

Axel Remote Management Version 4

(Document for AxRM version 4.5a and higher)

The screenshot displays the AxRM v4.5a software interface. The title bar indicates the version and date: "AxRM - v4.5a - 23071 - 12/03/2023". The interface includes a toolbar with icons for database, search, refresh, settings, and "Activate Detection". A navigation pane on the left shows a folder structure with "Axel" and "fb". The main area contains a table of thin clients with columns for Name, Product, IP Address, and Hardware. Below the table, it states "Number of selected thin clients: 0/12". A command log at the bottom shows the following text:

```
Command Log
t_leafs : C:\ProgramData\Axel\AxRMV4
Loading database file: G:\fb\Documents\AxRm\AxRM3.axd
----> OK
Load DB : G:\fb\Documents\AxRm\AxRM3.axd
Number of terminals: 12
=== Initialization completed ===
```

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WARNING

This documentation describes the Axel administration software. It is assumed that the reader is familiar with the Axel hardware. For more information please consult the User's Manuals. (From www.axel.com)

TABLE of CONTENTS

- 1 - INTRODUCTION	1
- 2 - INSTALLATION / REMOVAL OF THE SOFTWARE	3
2.1 - PREREQUISITES.....	4
2.2 - UPGRADING	4
2.3 - INSTALLATION.....	4
2.3.1 - <i>On Windows</i>	4
2.3.2 - <i>On Linux</i>	8
2.4 - REMOVAL	9
2.4.1 - <i>On Windows</i>	9
2.4.2 - <i>On Linux</i>	9
- 3 - LAUNCHING THE SOFTWARE	10
3.1 - CHOOSE LANGUAGE	11
3.2 - PASSWORD	11
3.3 - EMPTY DATABASE	11
3.4 - IMPORTING FROM AUTO-CONFIGURATION.....	12
3.5 - THE MAIN CONSOLE	12
3.5.1 - <i>The Button Bar on the Top of the Screen</i>	13
3.5.2 - <i>Folder Panel</i>	14
3.5.3 - <i>Thin Client Panel</i>	14
3.5.4 - <i>Log Zone</i>	16
3.5.5 - <i>[Console Settings] Button</i>	16
- 4 - MANAGEMENT OF THE DEVICE DATABASE	18
4.1 - THE DATABASE.....	19
4.1.1 - <i>Text File Management</i>	19
4.1.2 - <i>MS-SQL or MySQL Management</i>	19
4.1.3 - <i>Import/Export functions</i>	19
4.2 - MANAGEMENT OF THE DATABASE.....	20
4.2.1 - <i>Folders</i>	20
4.2.2 - <i>Thin clients</i>	20
4.3 - ADDING AND MODIFYING DATABASE ENTRIES	21
4.3.1 - <i>Scanning for Thin clients</i>	21
a) <i>Detection Methods</i>	21
b) <i>Adding Thin Clients to the Database</i>	22
4.3.2 - <i>Adding Thin Clients Manually</i>	23
4.3.3 - <i>Modification</i>	24
4.4 - IMPORT/EXPORT FUNCTIONS	25
4.4.1 - <i>Exporting the Database to a CSV File</i>	25
4.4.2 - <i>Recording Selected Thin Clients to GLPI via FusionInventory</i>	28
4.4.3 - <i>Recording Selected Thin Clients to GLPI Inventory</i>	29
4.4.4 - <i>Exporting Selected Thin Clients as OCS Files</i>	30
4.4.5 - <i>Importing a Database (Text File)</i>	31
4.4.5 - <i>Importing a CSV File</i>	31
4.4.7 - <i>Importing Devices Discovered with Auto-Configuration</i>	32
4.5 - REFRESHING THIN CLIENT DATABASE	32
4.5.1 - <i>SNMP Discover</i>	33
4.5.2 - <i>Configuration Files</i>	33
4.5.3 - <i>Other Options</i>	33
- 5 - THIN CLIENT ADMINISTRATION	34
5.1 - OBTAINING THIN CLIENT GENERAL INFORMATION	36
5.1.a - <i>SnapShot for support</i>	38
5.2 - REMOTE ADMINISTRATION	39
5.2.1 - <i>Getting Thin Client Configuration</i>	41
5.2.2 - <i>Send Configuration File to Thin client</i>	43

5.2.3 - Downloading Firmware	43
5.2.4 - Handling Power-On and Power-Off	44
5.2.5 - Displaying a Message	44
5.2.6 - Getting Thin Client Statistics	45
5.2.7 - Enabling/Disabling Auto-Configuration	46
5.2.8 - Running Command(s) from Auto-Configuration File	47
5.3 - MANAGING THE THIN CLIENT LOCAL STORE	47
5.3.1 - Adding a Background/Logo	48
5.3.2 - Adding a Certificate	49
5.3.3 - Deleting an Object	49
5.3.4 - Clear the Local Store	50
5.4 - REMOTE ACCESS TO A THIN CLIENT	51
5.4.1 - Text-Only Remote Control	52
5.4.2 - VNC Remote Control	53
5.4.3 - Telnet Set-Up	54
- 6 - AUTO-CONFIGURATION	55
6.1 - AUTO-CONFIGURATION SET-UP	57
6.1.1 - Management of the auto-configuration environment	58
6.1.2 - Group Tab	60
a) Local Folder	60
b) Thin client models	60
c) FK Code	61
d) List of Serial Numbers	61
e) Range of Serial Numbers	62
f) Subnet	62
g) External file	63
g') Excel file structure:	63
g") Text file structure:	63
Sample Files:	63
h) Quick Exchange	65
h') Quick Exchange setup files	67
h") Setting up the process	67
h''') Quick Exchange operating mode	68
6.1.2 - Priority of the Groups	69
6.1.3 - "Command Tab"	69
a) Password	69
b) Firmware file	69
c) Options related to the firmware	70
c') Preserve configuration:	70
c") Enable "Smart Firmware Analysis":	70
c''') Continu process in case of identical firmware (SFA):	70
d) Set-up file	71
e) Set-up Options	71
e') Force disabling auto-Configuration	71
e'') Using Smart Setup Analysis	71
f) Logo file	71
g) How does it work?	72
6.1.4 - TLS Protocol	72
6.1.5 - Handling the Environment File	72
6.2 - LAUNCHING THE AUTO-CONFIGURATION	73
6.2.1 - Interactive Mode	73
a) Receiving a Thin Client Request	74
b) Downloading Firmware	74
c) Sending a Configuration File	74
d) Sending a logo	74
6.2.2 - Service Mode	75
a) Installing the Service	75
b) Starting the Service	76

c) View LOG File	77
d) Stopping the Service	77
e) Uninstalling the Service	77
6.3 – FROM THE AXEL THIN CLIENT SIDE	78
- 7 - OTHER FUNCTIONS	79
7.1 - ASSIGNMENT OF AN IP ADDRESS	80
7.2 - USING BOOTP TO REPAIR FIRMWARE	81
7.2.1 - <i>Basic Concept</i>	81
7.2.2 - <i>Configuring the BOOTP Server</i>	81
7.2.3 - <i>Launching BOOTP to Download Firmware</i>	82
7.2.4 - <i>Configuring a third-party TFTP Server (Advanced)</i>	82
7.3 - AXRM SETTINGS	83
7.3.1 - <i>General Parameters</i>	83
a) Language Selection	83
b) Network Interface	83
c) Passwords	83
d) Detection method	84
7.3.2 - <i>Administration Protocol</i>	85
a) Protocol	85
b) Miscellaneous	85
c) Windows DNS Cache	86
7.3.3 - <i>The Database</i>	86
a) Text-File Database	87
b) MySQL or MS-SQL Database	87
7.3.4 - <i>Default Folders</i>	88
7.3.5 - <i>Remote Control</i>	89
a) Alternate Telnet Command	89
b) Alternate VNC Command	89
7.4 – THIN CLIENT DETECTION	90
7.4.1 - <i>Parameters</i>	90
7.4.2 - <i>Operation mode</i>	90
APPENDIX	91
A.1 - ADDITIONAL SOFTWARE	92
A.1.1 - <i>AxViewer: Remote Control</i>	92
A.1.2 - <i>AxRAC: Remote Administration Command</i>	93
A.1.2 a Display online help	94
A.1.2 b Background Mode	94
A.1.2 c - Interactive Mode	95
A.2 - USING WITH A FIREWALL	96
A.3 - FORMAT OF THE TEXT-FILE DATABASE	97
A.4 - FORMAT OF THE SQL DATABASE	97
A.5 - AXRM CONFIGURATION FILE	98
A.6 - MANAGING DHCP THIN CLIENTS	103
A.6.1 - <i>IP Address vs DNS NAME</i>	103
A.6.2 - <i>The Windows DNS Cache</i>	103
A.7 - RSH-BASED COMMANDS	104
A.8 - SNMP SUPPORT	106
A.9 - SECURING XML WITH TLS	107
A.9.1 - <i>Auto-Configuration</i>	107
A.9.2 - <i>Administration Commands</i>	107
A.9.3 – <i>Create a Self-Signed X509 TLS certificate on Windows</i>	108
A.9.3.a - Create the X509 certificate	108
A.9.3.b - Export the X509 certificate	109
A.9.3.c - Import the X509 certificate on the personal AxRM user store	110
A.10 - AUTO-CONFIGURATION DHCP VENDOR OPTIONS	112
A.10.1 - <i>Adding "Axel" option in Microsoft DHCP server</i>	112
A.10.2 - <i>'axrmserv' Option: XML auto-configuration</i>	114
A.10.3 - <i>'axrmservTLS' Option: XML-TLS auto-configuration</i>	114

A.11 – OPERATION OF AUTO-CONFIGURATION	115
A.11.1 - 'AxRM 4.4a' compatible	115
A.11.2 - AxRM 4.4b and 4.4d	116
A.11.3 - AxRM 4.4e and more	117

**- 1 -
INTRODUCTION**

This chapter introduces the main features of the AxRM software.

The AxRM software allows system administrators to manage and configure Axel Thin Clients remotely over a network. The Axel device is selected by its IP address or network name.

AxRM creates and maintains a database of Axel devices on the network and lets the administrator perform the following functions:

- Obtain hardware and firmware revision levels, serial number and Mac Address,
- Obtain network and device statistics,
- Obtain set-up configuration,
- Reboot the device,
- Remotely configure the device (set-up),
- Download firmware,
- Local store management (logo, certificate, etc.)
- Remote access: take remote control of the device and/or enter the interactive set-up.

The auto-configuration allows a firmware and/or a configuration to be automatically sent to a thin client powered on for the very first time.

This document covers:

- Installation / Removal of AxRM,
- Launching the software,
- Management of the thin client database,
- Thin client administration
- Auto-Configuration function,
- Other functions,
- Appendix.

- 2 -
INSTALLATION / REMOVAL
OF THE SOFTWARE

This chapter gives details of installation and removal procedures.

2.1 - PREREQUISITES

AxRM is certified for Windows (2000, 2003, 2008, 2012, 2016, 2019, 2022, XP, Vista, Windows 7, 8,10 and 11).

It's strongly advised to use a computer supporting at least 15bpp (32765 colors).

2.2 - UPGRADING

If AxRM V4 is already installed, it is not imperative to remove before loading a newer version. (See chapter [2.4](#)).

Note: AxRM V4 and former AxRM version (V3 and V2) can be installed on the same computer.

2.3 - INSTALLATION

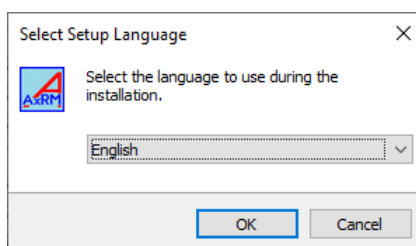
2.3.1 - On Windows

Two packages are available: AxRMV4_X64.exe (for 64-bit platforms) and AxRMV4_X86.exe (for 32-bit platforms)

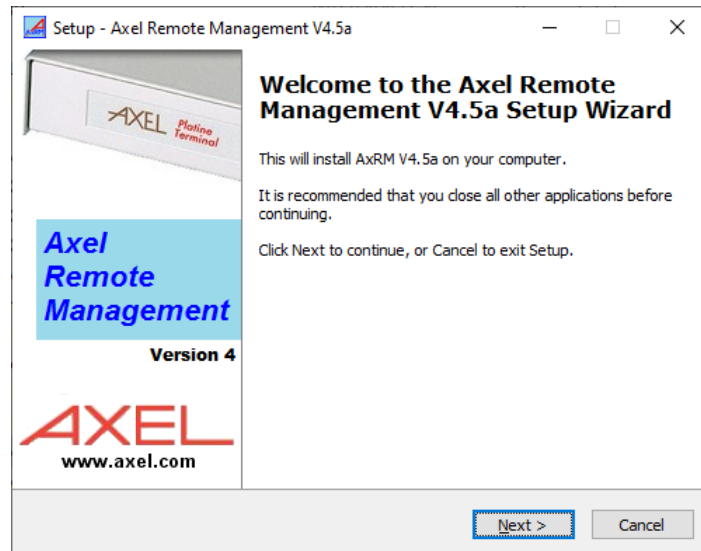
To start the installation, double click on the '.exe' file and follow the instructions.

Note: for Windows 7 and later, please run this installer “**as administrator**”.

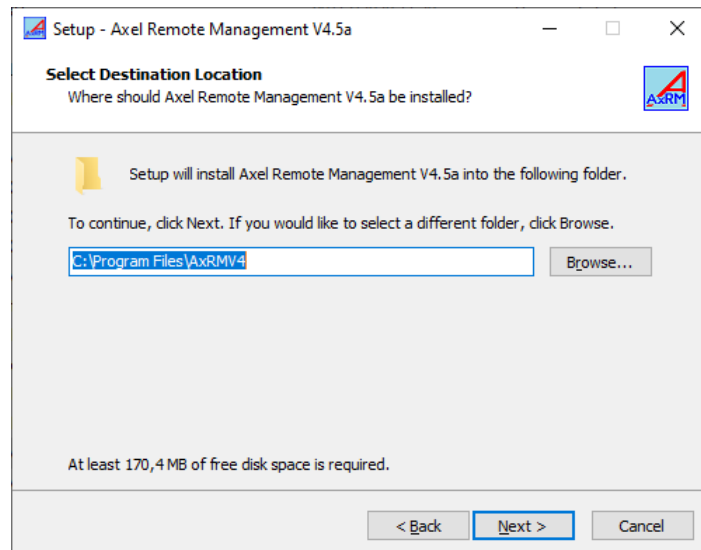
The first window is a language selection box:



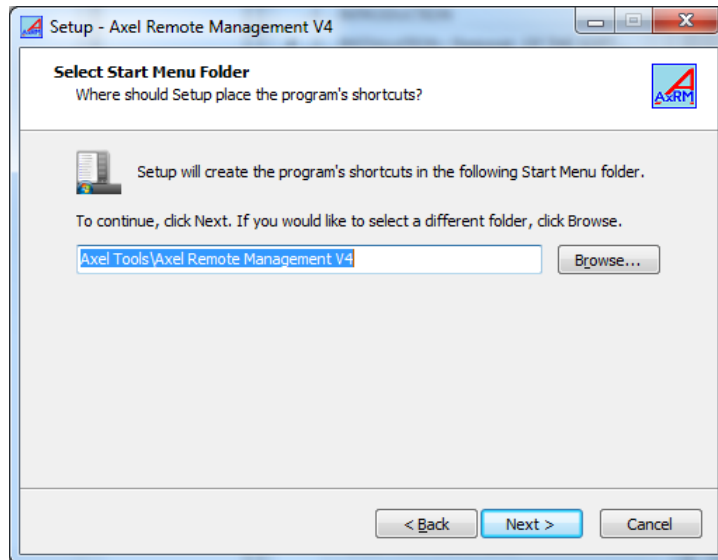
Click on **[OK]** to continue:



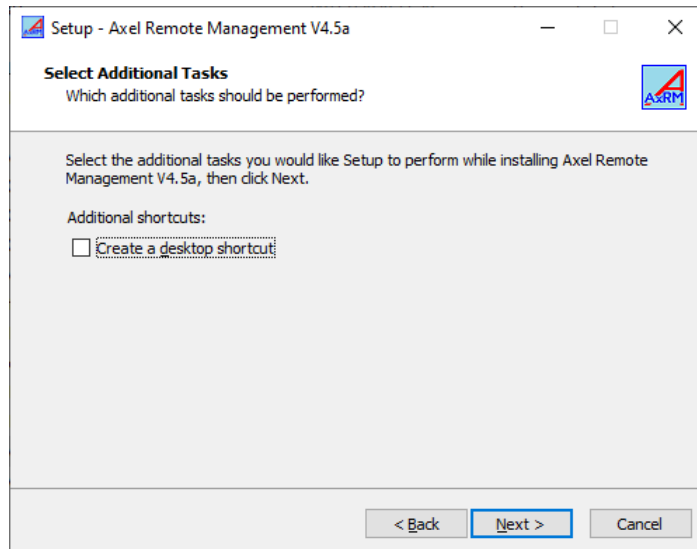
To continue the installation, click on **[Next]**. The option to enter a different location for AxRM is offered:



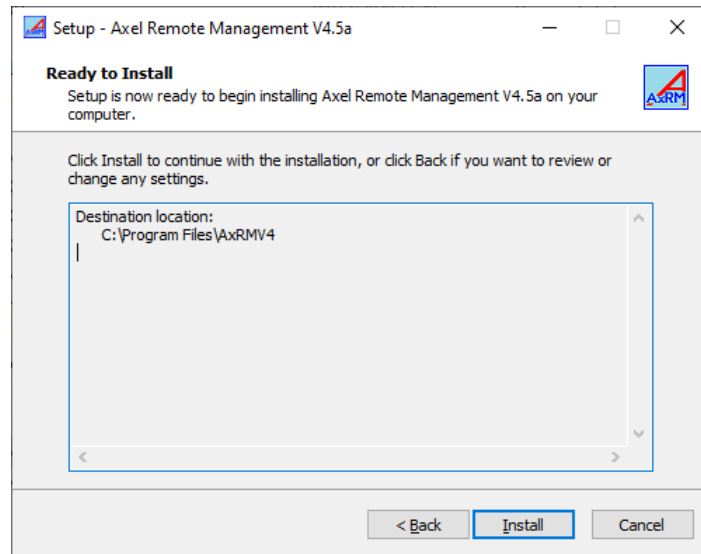
Click on **[Browse]** to select a different location. To continue installation, click on **[Next]**. The following window shows Start Menu folder where AxRM can be installed:



The default program group is "Axel Tools". Click on **[Next]** to accept and continue the installation:

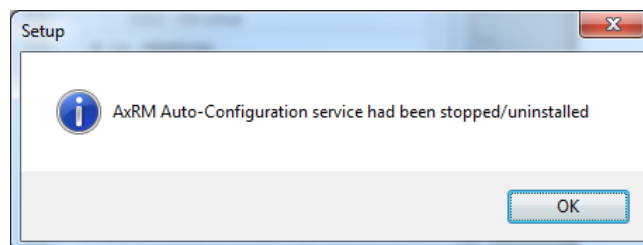
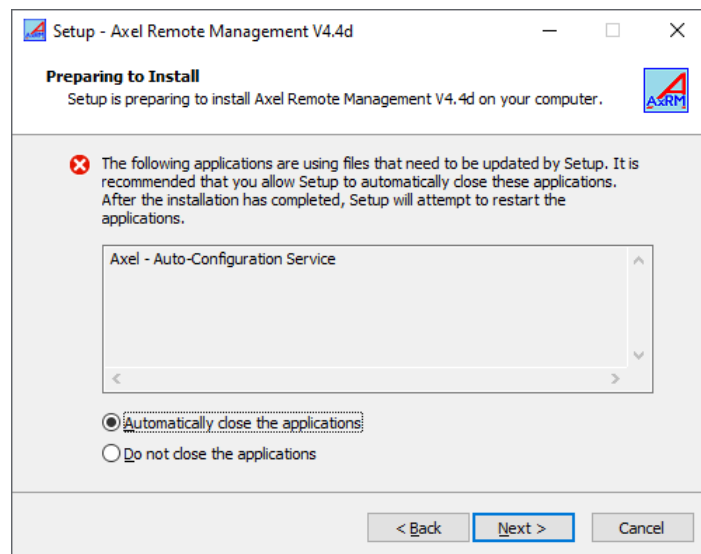


Click on **[Next]**. The installation summary is displayed:



Click on **[Install]** to start the installation.

If the AxRM auto-configuration service is running (installed by a former AxRM version), the service is stopped and uninstalled:

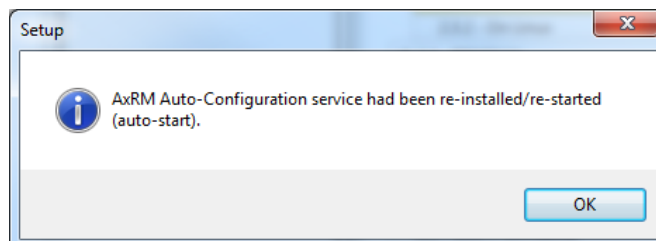


Now files are copied onto the installation folder:

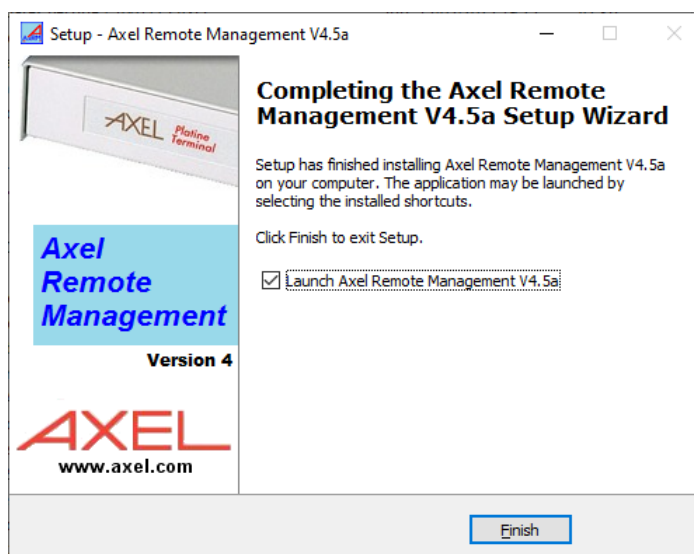
- Axel Remote Management (AxRMV4.exe)
- Axel Viewer (AxelViewer.exe)
- Axel Auto-Configuration Service (AxRMV4-AutoConf-Service.exe)

- Uninstall Axel Remote Management
- DLL files

Then the AxRM auto-configuration service is re-installed and re-started:



The installation is completed:



2.3.2 - On Linux

On Linux, only AxRAC (Axel Remote Administration Command) is available.

