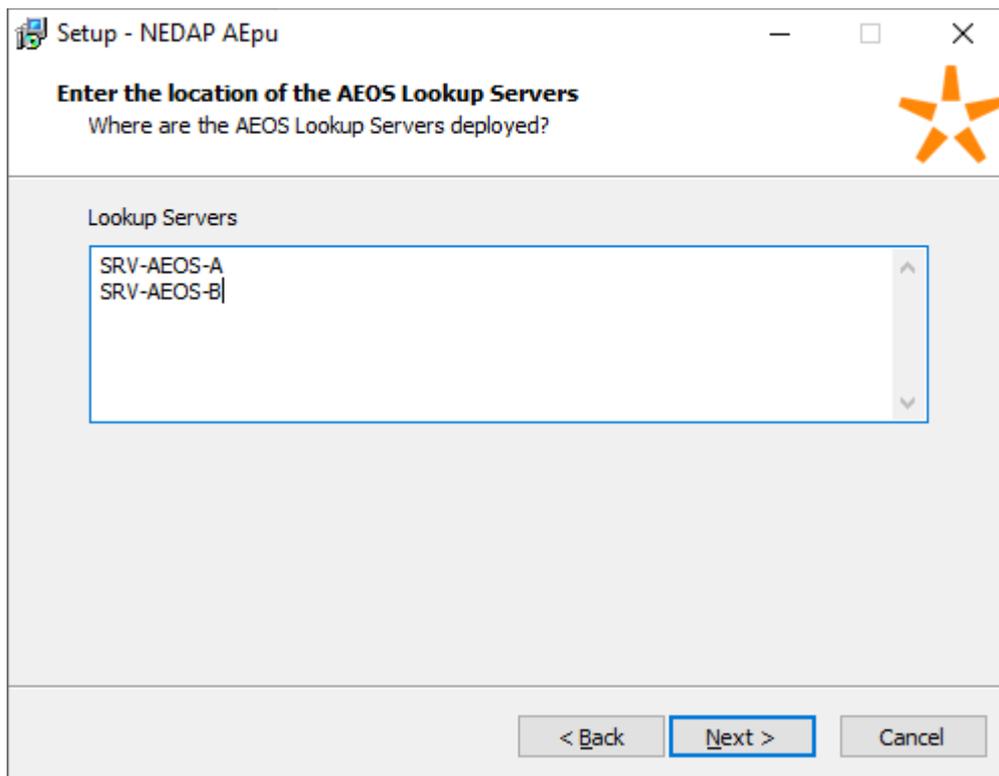
The name of the AEOS server:

The web port of the AEOS server:

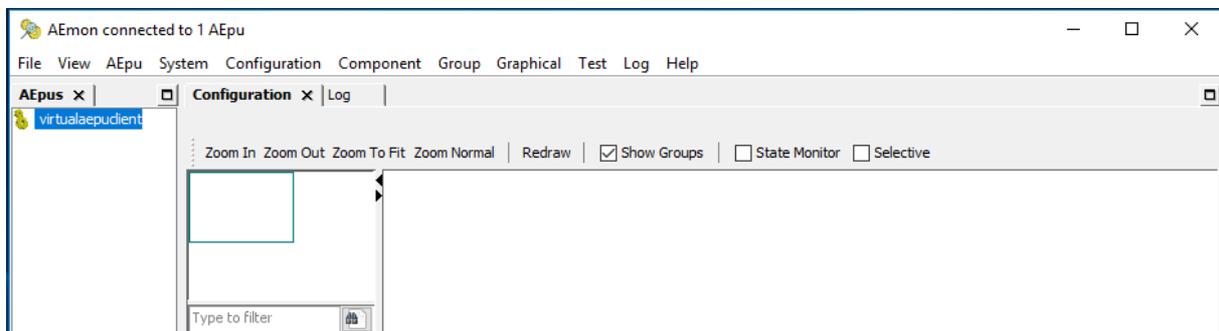
< Back
Next >
Cancel

Setting up a SafeKit failover cluster with AEOS & SQL

- Set **both lookup servers** to allow connection to the active one

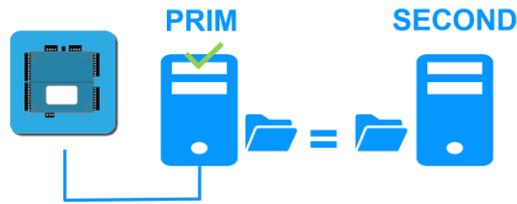


- When starting the service it must be present in AEmon

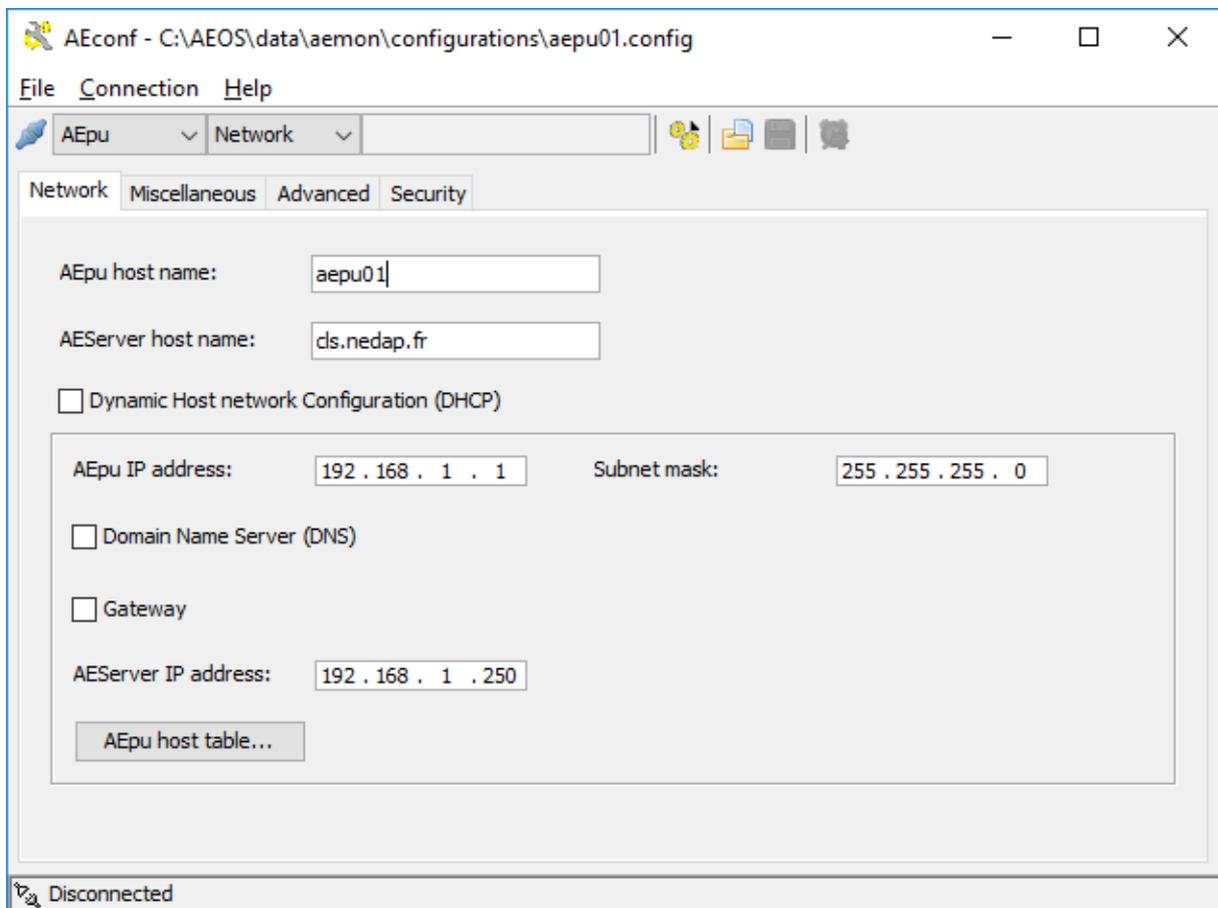


4.3. Physical AEPU

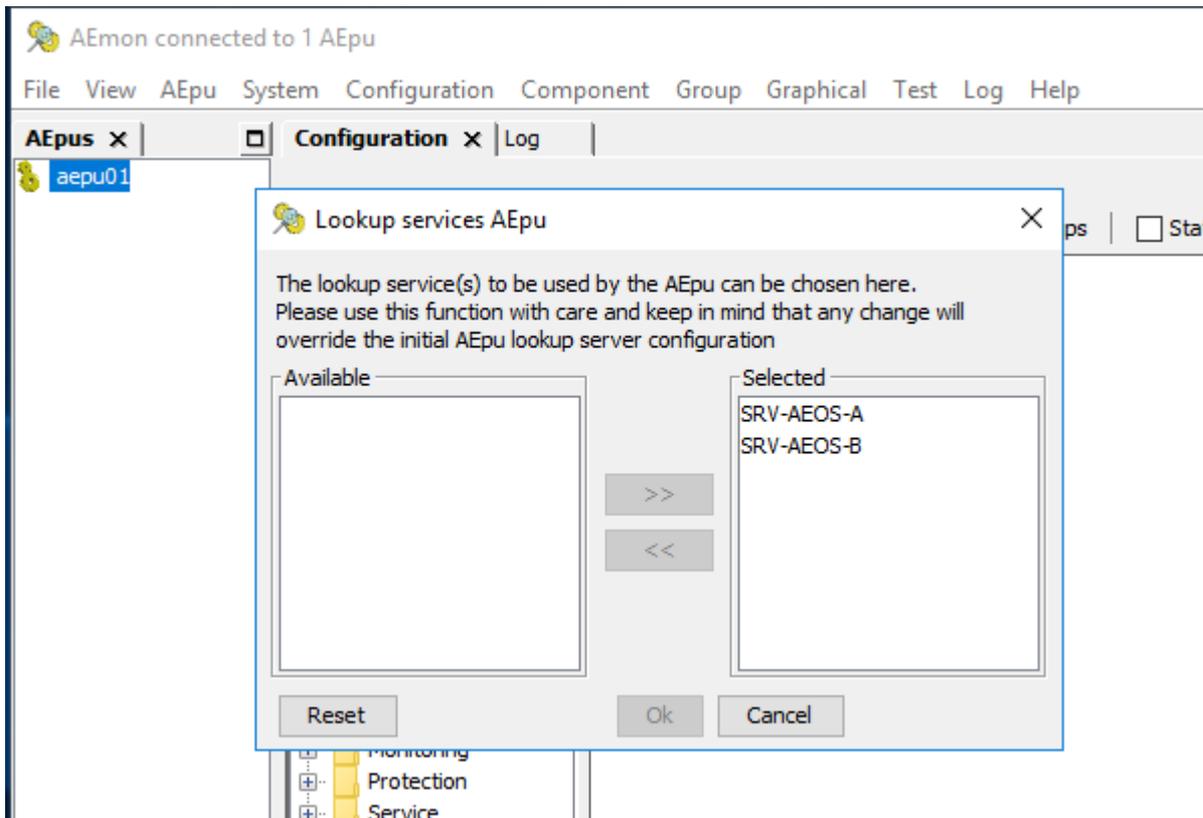
- AEPU on the network :



