Nedap Security Management

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

Block diagram of the SafeKit mirror cluster:

• <u>Step 1. Real-time replication:</u>

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.



• <u>Step 2. Automatic failover:</u>

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.

• <u>Step 3. Reintegration after failure:</u>

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.

• <u>Step 4. Return to normal:</u>

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
 - 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 to adapt):

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 in the same subnet (alias)





3. SafeKit

3.1. Servers A & B: Installation

- Start installation of the <u>safekit_windows_x86_x_x_x_x.msi</u> package
- Accept the terms in the License Agreement and click on the "Install" button

🖁 SafeKit Setup —		×
Please read the SafeKit License Agreement		
End User License Terms and Conditions for Evidia Licensed Products 2017-06 Installation, operation and use of all Evidian Licensed Products including this one, are exclusively governed by and subject to, all the terms and conditions of this Agreement, except of the extent that a separate written license agree that is legally binding on Evidian ("Separate] accept the terms in the License Agreement Click Install the product with default options for all users. Click Advanced to installation options.	an to ement o change	~
Print Advanced Install	Cano	el

• At the end of the installation, select "Set console credentials and firewall rules now."

SafeKit Setup	- 🗆 X
	Completed the SafeKit Setup Wizard
	Click the Finish button to exit the Setup Wizard.
	Set console credentials and firewall rules now.
	Back Finish Cancel

- Click on "Finish" and SafeKit
 - o configures Microsoft Windows Firewall for SafeKit.
 - opens a window to enter the password for the admin user of the SafeKit web console. Set the same password on all nodes.

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Windows PowerShe	ll credential request.	?	×					
R		AF						
Please set up the password for the console.								
User name:	🖸 admin	`	·					
Password:	1							
	ОК	Can	cel					

- Copy the module "<u>nedap.safe (get it here)</u>" (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 <u>one-month temporary license key</u>
- 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.

		Ø		🔒 Login		×	+		-		×
	\leftarrow	С	i	localhost:	010/console/e	Q	A" 🗘	¢			
		-								-	
						Logir	ı				
			Us	er Name							
			Pa	ssword							
feKit Web		L		Log in	elp		_		_		

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• After authentication, the administration console appears

≡				:				
⊘ Monitoring	A Warning - Cluster not configu	ıred						
🌣 Configuration	Cluster configuration							
	← Exit cluster configuration wizard							
	1 Edit cluster configuration							
	Advanced configuration			() Help				
	Lan and nodes		Ð					
	Lan name* default							
	Node address*		Ð					
	Required value							
	Reload Save and apply							

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: 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

losts - Bloc-notes								
<u>Fichier</u> Edition Format Affichage ?								
# Copyright (c) 1993-2009 Microsoft Corp.			^					
#								
<pre># This is a sample HOSTS file used by Microsoft TCP/IP for Windows. #</pre>								
# 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 rh1no.acme.com # source server								
# 36.25.05.10 X.acme.com # X CLIENT NOSC								
# localhost name resolution is handled within DNS itself.								
# 127.0.0.1 localhost								
# ::1 localhost								
192 168 1 101 SRV-0F05-0								
192.168.1.102 SRV-AEOS-B								
192.168.1.250 cls.nedap.fr								
<			>					
Least and the second								

Important :

• Perform this step on both servers A & B

3.3. 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	_	х
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"



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



3.4. 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.

		Ô		🔒 Login		×	+		-		\times
	\leftarrow	C	0) localhos	t:9010/console/e	Q	A»	₿			
		-								-	
						_ogir	า				
			-	User Name							
				Password							
	•	L	(Log in	Help						
SafeKit Web Console											

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• After authentication, the administration console appears

≡				:
• Monitoring	A Warning - Cluster not co	nfigured		
🔅 Configuration	Cluster configuratio	n		
		– 2 Check result		
	Advanced configuration			() Help
	Lan and nodes		Ð	
	Lan name* default			
	Node address*		Ð	
	Required value			
	Reload Save and apply			

3.4.1. 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.

<u>Note:</u> Red color indicates a connection error.

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

≡				:
0	Cluster configuration		Modules configuratio	n
¢	← Exit cluster configuration wizard			
	1 Edit cluster configuration		2	Check result
	Advanced configuration			() Help
	Lan and nodes		Ð	
	Lan name* default			
	Node address* 192.168.1.101	Node name* SRV-AEOS-A	ō	
	Node address* 192.168.1.102	Node name* SRV-AEOS-B	₫ ⊕	
	Reload Save and apply			

• Check result.