Create a folder for the application (command `mkdir`)

Copy AxRAC_LX86.tgz or AxRAC_LX64.tgz onto this folder.

Decompress the file with the 'unzip' command'

Set the execution permission with the following commands:

```
chmod +x AxRAC
```

To use the Linux executable, it is necessary to install the QT library (Core and GUI), version 4.5 minimum. If needed, install the "libcanberra-gtk-module" modules.

Ex Ubuntu or Debian:

```
$ sudo apt-get install libqtcore4
```

```
$ sudo apt-get install libqtgui4
```

```
$ sudo apt-get install libcanberra-gtk-module libcanberra-gtk3-module
```


2.4 - REMOVAL

2.4.1 - On Windows

IMPORTANT: Before uninstalling AxRM, if necessary, **stop the auto-configuration service**. See Chapter [6.2](#).

To remove AxRM, go to the "Control Panel" or select "Uninstall Axel Remote Management" in the menu **[Start]-[Programs]-[Axel Tools]-[Axel Remote Management V4]**.

2.4.2 - On Linux

Simply remove the installation folder.

- 3 -
LAUNCHING THE SOFTWARE

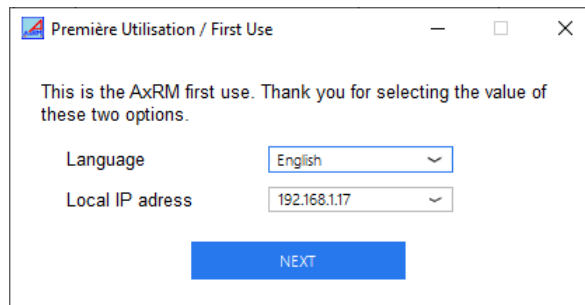
This chapter covers AxRM's setup and startup operation.

To launch the administration software, click on the AxRMV4 icon

Before the main console is displayed some dialog boxes will require completing.

3.1 - CHOOSE LANGUAGE

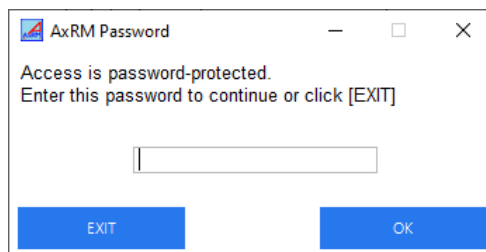
When AxRM is run for the first time, the language and the IP address of the host are prompted:



This information can be changed at a later time (see chapter [7.3.1](#)).

3.2 - PASSWORD

If the access to the AxRM is restricted the following dialog box is shown (see chapter [7.3.1](#)):

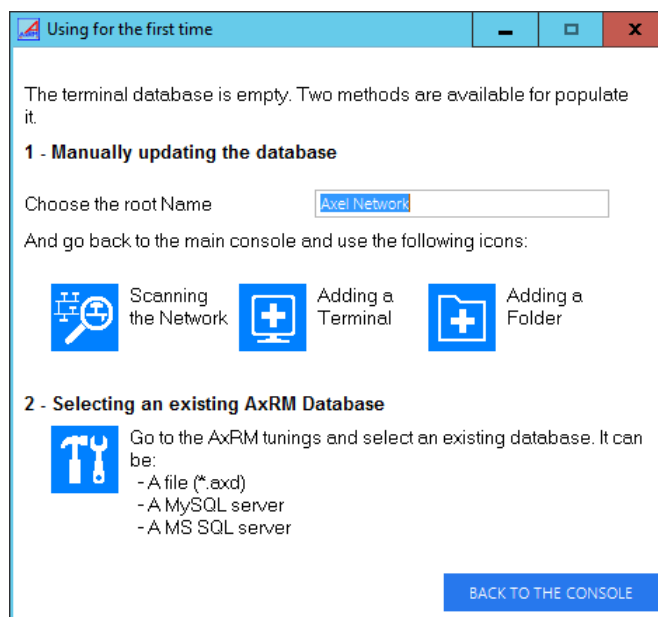


Enter the password to continue.

3.3 - EMPTY DATABASE

AxRM maintains a database of the Axel thin clients. This database is presented in the form of a tree structure (with a root and folders).

If the current database is empty the following dialog box is displayed:



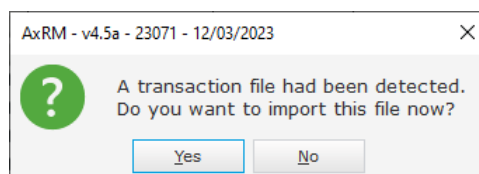
The name of the database (root folder) can be changed now or at a later date (see Chapter [4.2.1](#)).

3.4 - IMPORTING FROM AUTO-CONFIGURATION

The Auto-Configuration function allows thin client updates to be automatically processed. (See Chapter [6](#))

This function may be independently run from AxRM. ("Service Mode", see Chapter [6.2.2](#))

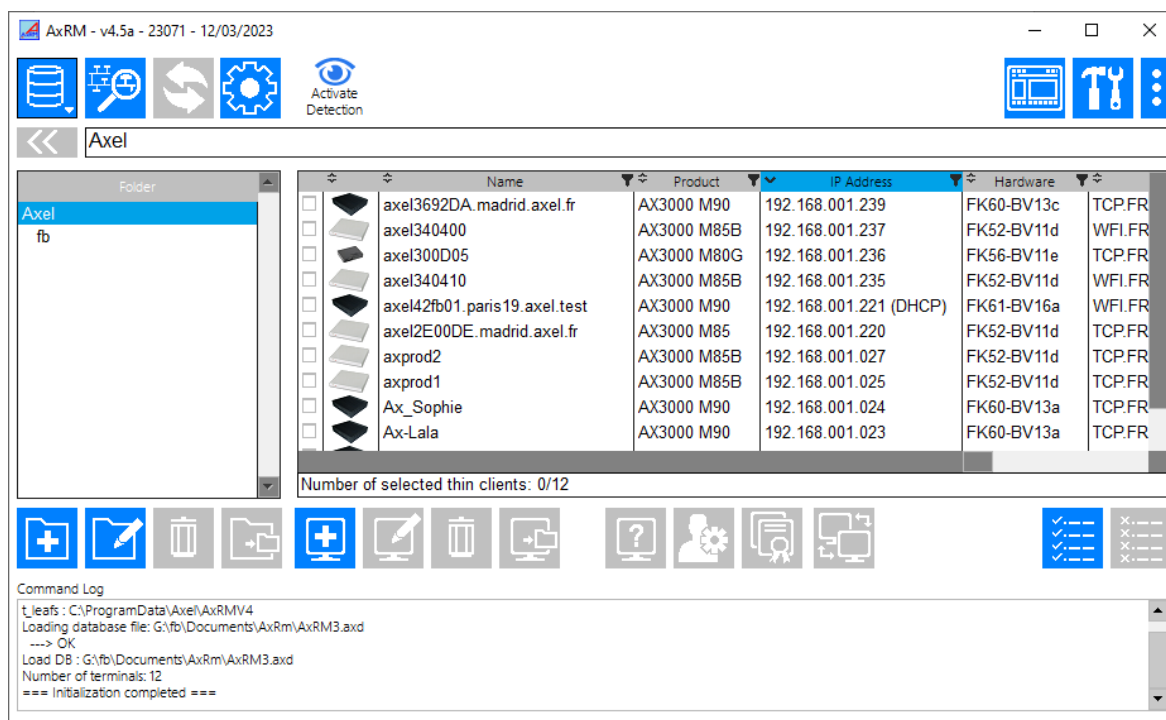
When configured to work with a transaction file, each time AxRM is started, new devices recorded by the Auto-Configuration service are checked. If new thin client descriptions are found or the thin client descriptors have changed, the following dialog box is displayed:



If the importation operation is selected a dialog box allowing selection and importation of thin clients is displayed. For more information see Chapter [4.4.6](#).

3.5 - THE MAIN CONSOLE

The AxRM Main Console displays the thin client database and allows administration commands to be performed.



The main console is made up of the following:

- On the top, a horizontal button bar. (See Chapter [3.5.1](#))
- Below a text zone with the current folder path and a button to go back to the parent folder.
- A left panel listing sub-folders (of the current folder). Below this panel,
 - 4 buttons are available for folder operations.
- A right panel listing thin clients of the current folder (and sub-folders). Below this panel:
 - 4 buttons for managing thin clients in the database
 - 4 buttons for administering thin clients
 - 2 buttons for selecting/deselecting thin clients
- A log zone.

3.5.1 - The Button Bar on the Top of the Screen

The following buttons are available:



[Database] Button

Creating, opening, importing, exporting and saving a database. For more information see Chapter [4.1](#).



[Network Scanning] Button

Discovering thin clients by broadcasting or scanning IP address ranges. See Chapter [4.3.1](#).



[Refreshing the database] Button

Refreshing the database by scanning all existing thin clients. See Chapter [4.5](#).



[Auto-Configuration] Button

Automatic update of thin clients. See Chapter [6](#).



[Detection] Button

Scans the network to check if the thin clients in the current folder are turned on. [7.4](#)



[Console Settings] Button

A contextual menu allows the main console display to be customized. See Chapter [3.5.5](#)



[AxRM Settings] Button

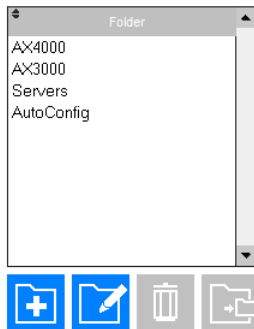
Setting AxRM preferences. See Chapter [7.3](#).



[Other Functions] Button

Setting IP address by Ping commands (see Chapter [7.1](#)) and uploading firmware by BOOTP+TFTP (see Chapter [7.2](#)).

3.5.2 - Folder Panel



Two display modes are available for the Folder panel:

- Tree mode: all sub-folders are displayed in a tree structure
- Flat mode: only the sub-folders of the current folder are displayed

This display mode is selected from the contextual menu of **[Console Settings]** button. See Chapter [3.5.5](#)

For more information about the 4 buttons below the Folder panel, please see the Chapter [4.2.1](#).

Available actions on the Folder panel:

- Left click: changing the current folder
- Right click: showing a contextual menu with the same action than the buttons of below.

The button bar can be hidden from **[Console Settings]** button.

3.5.3 - Thin Client Panel

The following screenshot is an example of the Thin Client panel:

	Name	Product	IP Address	Hardware	Firmware	MAC Ad
<input checked="" type="checkbox"/>	Ax-Lynda	AX3000 M90	192.168.001.021	FK60-BV13a	TCP.FR.2232a:STD_23069	00:A0:34:36:0
<input type="checkbox"/>	Ax_Stephanie	AX3000 M90	192.168.001.022	FK60-BV13c	TCP.FR.2232a:STD_23069	00:A0:34:36:9
<input type="checkbox"/>	Ax-Lala	AX3000 M90	192.168.001.023	FK60-BV13a	TCP.FR.1945b:STD_23044	00:A0:34:36:0
<input type="checkbox"/>	Ax_Sophy	AX3000 M90	192.168.001.024	FK60-BV13a	TCP.FR.1945b:STD_23044	00:A0:34:36:1

Axel / fb / Ax-Lynda

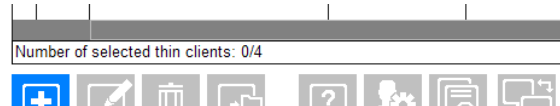
For more information about the 4 buttons on the left below the Thin Client panel, please see Chapter [4.2.2](#). For other buttons (administering thin client), see Chapter [5](#)

The button bar can be hidden from the contextual menu of **[Console Settings]** button. (See Chapter [3.5.5](#))


Available actions on the Thin Client panel:

- Left click: selecting/deselecting a thin client
- Right click (Windows only): showing a contextual menu with the same action than the buttons below the Thin Client panel.
- Left double-click: showing information about a thin Client (same then the '?' button)

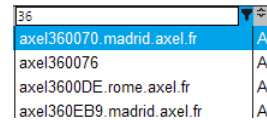
The number of selected thin clients is displayed below the list.



The thin client list can be sort by clicking the header of a column

It is also possible to search on “products” and “firmware” columns by clicking on the  icon

Ex : In this example all products with « 36 » in their name are listed



3.5.4 - Log Zone

Actions on thin client database and administration commands are listed in this Log Zone.



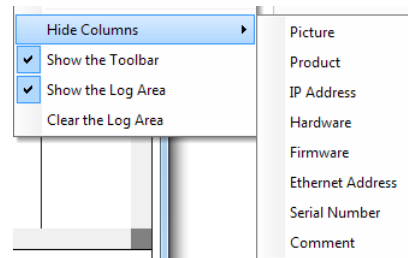
This zone can be hidden or its content cleared from the contextual menu **[Console Settings]**. (See Chapter [3.5.5](#))

3.5.5 - [Console Settings] Button



The contextual menu of **[Console Settings]** button allows the following actions and functions:

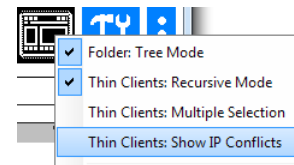
- **Hide or display selected columns from the list.**



- **Display IP address conflicts**

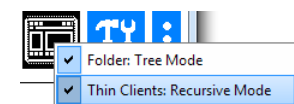
A red cross is added to the icon of any conflicting thin clients.

<input type="checkbox"/>		axel2C00DE	AX3000 M80F	192.168.001.231
<input checked="" type="checkbox"/>		axel30006F	AX3000 M80G	192.168.001.245
<input checked="" type="checkbox"/>		axel36185D	AX3000 M90	192.168.001.245



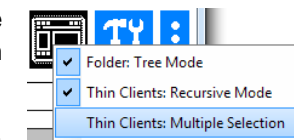
- **Select the display mode for thin clients :**

- Recursive: thin clients of the current folder and all folders are displayed.
- Non-recursive: only thin clients in the current folder are displayed.

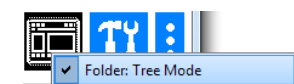


- **Manage the selection method :**

- Multiple: the thin client (s) are added or removed from the selection by a simple left click (advised mode for touch screen).
- Individual:
 - Left Click: clears the current selection and adds the thin client to the selection.
 - Ctrl + Left Click: Adds the thin client to the selection.
 - Shift + Click Left: deletes the current selection and selects the group of thin clients between the previously selected and the selected one.

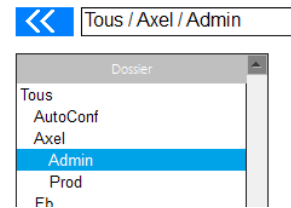


- **Change how folders are displayed :**



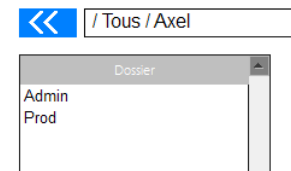
- Tree view: All folders are displayed in tree form

Ex : Example of « Admin » folder



- Flat view: only folders belonging to the current folder are displayed

Ex : Example of « Axel » folder and two sub folders
« Admin » and « Prod »



- 4 -

MANAGEMENT OF THE DEVICE DATABASE

This chapter describes the creation and the handling of the database.

4.1 - THE DATABASE

The thin client database can be handled by

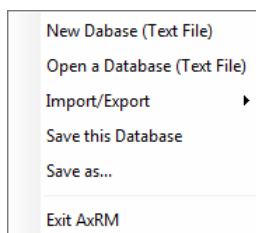
- a single file (text format)
- MS-SQL or MySQL

To provide better performance, the database is limited to a maximum of 5000 thin clients in 500 folders. (Please contact Axel if this imposes a limitation).



This is the database management button.

Click this button to open this menu:



The contextual menu of the 'Database' button allows:

- Creating a new database,
- Opening an existing database,
- Saving the current database. (When exiting AxRMV4, if the database had been modified, a dialog box will be displayed to offer the option of saving the database).
- Saving the current database under a different name.

Note: the 'Save' options are disabled when using an SQL database (in this case database updates are done in real time).

4.1.1 - Text File Management

By default, the text file name is "AxRM.axd". On Windows its location is "%ProgramData%\AxRMV4".

To change this name see AxRM Tunings (See Chapter [7.3.3](#)).

4.1.2 - MS-SQL or MySQL Management

The AxRM preferences allow the MS-SQL or MySQL connection details to be given (See Chapter [7.3.3](#)). The SQL user must have the 'database creation' permission.

In this situation the database is updated in real time so there is no 'Save database' or 'Reload database' command.

Note: The connection on MySQL is done in native mode, while that on MsSQL is done via OLEDB.

4.1.3 - Import/Export functions

Some Import/Export functions are also available. See Chapter [4.4](#).

4.2 - MANAGEMENT OF THE DATABASE

The thin client database can be logically organized by adding folders and sub-folders to contain thin clients.

4.2.1 - Folders

These are the buttons for the folder management, these actions are also available by a contextual menu:



[Creating] Button

Only the folder name is requested. This folder is created in the current folder



[Renaming] Button

A simple dialog box allows the folder name to be changed.



[Deleting] Button

After confirmation the folder and its contents are deleted.



[Moving] Button

The possible destinations are displayed. After selection, the folder and its contents are moved.

Note: the root of the tree is regarded as a directory. It can be renamed but not deleted or moved.

4.2.2 - Thin clients

Click on the line of a thin client to select/unselect it (the line background of a selected thin client is blue). Multiple thin clients can be selected.

The selection method (single or multiple) of a thin client can be changed by the button **[Console Settings]** (See chapter [3.5.5](#))

"Select all" or "Deselect all" buttons are available at the bottom right of the list of thin clients. These buttons act on the current folder



When the detection function is activated, a button that allows you to select only powered on thin clients appears.



These are the buttons for the thin client management, these actions are also available by a contextual menu:



[Adding] Button

A dialog box allows a thin client to be manually added. See Chapter [4.3.2](#).



[Editing] Button

A dialog box allows the thin client description to be modified. See Chapter [4.3.3](#).



[Deleting] Button

After confirmation the selected thin client(s) is deleted.



[Moving] Button

The possible destinations are displayed. After selection, the selected thin client(s) is moved.

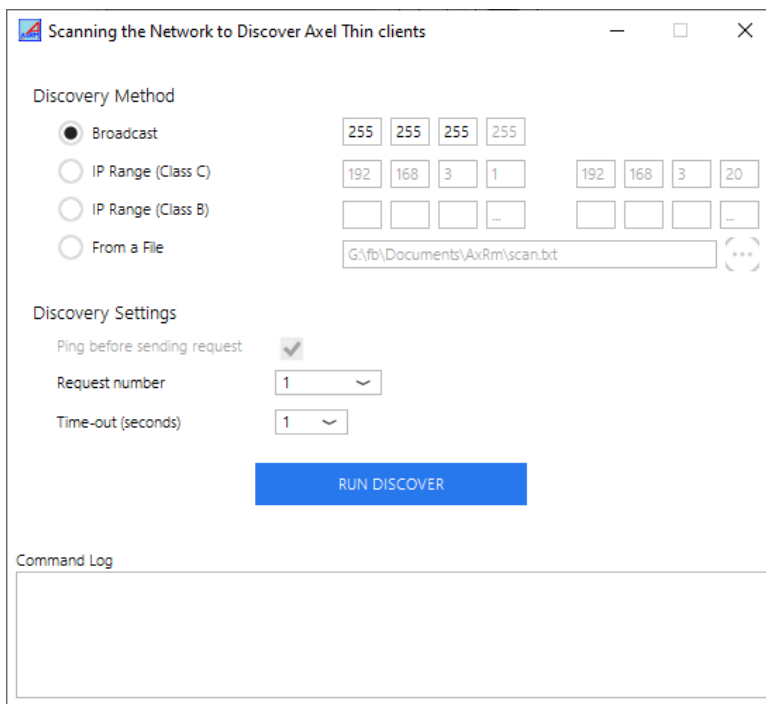
4.3 - ADDING AND MODIFYING DATABASE ENTRIES

A thin client can be added manually or automatically.

4.3.1 - Scanning for Thin clients

The automatic scan adds all thin clients found on the network to the database

Here is the button and dialog box:



a) Detection Methods

Thin clients are detected with SNMP requests.