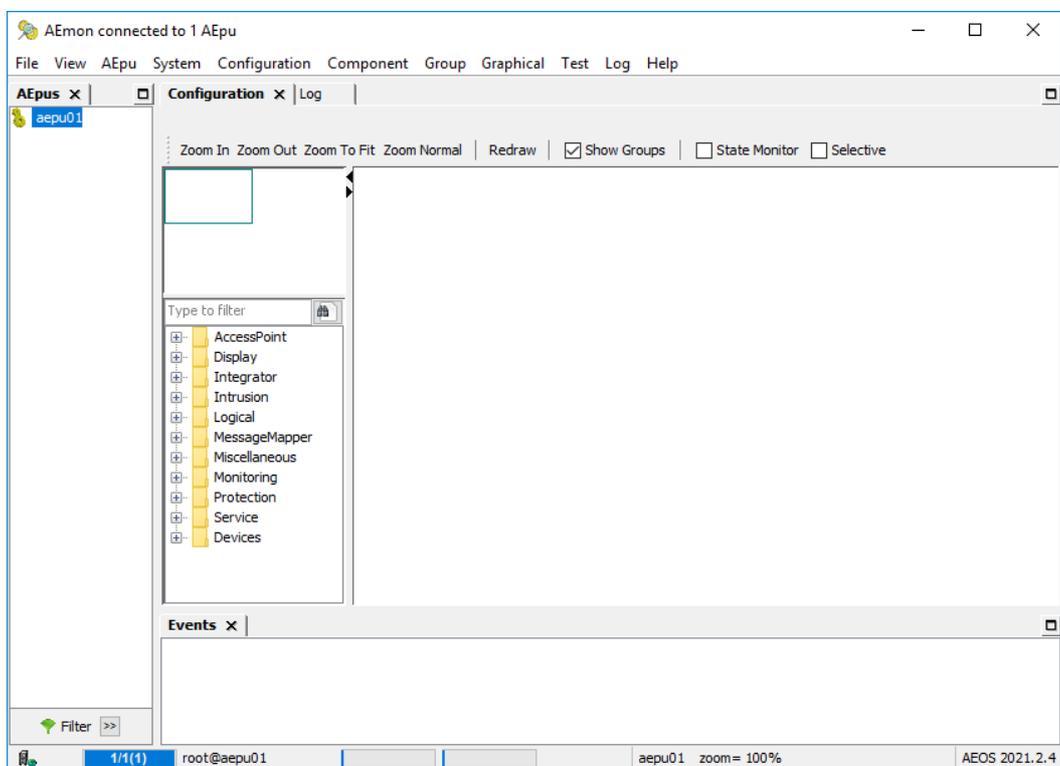
- Set to AEconf with the following settings:
 - AEServer host name: Name of the cluster "cls.nedap.fr"
 - AEServer IP address: Virtual IP "192.168.1.250"



- Open AEmon and define 2 lookup servers in the contextual menu → Properties → Lookup services



- Check the presence of the AEPU in automatic mode

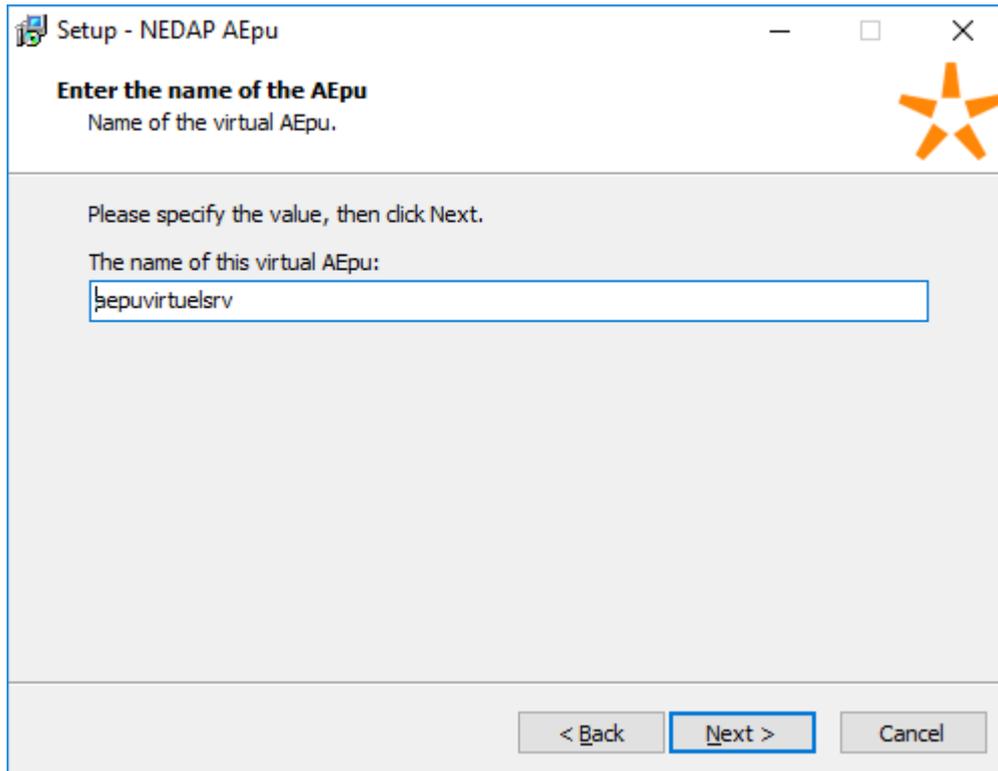


4.4. Virtual AEPU "server"

- Virtual AEPU installed on each server with a single active:



- Restart a setup and define the name of the virtual AEPU



Setup - NEDAP AEpu

Enter the name of the AEpu
Name of the virtual AEpu.

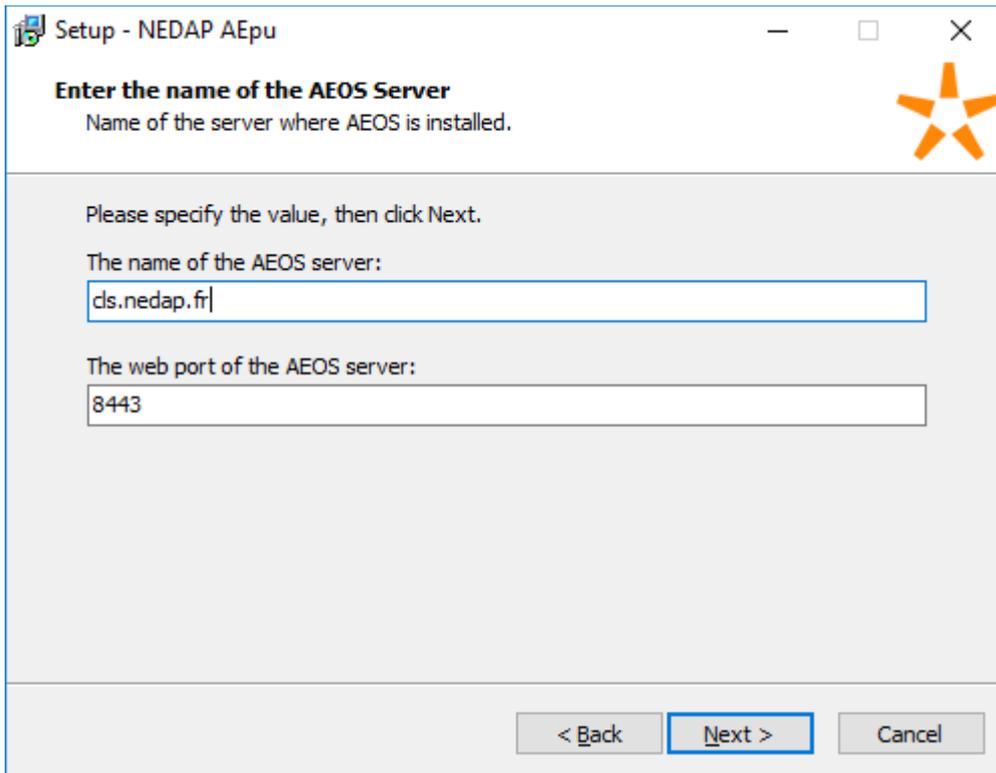
Please specify the value, then click Next.

The name of this virtual AEpu:

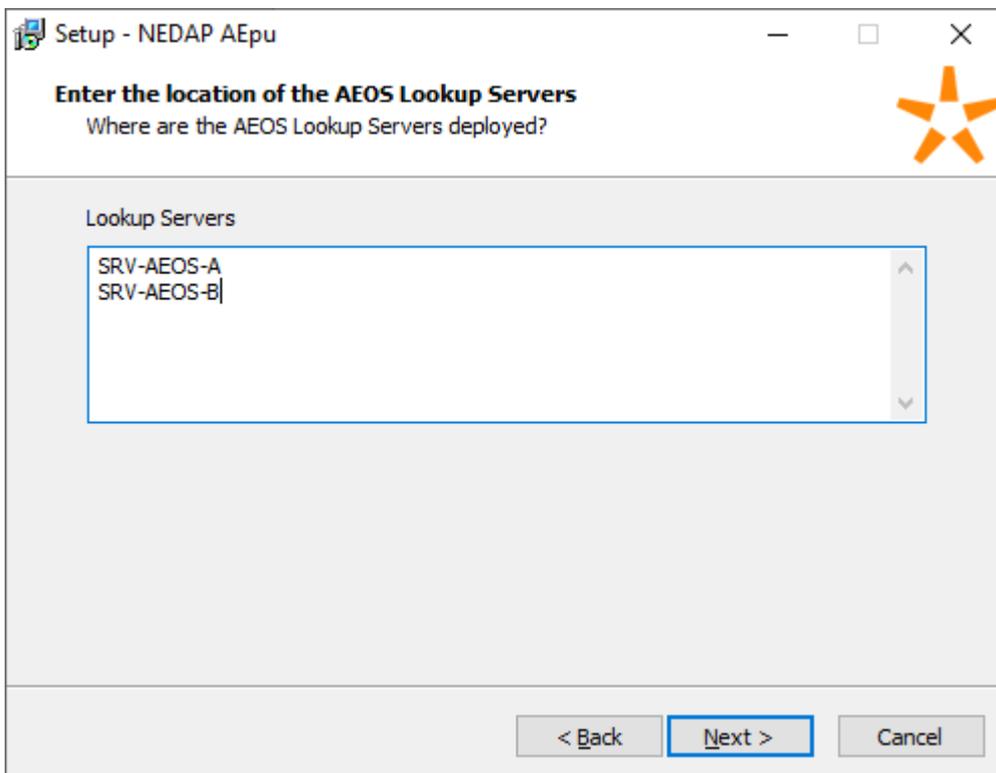
< Back Next > Cancel

Setting up a SafeKit failover cluster with AEOS & SQL

- Set the cluster name and click Next



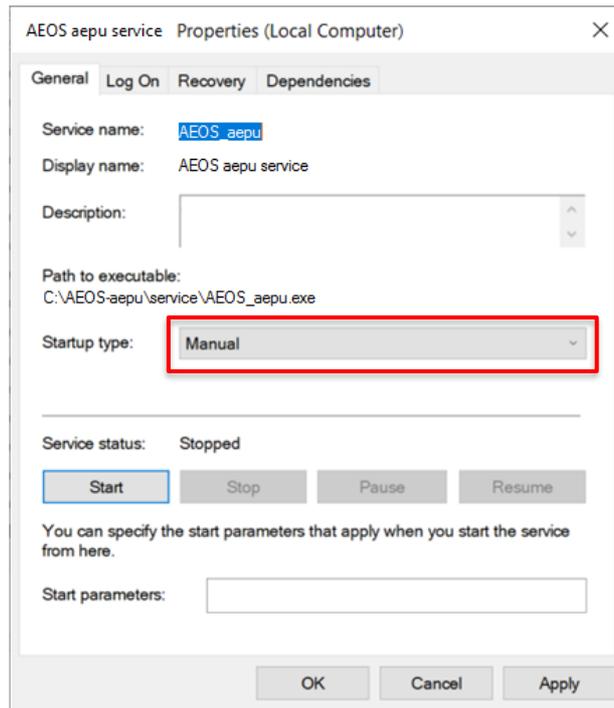
- Set both lookup servers to allow connection to the active one



Important:

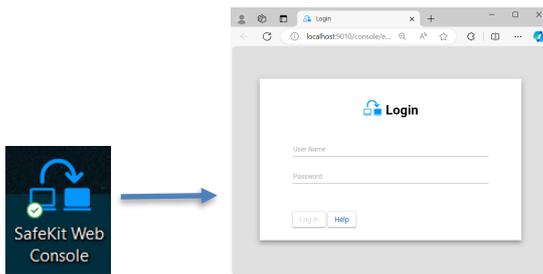
- Perform this step on both servers A & B with the same AEPu name

- Switch startup type of "AEOS aepu service" to manual on both servers A & B

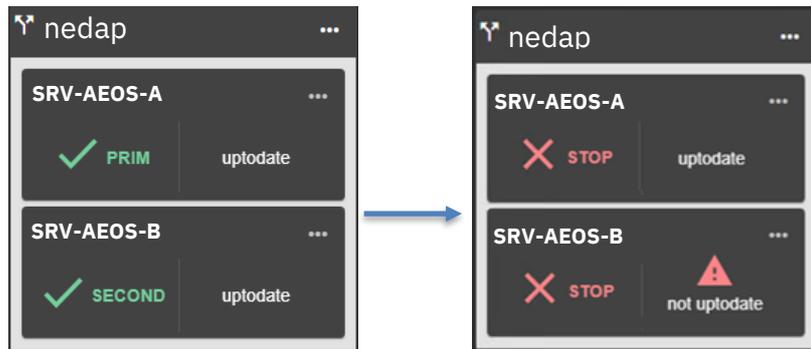


Setting up a SafeKit failover cluster with AEOS & SQL

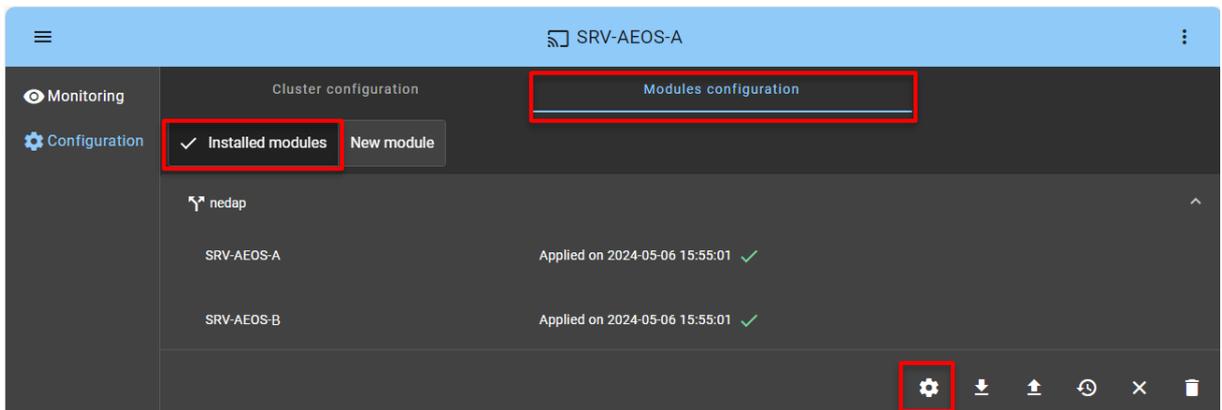
- Start the SafeKit console and authenticate.