≡		:	
0	Cluster configuration	Modules configuration	
۵	← Exit cluster configuration wizard		
	C Edit cluster configuration		- 2 Check result
	Saving and applying cluster configuration		
	SRV-AEOS-A	Success 🗸	~
	SRV-AEOS-B	Success 🗸	~
	Previous step Configure modules		

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3.4.2. nedap.safe configuration

Click on "Modules configuration" tab → "New module" button → nedap.safe. And click on the configure icon. The console finds nedap.safe in the Application_Modules/generic/ directory on the server side if you dropped the module there during installation.

≡		ລີ SRV-AEOS-A	:
• Monitoring	A Warning - No module configured		
🄹 Configuration	Cluster configuration	Modules configuration	
	Installed modules 🗸 New module		
	Main modules		
	Select a module:		
	🔿 farm.safe		
	O mirror.safe		
	nedap.safe		
			\$ ±
	Backup modules		
	Other modules		
	Upload a module		~

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





• Configure module parameters.

≡	SRV-AEOS-A				
Monitoring ■	A Warning - No module configured	A			
🌣 Configuration	Cluster configuration Modules configuration				
	← Exit new module configuration wizard - nedap				
	1 Edit module configuration 2 Edit module scripts 3 Enable communication encryption 4 Save and apply –	5 Check result			
	Advanced configuration	Help			
	Module startup at boot	~			
	Macros	~			
	Heartbeart networks	~			
	Virtual IP addresses 🕄	~			
	Replicated directories	~			
	Checkers	~			
	Reload Next step	ļ			

- Module startup at boot: Startup type: Automatic, Startup delay: 0
- Macros / SERVICES: MSSQLSERVER, AEOS Application Server, AEOS Lookup Server
- Heartbeat networks: default
- Virtual IP addresses: 192.168.1.250 (example to adapt)
- Replicated directories: define SQL & AEOS directories (example to adapt):
 - 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\aemon\configurations
- Checkers → Processes/services:
 - AEOS_appl.exe process
 - sqlservr.exe process



- Edit scripts (optional): click directly on Next step.
 - This step is optional and can be skipped in most cases, as the restart scripts are already pre-configured to restart services defined in the previous step.
 - So, click directly on Next step.
 - start_prim.ps1 starts all services in the order specified in the SERVICES list, while stop_prim.ps1 stops all services in the reverse order.
 - Additionally, start_prim.ps1 checks the startup of each service and stops the module if any service fails to start correctly.
 - During module configuration, the boot startup of services will automatically be set to 'Manual'. This ensures that services do not start automatically upon system boot, but instead, they will be initiated only when the module itself is started.

≡			╗ node1 👻		(J).
0	Cluster configuratio	n	Modules configuration	_	
-	← Exit new module configuration	wizard			
	Edit module configuration —	2 Edit module scripts	3 Enable communication encryption Optional	— (4) Save and apply —	5 Check result
	Advanced configuration				⑦ Help
	bin/start_prim.ps1 bin/stop_prim.ps1				
	Reload Previous step	Next step			

• Encryption: keep the default "Enable" value

≡	SRV-AEOS-A				
 Monitoring 	A Warning - No module configured				
Configuration	Cluster configuration Modules configuration				
	← Exit new module configuration wizard - nedap				
	Edit module configuration Coptional Edit module scripts Coptional Edit module scripts Coptional Coptional	- 5 Check result			
	Encrypt module communications:				
	Reload Previous step Next step				



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

≡		SRV-AEOS-A		:
©	A Warning - No module configured			
	Cluster configuration	Modules configuration		
	← Exit new module configuration wizard - nedap			
	Edit module configuration 2 Edit modul Optional	scripts 3 Enable communication encryption Optional	4 Save and apply	— 5 Check result
	Select nodes:			
	SRV-AEOS-A			
	SRV-AEOS-B			
	Previous step Save and check Save and	apply		

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

≡	ត្ថា SRV-AEOS-A				
Monitoring	Cluster configuration	M	odules configuration		
🏩 Configuration	← Exit module configuration wizard - ned	ap			
	C Edit module configuration 2 $\begin{bmatrix} E_1 \\ O_1 \end{bmatrix}$	dit module scripts 3 e	nable communication encryption	Save and apply	— 5 Check result
	Saving and applying nedap configuration	1			
	SRV-AEOS-A	Success 🗸			
	SRV-AEOS-B	Success 🗸			
	Previous step Monitor modules				



• 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.