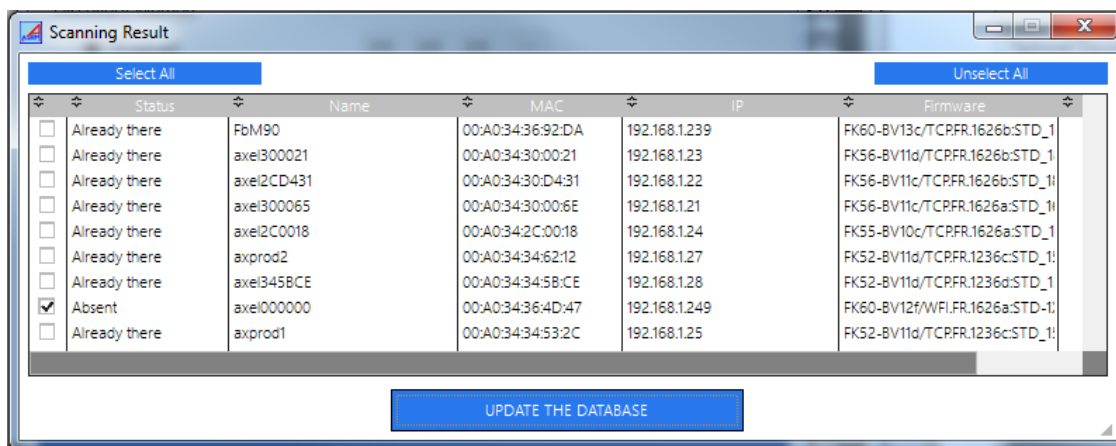
Three methods are available to scan the network:

- **Broadcast:** The main benefit of SNMP is its speed. One SNMP request is sent to all the terminals simultaneously. This may be limited to the LAN depending on router configuration.
- **IP Range (Class C):** The beginning and the end of the range are given by byte 4. A 'ping' request may be sent before the SNMP request to limit the timeout.
- **IP Range (Class B):** The beginning and the end of the range are given by byte 3. A 'ping' request may be sent before the SNMP request to limit the timeout.
- **From a File:** Actions performed for this method are the same as the previous method. Each line of the text file can contain an IP address, or a Class-C IP addresses range. (The two IP addresses are separated by '->'. Example: 192.168.1.21->192.168.1.30)

The actions performed by this method are the same as the previous method.

b) Adding Thin Clients to the Database

After the scan all thin clients discovered are listed:



The status is given for each thin client:

- **'absent'**: The thin client is not yet entered in the database
 - If the comment of the thin client is empty then AxRM forces a standard comment of the type: "DD / MM / YYYY: Updated by a scan"
- **'To be updated'**: The thin client is already entered but its details have changed.

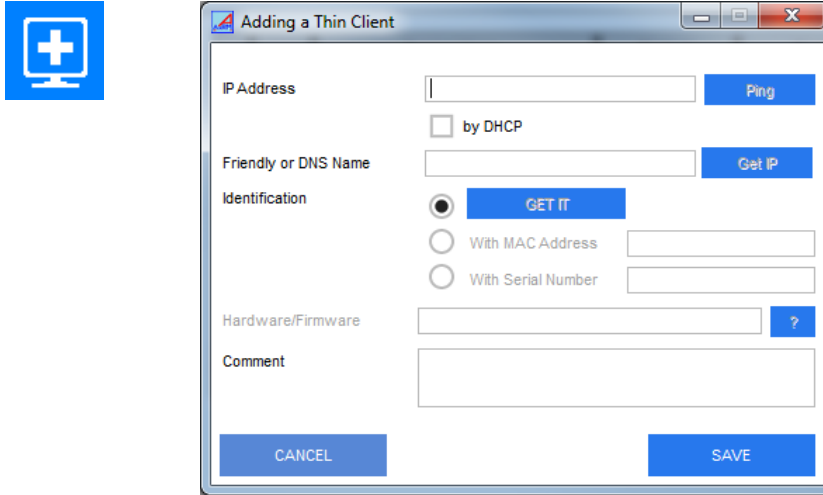
Special cases for comments:

 - If in the database a comment is already associated with this thin client, then it is only updated if a comment is entered in the thin client.
 - If in the database there is no comment associated with this thin client, and the comment from the thin client is empty, then AxRM forces a standard comment of the type: "DD / MM / YYYY: Updated by a scan".
- **'Already there'**: The thin client is already in the database.

For each thin client a check box is available. Only the ticked thin clients will be added to the database.

4.3.2 - Adding Thin Clients Manually

A thin client can be added manually to the database. In this case certain information is required. Here is the button and corresponding dialog box :



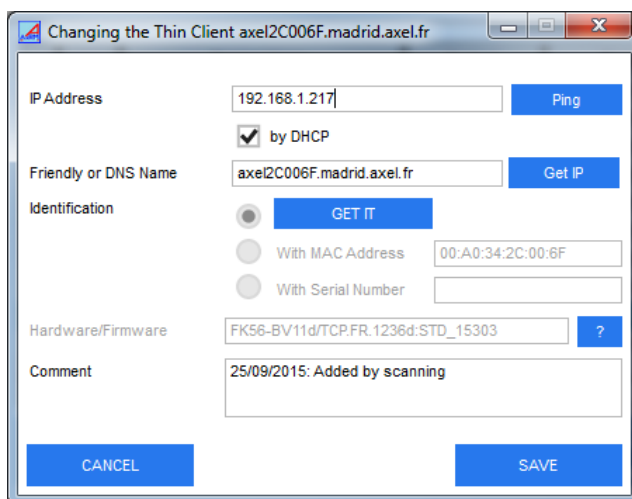
The following information is required:

- **IP address:** Enter the IP address and specify if it's static or given '**by DHCP**'. The **[Ping]** button allows this address to be checked.
- **Friendly or DNS name:** when a dynamic IP address is used this name should be a DNS name. In this case use the **[Get IP]** button to retrieve the IP address and to confirm if it is a static or dynamic address.
- **Identification:** (mandatory for admin functions - not mandatory to enter in database). Enter either serial number or MAC address. This is used to identify thin client. Press the **[GET IT]** button to get these details directly from the thin client or enter manually.
Note: the **[GET IT]** button is only available if the XML protocol is enabled. (See chapter [7.3.2](#))
- **Hardware/Firmware:** this value can only be obtained by the button **[?]** located on the right.
- **Comment:** free field for user comments.

After validation the thin client is added to the current location in the database.

4.3.3 - Modification

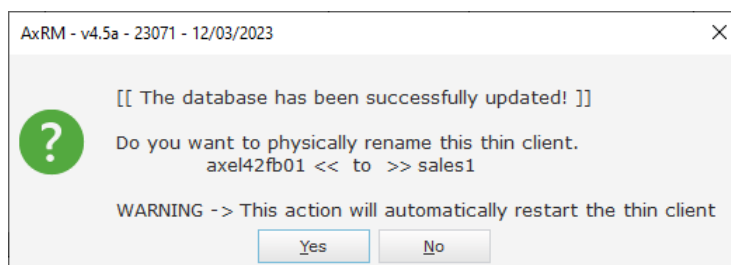
Here is the icon and corresponding dialog box



Note: for more information about this dialog box, please see the previous chapter [4.3.2](#).

The 'IP Address', 'Friendly or DNS Name' and the 'Comment' can be modified but the 'Device Identification' can't be changed.

When modifying the name of the thin client, a dialog box proposes the physical change of the name on the thin client:

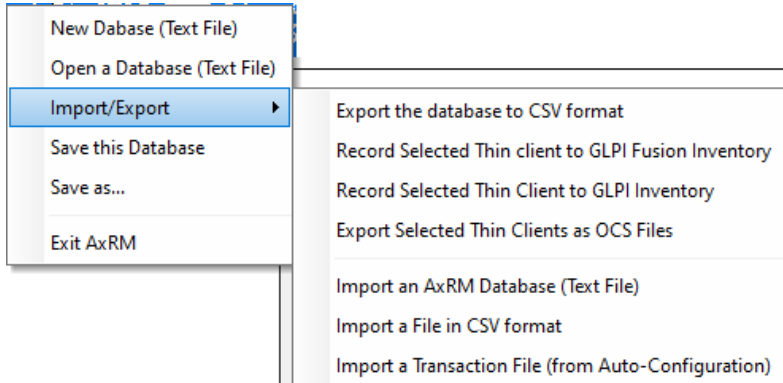


Note: If « Allow a different username than the real one thin client name. » parameter is not checked, this dialog box doesn't open.

4.4 - IMPORT/EXPORT FUNCTIONS



This is the button for import/export functions. The following menu is displayed:

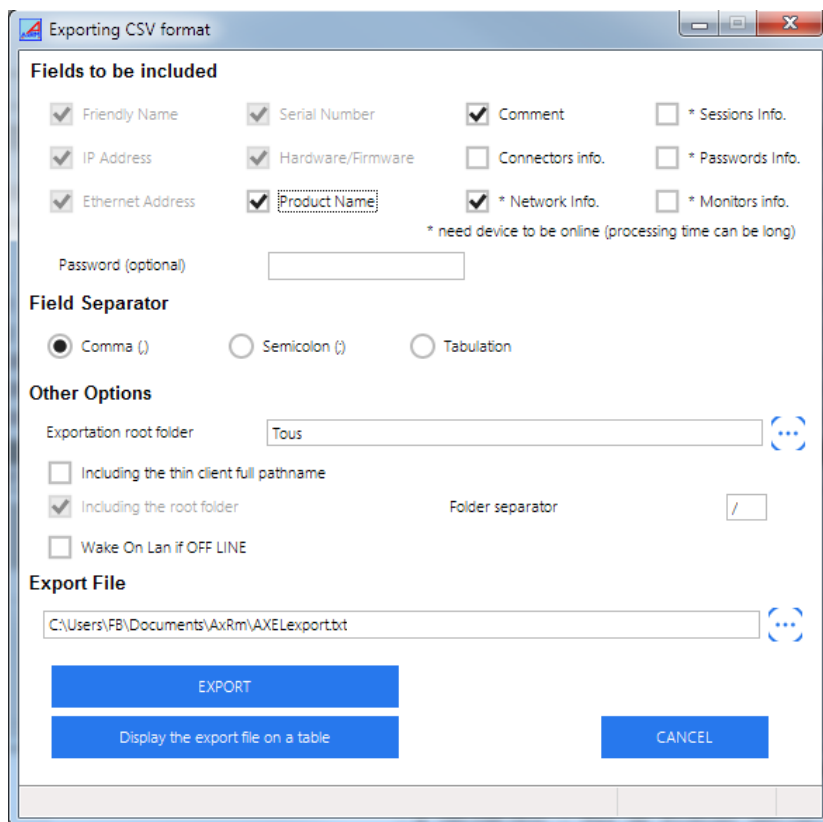


4.4.1 - Exporting the Database to a CSV File

The contents of the database (SQL or text file) can be exported to a text file in CSV format.

CSV (Comma-Separated Values) show the database values as parameters separated by a tag. By default, the separator tag is a comma but it is possible to choose other separator tags to avoid conflicts with the data in the file.

In the menu, select **[Export the Database to a CSV File]**. The following dialog box is shown:



Select the **Fields to be included** in the export file. Only the thin client's name is mandatory.

Two types of fields are selectable:

- Fields directly retrieved from the database
 - Fields available only with a connection to the thin client (they are marked with an asterisk)
 - If the thin client is not accessible, the information will be retrieved from the last set-up file received from the thin client in the back-up directory (see chapter [7.3.4](#)). If there is no set-up file corresponding to the thin client in this directory, the fields will not be filled.
 - An "ONLINE" field is included before the first accessible field with connection. The value of this field varies in the result of the connection:
 - ONLINE [Yes] connection succeeds, Information has been retrieved from the thin client
 - ONLINE [No - Set-up file from 22/01/2019 17: 35: 26: 0] The connection failed; the information was retrieved from the last received set-up file.
 - ONLINE [No - no set-up file] the connection failed, there is no set-up file corresponding to this thin client.
 If an error is detected at the time of the connection it is indicated in ONLINE.
 Ex: ONLINE [ERR 106 ...] set-up inaccessible (already in use)
 ONLINE [ERR 114 ...] incorrect password
 - In this case, all the fields (even the fields accessible offline) come from the information received by the thin client or the set-up file. If differences are detected, they are noted in the "DATABASE_vs_SET-UP" field added at the end of the line.
 Ex: DATABASE_vs_SET-UP [TCP.FR.1626b: STD_18100 vs TCP.FR.1626b: STD_19014]
- Note:** Connecting to thin clients can significantly slow down processing, especially if thin clients are not available (time-out).

The **password** (optional), this field is only available if there is a need to connect to thin clients.

The **Field Separator** can be a comma, semi colon or tab as selected.

Other options are:

- **Export root folder:** This is the folder from which the export is made (by default it is the current folder).
- **Include the thin client full pathname:** when selected, folder path is included in the thin client's name. This option is interesting if you want to use the export file for re-importing into AxRM
- **Include the root folder:** when the full pathname is included, the root folder can be used or not (may not necessary when re-importing the database).
- **Folder separator:** when the full pathname is included, the folder separator can be set (by default "/")
- **Wake On Lan if OFF LINE:** only available if AxRM needs to connect to thin clients when exporting.

After entering name and location for the file click **[EXPORT]**.

A progress bar allows you to visualize the export progress, when the export is finished, a window pops-up.

A **[Display the exported file on a table]** button allows you to easily check the export that you have created.

NAME	IP	MAC	SN	HARD/FIRM	PRODUCT	COMMENT
Sophie	192.168.001.024	00:A0:34:2C:00:...	B81180F00024	FK55-BV10c/TC	AX3000 M80F	03/03/2017 : mis
Lala	192.168.001.023	00:A0:34:30:00:2...	B10780G00033	FK56-BV11d/TC	AX3000 M80G	03/03/2017 : mis
Lynda	192.168.001.021	00:A0:34:30:00:6...	B10780G00110	FK56-BV11c/TC	AX3000 M80G	03/05/2018 : mis
Véronique	192.168.001.022	00:A0:34:30:D4:...	B10780G54321	FK61-BV14a/TC	AX3000 M80G	03/05/2018 : mis

Buttons: Create an Excel file, CANCEL

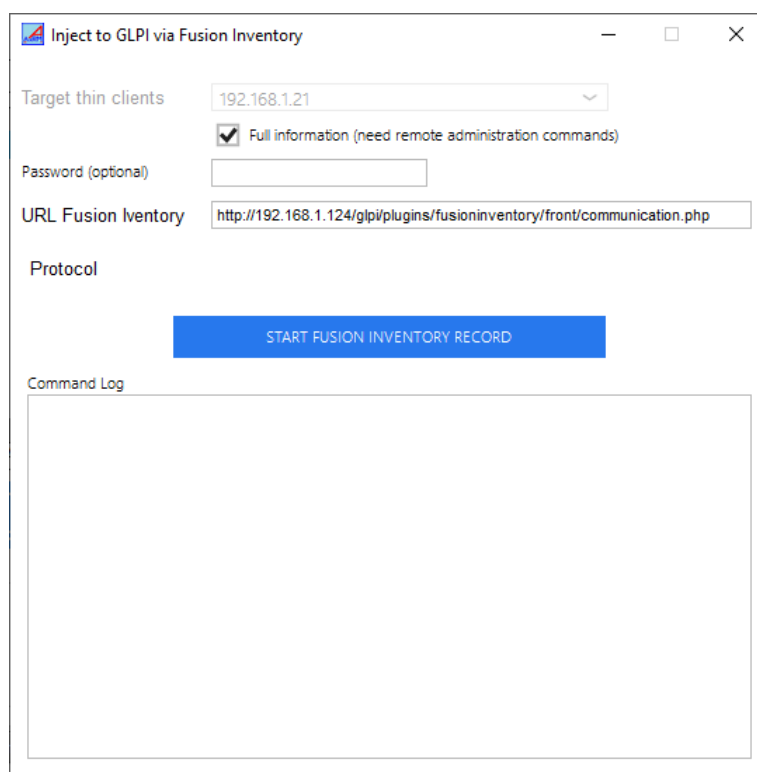
A **[Create an Excel file]** button allows you to convert to an Excel file format.

4.4.2 - Recording Selected Thin Clients to GLPI via FusionInventory

GLPI is a network management tool and FusionInventory is a GLPI plugin for automatic inventory of hardware and software.

With this function, the description of each selected thin client is recorded in a GLPI database.

Select one or more thin clients, and in the menu select **[Record Selected Thin Clients to GLPI Server]**. The following dialog box is shown:



At the top a drop-down list shows thin clients previously operated on.

By default, thin client descriptions are generated with information contained in the current database, in which case no access to the thin client is needed.

If '**Full Information**' is ticked, the thin client will be accessed by remote commands to get further information (network interface type, status, mask, router, etc., generic information, monitors, printers, etc.). In this case it is possible to enter a "**password**" if necessary.

The "**URL FusionInventory**" is the interface with GLPI. Here is the URL structure:

```
http://myserver/glpi/plugins/fusioninventory/front/communication.php
```

It is possible to specify the port number (default 80) by adding " :**xxxx**" in the URL after the server (where xxxx is the listening port number of the GLPI server).

Example: `http://myserver:81/plugins/fusioninventory/front/communication.php`

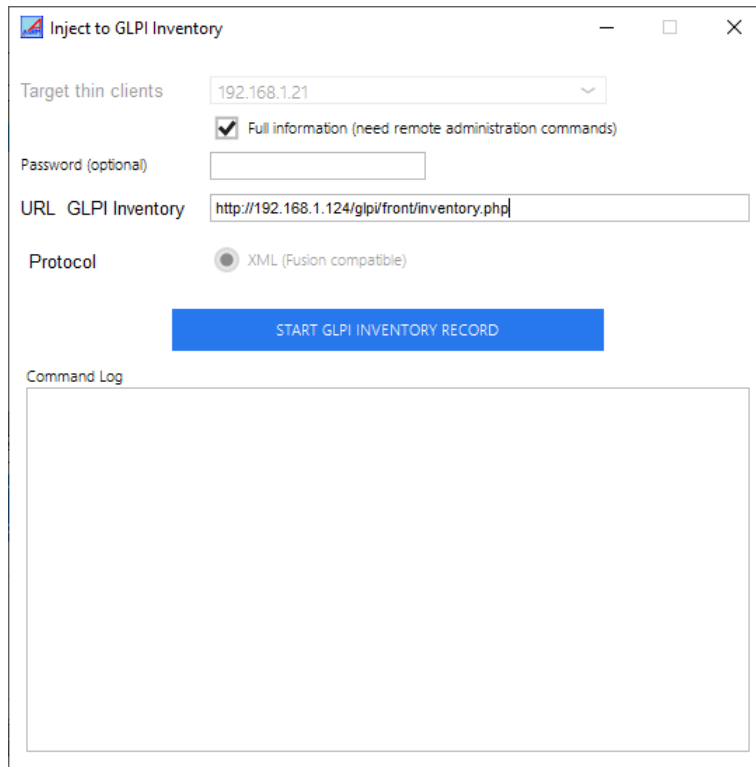
Click **[START FUSION INVENTORY RECORD]**. The description of each selected thin client is sent to this URL.

4.4.3 - Recording Selected Thin Clients to GLPI Inventory

GLPI 10 directly integrates the Inventory function, the FusionInventory 'plugin' can no longer be installed, but a compatible mode is retained, it is this mode that is used by AxRM.

This function is used to inject the description of the selected thin clients into the GLPI 10 database.

Select one or more thin clients, and in the menu select **[Record Selected Thin Clients to GLPI Server]**. The following dialog box is shown:



At the top a drop-down list shows thin clients previously operated on.

By default, thin client descriptions are generated with information contained in the current database, in which case no access to the thin client is needed.

If **'Full Information'** is ticked, the thin client will be accessed by remote commands to get further information (network interface type, status, mask, router, etc., generic information, monitors, printers, etc.). In this case it is possible to enter a **"password"** if necessary.

The **"URL GLPI Inventory"** is the interface with GLPI. Here is the URL structure:

```
http(s)://myserver/glipi_base/front/inventory.php
```

It is possible to specify the port number (default 80) by adding **":xxxx"** in the URL after the server (where xxxx is the listening port number of the GLPI server).

Example: `http://myserver:81/glipi_base/front/inventory.php`

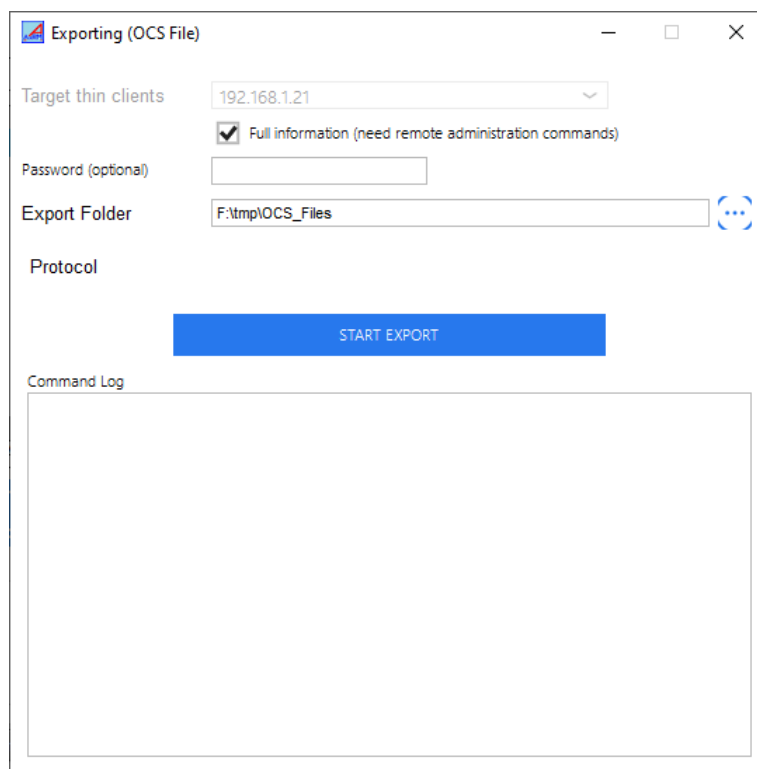
Click **[START GLPI INVENTORY RECORD]**. The description of each selected thin client is sent to this URL.

4.4.4 - Exporting Selected Thin Clients as OCS Files

The OCS Inventory NG is a network management tool. It allows automatic inventory of hardware and software.

With this export function, for each selected thin client, an OCS description file is generated. This file can be imported in the OCS NG database.