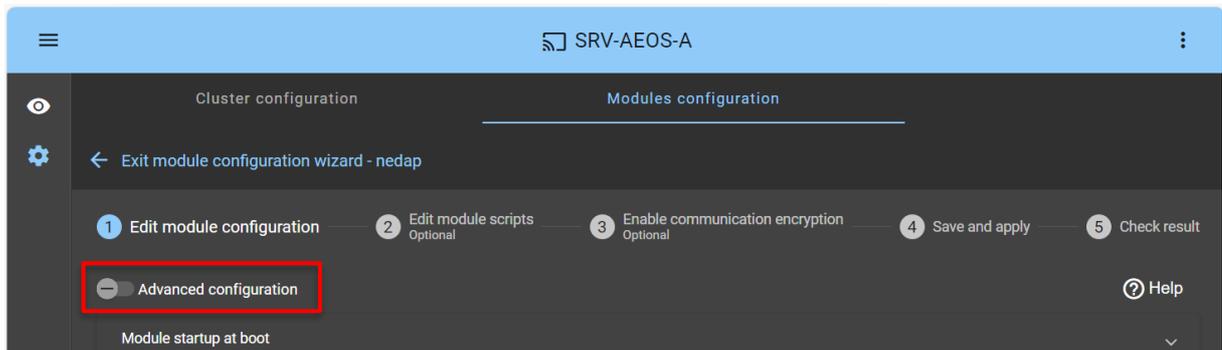
- Before reconfiguring the nedap module, first stop it. Stop first the SECOND to avoid a failover. Use the "Stop" command in "..."



- Click on "Modules configuration" tab → "Installed Modules" → nedap configure icon



- Click on "Advanced configuration"



- In conf/userconfig.xml, uncomment the replication of the virtual AEPU directory (optional). And configure the process monitoring of AEOS_aepu.exe (optional, still in comment in the screenshot).

```
conf/userconfig.xml
XML*
<!-- Define the name or IP address of your virtual server -->
<!-- File Replication Configuration -->
<!-- Adapt with the directory of your SQL Server database and logs -->
<rfs>
  <replicated dir="C:\Program Files\Microsoft SQL
Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>
  <replicated dir="C:\Program Files\Microsoft SQL
Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"/>
  <replicated dir="C:\AEOS\data\aeomon\configurations"/>
  <!--
  <replicated dir="C:\AEOS-aepu\data\aepu" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil" />
  <replicated dir="C:\Program Files\AppVision 4\Configurations" />
  -->
</rfs>
<!-- Software Error Detection Configuration -->
<errd polltimer="10">
  <!-- AEOS process -->
  <proc name="AEOS_appl.exe" class="prim" action="restart"/>
  <!-- SQL Server process -->
  <proc name="sqlservr.exe" action="restart" class="prim"/>
  <!-- AEOS aepu process -->
  <!-- <proc name="AEOS_aepu.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL import process -->
  <!-- <proc name="NSI_service.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL export process -->
  <!-- <proc name="NSX_service.exe" action="restart" class="prim" /> -->
  <!-- AppVision process -->
  <!-- <proc name="AppServer.exe" action="restart" class="prim" /> -->
</errd>
<!-- User scripts activation -->
<user/>
</service>
</safe>
```

- Edit the scripts start_prim.cmd and stop_prim.cmd and **uncomment** the start/stop of "AEOS aepu service" (remove **rem**).

```
bin/start_prim.cmd
TEXT
net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

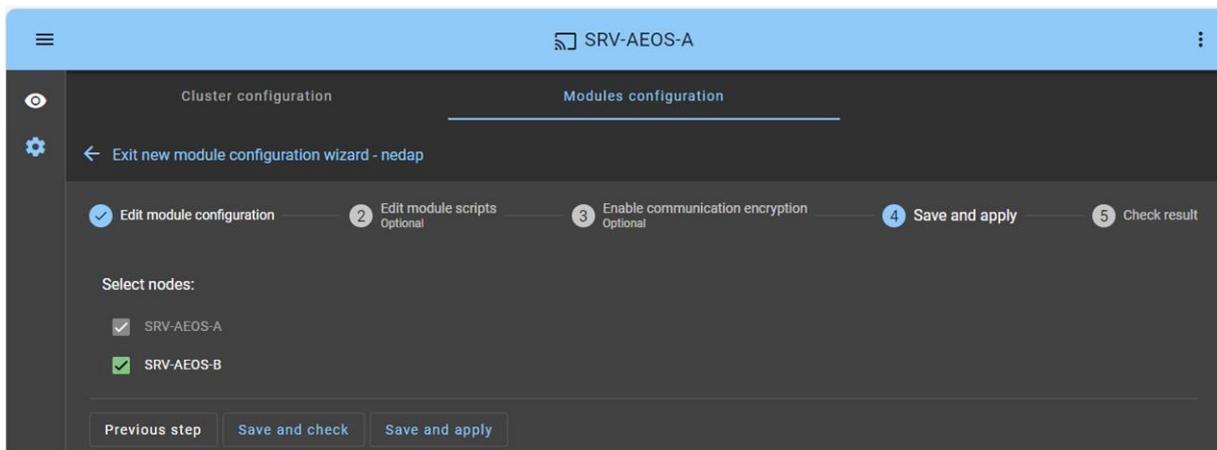
rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

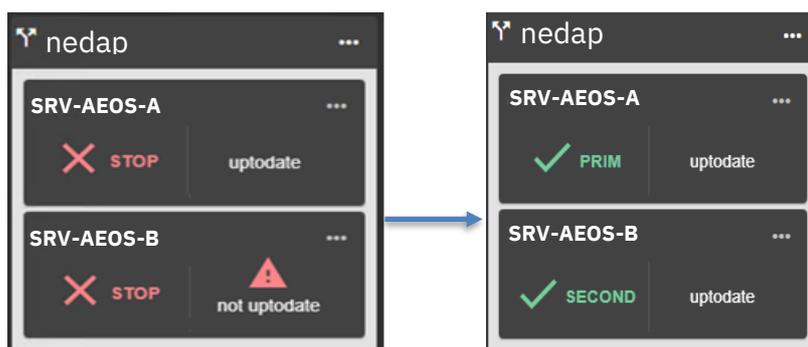
rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