• 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 stays in the SECOND (orange) state while resynchronizing replicated folders. And ends in the state SECOND (green).
 <u>Note:</u> Check the server B log (by clicking on SRV-AEOS-B) to see resynchronization progress.

Y nedap	•••
SRV-AEOS-A	•••
	uptodate
SRV-AEOS-B	
SECOND	uptodate



3.5. Cluster validation

3.5.1. 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/





3.5.2. Manual failover

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



• Server B should go into ALONE (green) state and server A into STOP (red) state.





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• 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/

InPrivate		AEOS	×	+
\leftarrow C	۵ ô	https://cls.ned	ap.fr:8443/aeos/	
		200		
		वस्र	25	
	Llooro	*		
	Usern			
	Passv	/ord*		
			Login	
				_

Setting up a SafeKit failover cluster with AEOS & SQL





• Server A stays in the SECOND (orange) state while resynchronizing replicated folders. And ends in the state SECOND (green). The cluster is then operational again.



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3.5.3. Server failure

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

≡		ଲି SRV-A	EOS-B :
0	ነ nedap		
	SRV-AEOS-A	•••	
		uptodate	
	SRV-AEOS-B	•••	
		uptodate	

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

<mark>Ƴ</mark> nedap	
SRV-AEOS-A	
ERROR	HTTP connection error
SRV-AEOS-B	

• 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



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

InPrivate	a Aeos		× +
\leftarrow C	යි 🖒 https	:// cls.nedap.fr :8443/ae	
		000	
	d	692	
	lleene *		
	Osemanie		
	Password*		
		Login	

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



3.6. Activation of HTTPS for the SafeKit console

More information: SafeKit User's Guide (evidian.com) / 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 cluster name (cls.nedap.fr) and virtual IP (192.168.1.250).

4.2. Virtual AEPU "client"

• Virtual AEPU 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.			1	1
Please specify the value, then click Next.				
The name of the AEOS server:				
ds.nedap.fr				
The web part of the AEOS server				
8443				
< Bac	k Next	>	Cancel	

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

🕞 Setup - NEDAP AEpu		—	
Enter the location of the AEOS Lookup Where are the AEOS Lookup Servers dep	Servers loyed?		$\dot{\mathbf{x}}$
Lookup Servers			
SRV-AEOS-A SRV-AEOS-B			< >
	< <u>B</u> ack <u>N</u> e	xt >	Cancel

• When starting the service, it must be present in AEmon

% AEmon connected to 1 AEpu	_	х
File View AEpu System Configuration Component Group Graphical Test Log Help		
AEpus X Configuration X Log		
🗞 virtualaepuclient		
Zoom In Zoom Out Zoom To Fit Zoom Normal Redraw 🗹 Show Groups 🗌 State Monitor 🗌 Selective		
Type to filter		



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"

AEconf - C:\AEOS\data\aemon\configurations\aepu01.config -	×
File Connection Help	
AEpu V Network V	
Network Miscellaneous Advanced Security	
AEpu host name: aepu01	
AEServer host name: ds.nedap.fr	
Dynamic Host network Configuration (DHCP)	
AEpu IP address: 192.168.1.1 Subnet mask: 255.255.255.0	
Domain Name Server (DNS)	
Gateway	
AEServer IP address: 192.168.1.250	
AEpu host table	
₹a Disconnected	

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

🧏 AEm	on connec	ted to 1 A	\Epu							
File Vie	w AEpu	System	Configuration	Component	Group	Graphical	Test	Log	Help	
AEpus ×	:	Cor	figuration \mathbf{x}	Log						
👌 aepu0:	1	🤊 L	ookup services A	Epu					× _{ps}	Sta
		The lo Please overri	ookup service(s) to e use this function ide the initial AEpu	be used by the with care and ke lookup server c	AEpu can eep in min onfigurati	i be chosen h d that any ch on	ere. Iange w	vill		
		Avail	able		S	RV-AEOS-A				
				>	>	RV-AEO3-D				
				<	<					
		Re	eset	0	k (Cancel				
		+	Protection Service							

• 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:				
bepuvirtuelsrv				
	< <u>B</u> ack	<u>N</u> ext >		Cancel

• Set the cluster name and click Next

🕞 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:					
ds.nedap.fr					
The web port of the AEOS server:					_
8443]
					_
	< <u>B</u> ack	<u>N</u> ex	t >	Can	icel

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

Betup - NEDAP AEpu Enter the location of the AEOS Lookup Server Where are the AEOS Lookup Servers deployed?	rs	_		
Lookup Servers				<u> </u>
SRV-AEOS-A SRV-AEOS-B			< v	
	< <u>B</u> ack	<u>N</u> ext >	Cancel	

Important:

• Perform this step on both servers A & B with the same AEPU name



• Start the SafeKit console and authenticate.