Select one or more thin clients, and in the menu select [**Export Selected Thin Clients as OCS Files**]. The following dialog box is shown:



The dialog box is titled "Exporting (OCS File)". It features a "Target thin clients" dropdown menu with "192.168.1.21" selected. Below this is a checked checkbox labeled "Full information (need remote administration commands)". There is an empty text field for "Password (optional)". The "Export Folder" is set to "F:\tmp\OCS_Files" with a browse button. A "Protocol" label is present but has no input. A blue "START EXPORT" button is centered. At the bottom is a "Command Log" text area.

At the top of the box, a drop-down list shows thin clients previously operated on.

By default, OCS files are generated with information contained in the current database, in which case no access to the thin client is needed.

If '**Full Information**' is ticked, the thin client will be accessed by remote commands to get further information (network interface type, status, mask, router, etc., generic information, monitors, printers, etc.). In this case it is possible to enter a "**password**" if necessary.

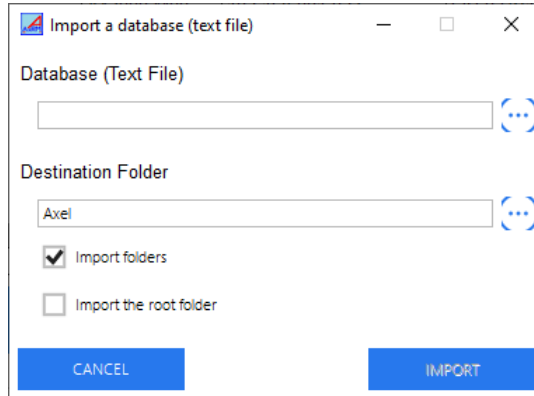
The "**Export Folder**" will contain the generated OCS files.

Click [**START EXPORT**]. For each thin client, an OCS file is generated with a name based on the thin client Ethernet address (00-A0-34-xx-yy-zz.ocs).

4.4.5 - Importing a Database (Text File)

A 'text file' database can be imported to the current database.

In the menu, select **[Import a Database (Text File)]**. The following dialog box is shown:



Select the database file and the destination folder.

Other options are:

- **Import folders:** folders will be created to comply with the original thin client full pathname
- **Import the root folder:** if 'Import folders' is selected, the root folder to be also imported.

Click **[IMPORT]** button. When the import is complete the number of thin clients added or updated is displayed.

4.4.5 - Importing a CSV File

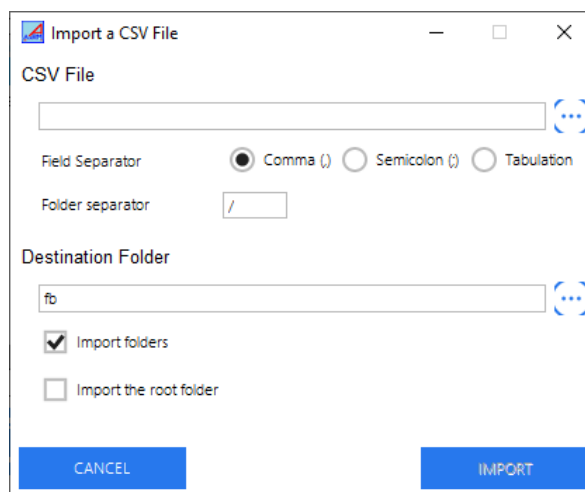
A database previously exported by AxRM (see Chapter [4.4.1](#)) or other source can be imported to the current database.

This file must have a precise structure:

Name SEP Ip_Addr SEP Mac_Addr SEP Serial_Number SEP Version SEP Model SEP Comment

Where "SEP" is a comma, a semicolon, a tabulation

In the menu, select **[Import a CSV File]**. The following dialog box is shown:



Select the **CSV File** and the **Destination Folder**.

Other options are:

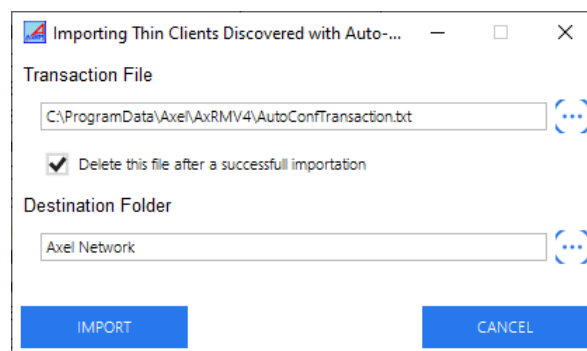
- **Field Separator** and **Folder Separator**: these are the separators selected for the importation (see Chapter [4.4.1](#))
- **Import folders**: folders will be created to comply with the original thin client full pathname
- **Import the root folder**: this option allows the root folder to be imported.

Click **[IMPORT]** button. When the import is completed the number of thin clients added or updated is displayed.

4.4.7 - Importing Devices Discovered with Auto-Configuration

The Auto-configuration function allows new thin clients to be discovered. When this function is run in service mode, information about new thin clients is recorded in a special file. (See chapter [6.2.2](#)).

To update the thin client database with this new information, select **[Import a Transaction File (from Auto-Configuration)]**. The following dialog box is shown:



Select the transaction file and the destination folder.

Click **[IMPORT]** button. When the import is completed the number of thin clients added or updated is displayed.

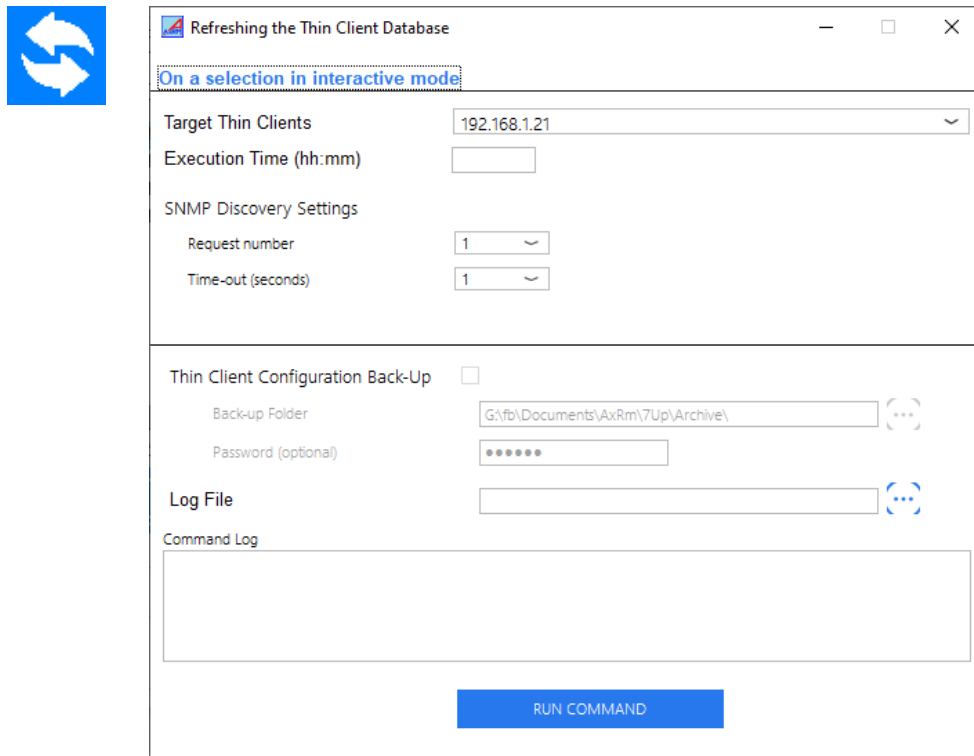
4.5 - REFRESHING THIN CLIENT DATABASE

This function allows entries for existing thin clients in the database to be updated:

- Thin client information (thin client name, firmware revision...) is refreshed.
- The thin client set-up can be optionally collected (Interesting for the Quick Exchange function).

Note: Only existing thin clients in the database will be scanned.

The function is invoked from the toolbar. Here is the icon and dialog box:



At the top, a drop-down list shows thin clients previously operated on.

The “**Execution Time**” allows the command to be run at a given time. If this field is empty the command is run immediately.

4.5.1 - SNMP Discover

The scenario is the following: a unicast SNMP request is sent to each thin client.

If no response is received before the " **Time-out (seconds)**" expiration another request is sent. Until the "**Request Number**" is reached or an SNMP response is received.

The SNMP response allows thin client information to be updated: thin client name, firmware revision and comment. This allows also the MAC Address to be checked.

4.5.2 - Configuration Files

With this function, thin client configuration files can also be collected by specifying the "**Backup Folder**" and the '**Password (optional)**".

For each thin client found with the SNMP command, a remote administration command is issued to get the configuration file. The filenames are the MAC Address plus a ".txt" suffix.

4.5.3 - Other Options

The '**Log file**' option allows the output of this command (messages, errors...) to be stored.

**- 5 -
THIN CLIENT
ADMINISTRATION**

This chapter describes how to select one or more thin clients from the database on which to perform management operations.

The administration of a thin client or a group of thin clients is composed of two phases:

- Selection of the thin client(s)
- Selection and order of actions.

Most of the management commands can be executed on one or multiple thin clients.

Click on a thin client to select/deselect it (the background of a selected thin client is blue).

The thin client selection mode can be customized:

- **Multiple:** click left to add or remove a thin client to/from the selection. This mode is advised when using a touch screen.
- **Individual:** this mode operates as described below:
 - Click left: clear the current selection and add this thin client to the selection.
 - Ctrl + Click left (Windows only): add this thin client to the selection.
 - Shift + Click left (Windows only): clear the current selection and select the group of thin clients from the former selected thin client to the current selected thin client.

Note: the selection mode is chosen with the **[Console Settings]** button. See Chapter [3.5.5](#).

Selection can also be done by these buttons:



[Select All] Button

All thin clients in the panel are selected.



[Unselect All] Button

All thin clients in the panel are unselected.



[Select Online product] Button

Displayed only if the "Detection" button is active

All thin clients on the right panel that are powered on are selected

Once selection is made use buttons under the thin client panel. (On Windows a contextual menu is available by right click).

Note: by default, AxRM uses the DNS name to administer thin clients with dynamic IP addresses. It's not advised, but this can be changed to use the IP address in AxRM tunings (see Chapter [7.3.2](#)).

5.1 - OBTAINING THIN CLIENT GENERAL INFORMATION

This command is available when only one thin client is selected (or on Windows when double clicking a thin client).

Here is the icon and corresponding dialog box



Product Information Ax-Lynda

AX3000 M90
Password
 None

Serial Number: B509M9003251
 MAC Address: 00:A0:34:36:0C:B3
 Hardware/Firmware: FK60-BV13a/TCP.FR.2232a:STD_23069
 IP Address: 192.168.001.021

Connectors

Ethernet:	GigaBit	Wireless:	802.11b/g/n Not installed
USB Port(s):	6	Video Port(s):	DP & VGA
Audio:	1 Speak + 1 Mic	PS/2 Port(s):	0
Serial Port(s):	0	Parallel Port(s):	0

Configuration

Network:

Screen Session(s): 1 - rdp -> SERV2K19 (1 windows) (Connected)

Auxiliary Port(s):

USB Device(s):

Buttons: REFRESH, SNAPSHOT, EXIT

Note: If the thin client is equipped with firmware version lower than « 2232a », the « General Info », « USB Information », « Session Information » and « USB Device Information » buttons are not displayed.

At the top of the box, general information is displayed.

'Connectors' Section : Lists physical characteristics of this thin client.

'Configuration' Section : Drop-down lists are used to view the network configuration, the screen sessions (associated protocol and server) and the auxiliary ports (service or associated redirection).

The fourth drop-down list allows you to view the USB devices currently connected to the thin client. This list is only available if the thin client is accessible.

If the thin client is not available and the information comes from the configuration file in the configuration back-up directory (see chapter 7.3.4), a message is displayed in red color with the date and time of the set-up file creation:

Thin client unreachable, configuration issued from a set-up backup file of 20/03/2023 16:16:17:0

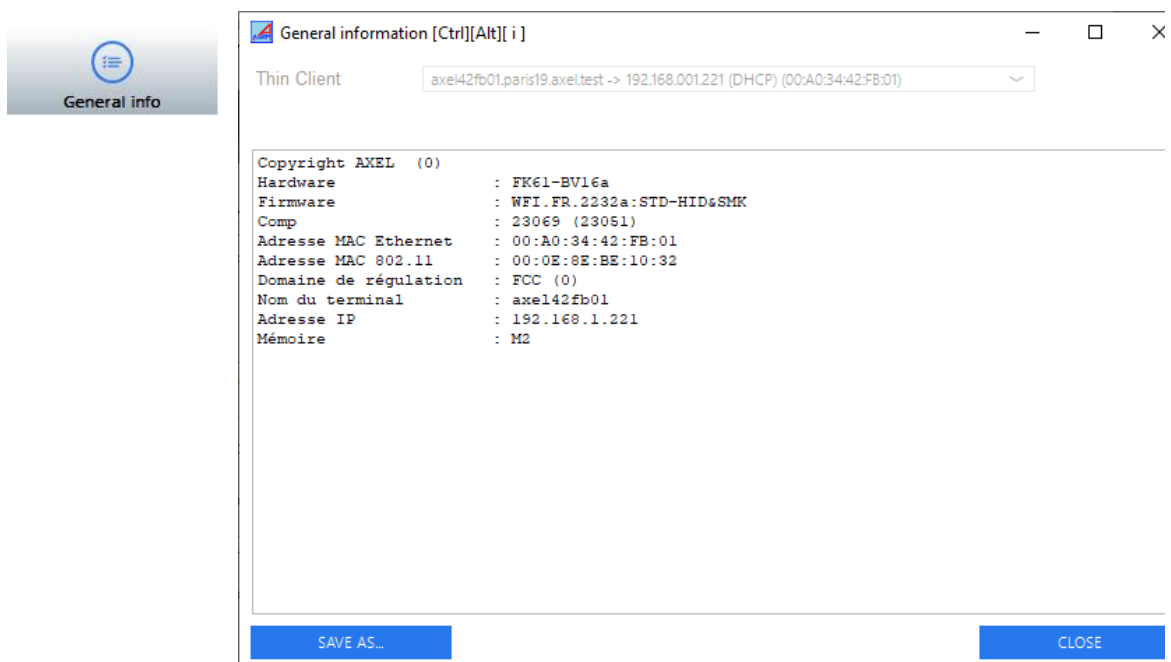
Network:

Screen Session(s):

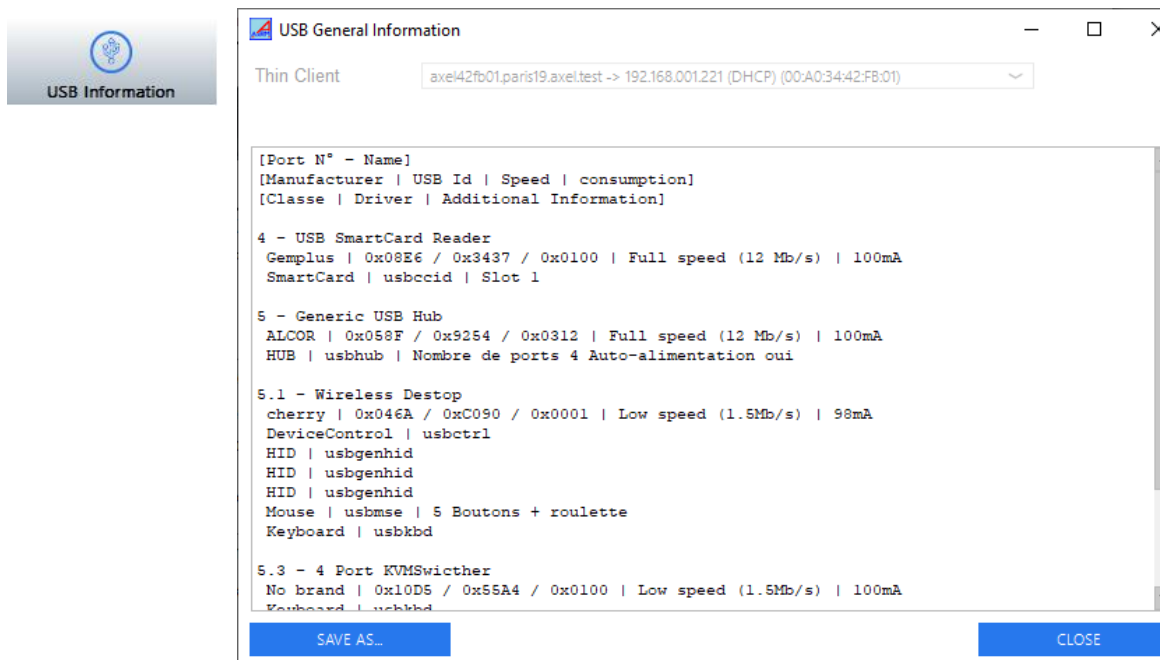
Auxiliary Port(s):

USB Device(s):

The "General Information" button displays the equivalent of a <CTRL><ALT><i>.on the local desktop:



The "USB Information" button displays the equivalent of a <CTRL><ALT><U>. on the local desktop:



Buttons :  

Respectively allow you to obtain specific information about the active session or the USB device displayed in the list.

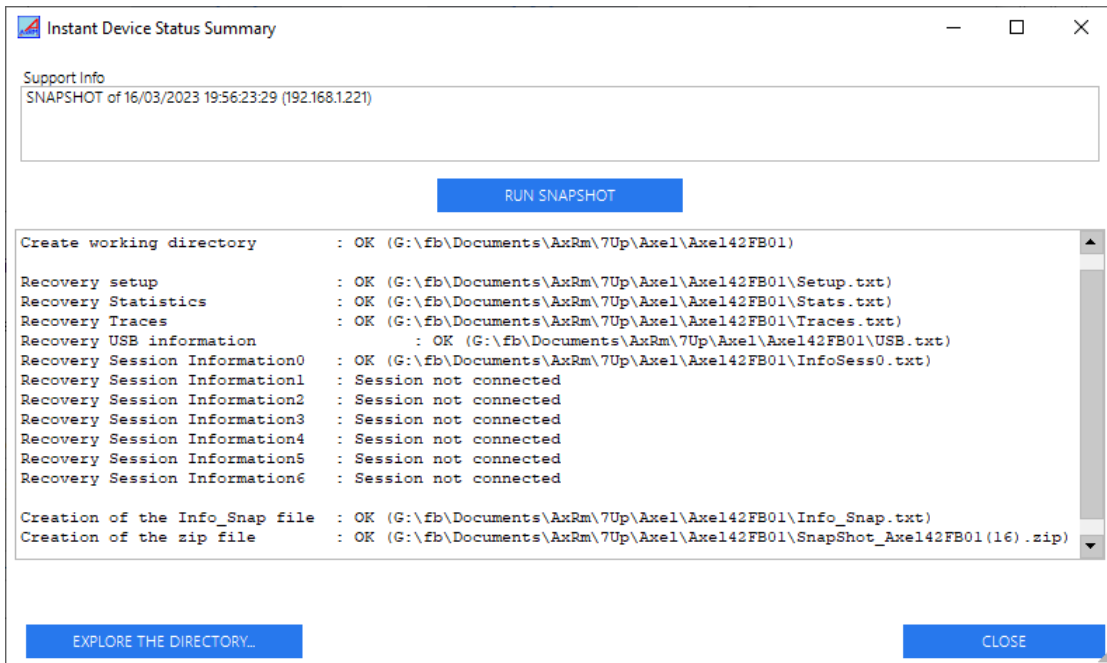
5.1.a – SnapShot for support

The [SNAPSHOT] button allows you to make an instantaneous state of the thin client, all the data recovered (setup, statistics, session and USB information, traces etc.) are compressed in a zip file.

A "SnapShot" makes it possible to concentrate all the technical data of a thin client in a single file, it will sometimes be requested by AXEL technical support.

Note: the "SnapShot" is also accessible via the command menu (Right click in the list of devices).

Here is the dialog displayed for the SnapShot:



The resulting file is a zip file named **SnapShot_Axelxxxxxx(nn).zip** where:

- **xxxxxx** corresponds to the last 6 bytes of the MAC address of the thin client
- **nn** corresponds to an automatic increment if the file already exists, the first being of the form “SnapShot_Axelxxxxxx.zip” the second “SnapShot_Axelxxxxxx(01).zip” etc...

5.2 - REMOTE ADMINISTRATION

Here is the icon and corresponding dialog box:



Remote Administration
— □ ×

Target Thin Clients PING

Password (optional)

Execution Time (hh:mm)

Auto Power-On (WOL)

Administration Protocol

Administration Commands
Auto-Configuration
Local Store
"BFT" traces

Get Configuration

Send Configuration File

Download Firmware

Boot/Reboot/Shutdown

Display a Message

Get Statistics

Store to File

Full Set-Up

RUN COMMAND

Command Log

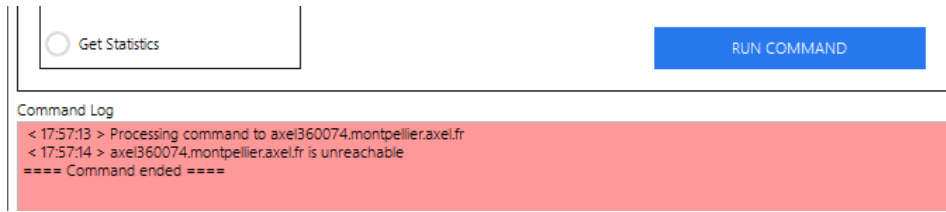
General options are located on the top of the box:

- **Target Thin Clients:** A drop-down list shows thin clients previously operated on. If only one thin client has been selected, this list is disabled. The **[PING]** button is available if only one thin client has been selected.
- **Password:** Depending on the administration command and thin client set-up, a password may be required.
- **Execution Time:** This option allows the command to be started at a later time.
- **Auto Power-On:** This option allows target thin clients to be powered-on (if needed) before starting the remote command. This option is enabled if the WakeOnLan capability is supported by at least one of the target thin clients.
- **Administration Protocol:** by default the displayed value is the selected protocol of AxRM Preferences (see Chapter [7.3.2](#)). If this protocol is "XML over TLS", the possible values are XML and XML-TLS.