```
bin/stop_prim.cmd
TEXT*
%SAFE%\safekit printi "Stopping AEOS Application Server"
net stop "AEOS Application Server"
%SAFE%\safekit printi "Stopping AEOS Lookup Server"
net stop "AEOS Lookup Server"
rem %SAFE%\safekit printi "Stopping AEOS aepu service"
rem net stop "AEOS aepu service"
rem %SAFE%\safekit printi "Stopping NSI_Service"
rem net stop "NSI_Service"
rem %SAFE%\safekit printi "Stopping NSX_Service"
rem net stop "NSX_Service"
rem %SAFE%\safekit printi "Stopping AppVision Service"
rem net stop "AppVision Service"
%SAFE%\safekit printi "Stopping SQL Server (MSSQLSERVER)"
sc.exe config "MSSQLSERVER" start= disabled
net stop "MSSQLSERVER" /Y
```

- Click on "Save and apply" to reconfigure the module on both nodes.

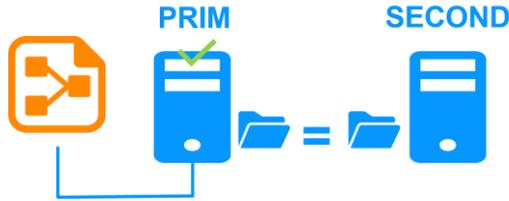


- Restart the nedap module with the "Start" command in "..."

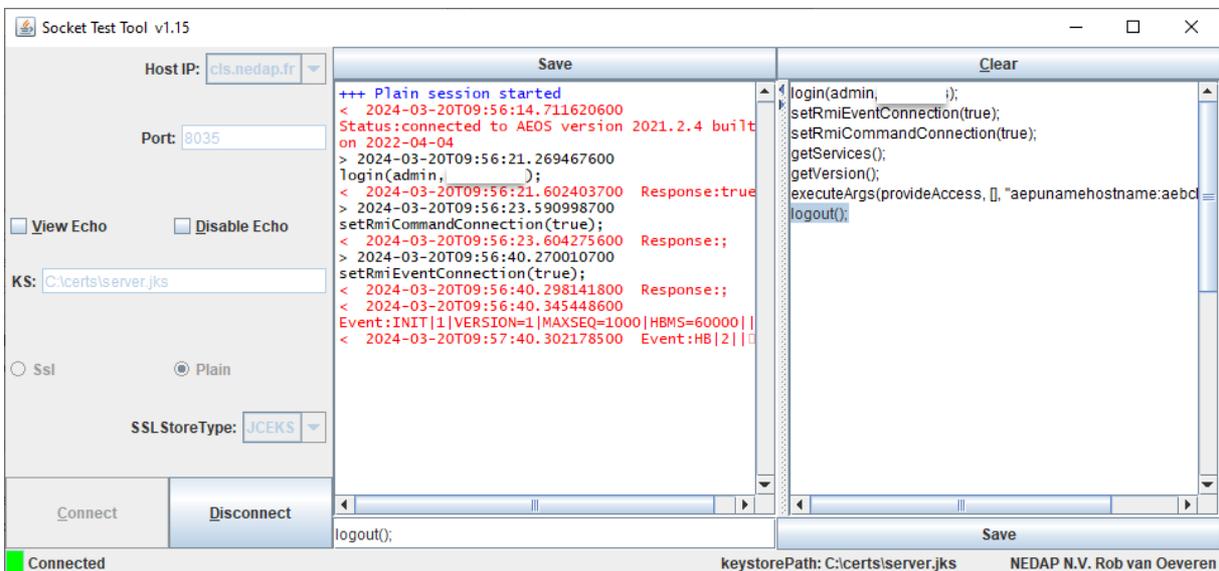
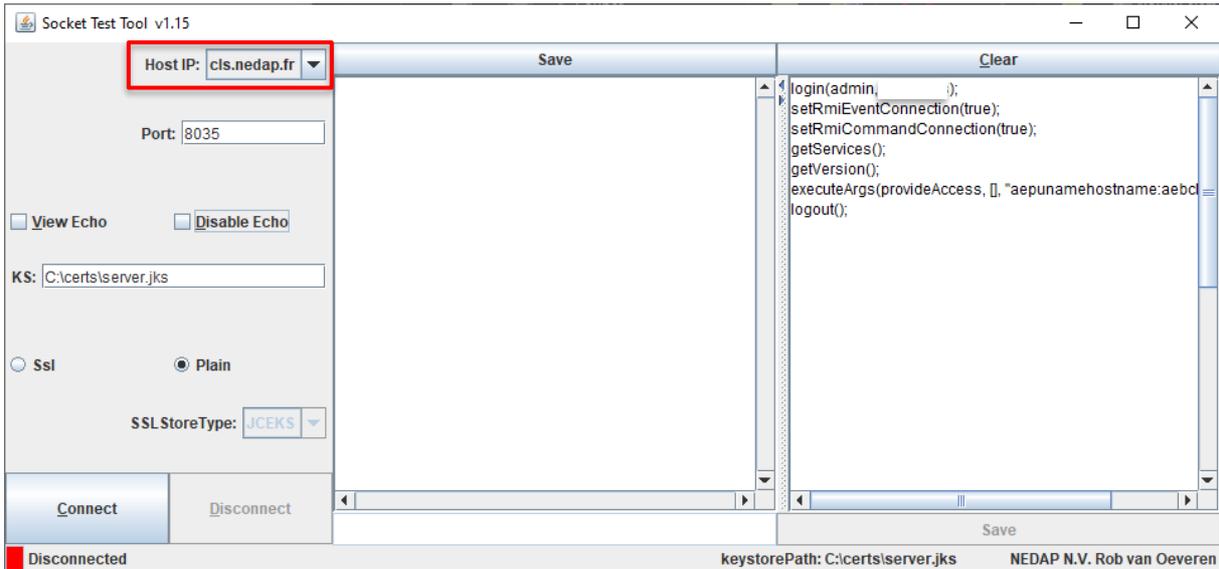


4.5. Socket Interface - RMI

- Hypervisor connected as a client over the network:



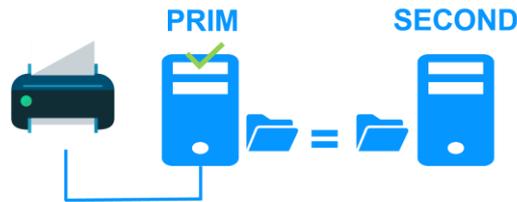
- Configure the driver with the cluster name “cls.nedap.fr” and the port 8035 (default)



Note: The utility presented is an example for simulating a driver. Its use is only for testing and not for production.

4.6. AEOS Capture – AEOS Cardprinter

- AEOS Capture and AEOS Cardprinter are connected as a client on the network:



- Launch the setup and define the cluster name "cls.nedap.fr"

AEOS Cardprinter:

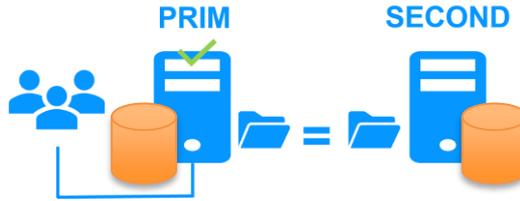
AEOS Capture:

- Check the presence of applications in the taskbar

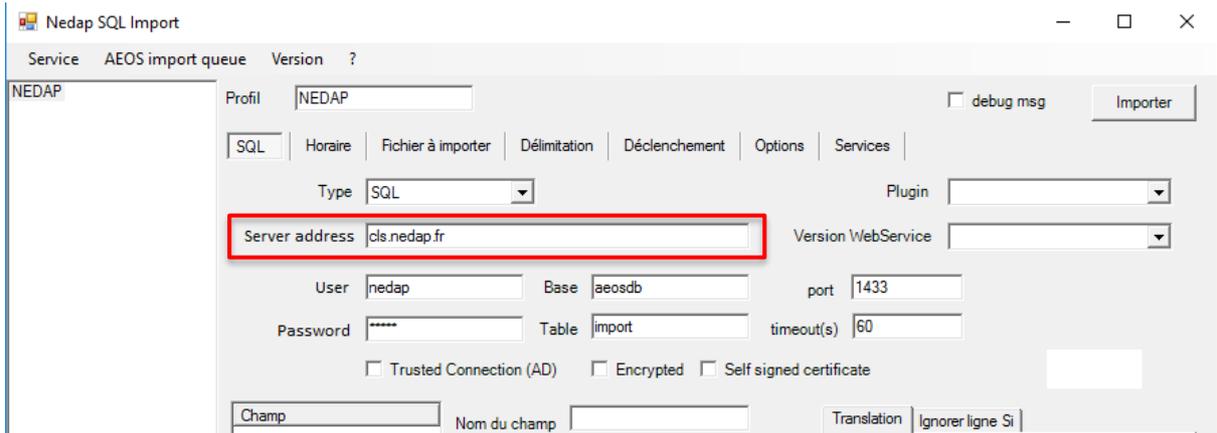


4.7. Nedap SQL import

- The Nedap SQL Import utility is installed on each server with a single one active:

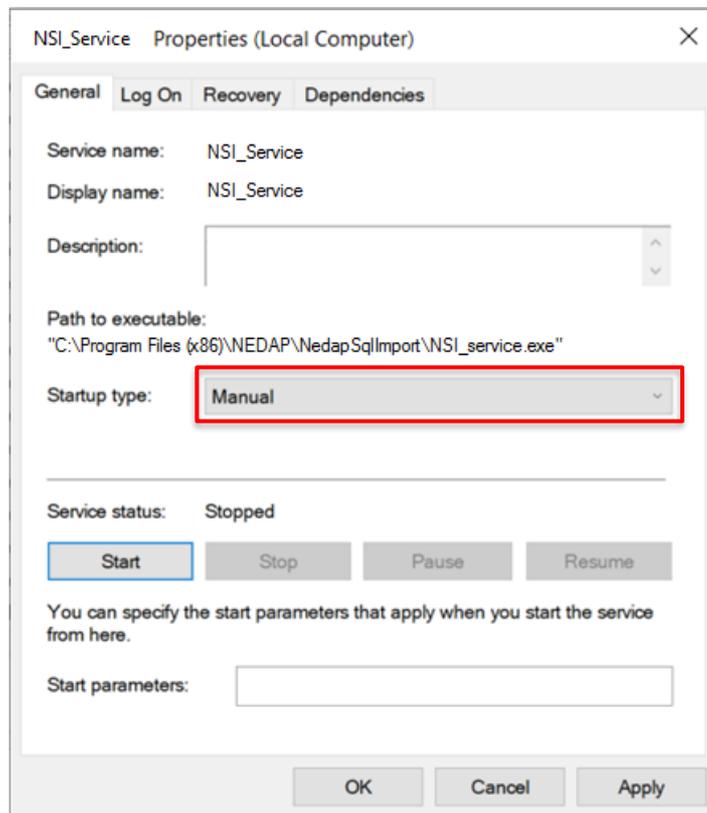


- Define the profile(s) with the cluster name “cls.nedap.fr”



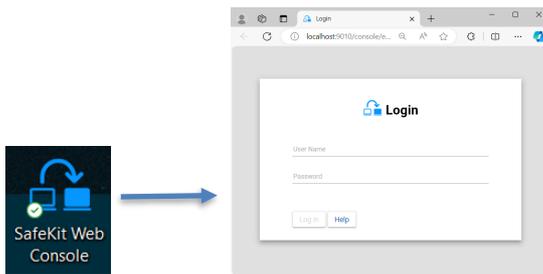
Important:

- Perform this step on both servers A & B
- Switch startup type of “NSI_Service” to manual on both servers A & B

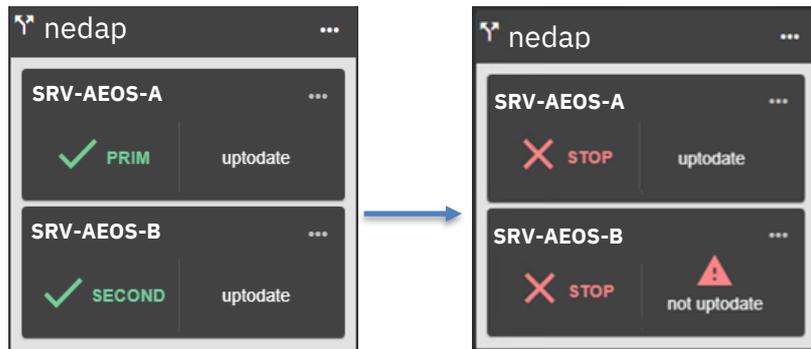


Setting up a SafeKit failover cluster with AEOS & SQL

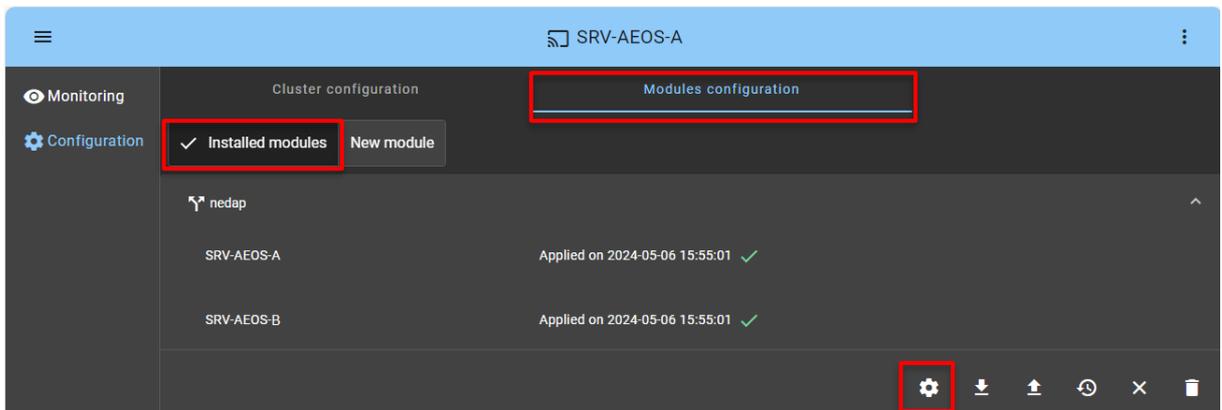
- Start the SafeKit console and authenticate.



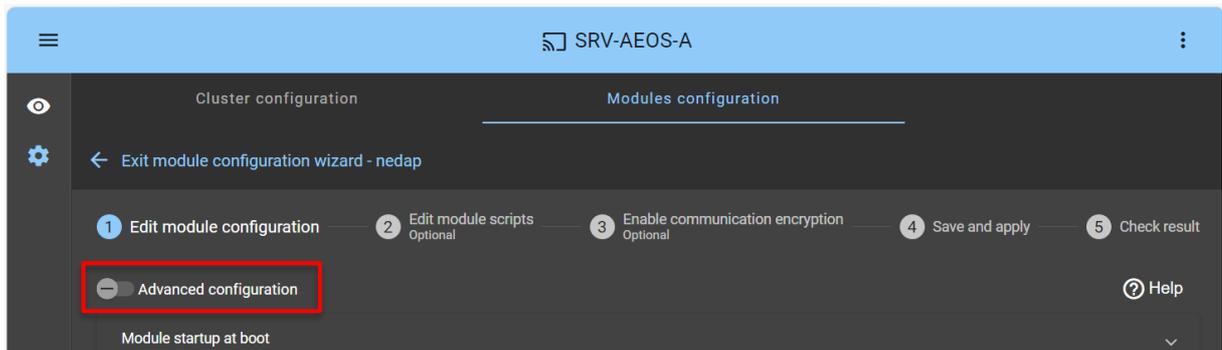
- Before reconfiguring the nedap module, first stop it. Stop first the SECOND to avoid a failover. Use the "Stop" command in "..."



- Click on "Modules configuration" tab → "Installed Modules" → nedap configure icon



- Click on "Advanced configuration"



- In conf/userconfig.xml, uncomment the replication of the Nedap SQL Import directory to enable profile replication (optional). And configure the process monitoring of NSI_Service.exe (optional, still in comment in the screenshot).

```
conf/userconfig.xml
XML*
<!-- Define the name or IP address of your virtual server -->
<!-- File Replication Configuration -->
<!-- Adapt with the directory of your SQL Server database and logs -->
<rfs>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"/>
  <replicated dir="C:\AEOS\data\aeon\configurations"/>
  <!--
  <replicated dir="C:\AEOS-aeou\data\aeou" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil" />
  <replicated dir="C:\Program Files\AppVision 4\Configurations" />
  -->
</rfs>
<!-- Software Error Detection Configuration -->
<errd polltimer="10">
  <!-- AEOS process -->
  <proc name="AEOS_appl.exe" class="prim" action="restart"/>
  <!-- SQL Server process -->
  <proc name="sqlservr.exe" action="restart" class="prim"/>
  <!-- AEOS aeou process -->
  <!-- <proc name="AEOS_aeou.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL import process -->
  <!-- <proc name="NSI_service.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL export process -->
  <!-- <proc name="NSX_service.exe" action="restart" class="prim" /> -->
  <!-- AppVision process -->
  <!-- <proc name="AppServer.exe" action="restart" class="prim" /> -->
</errd>
<!-- User scripts activation -->
<user/>
</service>
</safe>
```

- Edit the scripts start_prim.cmd and stop_prim.cmd and **uncomment** the start/stop of "NSI_service" (remove **rem**).