	 ≗ ←	ð C		A Login localhost90	10/console/e	× ©	+ ^ ☆	3	- 0	•	×
					a ∎ 1	.ogin	1			1	
\frown			Us Pa	er Name ssword							
SafeKit Web Console		_		.og in He	Þ	_	_		_		

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

Ƴ nedap	•••		۲ nedap	
SRV-AEOS-A	•••		SRV-AEOS-A	
	uptodate		X STOP	uptodate
SRV-AEOS-B	•••	\rightarrow	SRV-AEOS-B	
	uptodate		Х STOP	not uptodate

• Click on "Modules configuration" tab \rightarrow "Installed Modules" \rightarrow nedap configure icon

=			SRV-AEOS-A					:
• Monitoring		onfiguration	Modules configuration					
🏟 Configuration	✓ Installed modules	New module						
	∱ " nedap							
	SRV-AEOS-A		Applied on 2024-05-06 15:55:01 🗸					
	SRV-AEOS-B		Applied on 2024-05-06 15:55:01 🗸					
				• ±	t	Ð	×	ī

• Click on "Advanced configuration" to access userconfig.xml

=		SRV-AEOS-A	:
0	Cluster configuration	Modules configuration	
\$	← Exit module configuration wizard - nedap		
	1 Edit module configuration — 2 Edit mode Optional	ule scripts 3 Enable communication encryption optional	G Save and apply 5 Check result
	Advanced configuration		() Help
	Module startup at boot		

- In userconfig.xml, add in the **SERVICES** macro at the end and separated by a comma: **AEOS aepu service**
- 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*	D	<u>0</u>
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></rfs>		
Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>		
<replicated c:\aeos\data\aemon\configurations"="" dir="C:\Program Files\Microsoft SQL
Server\MSSQL13_MSSQLSERVER\MSSQL\DATA*/></td><td></td><td></td></tr><tr><td><pre><replicated dir="></replicated>		h
<replicated dir="C:\AEOS-aepu\data\aepu"></replicated>		
<replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil"></replicated>		
<replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil"></replicated>		
<replicated dir="C:\Program Files\AppVision 4\Configurations"></replicated>		
->		
<l- configuration="" detection="" error="" software=""></l->		
<pre><errd polltimer="10"></errd></pre>		
AEOS process		
<pre></pre>		
SQL Server process		
<proc action="restart" class="prim" name="sqlservr.exe"></proc>		
AEOS aepu process		
<proc name="AEOS_aepu.exe" action="restart" class="prim" / >		
Nedap SQL import process		
<pre et Nodes SOL avaat around to a set on = restart class= prim />>		
Neoap out export process		
<pre change = "AppServer.exe" action="restart" class="prim" />>		
User scripts activation		
<user></user>		
		Ť
		1.



≡		ଲ୍ଲ SRV-AEOS-A		:
0	Cluster configuration	Modules configuration		
۵	← Exit new module configuration wizard - nedap			
	Git module configuration 2 Edit module Optional	e scripts ③ Enable communication encryption Optional	4 Save and apply	5 Check result
	Select nodes: SRV-AEOS-A SRV-AEOS-B			
	Previous step Save and check Save and	apply		

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

™ nedap			Ƴ nedap	
SRV-AEOS-A			SRV-AEOS-A	•••
🗙 stop	uptodate			uptodate
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	••••
Х ѕтор	not uptodate		SECOND	uptodate

📩 nedap

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)

🕌 Socket Test Tool 🗴	1.15		– 🗆 X
Но	st IP: cls.nedap.fr 🔻	Save	<u>C</u> lear
Por	t: 8035	<u>^</u>	<pre>1 login(admin, i); setRmiEventConnection(true); setRmiCommandConnection(true); getServices(); getVersion(); executeArgs(provideAccess, [], "aepunamehostname:aebcl ==</pre>
Uiew Echo	Disable Echo		logout();
KS: C:\certs\server.jks	3		
⊖ Ssl	Plain		
SSLS	StoreType: JCEKS 🔻		
Connect	Disconnect	▼ ▲	
	_		Save
Disconnected		keystor	ePath: C:\certs\server.jks NEDAP N.V. Rob van Oeveren