The remote administration is separated in four tabs:

- Administration commands
- Auto-configuration commands.
- Local store
- Trace recovery for technical support

At the bottom of the dialog box a zone displays the order log, in the event of an error this zone changes to a red background.



5.2.1 - Getting Thin Client Configuration

AxRM can be used to remotely access and store the thin client's setup configuration.

Below is the corresponding dialog box:



If **"Full set-up"** is selected the entire setup information is obtained. If not selected only non-default settings are obtained - making the file smaller.

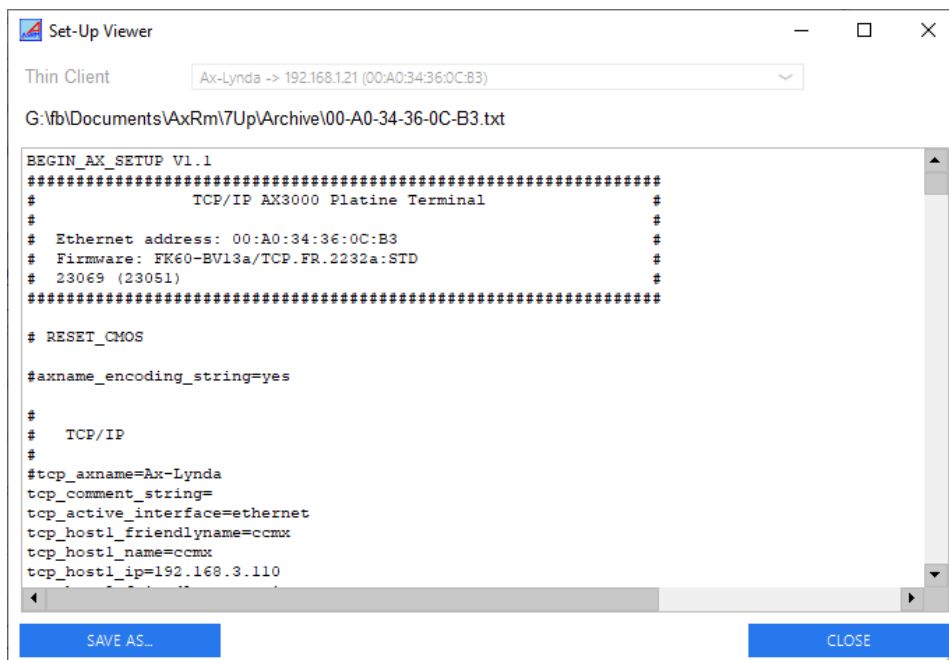
To save this information in a file, provide a name in the field **"Store to File"**.

Note: the button [...] can be used to navigate to a preferred file location.

If no filename is given, the configuration will be stored in the "Back-up Folder" (see Chapter [7.3.4](#)) with a name based on the Ethernet Address (00-A0-34-xx-yy-zz.txt).

IMPORTANT: if this command is password-protected (check the thin client set-up), the password must be entered in the **"Password"** field.

After the command, the configuration is displayed onto a new window:



If multiple thin clients are selected use the drop-down list to choose an individual thin client. The associated filename is displayed below this drop-down list.

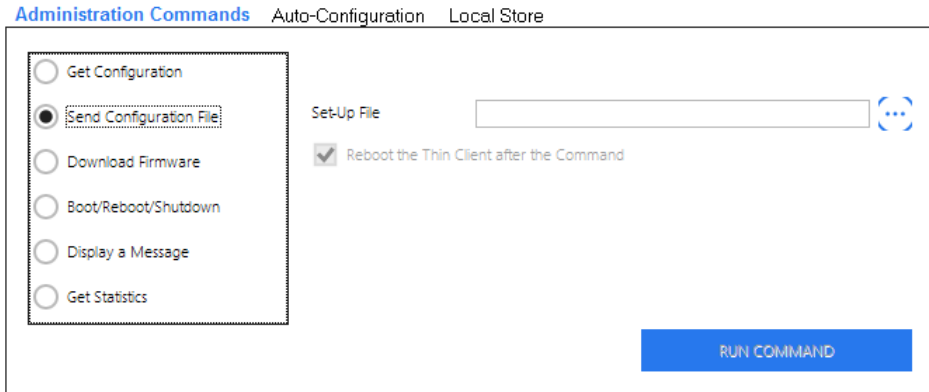
Click **[CLOSE]** or **[SAVE AS...]** depending if you wish to save the data or not.

5.2.2 – Send Configuration File to Thin client

AxRM lets a pre-defined setup file be applied to the thin client. This setup file is obtained beforehand from an already configured thin client (see chapter 5.2.1), written from scratch with a text editor, or obtained from an existing thin client and modified to suite with a text editor.

Note: for more information on the set-up file see the *AX3000 User's Guide*.

Below is the corresponding dialog box:



The name of the set-up file must be given in the "Set-up File" field, the [...] button can be used to navigate to the location of the setup file.

By default, the thin client will automatically reboot after receiving the new configuration. You may untick the "Reboot the Thin Client after the Command" option to skip this reboot command (not advised).

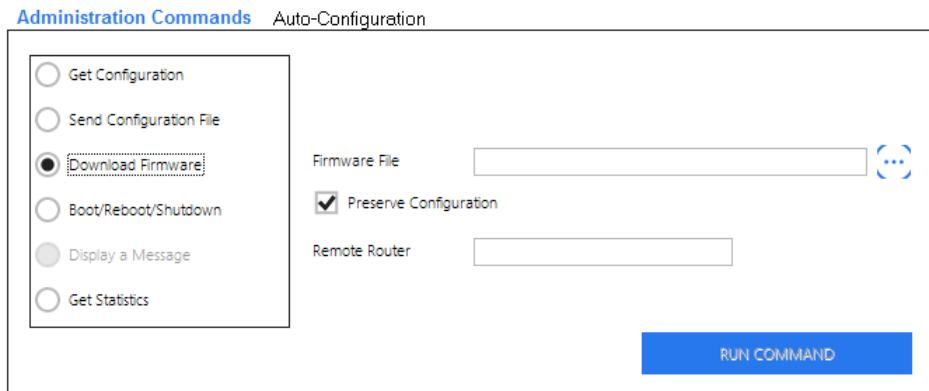
Note: by default this option is disabled. The AxRM configuration file must be changed to enable it. See Appendix A.5.

IMPORTANT: if the thin client is password-protected, the password must be entered in the "Password" field.

5.2.3 - Downloading Firmware

AxRM can be used to upgrade the thin client firmware.

Below is the corresponding dialog box:



The name of the firmware file must be entered in the "Firmware File" field, the [...] button can be used to select the location of this file.

Upgrading the firmware will result in the thin client losing its existing configuration. By ticking the "Preserve Configuration" the original configuration will be re-applied. The following sequence of commands is run:

- Get thin client configuration (saved as a temporary file)
- Download firmware
- Reboot (the device)
- Send configuration (send file generated above)
- Reboot (the device).

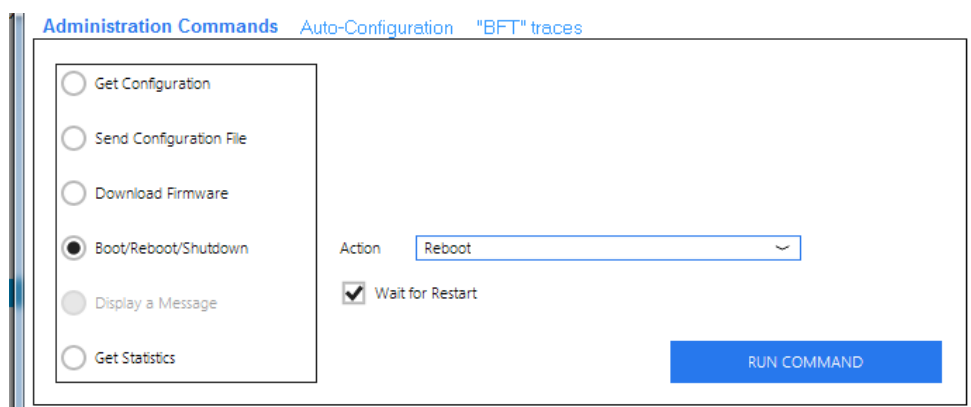
The field "**Remote Router**" is shown only **when the administration protocol is set to "RSH"** (see Chapter [7.3.2](#)). When the Axel thin client and the AxRM machine are not on the same local area network, it is imperative to complete IP address of the router on the side of the Axel thin client

IMPORTANT: if the thin client is password-protected, the password must be entered in the "**Password**" field.

5.2.4 - Handling Power-On and Power-Off

Thin clients can be remotely powered-on (M90/M95 only), rebooted and powered-off.

Below is the corresponding dialog box:



The possible actions are:

- **Power-On:** this is done with a WakeOnLAN command. It works only with M90/M95 and only over a LAN.
(This command is not possible with RSH or XML protocols as it is UDP based)
- **Reboot:** the thin client is rebooted (without any notification on the user)
- **Shutdown:** the thin client is powered-off (without any notification on the user). Applicable only for M90/M95 terminals.
- **Wait for Power On** or **Wait for Restart** is automatically checked, if you uncheck this option, AxRM will not check the command. This speeds up the command when multiple thin clients are selected.

IMPORTANT: for the Reboot and Shutdown commands the password must be entered in the "**Password**" field if the thin client is password-protected,

5.2.5 - Displaying a Message

A message can be sent to one or multiple thin clients.

Below is the corresponding dialog box:

Administration Commands Auto-Configuration Local Store

Get Configuration
 Send Configuration File
 Download Firmware
 Boot/Reboot/Shutdown
 Display a Message
 Get Statistics

Title

Message

Auto Valid

Beep Number

Critical Message (red background)

Large Font

RUN COMMAND

A message is a **'Title'** (optional) and the actual **'Message'** .

Other options are:

- **Auto-Valid:** sets the length of time the message is displayed. If set to 'no' the message is displayed until the user clears it.
- **Beep Number:** set the number of beeps sounded when the message is displayed.
- **Critical Message:** by default, the message is displayed in a blue dialog box. When this option is set, the dialog box is red.
- **Large Font:** sets the double-size character mode

IMPORTANT: if this command is password-protected (check the thin client set-up), the password must be entered in the "**Password**" field.

5.2.6 - Getting Thin Client Statistics

AxRM can be used to remotely access and store the thin client's network statistics.

Below is the corresponding dialog box:

Administration Commands Auto-Configuration Local Store

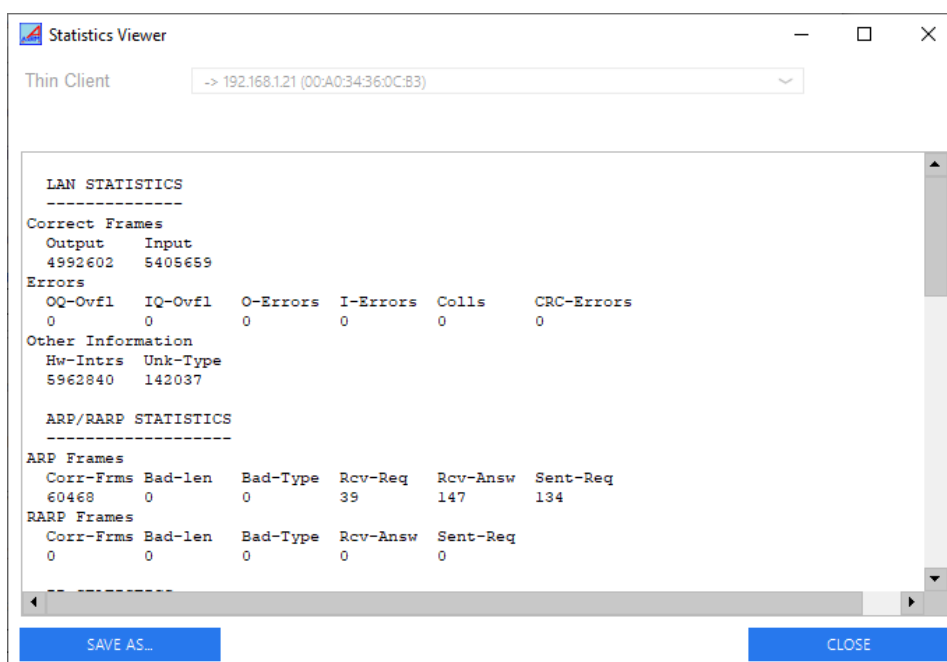
Get Configuration
 Send Configuration File
 Download Firmware
 Boot/Reboot/Shutdown
 Display a Message
 Get Statistics

Store to File ⋮

RUN COMMAND

To save this information in a file, provide a name in the field "**Store to File**", the button [...] can be used to navigate to a preferred file location.

After the command, the statistics information is displayed onto a new window:



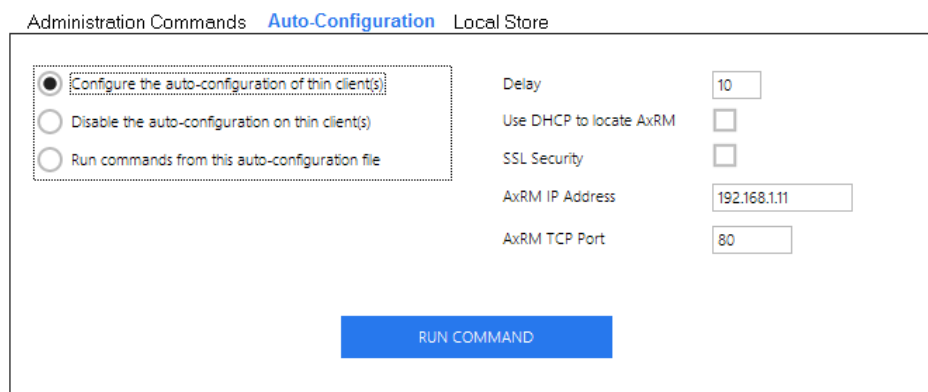
If multiple thin clients are selected use the drop-down list to choose a single thin client. The associated filename is displayed below this drop-down list.

Click **[CLOSE]** or **[SAVE AS...]** depending if you wish to save the data.

5.2.7 - Enabling/Disabling Auto-Configuration

AxRM can be used to enable/disable thin client auto-configuration feature (see Chapter 6).

Select the "Auto-Configuration" tab then click the "**Configure the auto-configuration of thin client(s)**" option. Below is the corresponding dialog box:



The "**Delay**" option is the maximum number of seconds allowed for the auto-configuration process. If no auto-configuration response is received before the timeout expiration, the thin client continues the usual boot scenario.

Two methods allow the AxRM machine (IP address / TCP Port) to be located by the thin client:

- **Static:** IP address (or DNS) name and TCP port are given.
- **Dynamic:** information will be given by a DHCP server.

IMPORTANT: if the thin client is password-protected, the password must be entered in the "**Password**" field.

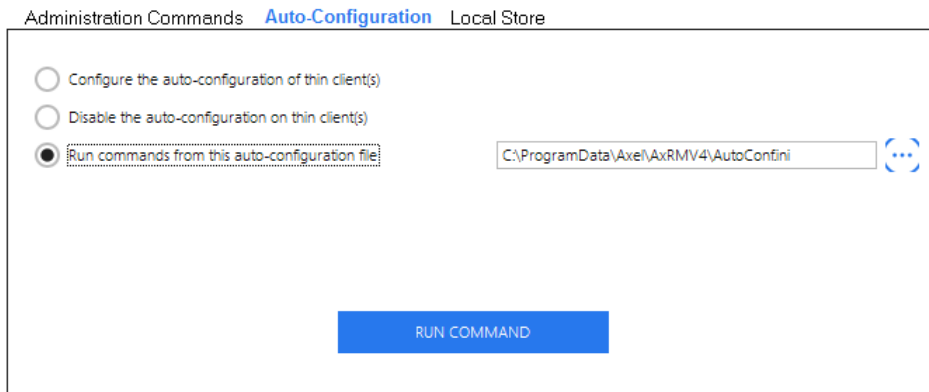
The thin client doesn't reboot after receiving the enable/disable auto-configuration command. This command will take effect the next time the thin client will be rebooted.

Note: to disable the auto-configuration, simply click the "**Disable the auto-configuration of thin client(s)**" option. The password is required and the target thin client(s) won't reboot when receiving this command.

5.2.8 - Running Command(s) from Auto-Configuration File

AxRM can be used to launch commands issued from the auto-configuration file (see Chapter 6).

Select the "Auto-Configuration" tab then click the "**Run commands from this auto-configuration file**" option. Below is the corresponding dialog box:



The name of the environment file is issued from the auto-configuration settings. (See Chapter 6.1.5)

5.3 - MANAGING THE THIN CLIENT LOCAL STORE

A local store is offered by AX3000 Thin Clients. Three types of objects can be stored:

- TSE License: sent by a TSE **per devices** license server.
- Logo: a **JPEG** or **PNG** picture (only one logo can be stored).
- Security Certificate (personal, authority, or SSH private key): PFX, PEM, P12 and CER are supported.
- TSE Printer Configuration: sent by a TSE server.

Note: the AX3000 Local Store is not available when the administration protocol is '**RSH**' (See Chapter 7.3.2).

Below are the button and the corresponding dialog boxes (dependent of one or multiple thin clients being selected):



Administration Commands Auto-Configuration [Local Store](#)

Please, first synchronize the local store

Only one thin client had been selected

Administration Commands Auto-Configuration [Local Store](#)

The local store view is disabled with multiple thin clients

Multiple thin clients had been selected

Note: when a single thin client is selected the store content can be displayed by synchronizing, shown below:



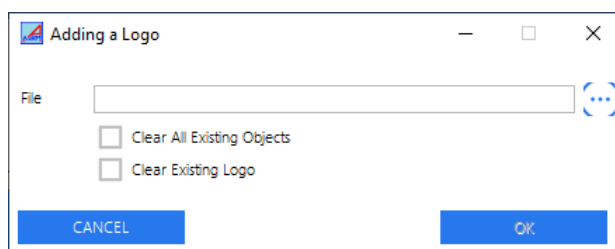
[Local Store](#)

Object store (9K/96K) - Number of object(s): 1

1 - PNG 512x224 (9552 bytes)

5.3.1 - Adding a Background/Logo

Below are the button and the corresponding dialog box for adding a logo:



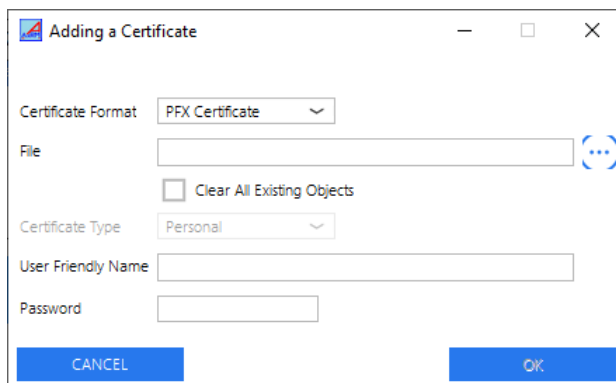
Parameters are the following:

- **File:** click the [...] button to browse the disk.
- **Clear All Existing Objects:** empty the store before adding this object.
- **Clear Existing Logo:** only one logo can be stored

After confirmation, the adding command is issued to one or more thin clients. The store content is updated.

5.3.2 - Adding a Certificate

Below are the button and the corresponding dialog box for adding a certificate:



Parameters are the following:

- **Certificate Format:** supported formats are PFX, PEM, P12 and CER.
- **File:** click the [...] button to browse the disk.
- **Clear All Existing Objects:** empty the store before adding this object.
- **Certificate Type:** select "Personal" or "Authority (CA)".
- **User Friendly Name:** this name is displayed in the "Information" field of the local store. This allows the certificate to be selected when needed.
- **Password:** this password is required for the certificate installation. If it's not given now, it will have to be given later from the thin client interactive set-up.

After confirmation, the adding command is issued to one or more thin clients. The store content is updated.

5.3.3 - Deleting an Object

Note: only available when a single thin client is selected.



[Delete] Button

Select an object on the store content and click this button to delete it.

5.3.4 - Clear the Local Store

Note: only available when multiple thin clients are selected.



[Delete] Button

To delete all objects of all the selected thin client, click this button.

5.4 - REMOTE ACCESS TO A THIN CLIENT

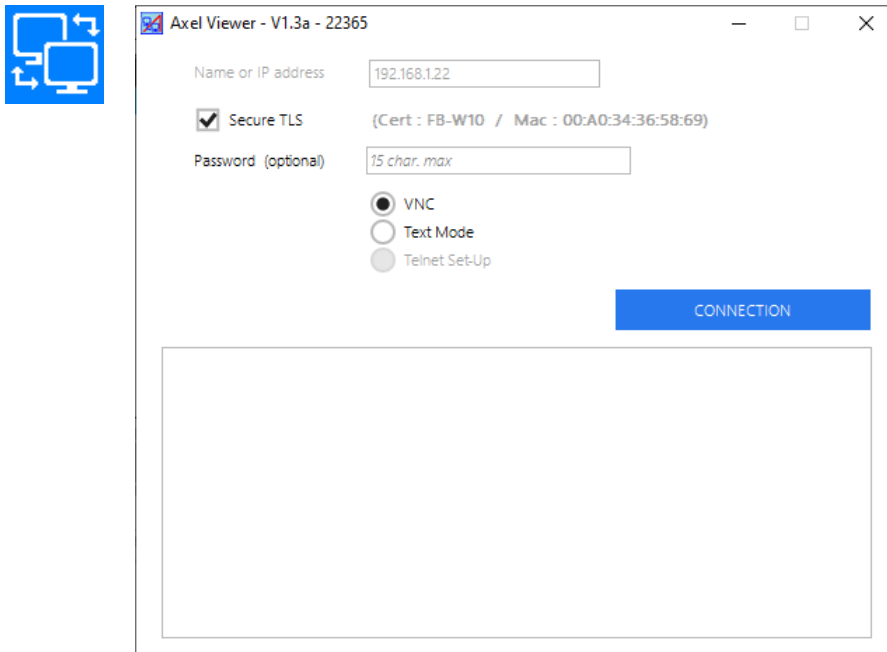
Remote access of a thin client can be either taking the control of the remote thin client (see Chapter [5.4.1](#) and [5.4.2](#)) or entering the interactive set-up of a remote thin client (see Chapter [5.4.3](#)).