```
bin/start_prim.cmd
TEXT
net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

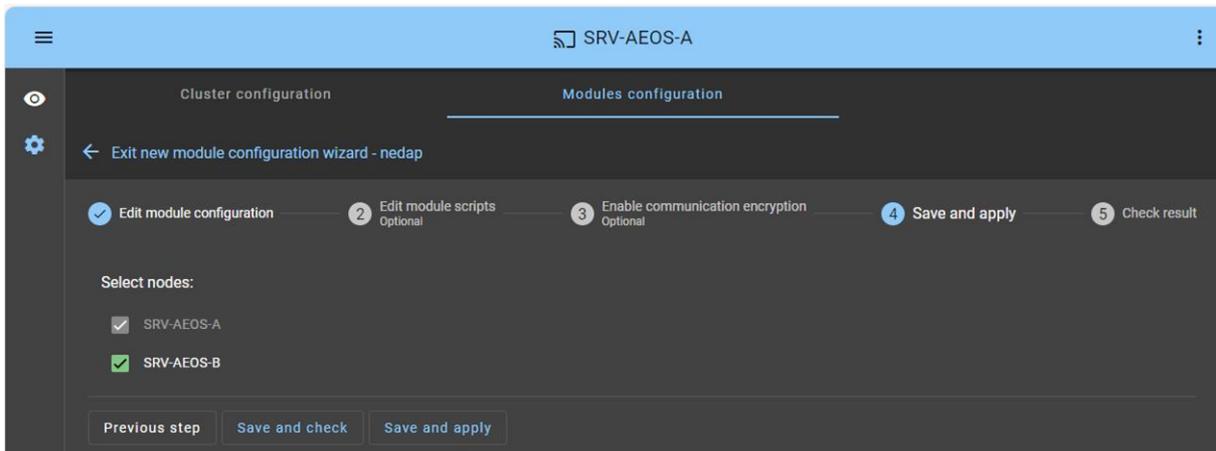
rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

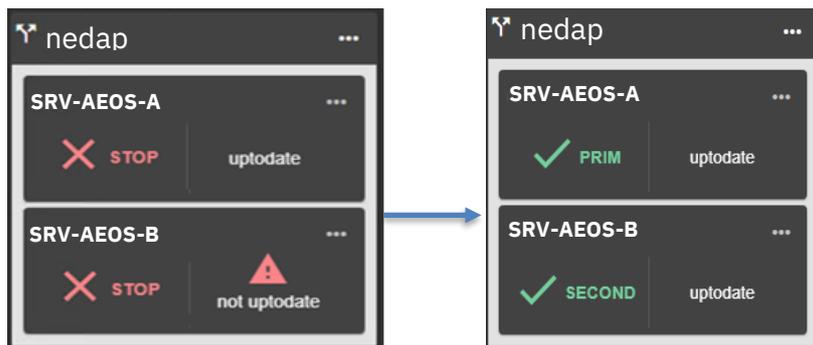
Setting up a SafeKit failover cluster with AEOS & SQL

```
bin/stop_prim.cmd
TEXT*
%SAFE%\safekit printi "Stopping AEOS Application Server"
net stop "AEOS Application Server"
%SAFE%\safekit printi "Stopping AEOS Lookup Server"
net stop "AEOS Lookup Server"
rem %SAFE%\safekit printi "Stopping AEOS aepu service"
rem net stop "AEOS aepu service"
rem %SAFE%\safekit printi "Stopping NSI_Service"
rem net stop "NSI_Service"
rem %SAFE%\safekit printi "Stopping NSX_Service"
rem net stop "NSX_Service"
rem %SAFE%\safekit printi "Stopping AppVision Service"
rem net stop "AppVision Service"
%SAFE%\safekit printi "Stopping SQL Server (MSSQLSERVER)"
sc.exe config "MSSQLSERVER" start= disabled
net stop "MSSQLSERVER" /Y
```

- Click on "Save and apply" to reconfigure the module on both nodes.



- Restart the nedap module with the "Start" command in "..."

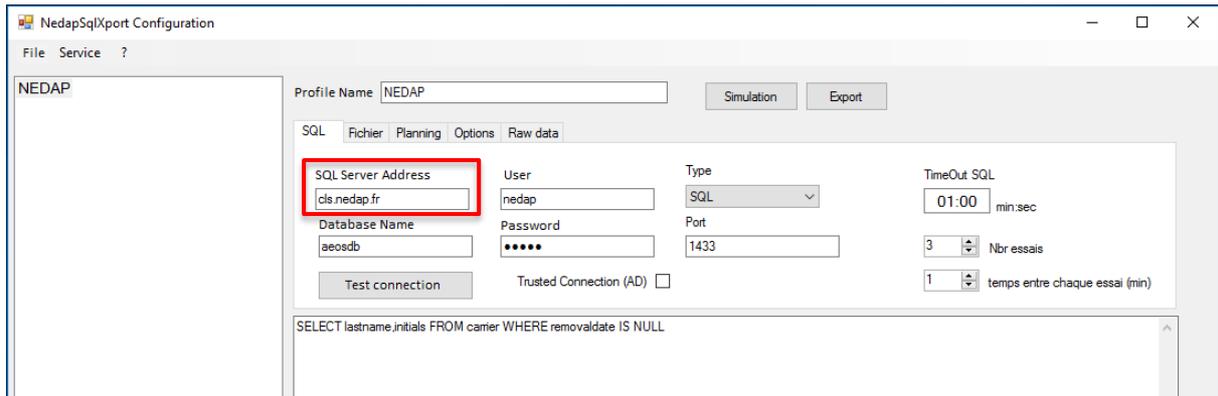


4.8. Nedap SQL export

- The Nedap SQL Export utility is installed on each server with a single one active:

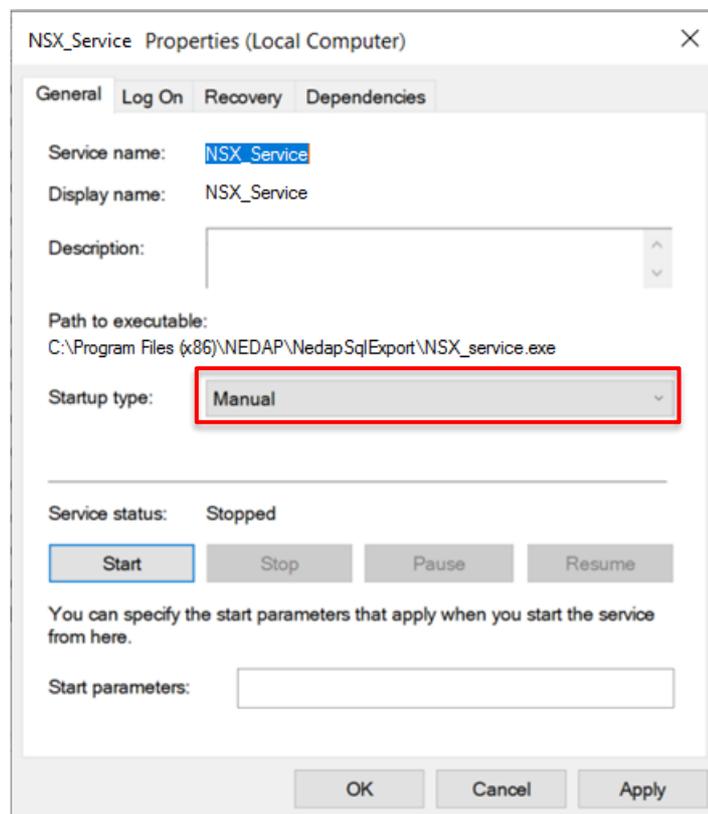


- Define the profile(s) with the cluster name “cls.nedap.fr”



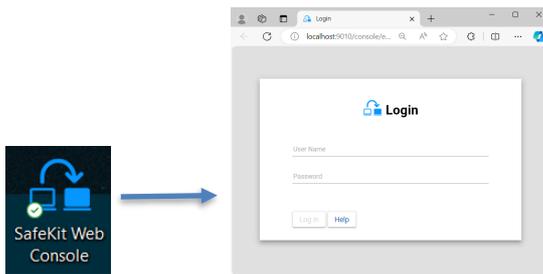
Important:

- Perform this step on both servers A & B
- Switch the startup type of “NSX_Service” to manual on both servers A & B

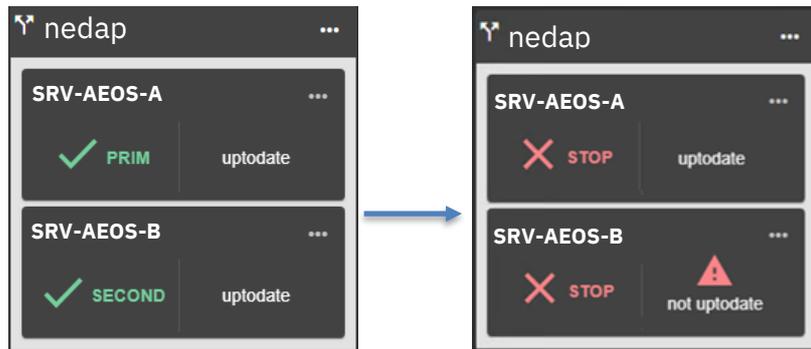


Setting up a SafeKit failover cluster with AEOS & SQL

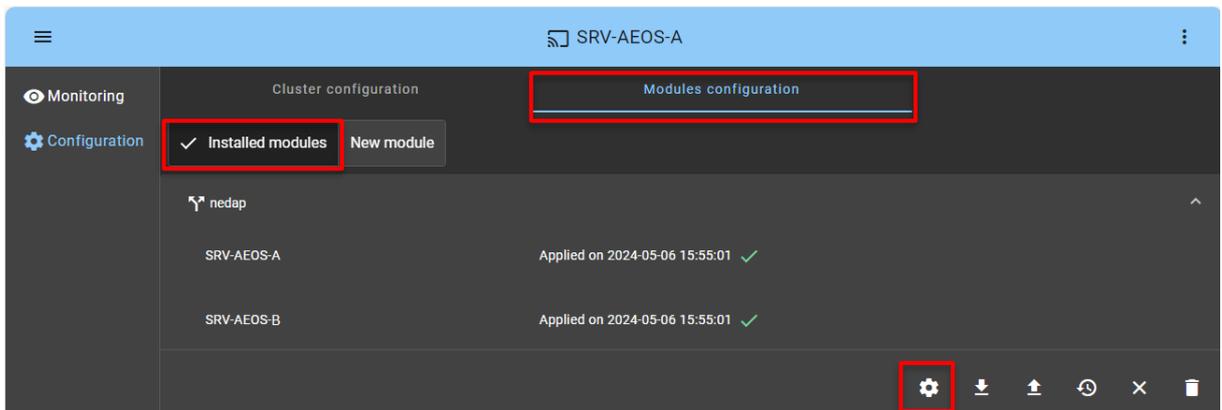
- Start the SafeKit console and authenticate.



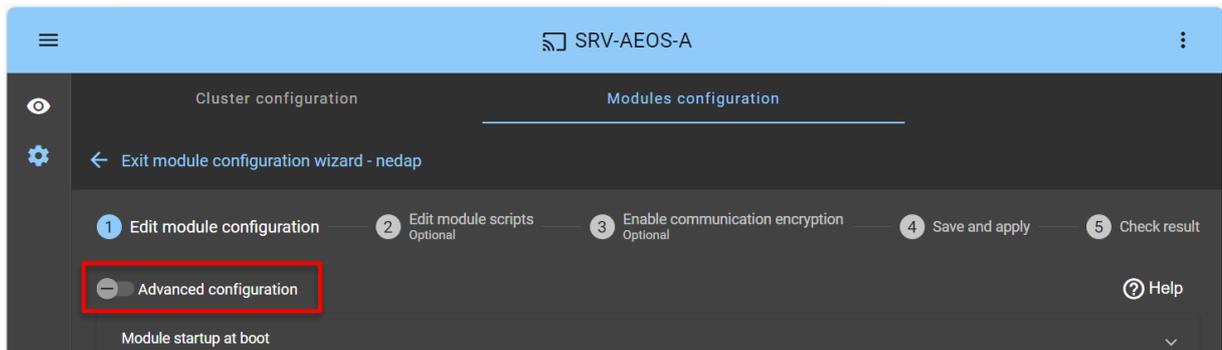
- Before reconfiguring the nedap module, first stop it. Stop first the SECOND to avoid a failover. Use the "Stop" command in "..."