🕌 Socket Test Tool v1.	.15			- 🗆 X
Hos	t IP: cls.nedap.fr 💌	Save		<u>C</u> lear
Port	8035	+++ Plain session started < 2024-03-20T09:56:14.711620600 Status:connected to AEOS version 2021.2.4 built on 2022-04-04 > 2024-03-20T09:56:21.269467600 Logic(dwint)		login(admin, i); setRmiEventConnection(true); getServices(); getServices(); getServices();
<u>V</u> iew Echo	<u>D</u> isable Echo	<pre>cv 2024-03-20T09:56:21.602403700 Response:true > 2024-03-20T09:56:23.590998700 setRmiCommandConnection(true); < 2024-03-20T09:56:23.604275600 Response:; > 2024-03-20T09:56:40.270010700to:ir.com/setCom/se</pre>		executeArgs(provideAccess, [], "aepunamehostname:aebcl logout();
KS: C:\certs\server.jks		<pre>setKm1EventConnection(true); < 2024-03-20T09:56:40.298141800 Response:; < 2024-03-20T09:56:40.345448600 Event:INIT11VERSION=1/MAXSEQ=1000 HBMS=60000 < 2024-03-20T09:57:40.302178500 Event:HB 2 0</pre>		
O Ssl	Plain toreType: JCEKS			
<u>C</u> onnect	<u>D</u> isconnect			
Connected		keys	store	Path: C:\certs\server.jks NEDAP N.V. Rob van Oeveren

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:

Host-name (name of the AEOS server)	cls.nedap.fr
Host-portnr (def.:3528)	3528
Card printer name	Microsoft Print to PDF
Prefix	CardPrinter_
Client-portnr (def.:3628)	3628
Layout directory	C:\AEOS_Cardprinter
Logo directory	C:\AEOS_Cardprinter
Preview Layout	
Encode type	\sim

AEOS Capture:

🛃 Setup - NEDAP AEOS Capture	- 🗆 ×
Enter photo/signature capture values Reference: Advanced install manual Please specify value and dick then next:	*
Host-name (name of the AEOS server)	cls.nedap.fr
Host-portnr (def.:3528)	3528
Identifier photo device (TruPhotoCamera)	FileInput001
Identifier signature device (TruSignature)	SigFileInput
Prefix	capture_
Client-portnr (def.:3629)	3629
	< Back Next > Cancel

• 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"

💀 Nedap SQL I	mport			– 🗆 ×
Service AEO	S import queue Version ?			
NEDAP	Profil NEDAP		🗌 debug r	nsg Importer
	SQL Horaire	ichier à importer Délimitation Déclencher	ment Options Services	
	Type S	L	Plugin	•
	Server address	nedap.fr	Version WebService	•
	User ne	lap Base aeosdb	port 1433	
	Password	* Table import	timeout(s) 60	
		Trusted Connection (AD) Encrypted	Self signed certificate	
	Champ	Nom du champ	Translation Ignorer ligne Si	

Important:

- Perform this step on both servers A & B
- 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 "..."

Ƴ nedap	•••		Ƴ nedap	
SRV-AEOS-A			SRV-AEOS-A	
	uptodate		Х втор	uptodate
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	
	uptodate		🗙 STOP	not uptodate

• Click on "Modules configuration" tab \rightarrow "Installed Modules" \rightarrow nedap configure icon



≡				SRV-AEOS-A							:
		Cluster configuration		Modules configuration							
🌣 Configuration	✓ Installed modules	New module									
	¶nedap										
	SRV-AEOS-A			Applied on 2024-05-06 15:55:01							
	SRV-AEOS-B			Applied on 2024-05-06 15:55:01							
						٠	Ŧ	1	ତ	×	ī

• Click on "Advanced configuration" to access userconfig.xml

≡	ິສີ] SRV-AEOS-A								
0	Cluster configuration	Modules configuration							
\$	← Exit module configuration wizard - nedap								
	1 Edit module configuration 2 Edit mod Optional	lle scripts 3 Enable communication encryption Optional	4 Save and apply	5 Check result					
	Advanced configuration			() Help					
	Module startup at boot			~					

- In userconfig.xml, add in the **SERVICES** macro at the end and separated by a comma: **NSI_Service**
- 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*	6	<u> </u>
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> <td></td><td></td></rfs>		
Server\MSSQL13.MSSQLSERVER\MSSQL\Log"/>		
Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"/>		
<pre></pre>		
<replicated dir="C:\AEOS-aebU\data\aebu"></replicated> <replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil"></replicated>		Ш
<replicated 4\configurations"="" dir="C:\Program" files\appvision=""></replicated>		Ш
		Ш
Software Error Detection Configuration <errd polltimer="10"></errd>		Ш
AEOS process <proc action="restart" class="prim" name="AEOS_appl.exe"></proc>		Ш
SQL Server process <proc action="restart" class="prim" name="sqlservr.exe"></proc>		Ш
AEOS aepu process <proc name="AEOS_aepu.exe" action="restart" class="prim" / >		Ш
Nedap SQL import process <proc name="NSI_service.exe" action="restart" class="prim" / >		Ш
Nedap SQL export process <proc name="NSX_service.exe" action="restart" class="prim" / >		Ш
AppVision process <proc name="AppServer.exe" action="restart" class="prim" / >		Ш
User scripts activation		
<user></user>		-
		1.