Warning: Only one thin client can be accessed at a time.

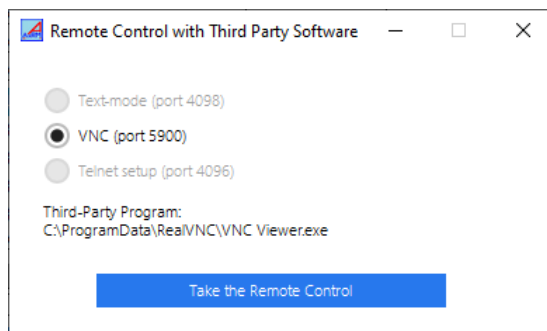
Note: the remote access functions can be enabled/disabled through the thin client set-up. For more information, please consult the *AX3000 User's Manual*.

On Windows, by default remote control is offered by the AxelViewer software (installed at the same time as AxRM). Alternative third party software can be specified (see Chapter [7.3.5](#)).

Below is the button and the corresponding dialog box:



With the AxelViewer software



With the alternate commands

Note 1: The "secure TLS" mode is only displayed if AxRM is used with secure XML (TLS) type commands (see chapter [7.3.2](#)) and the thin client is equipped with firmware greater than or equal to version 2232a.

In this case, the VNC client and the Text Mode are encapsulated in a TLS pipe, identical to the XML commands.

Note 2 : the "Text-Mode" remote control is not available with alternate commands as it's based on an Axel proprietary protocol.

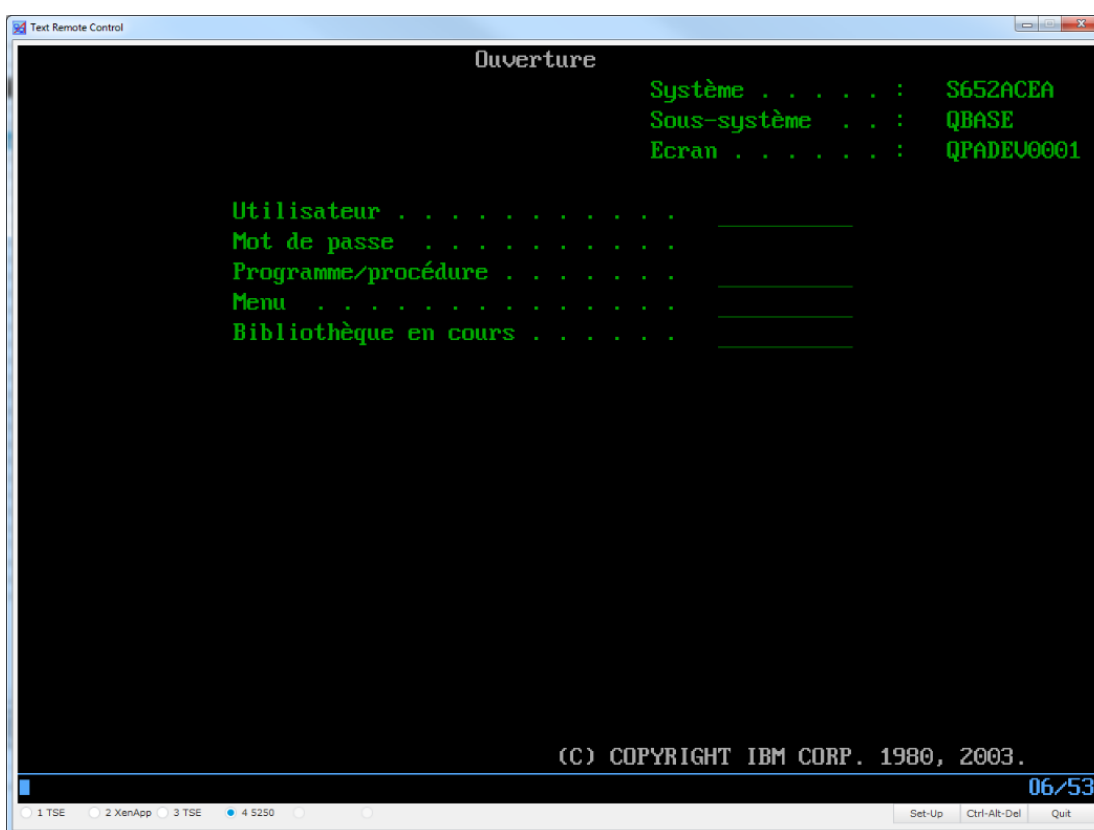
5.4.1 - Text-Only Remote Control

This functionality allows an administrator to remotely take control of a thin client. The administrator can passively watch the users screen or actively take control with his own keyboard for various support or administration purposes.

To open a 'remote control' session:

- Select the 'Text Mode' connection type,
- Enter port TCP (default 4098),
- Click on **[CONNECTION]**.

A window showing the display of the Axel thin client is opened:



The display of the thin client is displayed in real time. In addition the keystrokes from the Windows machine are sent to the thin client. This allows full control of the thin client.

The buttons underneath are the thin client sessions. Click on these buttons to switch sessions.

The **[set-up]** button allows the thin client set-up to be entered. This is a short cut to <Ctrl><Alt><Esc>.

The **[Ctrl-Alt-Del]** button emulates this keystroke.

The **[Quit]** button quits the remote-control window.

Only the text-mode session (5250, 3270, Unix emulation, set-up environment set-up) can be remote controlled. If the current session is a graphical-mode session (Windows for example) the window becomes grey and a help message is displayed.

Access control capabilities (see the AX3000 User's Manual):

- The remote control can be password-protected.
- An authorization from the thin client user may be requested to allow to remote control connection.

5.4.2 - VNC Remote Control

This functionality allows an administrator to remotely take the total control of a thin client (text and graphical modes). This mode requires good bandwidth between AxRM and the thin client and is only available for M8x and newer thin clients

To open a 'remote control' session:

- Select the 'VNC' connection type,
- Enter port TCP (default 5900),
- Click on **[CONNECTION]**.

The display of the thin client is displayed in real time. In addition, the keystrokes from the Windows machine are sent to the thin client. This allows full control of the thin client.

Double-screen management is taken into account for dual screen thin clients

Access control capabilities (see the AX3000 User's Manual):

- The remote control can be password-protected. (this password can be preset in AxRM (see chapter [7.3.5](#))
- An authorization from the thin client user may be requested to allow to remote control connection. In this case the VNC client keyboard is disabled until the thin client user accepts the remote control.

The remote-control console can be closed by clicking the Windows cross on the upper right corner or pressing **[CTRL] [ALT] [F4]** simultaneously.

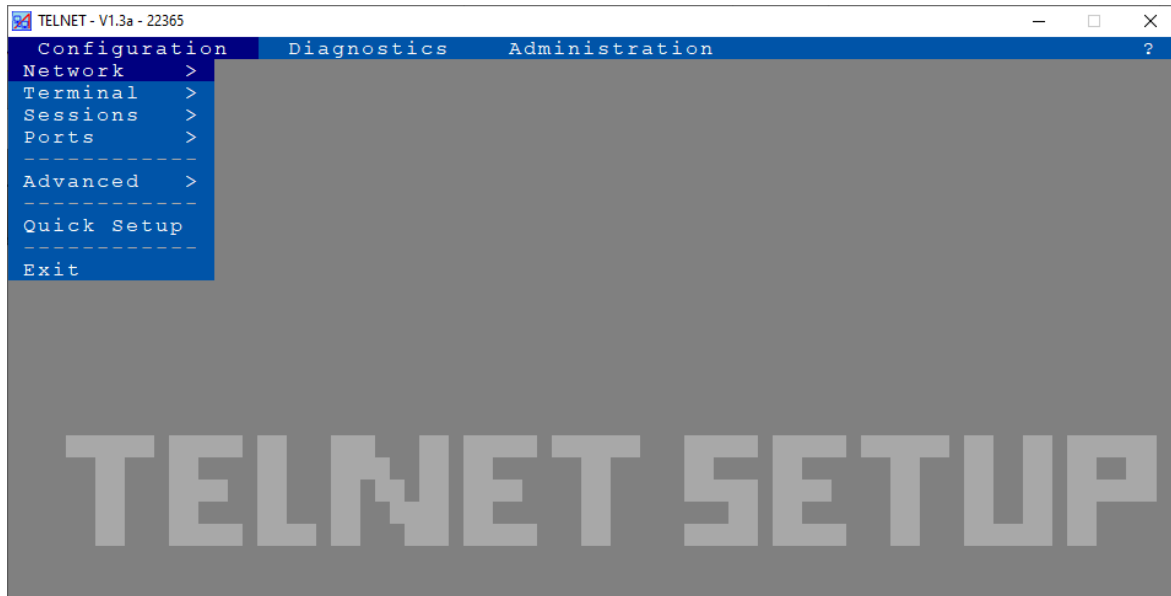
5.4.3 - Telnet Set-Up

This functionality allows remotely entering the thin client interactive set-up.

To open a 'telnet set-up' session:

- Select the 'Telnet' connection type,
- Enter port TCP (default 4096),
- Click on **[CONNECTION]**.

A window showing the set-up of the Axel thin client is opened:



Note: on the thin client, the set-up is also displayed, but to avoid conflict the thin client keyboard is locked. The 'TELNET SETUP' label allows differentiating when the set-up is locally or remotely entered.

This window is automatically closed when the set-up is exited.

Note: AxRM provides a pre-tuned telnet client designed specifically to access the thin client. It is also possible to use a generic telnet client with the appropriate parameters (see chapter [7.3.5](#)).

- 6 -
AUTO-CONFIGURATION

This chapter describes the auto-configuration function.

The auto-configuration function allows a thin client to automatically obtain a new firmware file and/or a pre-defined configuration. This is achieved without any human intervention at the thin client.

Within AxRM thin client groups are created. For each group, criteria of membership must be selected (model type, serial number(s)...), and operations to be performed must be defined (firmware upgrade, configuration update...).

The maximum number of groups allowed is 500.

Auto-configuration requests are sent by the thin client:

- Automatically at the very first power-on (i.e. Factory Settings),
- At each boot time (if this has been enabled in the thin client set-up).

When AxRM receives an auto-configuration request, it determines the group to which the thin client belongs and performs the associated operations.

It is necessary to configure AxRM beforehand with information of which firmware and configuration files are to be sent to which thin clients.

6.1 - AUTO-CONFIGURATION SET-UP

Below are the button and the corresponding dialog box:



Axel Auto-Configuration - C:\ProgramData\Axel\AxRMV4\AutoConf.ini

Environment

TCP Port: SSL (192.168.117) X509 Certificate CN:

Group Name	Firmware File	Config. File
testfb	F:\Firmwares\ax3...\FK61.WFI.FR.1945a.STD.21295	G:\fb\Documents\AxRm\7Up\Axel\fb239.bt

Interactive Mode **Service Mode**

System Account Username:

Set 'Automatic Start' Mode Password:

Dynamic reading of the environment file in case of changes

Transaction File:

Log File:

XML or XML-TLS can be used with Auto-Configuration

By default, the listening TCP port is 80 for XML and 443 for XML-TLS.

If the service is already running when this window is opened, AxRM is positioned directly on the « **Service mode** » tab

6.1.1 - Management of the auto-configuration environment

When receiving an auto-configuration request, AxRM determines whether the thin client belongs to one of the groups previously created by the administrator. (The maximum number of groups allowed is 500).

A group is defined by:

- A name (user definable)
- A criteria of group membership:
The criteria is a key element to allow different operations to be performed on different groups of terminals.
Criteria available are:
 - All thin clients
 - Local Folder
 - Thin client models
 - FK code
 - List of serial numbers
 - Range of serial numbers
 - Subnet
 - External File (xls or txt)
 - Quick Exchange
- Auto-configuration type:
 - From the factory setup (a new thin client)
 - At each boot time
 - Any

Operations:

- Using a password (optional): if thin clients are password-protected.
- Sending a firmware file (optional) with a 'preserve configuration' capability
- Activating the "SFA"
- Sending configuration file
- Disabling the auto-configuration after the configuration is sent (optional)
- Activating the "SSA"
- Sending logo file (optional)

Below is the button and dialog box for creating a group:



The “**Group**” part of the dialog box differs according to the “Type of elements”. Only the "Group name", the "Default folder" and the "Type of auto-configuration" always remain present at the end of the tab.

The "Group name" is at your convenience, it allows to differentiate the groups

The "default folder" is used to specify the folder in which the new thin clients of the group will have to be inserted, by default the root folder is used.

There are three "Type of auto-configuration" available:

- **Any**, in this case all incoming thin clients are accepted
- **From Factory Setting**, in this case only thin clients that have never been configured (in factory output mode) or those that have been reset to factory defaults
- **At each boot time**, in this case the thin clients configured by the self-configuration set-up after each startup are accepted.

The « **Commands** » tab remains always the same.

Commands

Password (optional)	<input type="text"/>	
Firmware File	F:_Firmwares\ax3000\1945a\212...\FK61.WFI.FR.1945a.STD.21295	
<input type="checkbox"/> Preserve Configuration	<input checked="" type="checkbox"/> Using SFA (Smart Firmware Analysis)	
	<input checked="" type="checkbox"/> Continue process in case of identical firmware (SFA)	
Set-Up File	G:\fb\Documents\AxRm\7Up\Axel\fb239.bt	
<input type="checkbox"/> Force Disabling Auto-Configuration	<input checked="" type="checkbox"/> Using SSA (Smart Setup Analysis)	
Logo File	<input type="text"/>	

6.1.2 – Group Tab

a) Local Folder

« Local Folder » criteria is used to select the folder (including subfolders) to serve as a selection criteria. The list of target thin clients is displayed on the right side.

In this case the « auto-configuration type » is grayed out and forced to « At each boot time ».

Creating a new group

Group

Group Name	AXEL Update																															
Type of elements	Local Folder																															
<table border="1"> <tr><td>Axel Network</td></tr> <tr><td>Admin</td></tr> <tr><td>Emb</td></tr> <tr><td>Prod</td></tr> <tr><td>RE</td></tr> <tr><td>Sav</td></tr> <tr><td>Support</td></tr> <tr><td>Tests</td></tr> </table>	Axel Network	Admin	Emb	Prod	RE	Sav	Support	Tests	<table border="1"> <thead> <tr> <th>Serial Number</th> <th>Name</th> </tr> </thead> <tbody> <tr><td>1919M8521846</td><td>axel2E5556</td></tr> <tr><td>230185B01040</td><td>axel340410</td></tr> <tr><td>B509M9018885</td><td>CL-M90-03</td></tr> <tr><td>B509M9008721</td><td>Ax-Vero</td></tr> <tr><td>B509M9038413</td><td>axel36960D</td></tr> <tr><td>2906M9504875</td><td>axel3C130B</td></tr> <tr><td>B509M9001297</td><td>axel360511.paris19.axel.test</td></tr> <tr><td>150575C23254</td><td>axel205AD6</td></tr> <tr><td>B509M9006512</td><td>Ax_Sophie</td></tr> <tr><td>B509M9022633</td><td>Ax_Stephanie</td></tr> </tbody> </table>	Serial Number	Name	1919M8521846	axel2E5556	230185B01040	axel340410	B509M9018885	CL-M90-03	B509M9008721	Ax-Vero	B509M9038413	axel36960D	2906M9504875	axel3C130B	B509M9001297	axel360511.paris19.axel.test	150575C23254	axel205AD6	B509M9006512	Ax_Sophie	B509M9022633	Ax_Stephanie	
Axel Network																																
Admin																																
Emb																																
Prod																																
RE																																
Sav																																
Support																																
Tests																																
Serial Number	Name																															
1919M8521846	axel2E5556																															
230185B01040	axel340410																															
B509M9018885	CL-M90-03																															
B509M9008721	Ax-Vero																															
B509M9038413	axel36960D																															
2906M9504875	axel3C130B																															
B509M9001297	axel360511.paris19.axel.test																															
150575C23254	axel205AD6																															
B509M9006512	Ax_Sophie																															
B509M9022633	Ax_Stephanie																															
Type of Auto-Configuration	Any																															

In this example the group « Axel Update » updates any thin client belonging to Axel, Admin and Prod issuing a auto-configuration request « At each boot time ».

b) Thin client models

The criteria "thin client models" allows one specific model to be updated. A list of all models is offered

Creating a new group

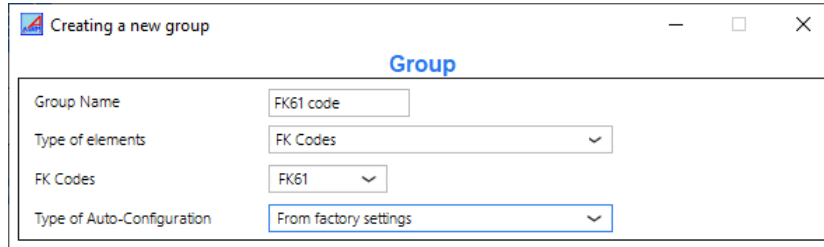
Group

Group Name	M95
Type of elements	Thin client models
Thin Client Models	AX3000 M95
Type of Auto-Configuration	Any

In this example, the « M95 » group will update any M95 thin client that issues an auto-configuration request.

c) FK Code

The FK code denotes the terminal's hardware. For example; M75, 75B and 75E were equipped with FK16 and the M90 is equipped with FK60.

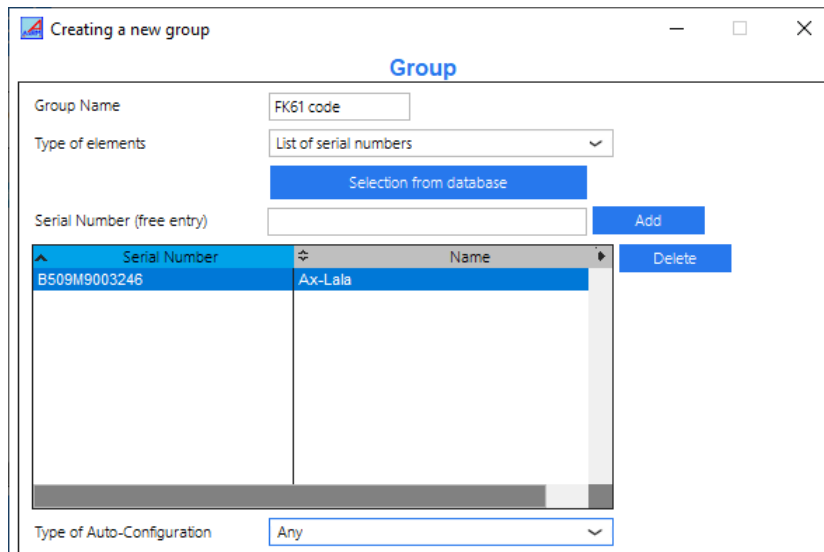


In this example the group « FK60 » concerns any thin client equipped with an FK60 card issuing a request for auto-configuration of type « From factory settings ».

d) List of Serial Numbers

This criteria lets you enter a list of serial numbers already existing in the local database or yet to be added. Serial numbers must be entered in the field "Serial Number (free entry)" and validated by the "Add" button. It is also possible to force the name of the thin client (for the update of the configuration), this requires to suffix the serial number by its name separated by ";" (Semicolon) or "," (comma).

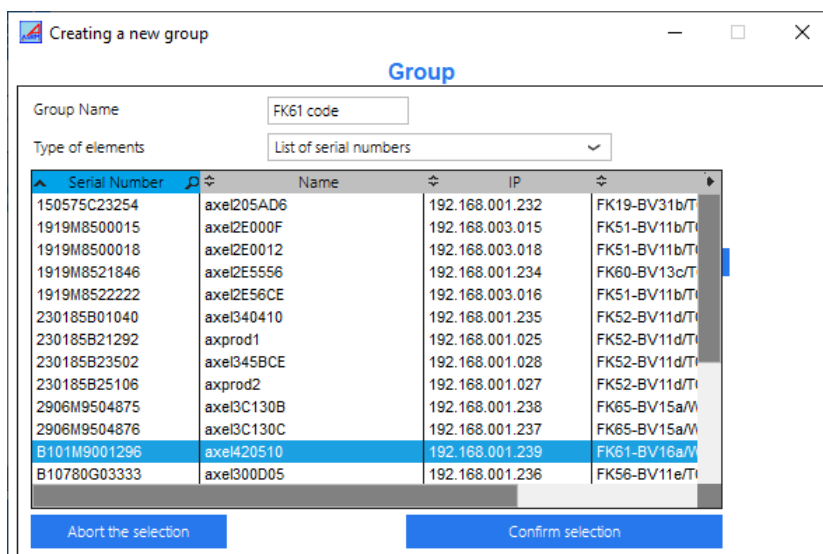
Example: B509M9003246;Ax-Lala



The "Delete" button deletes the selected line (blue).

Note: It is possible to modify, add or delete a name associated with a serial number by clicking on the corresponding cell.

The button "**Selecting the database**" is used to select serial numbers in the local database list (In this case, the associated name is automatically added).