- Click on "Modules configuration" tab → "Installed Modules" → nedap configure icon



- Click on "Advanced configuration"



- In conf/userconfig.xml, uncomment the replication of the Nedap SQL Export directory to enable profile replication (optional). And configure the process monitoring of NSX_Service.exe (optional, still in comment in the screenshot).

```
conf/userconfig.xml
XML*
<!-- Define the name or IP address of your virtual server -->
<!-- File Replication Configuration -->
<!-- Adapt with the directory of your SQL Server database and logs -->
<rfs>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"/>
  <replicated dir="C:\AEOS\data\aeon\configurations"/>
  <!--
  <replicated dir="C:\AEOS-aeu\data\aeu" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil" />
  <replicated dir="C:\Program Files\AppVision 4\Configurations" />
  -->
</rfs>
<!-- Software Error Detection Configuration -->
<errd polltimer="10">
  <!-- AEOS process -->
  <proc name="AEOS_appl.exe" class="prim" action="restart"/>
  <!-- SQL Server process -->
  <proc name="sqlservr.exe" action="restart" class="prim"/>
  <!-- AEOS aepu process -->
  <!-- <proc name="AEOS_aepu.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL import process -->
  <!-- <proc name="NSI_service.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL export process -->
  <!-- <proc name="NSX_service.exe" action="restart" class="prim" /> -->
  <!-- AppVision process -->
  <!-- <proc name="AppServer.exe" action="restart" class="prim" /> -->
</errd>
<!-- User scripts activation -->
<user/>
</service>
</safe>
```

- Edit the scripts start_prim.cmd and stop_prim.cmd and **uncomment** the start/stop of "NSX_service" (remove **rem**).

```
bin/start_prim.cmd
TEXT
net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

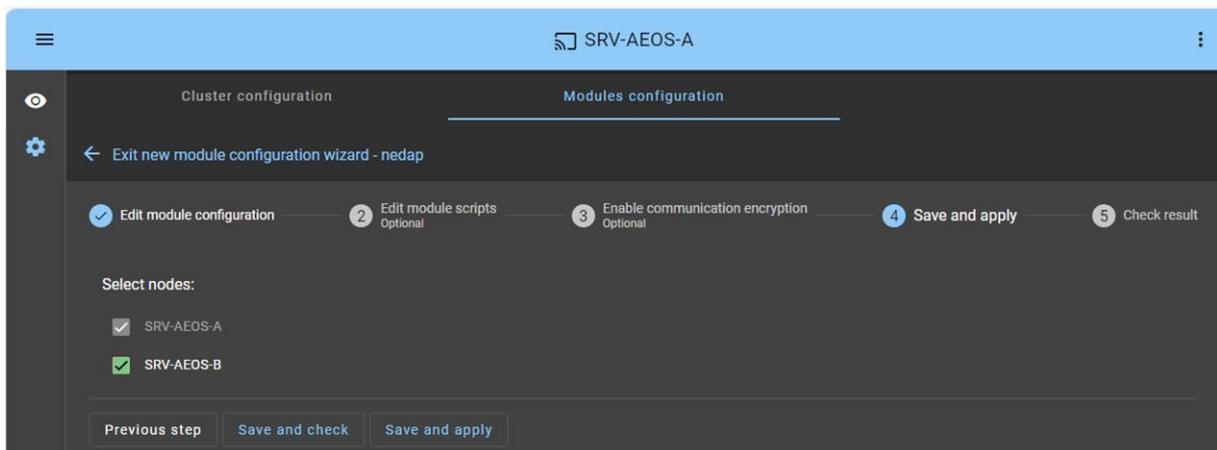
rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

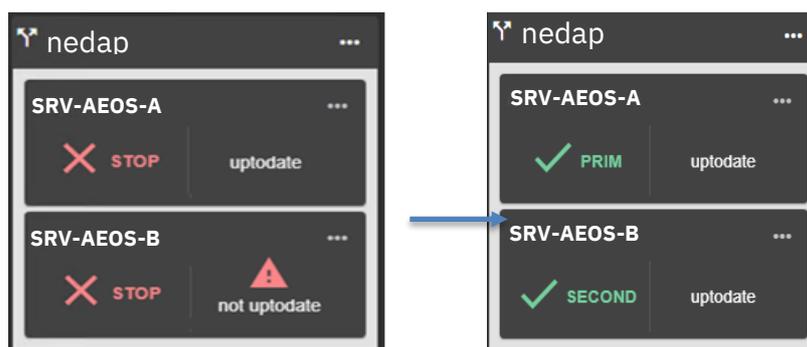
Setting up a SafeKit failover cluster with AEOS & SQL

```
bin/stop_prim.cmd
TEXT*
%SAFE%\safekit printi "Stopping AEOS Application Server"
net stop "AEOS Application Server"
%SAFE%\safekit printi "Stopping AEOS Lookup Server"
net stop "AEOS Lookup Server"
rem %SAFE%\safekit printi "Stopping AEOS aepu service"
rem net stop "AEOS aepu service"
rem %SAFE%\safekit printi "Stopping NSI_Service"
rem net stop "NSI_Service"
rem %SAFE%\safekit printi "Stopping NSX_Service"
rem net stop "NSX_Service"
rem %SAFE%\safekit printi "Stopping AppVision Service"
rem net stop "AppVision Service"
%SAFE%\safekit printi "Stopping SQL Server (MSSQLSERVER)"
sc.exe config "MSSQLSERVER" start= disabled
net stop "MSSQLSERVER" /Y
```

- Click on "Save and apply" to reconfigure the module on both nodes.



- Restart the nedap module with the "Start" command in "..."

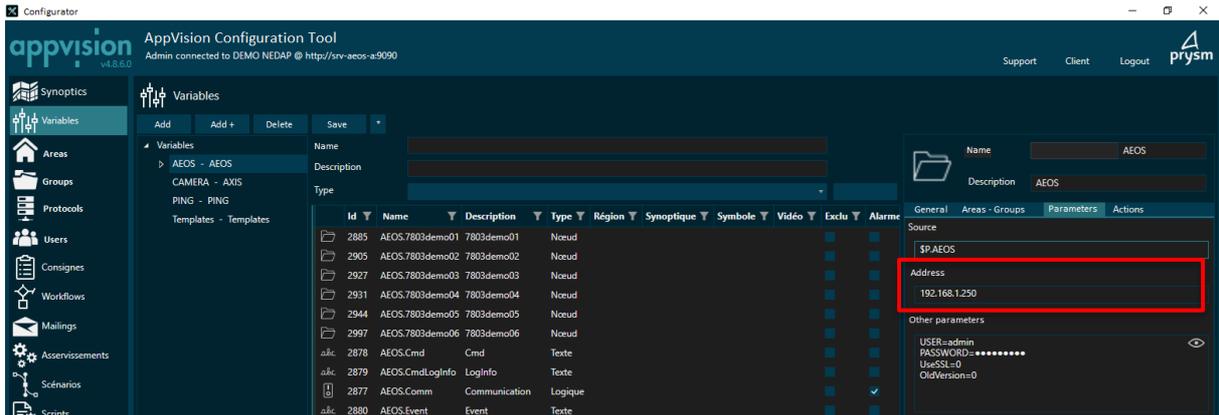


4.9. AppVision

- The AppVision hypervisor is installed on each server with a single one active:

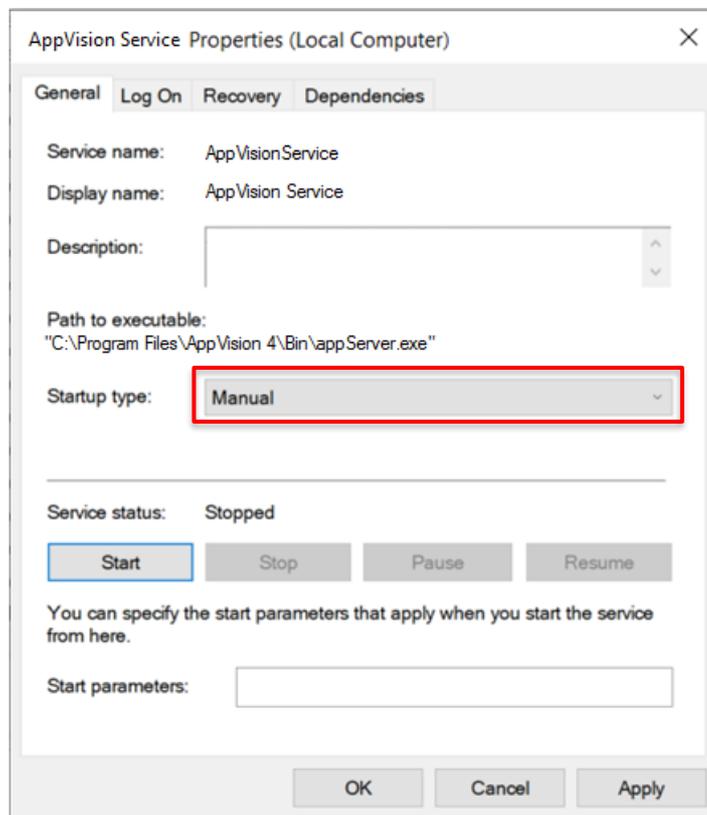


- Set the AppDriverAEOS driver connection with the cluster IP address 192.168.1.250



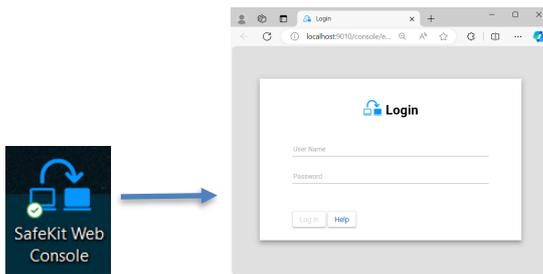
Note: The databases must be in SQL Server and the connection can be done locally or on cls.nedap.fr (cluster name/virtual IP)

- Switch the startup type of “AppVision Service” to manual on both servers A & B

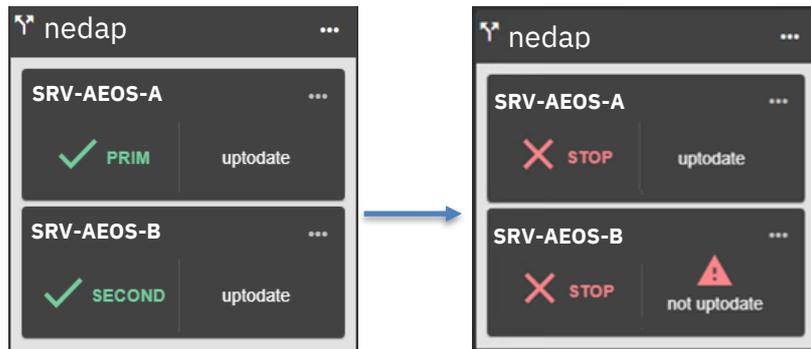


Setting up a SafeKit failover cluster with AEOS & SQL

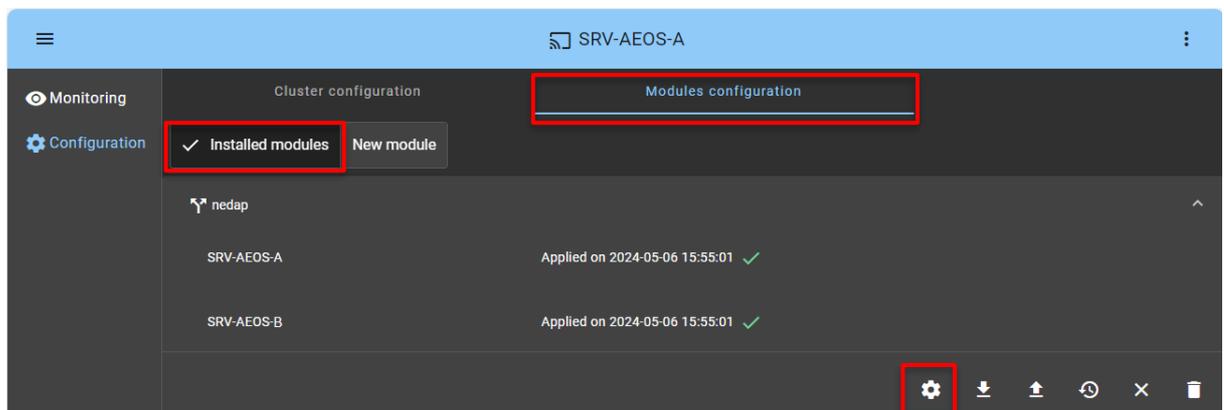
- Start the SafeKit console and authenticate.



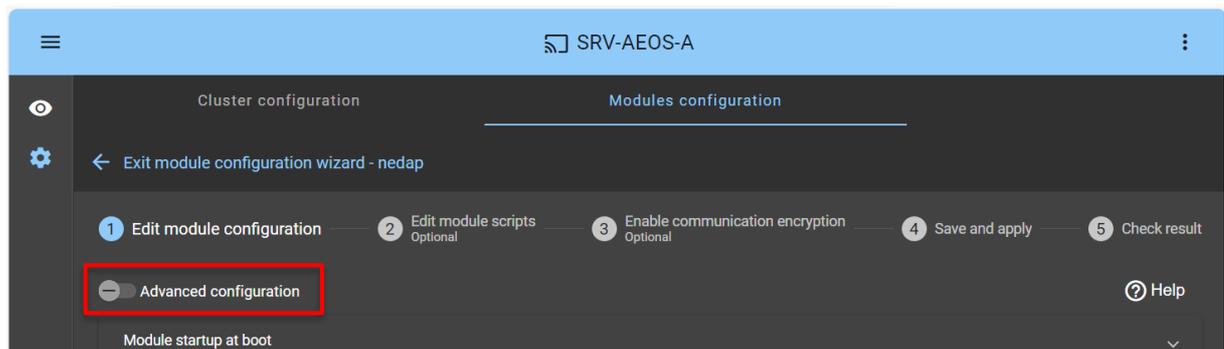
- Before reconfiguring the nedap module, first stop it. Stop first the SECOND to avoid a failover. Use the "Stop" command in "..."



- Click on "Modules configuration" tab → "Installed Modules" → nedap configure icon



- Click on "Advanced configuration"



- In conf/userconfig.xml, uncomment the replication of the AppVision Configurations directory to allow replication of plans, layouts, etc. (optional). And configure the process monitoring of AppServer.exe (optional, still in comment in the screenshot).