📩 nedap

Setting up a SafeKit failover cluster with AEOS & SQL

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



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

^የ nedap			Ƴ nedap	
SRV-AEOS-A			SRV-AEOS-A	•••
🗙 ѕтор	uptodate			uptodate
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	•••
Х втор	A not uptodate			uptodate

📩 nedap

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"

💀 NedapSqlXport Configuration						-		х
File Service ?								
NEDAP	Profile Name NEDAP SQL Fichier Planning Options Raw da	1	Simulation	(port				1
	SQL Server Address User [ds nedap fr nedap Database Name Passwo [aeosdb ••••• Test connection Truste	Connection (AD)	Type SQL V Port 1433		TimeOut SQL 01:00 min:sec 3 Nor essais 1 temps entre ch	aque essai ((min)	
	SELECT lastname initials FROM carrier WHERE	emovaldate IS NULL					^	

Important:

- Perform this step on both servers A & B
- 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 "..."

Ƴ nedap		^የ nedap	
SRV-AEOS-A	•••	SRV-AEOS-A	
	uptodate	🗙 ѕтор	uptodate
SRV-AEOS-B		 SRV-AEOS-B	
	uptodate	Х STOP	not uptodate

• Click on "Modules configuration" tab \rightarrow "Installed Modules" \rightarrow nedap configure icon



Setting up a SafeKit failover cluster with AEOS & SQL

≡			SRV-AEOS-A						:		
	Cluster co	onfiguration	Modules configuration								
Configuration	✓ Installed modules	New module									
	ጎ ግ nedap										
	SRV-AEOS-A		Applied on 2024-05-06 15:55:01 🗸								
	SRV-AEOS-B		Applied on 2024-05-06 15:55:01 🗸								
				٠	Ŧ	1	Ð	×	ī		

• Click on "Advanced configuration" to access userconfig.xml

=	ត្ថា SRV-AEOS-A								
0	Cluster configuration	Modules configuration							
\$	← Exit module configuration wizard - nedap								
	1 Edit module configuration 2 Edit mod optional	ule scripts ③ Enable communication encryption optional	4 Save and apply 5 Check result						
	Advanced configuration		⑦ Help						
	Module startup at boot		~						

- In userconfig.xml, add in the **SERVICES** macro at the end and separated by a comma: **NSX_Service**
- 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*	Ō	<u>0</u>
Define the name or IP address of your virtual server		
File Replication Configuration		
Adapt with the directory of your SQL Server database and logs		
< <mark>rfs></mark>		
<replicated dir="C:\Program Files\Microsoft SQL</td><td></td><td></td></tr><tr><td>Server\MSSQL13.MSSQLSERVER\MSSQL\Log"></replicated>		
<replicated c:\aeos\data\aemon\configurations"="" dir="C:\Program Files\Microsoft SQL</td><td></td><td></td></tr><tr><td>Server\MSSQL13.MSSQLSERVER\MSSQL\DATA'/></td><td></td><td></td></tr><tr><td><replicated dir="></replicated> </td <td></td> <td></td>		
<replicated dir="C:\AEOS-aepu\data\aepu"></replicated>		
<replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlImport\Profil"></replicated>		
<replicated dir="C:\Program Files (x86)\NEDAP\NedapSqlExport\Profil"></replicated>		
<replicated dir="C:\Program Files\AppVision 4\Configurations"></replicated>		
->		
Software Error Detection Configuration		
<errd polltimer="10"></errd>		
AEOS process		
<proc action="restart" class="prim" name="AEOS_appl.exe"></proc>		
SQL Server process		
<pre><pre><pre><pre>sqlservr.exe" action="restart" class="prim"/></pre></pre></pre></pre>		
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" / >		
User scripts activation		
<user></user>		$\overline{\mathbf{v}}$
		1.