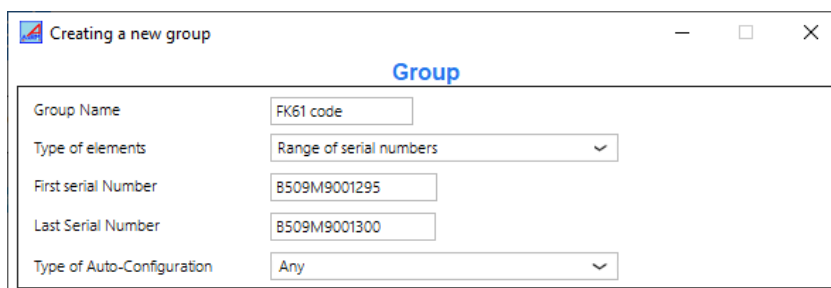


The selection must be validated by clicking on the button "**Confirm selection**"

Note: the greyed lines are the serial numbers already selected in the general list and they are no longer selectable.

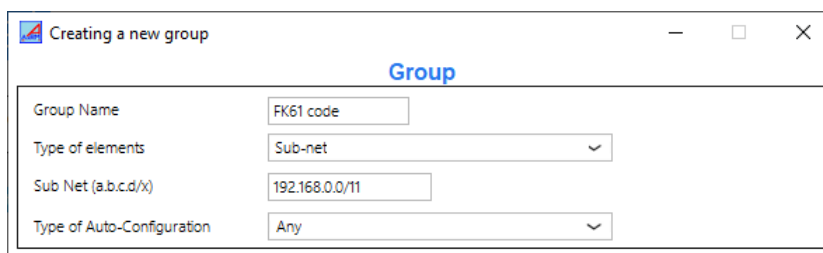
e) Range of Serial Numbers

This criteria is used to limit a range of serial numbers (Start-End). This is convenient for sequential serial numbers.



f) Subnet

A subnet is defined by both an IP address and a number of bits coding consecutive bits in the netmask (CIDR notation).

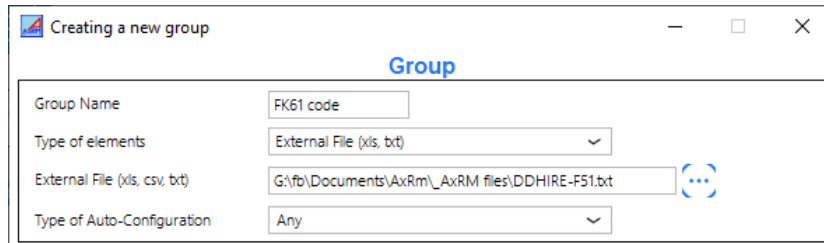


In this example, the number 11 encodes a mask equal to 255.224.0.0

g) External file

This criteria uses an Excel file (.xls or .xlsx) or text file (.txt) to list serial numbers to be updated. It is also possible to use set-up variables in the file in order to "force" their values for the configuration update.

"Force": replace the values in the setup file associated with this group.



g') Excel file structure:

- All cells should be standard.
- The first line "header" corresponds to the variable names to be updated.
- The first cell of the file must be equal to "ax_SN", the first column is always the serial number and it is the only mandatory column.

g") Text file structure:

- The first line named "header" corresponds to the variable names to be updated.
- The first word of the header line must be the word "ax_SN", the first word of each line is the serial number and it is the only mandatory field.
- The separator is the first character found after the word "ax_SN".

If a variable is empty, the set-up value is not modified, to force an nul value, you must use the keyword "\$EMPTY\$"

Note : The serial number can contain a wildcard " * " as the last character, for example, B509M90123* matches all 100 serials numbers from B509M9012300 through B509M9012399.

Sample Files:

The following 4 sample files will give the same results

Excel file example:

ax_SN	tcp_axname	tcp_comment_string
B509M9012345		
B509M9012346		Sales Position 5
B509M9012347	Prod12	\$EMPTY\$
B509M9012348	Accounting1	Sylvia thin-client (Accounting)

Text file example 1 (separator « ; ») :

```
ax_SN;tcp_axname;tcp_comment_string
B509M9012345
B509M9012346;;Sales Position 5
B509M9012347;Prod12;$EMPTY$
B509M9012348; Accounting1;Sylvia thin-client (Accounting)
```

Text file example 2 (separator « ; ») :

```
ax_SN;tcp_axname;tcp_comment_string
B509M9012345;;
B509M9012346;;Sales Position 5
B509M9012347;Prod12;$EMPTY$
B509M9012348; Accounting1; Sylvia thin-client (Accounting)
```

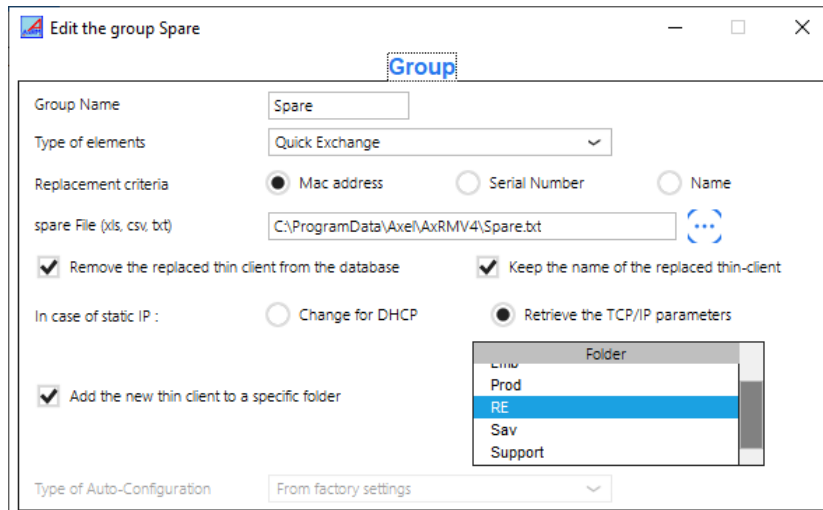
Text file example 3 (separator « | »):

```
ax_SN|tcp_axname|tcp_comment_string
B509M9012345
B509M9012346||Sales Position 5
B509M9012347|Prod12|$EMPTY$
B509M9012348| Accounting1| Sylvia thin-client (Accounting)
```


h) Quick Exchange

This mechanism allows the exchange of a faulty device by another thin client called "spare" device without IT specialist or administrator intervention.

Note: This feature is only available from **1945a.21081** firmware version



- **Replacement criteria:** Corresponds to the type of code that the end user will need to enter to replace their thin client. This code corresponds to the identifier that will allow AxRM to find in the database the thin client that the user wishes to replace:

- **The Ethernet Address (MAC Adress)**

In this case a message of this type will be displayed on the thin client:

Quick Exchange by MAC address (Ethernet)

This thin client is intended to replace a faulty thin client, please enter the MAC (Ethernet) address of the failed thin client. This information is available on the label located under the faulty device.
This MAC address begins with « 00:A0:34 »

Keyboard : **American**

Adresse Ethernet (MAC) 00:A0:34:■■■■

OK

- **The Serial number**

In this case a message of this type will be displayed on the thin client:

Quick Exchange by Serial Number

This thin client is intended to replace a faulty thin client, please enter the Serial Number of the failed thin client. This information is available on the label located under the faulty device. (label S.N.)

Keyboard : **American**

Serial Number :

OK

- **The device name**

In this case a message of this type will be displayed on the thin client:

Quick Exchange by Thin Client Name

This thin client is intended to replace a faulty thin client, please enter the name of the failed thin client. This information should be given to you by your administrator.

Keyboard : **American**

Thin Client Name :

OK

- **“Spare” Files:** Name of the external file listing the thin clients defined as "spare", the structure of this file is the same as the external files described in the previous chapter. [6.1.2.g](#)
- **Other options:**
 - **Remove the replaced thin client in the database (yes / No)**

If it is not removed, the comment will be changed automatically with information that allow to find the thin client who replaced.
 - **Keep the name of the replaced thin client (yes / No)**

If the name is not kept, a default name like "axelxxxxx" will be forced, where xxxxxx are the last 6 characters of the Ethernet address of the thin client.
 - **In case of static IP (on the faulty thin client)**
 - **Change for DHCP**, the replacement thin client will retrieve all the TCP / IP parameters from the DHCP server.
 - **Retrieve the TCP/IP parameters**, in this case the IP address will be set to a fixed IP, and all TCP / IP settings will be recovered from the faulty thin client.
 - **Add the new thin client on a specific folder**
 - If you choose this option, the new thin client will be created in the folder you chose from the list.
 - Otherwise, it will automatically create in the folder of the faulty thin client.

Note: In this operating mode some parameters (here framed in red) are deliberately grayed out and forced. It is only possible to configure, if necessary, a firmware update or a logo download.

Type of Auto-Configuration From factory settings

Commands

Password (optional)

Firmware File ⋮

Preserve Configuration Using SFA (Smart Firmware Analysis)

Set-Up File ⋮

Force Disabling Auto-Configuration Using SSA (Smart Setup Analysis)

Logo File ⋮

h) Quick Exchange setup files

The setup files used for the replacement must imperatively be present in the setup back-up directory, this directory can be configured in the AxRM parameters (see chapter. [7.3.4](#))

These files whose name corresponds to the Ethernet address of the thin client separated by "-" are automatically created or updated by the following AxRM commands or functions:



- Remote Administration -> **Get configuration** (see chapter [5.2.1](#))
If the "Saved in this file" field is blank
- **Refresh database** (see chapter [4.5](#))
If "Thin client Configuration backup" is checked, and that the Back-up Folder remains the default.
- **During a Quick Exchange operation**

h) Setting up the process

- Provide "spare" thin clients which will be able to replace faulty thin clients.

These "spares" thin clients must have the following characteristics:

- *New (factory setting), or already used and repositioned by the set-up in factory configuration.*
- *Firmware version minimum **1945a.21081***

Although this is not advisable, the model of a thin client "spare" can be different from the one it replaces. If on the "spare" thin client certain functions are not available, they will obviously not be activated.

- Create an external file (txt or xls) listing the "spare" thin clients by serial number.
- Create a new quick exchange autoconfiguration group with the one previously created "spares" file.
- Run autoconfiguration.

h") Quick Exchange operating mode

- When a thin client fails, the user physically swaps the failed thin client for the "spare" thin client.
- AxRM receiving a request from a thin client belonging to the "spare" file, sends back a "Quick Exchange" frame with the parameters defined in AxRM by the administrator.
- The thin client then displays a window in order to enter a replacement "code" which designates the thin client to be replaced (Serial number, MAC address or Name of the thin client).
- The user validates or changes the language of the keyboard used, then enters the replacement code, and valid.
- AxRM processes the request taking into account the information designating the thin client to replace, and using the configuration file of the faulty thin client

Note: It is of course imperative that the configuration files are up to date on the AxRM machine.

6.1.2 - Priority of the Groups

When AxRM receives an auto-configuration request it determines to which group the thin client belongs. The order of the groups is significant because a thin client can belong to several groups.

The two buttons on the right of the list allow the priority to be 'raised' or 'lowered'. (I.e. the higher up the list the higher the priority)

Group Name	Firmware File	Config. File
M85		c:\d\setup\axel.txt
FK60	C:\D\Firm\1236d\FK60.TCP.FR.1236d.STD.15305	
M80 Range	C:\D\Firm\1236d\FK56.TCP.FR.1236d.STD.15305	c:\d\setup\m80.txt
M85/M80 List		c:\d\setup\setup.txt
subnet		c:\d\setup\axel.txt

6.1.3 – “Command Tab”

Three types of commands are available, firmware update, configuration update and logo update. They are cumulative for the same group.

Commands

Password (optional)

Firmware File ⋮

Preserve Configuration Using SFA (Smart Firmware Analysis)
 Continue process in case of identical firmware (SFA)

Set-Up File ⋮

Force Disabling Auto-Configuration Using SSA (Smart Setup Analysis)

Logo File ⋮

a) Password

The password is optional and it is related to the whole group, it corresponds to the access password to the setup of the thin clients.

Note: If a password is entered for a thin client that does not need a password, the thin client will still accept the commands.

b) Firmware file

This is the full path of the firmware file to be used for updating firmware for the group.

In this path, it is possible to use wildcards (*,?), in order to be able to process thin clients of different hardware in the same group.

In this case AxRM lists the corresponding files in alphabetical order and then AxRM chooses the first FK ... file which corresponds to that of the thin client being processed.

Example: C:\Firmwares\FK*1626b*18100

Will select all versions (all FK numbers) with 1626b and 18100 in the filename.

Tip: To check your list, use the "dir" command in a windows DOS command prompt.

C :> dir C:\Firmwares\FK*1626b*18100

c) Options related to the firmware

c') Preserve configuration:

The check box "**Preserve Configuration**" retrieves the thin client configuration before sending the new firmware, then applies the saved configuration back to the terminal.

This option is useful only when the thin client is making the request "At each boot time", It does not impact clients updating "From factory setup" mode as they by definition have no previous config to be re-used.

In this case, the autoconfiguration is done in several steps:

- Retrieving the configuration and create a setup file in back-up folder.
- Downloading the requested firmware,
- Restarting the thin client.
- Sending the configuration retrieved previously.
- Restarting the thin client.

Note: If this option is selected, entering the setup file is automatically dimmed.

c") Enable "Smart Firmware Analysis":

The checkbox "**Enable Smart Firmware Analysis**" allows AxRM to check if the firmware version to be sent is identical to that already in place on the thin client, in this case AxRM does not send the firmware and stops the auto-configuration (the setup files and logos are not sent).

c''') Continu process in case of identical firmware (SFA):

In the case of SFA management, if it is checked, this option allows you to continue the current process for the thin client and possibly update the firmware or the logo, even if the firmware is identical.

Otherwise, the current process for the thin client stops if the firmware is identical.

d) Set-up file

This is the full path of the setup file that will be used to update the configuration of this group

Some information in this file can be “forced” by:

- The variables of the external file (see chapter [6.1.2.g](#))
- The name associated in the list of serial numbers ([6.1.2.d](#))
- The checkbox "**Force disabling auto-configuration**" which is located just after.

If the following tag "<00: A0: 34>" is put in place of the file name, AxRM uses a separate configuration file per thin client according to its Ethernet address.

In this case, the name of the file that will be taken into account is structured identically to the setup file names created by AxRM, CAD: "00-A0-34-xx-xx.txt" or "xx-xx" correspond to the last two bytes of the thin client's Ethernet address.

e) Set-up Options

e') Force disabling auto-Configuration

This option allows, regardless of the setup that will be sent to the thin client, to force the deactivation of auto-configuration for the next boot.

e") Using Smart Setup Analysis

The "Activate SSA (Smart Set-up Analysis)" checkbox allows AxRM to check if the thin client is already up to date, in this case AxRM don't send the set-up and stops the auto-configuration (the logo file is therefore not sent). See appendix [A11.2](#) for more details on the process.

The SSA is based on a checksum or Hash comparison. This information is kept in files with ".ssa" extension. These files bearing the name of the group are created in the same directory as the environment file (autoconf.ini).

Note: Requires firmware minimum version of 1945a.

f) Logo file

This is the full path of the logo file that will be used to update this group. If a setup file is used in the group, the logo file is sent before.

Note: If the field is empty, the logo already present on the thin client is not deleted.

g) How does it work?

Thin clients are always the initiator of the autoconfiguration request.

It is during power on that the thin clients make their request, either because they are configured in factory setup (ie never been configured), or because the administrator has configured auto-configuration through the set-up an

Thin clients can make two types of auto-configuration requests, **request 1** which is the first request sent by a thin client, then **request 2** which follows the reboot after a firmware download.

When AxRM finds the first group matching the thin client's criteria all subsequent matches are ignored (see Appendix [A.11](#)).

The priority of groups is therefore of utmost importance. (See chapter [6.1.2](#)).

6.1.4 - TLS Protocol

The TLS option can be used for securing communication with thin clients (requires firmware minimum version of 1626a).

When the TLS mode is enabled, an X509 certificate must be selected (by clicking the [...] button or entering the name manually).

Note: the selected protocol for auto-configuration (XML or XML-TLS) can be different to the protocol used for administration commands.

For more information about the TLS protocol, please consult Appendix [A.9](#).

6.1.5 - Handling the Environment File

The current settings (TCP port, manual management, groups etc.) are automatically saved in an 'environment' file (.ini).

By default, the last environment file is automatically reloaded on startup.



[File] Button

This button allows an environment file to be created, loaded or saved.

Note: the checkbox "Service Mode: Re-read environment file after each request" allows the settings to be refreshed without stopping and restarting the auto-configuration service.

6.2 - LAUNCHING THE AUTO-CONFIGURATION

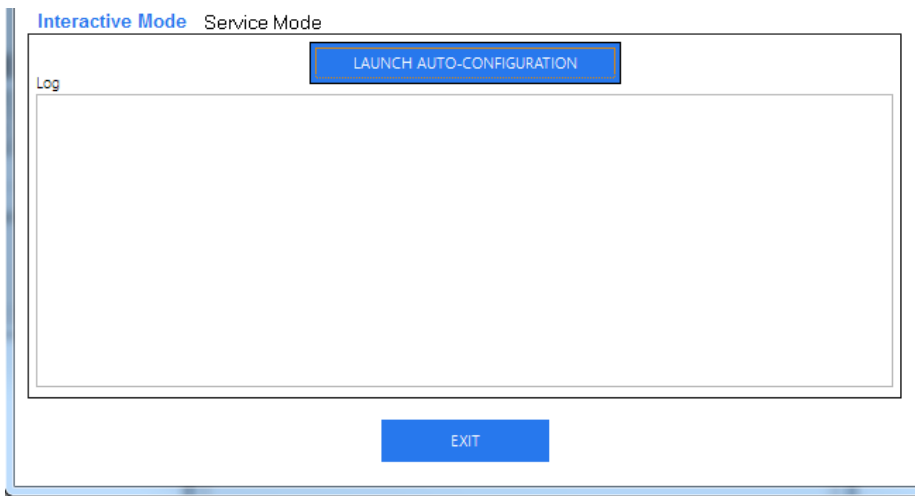
Two modes are available:

- Interactive mode: actions are performed and displayed in real time and the option "unknown thin clients" is supported.
- Service mode: the auto-configuration service is run as a Windows service in the background. There is no need for the PC to be logged on. A log file is generated to view activity.

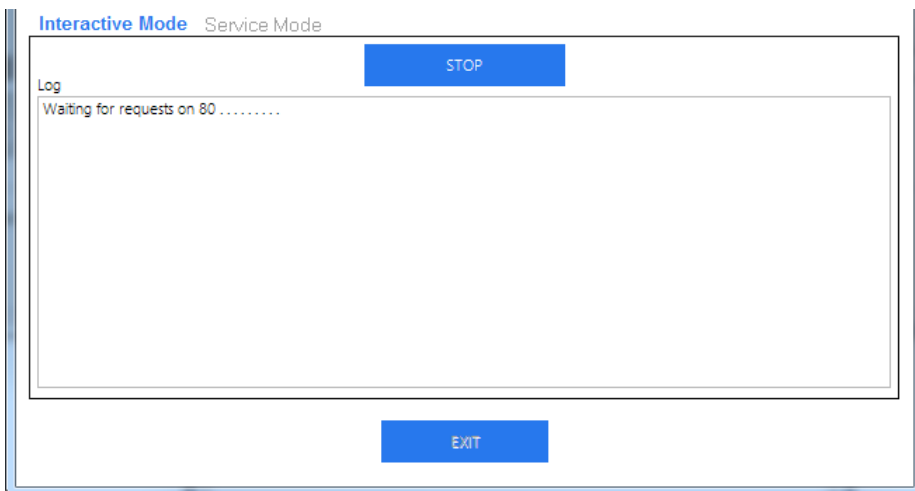
6.2.1 - Interactive Mode

The Interactive Mode can be started if at least one group is created (see chapter [6.1.1](#)):

To start this mode, click the 'Interactive Mode' tab and click on **[LAUNCH THE AUTO-CONFIGURATION]**:



The service is stopped by clicking on the same button, now named **[STOP]**.



Note: this dialog box can only be closed after the process is stopped.