```
conf/userconfig.xml
XML*
<!-- Define the name or IP address of your virtual server -->
<!-- File Replication Configuration -->
<!-- Adapt with the directory of your SQL Server database and logs -->
<rfs>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>
  <replicated dir="C:\Program Files\Microsoft SQL
  Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"/>
  <replicated dir="C:\AEOS\data\aeon\configurations"/>
  <!--
  <replicated dir="C:\AEOS-aeu\data\aeu" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil" />
  <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil" />
  <replicated dir="C:\Program Files\AppVision 4\Configurations" />
  -->
</rfs>
<!-- Software Error Detection Configuration -->
<errd polltimer="10">
  <!-- AEOS process -->
  <proc name="AEOS_appl.exe" class="prim" action="restart"/>
  <!-- SQL Server process -->
  <proc name="sqlservr.exe" action="restart" class="prim"/>
  <!-- AEOS aepu process -->
  <!-- <proc name="AEOS_aepu.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL import process -->
  <!-- <proc name="NSI_service.exe" action="restart" class="prim" /> -->
  <!-- Nedap SQL export process -->
  <!-- <proc name="NSX_service.exe" action="restart" class="prim" /> -->
  <!-- AppVision process -->
  <!-- <proc name="AppServer.exe" action="restart" class="prim" /> -->
</errd>
<!-- User scripts activation -->
<user/>
</service>
</safe>
```

- Edit the scripts start_prim.cmd and stop_prim.cmd and **uncomment** the start/stop of "AppVision Service" (remove **rem**).

```
bin/start_prim.cmd
TEXT
net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

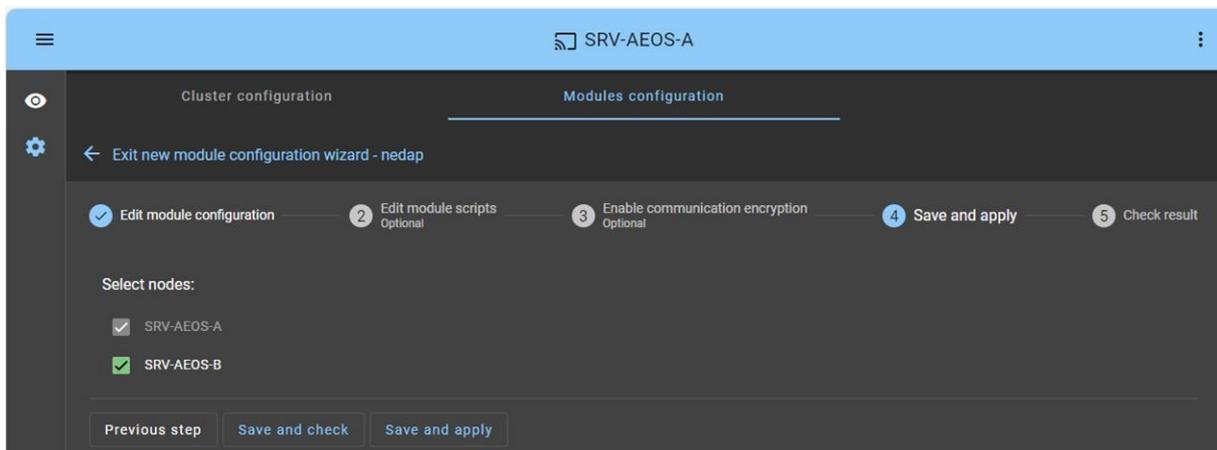
rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

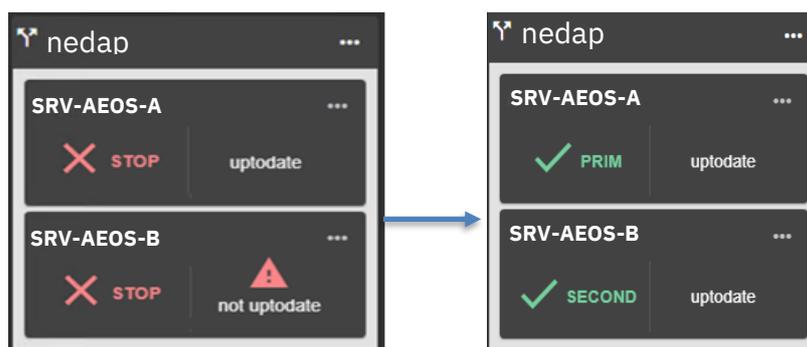
Setting up a SafeKit failover cluster with AEOS & SQL

```
bin/stop_prim.cmd
TEXT*
%SAFE%\safekit printi "Stopping AEOS Application Server"
net stop "AEOS Application Server"
%SAFE%\safekit printi "Stopping AEOS Lookup Server"
net stop "AEOS Lookup Server"
rem %SAFE%\safekit printi "Stopping AEOS aepu service"
rem net stop "AEOS aepu service"
rem %SAFE%\safekit printi "Stopping NSI_Service"
rem net stop "NSI_Service"
rem %SAFE%\safekit printi "Stopping NSX_Service"
rem net stop "NSX_Service"
rem %SAFE%\safekit printi "Stopping AppVision Service"
rem net stop "AppVision Service"
%SAFE%\safekit printi "Stopping SQL Server (MSSQLSERVER)"
sc.exe config "MSSQLSERVER" start= disabled
net stop "MSSQLSERVER" /Y
```

- Click on "Save and apply" to reconfigure the module on both nodes.



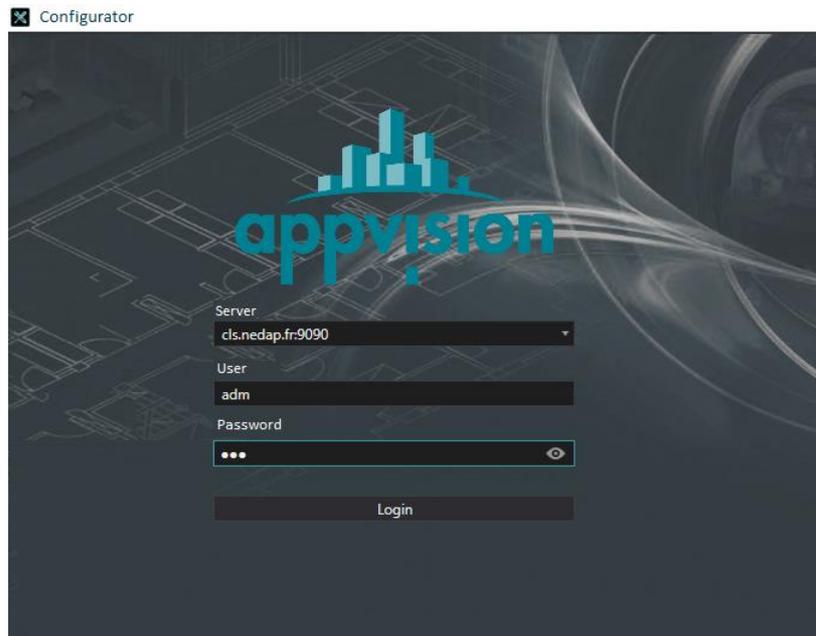
- Restart the nedap module with the "Start" command in "..."



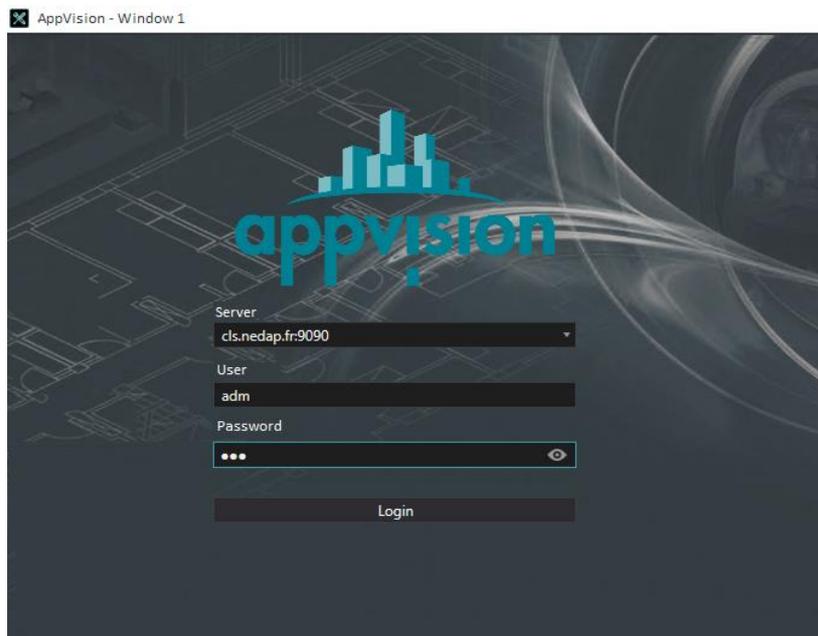
Setting up a SafeKit failover cluster with AEOS & SQL

- Client tools must connect to “cls.nedap.fr” (virtual IP)

AppVision configurator:



AppVision client:



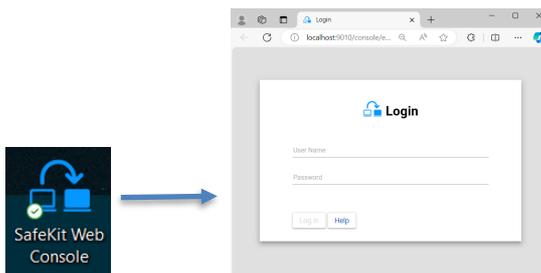
4.10. SQL script

The SQL script will allow you to modify a value in a table before starting the application. For example for the operation of TrakaWeb in “Active & Passive Switchover” mode.

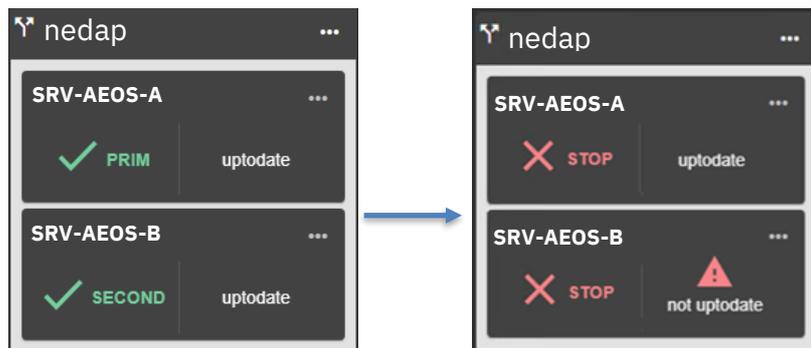
- Place the SQL script in a folder C:\safekit\script\ClusterTraka.sql (for example)

Note: The details of the script are documented in “TD0183 - TrakaWEB Active & Passive Switchover - V1_4.pdf”.