k nedap

Setting up a SafeKit failover cluster with AEOS & SQL

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



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

Ƴ nedap		[¶] nedap	
SRV-AEOS-A		SRV-AEOS-A	•••
X STOP uptod	ate	V PRIM uptoda	te
SRV-AEOS-B		SRV-AEOS-B	
	odate	SECOND uptoda	te

📩 nedap

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

X Configurator													-	ø ×
appvision	AppVision Configuration	on Tool @ http://srv-aeo	-a:9090								Support	Client	Logout	A prysm
Synoptics	바나 Variables													
법다 Variables	Add Add + Delet													
Areas	✓ Variables > AEOS - AEOS	Name								[e 🗌		AEOS	
Groups	CAMERA - AXIS	Туре								Desc	ription	AEOS		
Protocols	Templates - Templates	Id	T Name T	Description	Type T Région	Synoptique T S	Symbole 🝸 Vidéo 🝸	Exclu T A	Marme	General Areas		Parameters	Actions	
Users		288	5 AEOS.7803demo01	7803demo01	Nœud					Source				
Consignes		290	 AEOS.7803demo02 AEOS.7803demo03 	7803demo02 7803demo03	Nœud Nœud					SP.AEOS Address				
Workflows		293	AEOS.7803demo04	7803demo04	Nœud					192.168.1.250				
Mailings		294	AEOS.7803demo05	7803demo05	Nœud					Other parameters				_
**		299	AEOS.7803demo06	7803demo06	Nœud					USER=admin				\odot
Asservissements		akc. 287	AEOS.Cmd	Loginfo	Texte					UseSSL=0				
Scénarios		87	AEOS.Comm	Communication	Logique					Old Version=0				
Scripts		abc 288) AEOS.Event	Event	Texte									

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

• 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 "..."

ነ nedap	•••		Ƴ nedap	
SRV-AEOS-A	••• uptodate		SRV-AEOS-A	•••
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	
	uptodate		Х втор	not uptodate

• Click on "Modules configuration" tab \rightarrow "Installed Modules" \rightarrow nedap configure icon



≡				SRV-AEOS-A							:
	Cluster configuration		Modules configuration								
🌣 Configuration	✓ Installed modules	New module									
	¶nedap										
	SRV-AEOS-A			Applied on 2024-05-06 15:55:01							
	SRV-AEOS-B			Applied on 2024-05-06 15:55:01							
						٠	Ŧ	1	ତ	×	ī

• Click on "Advanced configuration" to access userconfig.xml

≡	SRV-AEOS-A					
0	Cluster configuration	Modules configuration				
\$	← Exit module configuration wizard - nedap					
	1 Edit module configuration 2 Edit mod Optional	lle scripts 3 Enable communication encryption Optional	4 Save and apply	5 Check result		
	Advanced configuration			() Help		
	Module startup at boot			~		

- In userconfig.xml, add in the **SERVICES** macro at the end and separated by a comma: **AppVision Service**
- 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*	Ū	<u> </u>
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></rfs>		
<replicated dir="C:\Program Files\Microsoft SQL
Server\MSSQL13.MSSQLSERVER\MSSQL\Log"></replicated> <replicated dir="C:\Program Files\Microsoft SQL</td><td></td><td>Н</td></tr><tr><td>Server\MSSQL13.MSSQLSERVER\MSSQL\DATA"></replicated> <replicated dir="C:\AEOS\data\aemon\configurations"></replicated> </td <td></td> <td>h</td>		h
<pre>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</pre>		Ш
> Software Error Detection Configuration <errd polltimer="10"></errd>		Ш
AEOS process <proc action="restart" class="prim" name="AEOS_appl.exe"></proc> SQL Server process		
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>		Ш
<pre <pre sqL import process> <pre Nedap SQL export process Nedap SQL export process Nedap SQL export process <pre sqL export process>		Ш
AppVision process AppVision process AppVision ame="AppServer.exe" action="restart" class="prim" / >		Ш
User scripts activation <user></user>		
		4

Setting up a SafeKit failover cluster with AEOS & SQL

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



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

۲ nedap			Ƴ nedap	
SRV-AEOS-A			SRV-AEOS-A	•••
🗙 stop	uptodate			uptodate
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	
Х ѕтор	not uptodate		SECOND	uptodate

📩 nedap

Setting up a SafeKit failover cluster with AEOS & SQL



• Client tools must connect to "cls.nedap.fr" (virtual IP)

AppVision configurator:

🔀 Configurator	
	ALL
	Server
$\sim \sim$	cls.nedap.fr:9090
>>>/	User
× Pro	adm
- Shill	Password
	••• •
	Login

AppVision client:

🗙 AppVision - Window 1		
	Server (Is nedan fr-9090	
	liser	
Ç A	adm	
	Password	
	••• 0	
	Login	



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 "..."