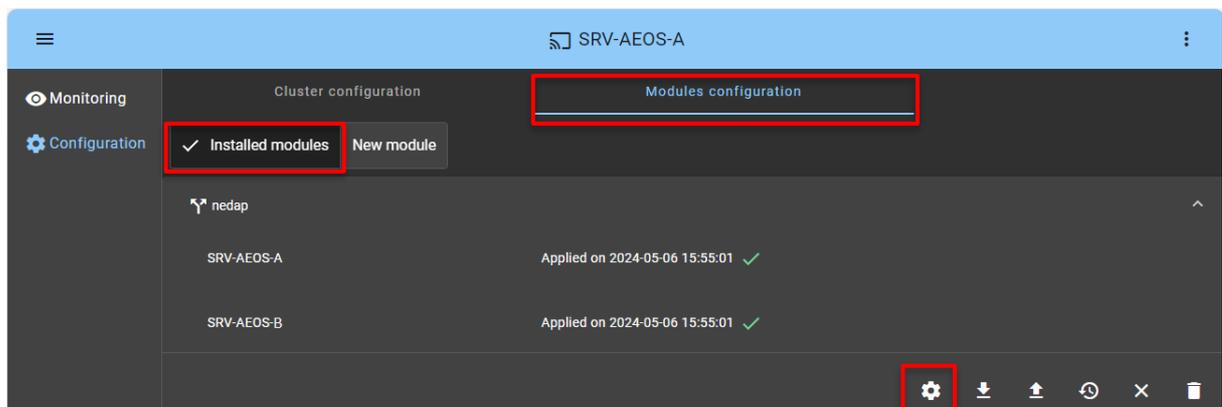
- Start the SafeKit console and authenticate.



- Before reconfiguring the nedap module, first stop it. Stop first the SECOND to avoid a failover. Use the "Stop" command in "..."

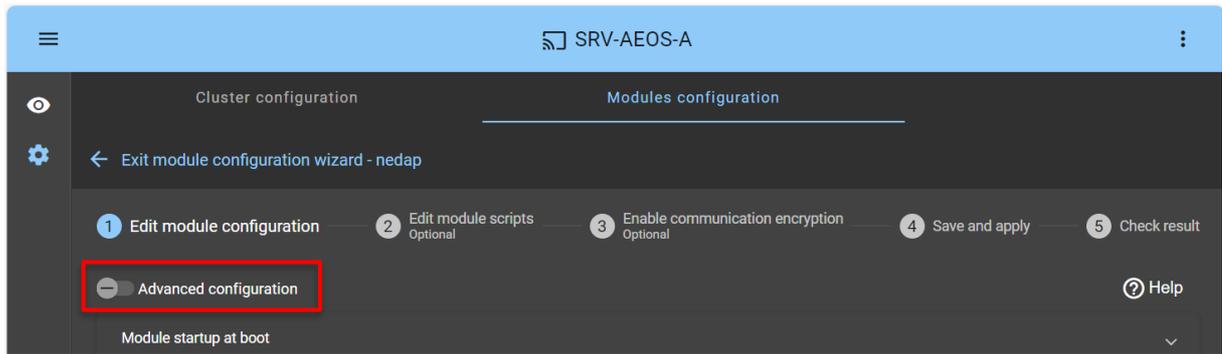


- Click on "Modules configuration" tab → "Installed Modules" → nedap configure icon



Setting up a SafeKit failover cluster with AEOS & SQL

- Click on "Advanced configuration"



- Edit the scripts start_prim.cmd and stop_prim.cmd and **uncomment** the start/stop of "AppVision Service" (remove **rem**).

```
bin/start_prim.cmd
TEXT
net start "MSSQLServer"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) start failed"
) else (
  %SAFE%\safekit printi "SQL Server (MSSQLServer) started"
)

net start "AEOS Application Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Application Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Application Server started"
)

net start "AEOS Lookup Server"
if not %errorlevel% == 0 (
  %SAFE%\safekit printi "AEOS Lookup Server start failed"
) else (
  %SAFE%\safekit printi "AEOS Lookup Server started"
)

rem net start "AEOS aepu service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AEOS aepu service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AEOS aepu service started"
rem )

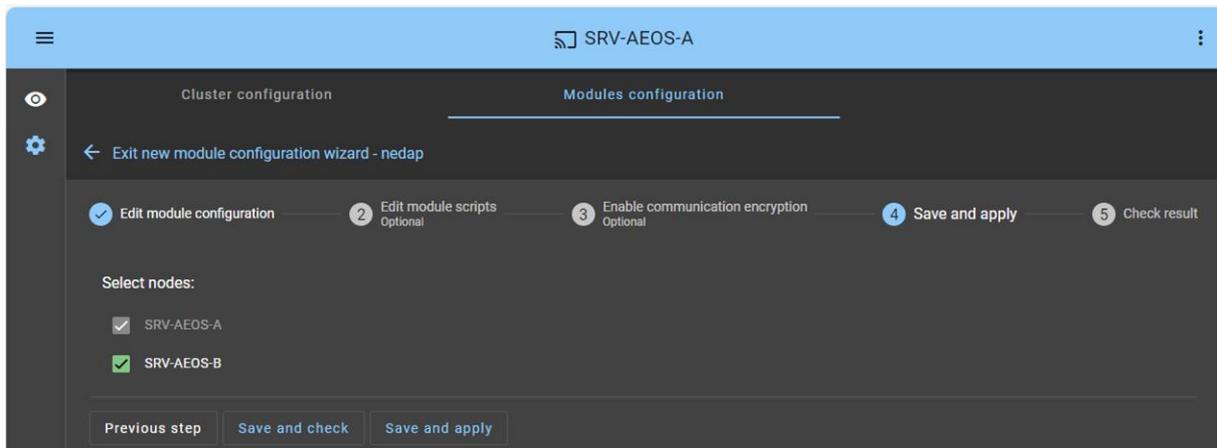
rem net start "NSI_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSI_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSI_Service started"
rem )

rem net start "NSX_Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "NSX_Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "NSX_Service started"
rem )

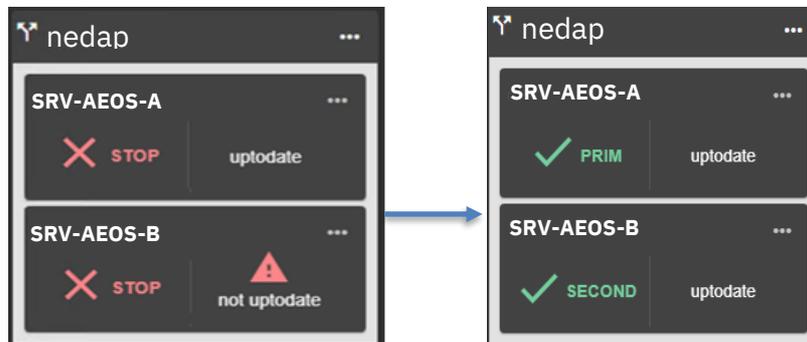
rem net start "AppVision Service"
rem if not %errorlevel% == 0 (
rem  %SAFE%\safekit printi "AppVision Service start failed"
rem ) else (
rem  %SAFE%\safekit printi "AppVision Service started"
rem )

rem %SAFE%\safekit printi "Traka script SQL"
rem sqlcmd -S cls.nedap.fr -U nedap -P your_password -i %SAFE%\script\ClusterTraka.sql
```

- Click on "Save and apply" to reconfigure the module on both nodes.



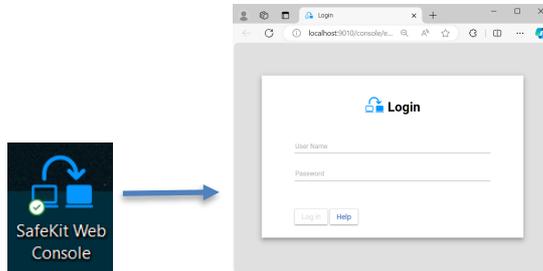
- Restart the nedap module with the "Start" command in "..."



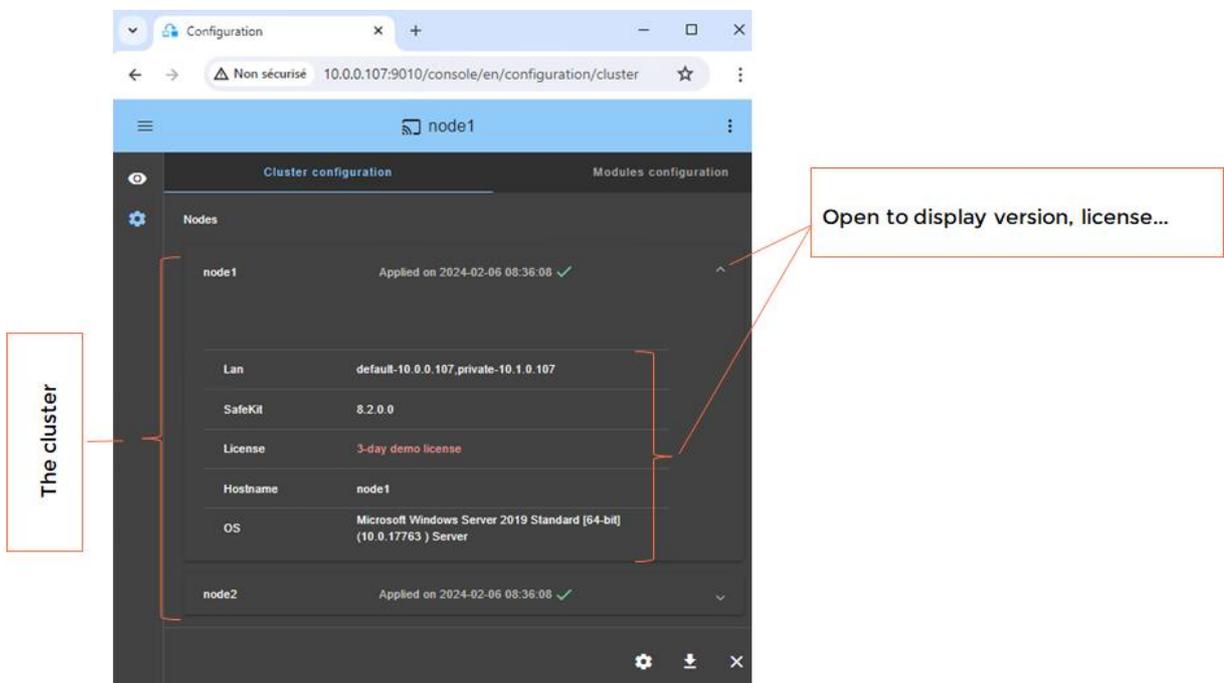
5. Miscellaneous SafeKit

5.1. Licence

- Start the SafeKit console and authenticate.



- Click on "Cluster configuration" tab



5.2. Logs

- Click on SRV-AEOS-A to see the log of events

1 Click on the server to display its detailed status

- It is highlighted with a blue color
- The module details are displayed

2 Click on the tab to visualize module logs, resources or node information

Module details for nedap on SRV-AEOS-A

- Click on a Script message to see the output messages

1 Click on a S(cript) message

- output of the script execution is displayed

Output of the script

5.3. Backup

- Back up the following elements to allow restoration if necessary:
 - C:\safekit\var\cluster\cluster.xml
 - C:\safekit\Application_Modules\generic: original configuration (*.safe)
 - C:\safekit\modules\lastconfig: the last 3 configurations (*.safe)
 - C:\safekit\web\conf\ (user authentication, https certificate...)

Notes:

- The files are available on both servers.
- A ".safe" file is a zip file containing the module configuration: userconfig.xml and scripts.
- A ".safe" file can be reinstalled with the SafeKit console.

5.4. More information on SafeKit

- [Nedap AEOS: the simplest high availability cluster between two redundant servers - Evidian](#) – the article further explains how to configure a splitbrain checker if necessary.
- [Hyper-V cluster without shared storage on a SAN - Evidian](#) – an alternative solution where Nedap AEOS is put inside a virtual machine fully replicated and restarted by SafeKit (other applications can be put in other VMs also replicated and restarted by SafeKit).
- [SafeKit Free trial - High Availability - Evidian](#) – all technical information including an on-line training.

6. Document history

Date	Modification	Version	Author
08/03/2024	Document creation	1	D.S.
10/05/2024	Translation in English + Adaptation to SafeKit 8.2	2	B.R.

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