ነ nedap		۲ nedap	
SRV-AEOS-A	•••	SRV-AEOS-A	•••
SRV-AEOS-B	•••	SRV-AEOS-B	
	uptodate		ntodate

• Click on "Modules configuration" tab \rightarrow "Installed Modules" \rightarrow nedap configure icon

=				ଲ] SRV-AEOS-A						:
• Monitoring	Cluster configuration		Modules configuration							
🏟 Configuration	✓ Installed modules	New module								
	∱ * nedap									
	SRV-AEOS-A A SRV-AEOS-B A		Applied on 2024-05-06 15:55:01 🗸							
			Applied on 2024-05-06 15:55:01 🗸							
					٠	Ŧ	t	Ð	×	ī



- Edit module scripts: click on start_prim.ps1.
 - Note that start_prim.ps1 starts all services in the order specified in the SERVICES list, while stop_prim.ps1 stops all services in the reverse order.



Edit the script start_prim.ps1 and uncomment the two lines below (remove #).



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

=		SRV-AEOS-A		:
ø	Cluster configuration	Modules configuration		
٠	← Exit new module configuration wizard - nedap			
	Edit module configuration Optional	ule scripts 3 Enable communication encryption Optional	4 Save and apply	5 Check result
	Select nodes:			
	SRV-AEOS-A			
	SRV-AEOS-B			
	Previous step Save and check Save an	nd apply		

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

۲ nedap			Ƴ nedap	
SRV-AEOS-A			SRV-AEOS-A	•••
🗙 ѕтор	uptodate			uptodate
SRV-AEOS-B		\rightarrow	SRV-AEOS-B	
Х STOP	not uptodate			uptodate



5. Miscellaneous SafeKit

5.1. Licence

• Start the SafeKit console and authenticate.



• Click on "Cluster configuration" tab





Click on the server to display its detailed status

• It is highlighted with a blue color

The module details are displayed

resources or node information

Click on the tab to visualize module logs,

5.2. Logs

1

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



• Click on a Script message to see the output messages

Date 🕹	Origin	Туре	Message	Script log
				2024-02-12T09:14:10 start_prim
2024-02-12 11:04:54.920	heart	6	Local state PRIM Ready	"Running start_prim WAIT ALONE"
2024-02-12 11:04:54.890	heart	0	Remote state SECOND Ready	"Running start_prim WAIT ALONE"
2024-02-12 09:14:20.362	heart	0	Local state ALONE Ready	[SC] ChangeServiceConfig SUCCESS
2024-02-12 09:14:10.046	userplug	\$	Script start_prim > userlog_2024-02- 12T091410_start_prim.ulog	The World Wide Web Publishing Service service is star
2024-02-12 09:13:45.928	heart	6	Remote state UNKNOWN	The World Wide Web Publishing Service service was sta
2024-02-12 09:13:45.922	heart	6	Resource heartbeat_flow set to down by heart	The SQL Server (MSSQLSERVER) service is starting
2024-02-12 09:13:45.862	heart	6	Resource heartbeat.default set to down by heart	The SQL Server (MSSQLSERVER) service was started succ
2024-02-12 09:13:15.781	userplug	\$	Script prestart "start" > userlog_2024- 02-12T091315_prestart.ulog	The Milestone XProtect Management Server service is s
2024-02-12 09:13:15.194	heart	▲	License : NO license : Demo 3 days	The Milestone XProtect Management Server service was
Items per	page 10	•	1 - 10 of 11 C C > 21	Items per page 10 👻 1 - 10 of 16

Output of the script



Click on a S(cript) message • output of the script execution is

displayed



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

- <u>SafeKit quick installation guide with Nedap (nedap.safe mirror module)</u> <u>Evidian</u> the article includes a free trial and the nedap.safe module.
- <u>SafeKit quick installation guide with Hyper-V (hyperv.safe mirror module) Evidian</u> an alternative solution where Nedap AEOS is put inside a virtual machine fully replicated and restarted by SafeKit. No need to define services, application folders and virtual IP per application in this solution. Other applications can be put in other VMs also replicated and restarted by SafeKit (active-active cluster).
- <u>SafeKit on-line training Evidian</u> a set of videos and demonstrations of SafeKit.



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.
16/05/2025	Adaptation to SafeKit 8.2.4 (SERVICES macro)	3	B.R.

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