The status zone provides details of in-coming requests and subsequent actions.

a) Receiving a Thin Client Request

When a thin client request is received, the following information is displayed in the status zone:

Connection request received from .AX3000 M90 : 192.168.1.239 / 00:A0:34:36:92:DA

AxRM checks if this request matches an existing group. If not the request is ignored and the status message below is given:

Connection request received from .AX3000 M90 : 192.168.1.239 / 00:A0:34:36:92:DA
This thin client doesn't belong to an existing group

If the request belongs to an existing group, the associated actions are performed as described in the next chapters.

b) Downloading Firmware

If the thin client belongs to a group where a firmware file is specified, the download is automatically carried out:

```
Waiting for requests on 80 . . . . .
Connection request received from .AX3000 M90 : 192.168.1.239 / 00:A0:34:36:92:DA
Group Name: Firm Update
-> Req 1
Obtaining thin client configuration.....
Storing configuration onto C:\ProgramData\Axel\AxRMV4\00-A0-34-36-92-DA.txt
Firmware : E:\_Firmwares\ax3000\1626b\18100\FK60.TCP.FR.1626b.STD.18100
Downloading .....
Programming flash.....
OK
```

Once the firmware is downloaded the thin client needs to reboot even though the auto-configuration process is not completed. (I.e. the configuration file is yet to be sent). After rebooting the thin client automatically makes a request for the configuration file.

c) Sending a Configuration File

If the thin client belongs to a group where only a configuration file is specified (or if the firmware has just been updated), the configuration file is sent:

```
Waiting for a new request on port : 80 . . . . .
Connection request received from .AX3000 M90 : 192.168.1.239 / 00:A0:34:36:92:DA
Group Name: Firm Update
-> Req 2
Sending configuration file C:\ProgramData\Axel\AxRMV4\00-A0-34-36-92-DA.txt.....
OK
```

When the entire process completes the thin client reboots again and is ready for use.

d) Sending a logo

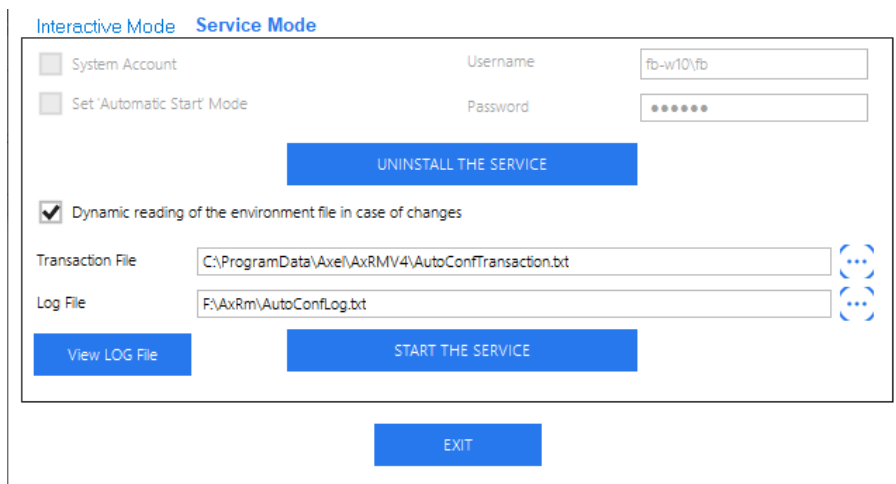
If the thin client belongs to a group where a logo file (JPG or PNG) is specified, the logo file is sent. If a configuration file must also be sent, the logo file is sent first. See chapter [6.1.3.g](#)

6.2.2 - Service Mode

IMPORTANT: The 'service mode' is available only with AxRM 64 bit.

Unlike the interactive mode, the AXEL auto-configuration service mode **allows simultaneous configuration of multiple thin clients** from AxRM v4.4a.

On the Auto-configuration window, select the 'Service Mode' tab:



The check box "**Dynamic reading of the environment file in case of changes**" allows the modification of the environment of the auto-configuration without having to stop and restart the auto-configuration service.

Note 1: with the service mode, mapped network drives must NOT be used for file location. (A network drive is created when the user logs on. And there is no user logon with a service mode)

Note 2: for the XML-TLS protocol, the user account must have the TLS certificate installed in his personal store and have the privilege for installing and starting a service (utility subincl.exe)

a) Installing the Service

The first step is the service installation.

A user account is required. It can be the system account (LocalSystem) or any user account with following administrative rights :

- Rights to log on as a service on the machine.
- Read/write permissions to the AxRM "home directory" you selected when installing AxRM (usually C:\Program Files\AxRMV4).
- Rights to manage Windows services (start / stop).
- Permissions to connect a SQL Server database if you use an SQL database.
- Permissions to enumerate the local computer's certificate store (if TLS trust is checked).

A check box allows the option of auto-starting the service when the Windows machine is booted. If this check box is not ticked, the service will have to be manually started each time the Windows machine is booted up or when required.

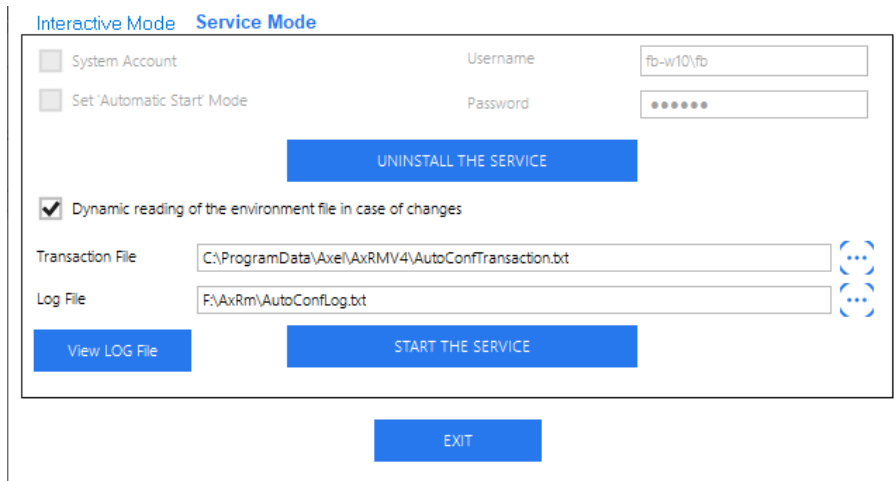
Click on **[INSTALL THE SERVICE]** to start the installation. If the installation is successful, the service start-up part is activated:

b) Starting the Service

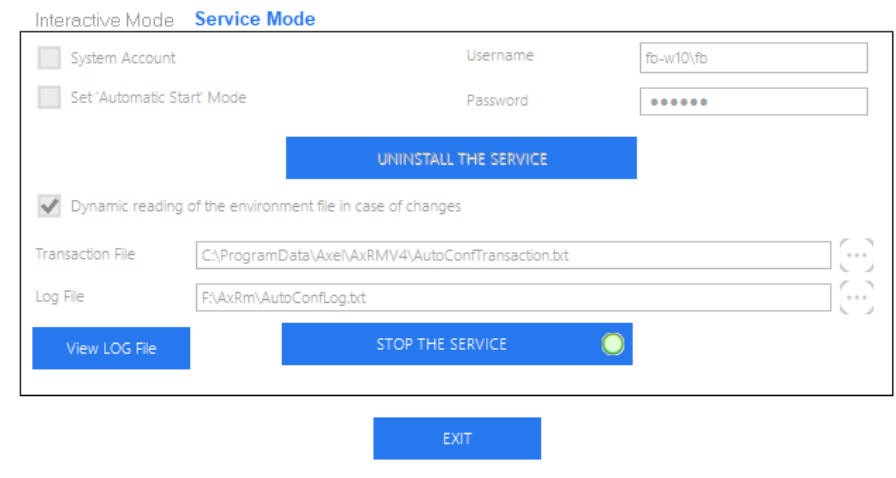
Two files are associated with this service:

- Log File: auto-configuration activity will be recorded in this file.
- Transaction File: information about devices using the auto-configuration service is recorded in this file. This allows the AxRM Thin client Database to be regularly updated. (See Chapters [3.4](#) and [4.4.6](#))

Click on **[START THE SERVICE]** to start. When running only the **[STOP THE SERVICE]** button is available:



If all goes well, only the service stop, log display and window exit buttons are available.

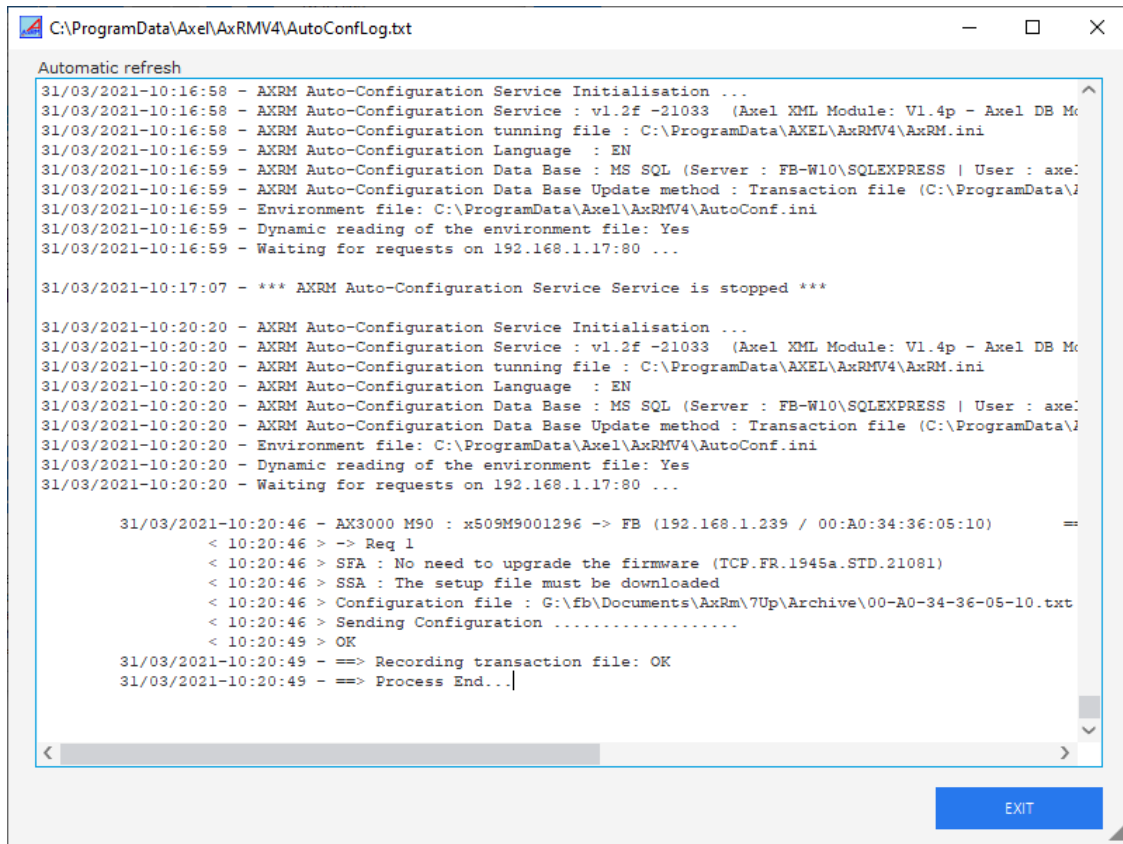


Once the service is started, auto-configuration is started in the background. It is not necessary to stay in AxRM or for the PC to be logged on

Note: when starting the service an event is recorded in the Microsoft Event Viewer (Application part). All subsequent auto-configuration events are recorded in the log file.

c) View LOG File

The "View LOG File" button is used to display all auto-configuration events.



d) Stopping the Service

To stop the service, click on **[STOP THE SERVICE]** (for example to change the environment file):

e) Uninstalling the Service

Uninstalling the service is only possible when the service is stopped.

Click on **[UNINSTALL THE SERVICE]**:

6.3 – FROM THE AXEL THIN CLIENT SIDE

When the thin client is switched on for the very first time, the auto-configuration function is automatically started. (It can also be configured to start at each boot time). No human intervention is necessary.

The following happens:

- Thin client obtains an IP address by DHCP (optional).
- Thin client locates the AxRM server. Possible methods are:
 - The AxRM information (IP address and TCP port) is given by “DHCP vendor” options. See Appendix [A.10](#).
 - The AxRM hostname is 'axrmserv' (and default TCP port is 80) or 'axrmservTLS' (and default TCP port is 443).
 - AxRM is running on the DHCP server (and we assume TCP port is 80).
 - The AxRM location is specified in the thin client set-up.
- Thin client sends auto-configuration requests (**req 1**).
- New firmware file received (optional).
 - IF the firmware is received.
 - ✓ **Thin client reboot automatically**
 - ✓ Thin client sends auto-configuration requests (req 2).
- Logo file received (optional).
- New configuration file received.
- **AxRM sends a reboot command to the Thin client**

The whole process takes about two minutes

Normally during a firmware update the thin client reboots after the new firmware is applied and again after the configuration file is applied.

CAUTION: During the "Writing Flash" phase it is critical the process is not interrupted or the terminal could be left in a state with no firmware installed. In this case use the function "Repair by BOOTP + TFTP" (see chapter [7.2](#)).

For more information on the behavior of the thin client in auto-configuration, see the *AX3000 User's Manual*.

- 7 -
OTHER FUNCTIONS

This chapter describes more operations possible with AxRM.

7.1 - ASSIGNMENT OF AN IP ADDRESS

The basic functions of AxRM require the thin client to already have a valid IP address.

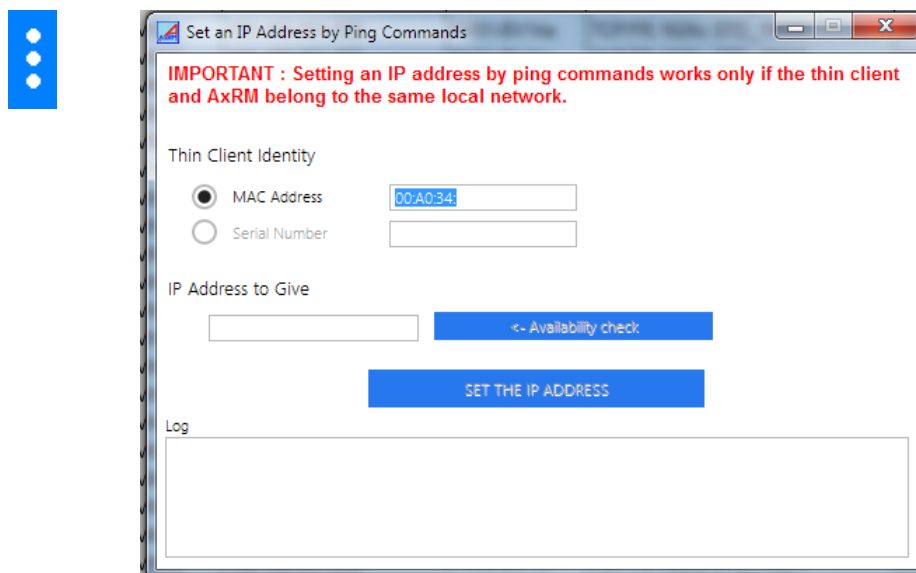
If the thin client does not have an address IP (or has an unknown address IP), it is possible to re-apply a new address IP if the serial number or Ethernet MAC address of the thin client are known.

Note: the serial number and the Ethernet address are printed on the label on the bottom of the thin client.

Important: this function is only available if:

- The thin client and the AxRM machine are on the same network (This function does not work through routers as routers work at the IP level and this command works at the hardware MAC address level).
- This option is enabled in the thin client set-up.

To call the dialog box, click the button on the upper right corner with the 3 dots and select on the menu **[Setting an IP Address by Ping]**:



- Step 1 - Identify the thin client by either serial number or Ethernet MAC address
- Step 2 - Enter new IP address to assign to the thin client, you can check using the **[Availability Check]** button that the address is not already in use on the network.
- Step 3 - Run command by pressing **[SET THE IP ADDRESS]**

After several seconds AxRM will confirm the command executed successfully.

Important: After the new IP address the thin client is automatically rebooted.

7.2 - USING BOOTP TO REPAIR FIRMWARE

7.2.1 - Basic Concept

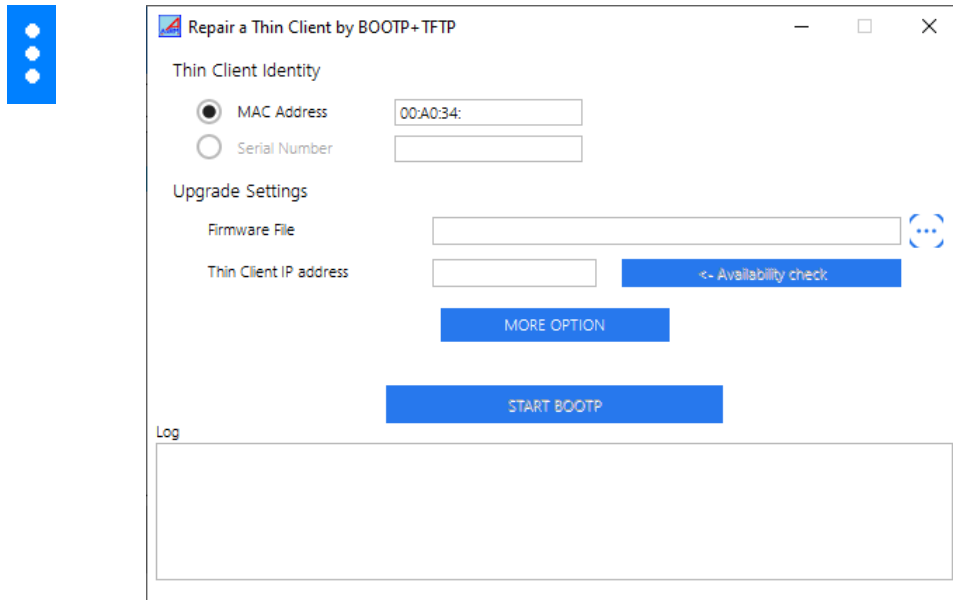
For certain Axel products firmware download comprises of a critical phase in which the existing firmware is erased and the new firmware has not downloaded. If a problem occurs during this phase (i.e. network incident or corrupt firmware file) the Axel product can be left without valid firmware. In this situation, on booting, it gives an “Invalid Flash Error” it follows a certain procedure.

The thin client sends out a BOOTP broadcast on the network to recover the parameters necessary download new firmware. These parameters are: thin client IP address, name of the firmware file and the TFTP server address.

Providing a BOOTP server is listening for such a request and that the BOOTP server "recognizes" this product (from to its Ethernet address), the firmware is reloaded.

7.2.2 - Configuring the BOOTP Server

To call the dialog box, click the button on the upper right corner with the 3 dots and select on the menu **[Repair by BOOTP + TFTP]**:



Select the method of identification (serial number or Ethernet address).

Provide an IP address for the thin client and the name of the firmware file to be downloaded.

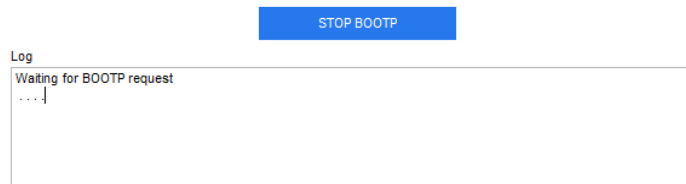
If DHCP is normally used on the network, select a non-conflicting static IP address

You can check using the **[Availability Check]** button that the address is not already in use on the network.

In this case, AxRM acts as both BOOTP server and a TFTP server. For more details, see Chapter [7.2.4](#).

7.2.3 - Launching BOOTP to Download Firmware

When all the parameters are given press the **[START BOOTP]** to start the service:



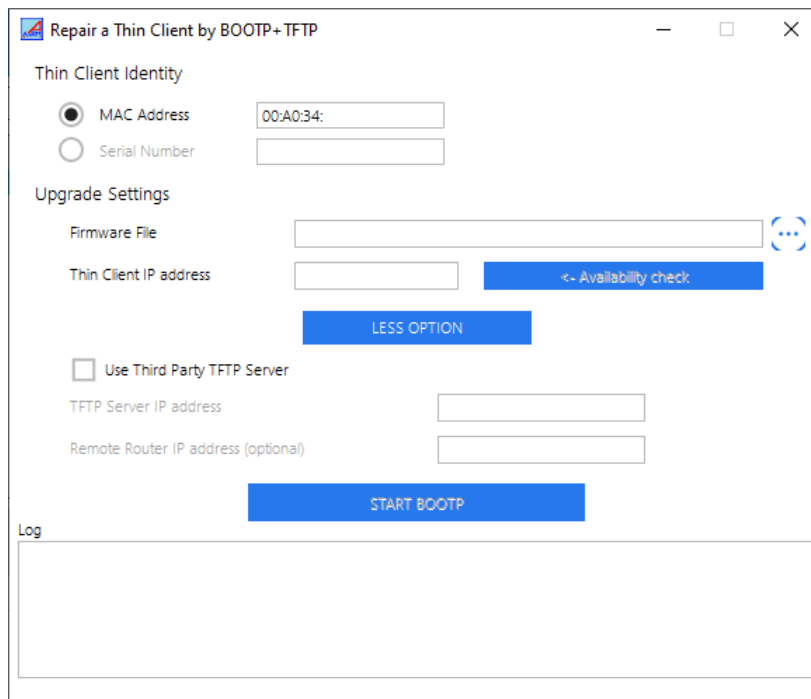
AxRM is now listening for BOOTP requests.

Note: the BOOTP server can be stopped by pressing the same button which is now called **[STOP BOOTP]**.

Power cycle the thin client to force it to send out a BOOTP request. If all the parameters are correct BOOTP will initiate the firmware transfer automatically.

7.2.4 - Configuring a third-party TFTP Server (Advanced)

The **[MORE OPTION]** button gives access to the advanced settings:



To use a third party TFTP server (i.e. not the embedded AxRM TFTP server) fill the "**TFTP Server IP address**" field

The thin client and AxRM are not on the same local area network: Enter the IP address of the router on the 'other' side in the "**Remote Router IP Address**" field.

7.3 - AXRM SETTINGS



Click this button, on the upper right corner of the console, to enter the AxRM settings box.

7.3.1 - General Parameters

Click on the "General" tab:

a) Language Selection

Use the drop-down list to select a language

b) Network Interface

For XML-TLS and RSH protocol administration, AxRM must know the IP address of its host Windows machine.

If needed the 'Network Interface' option allows this IP address to be changed. The hostname is also displayed for information after the IP address.

Note 1: the default value is set when AxRM is launched for the first time (see Chapter [3.1](#)).

Note 2: The wrong interface may be selected and require changing if you have more than one interface - for example if there is both a WiFi and Ethernet interface the wrong interface may be selected

c) Passwords

- **AxRM password:** If necessary, AxRM can be controlled by a password. Enter your chosen password twice. This password is saved encrypted in the AxRM.ini file.

The password will be requested the next time AxRM is launched.

Trick: If you lose your password, simply delete the "AxRM Password" line from the AxRM.ini file (see appendix [A5](#)). To do this, you must have the rights to modify this file.

- **Generic thin client password:** You can enter here a password that is suitable for all the thin clients in your fleet, if necessary, this password can be changed at the time of each remote command. This password is saved encrypted in the AxRM.ini file

d) Detection method

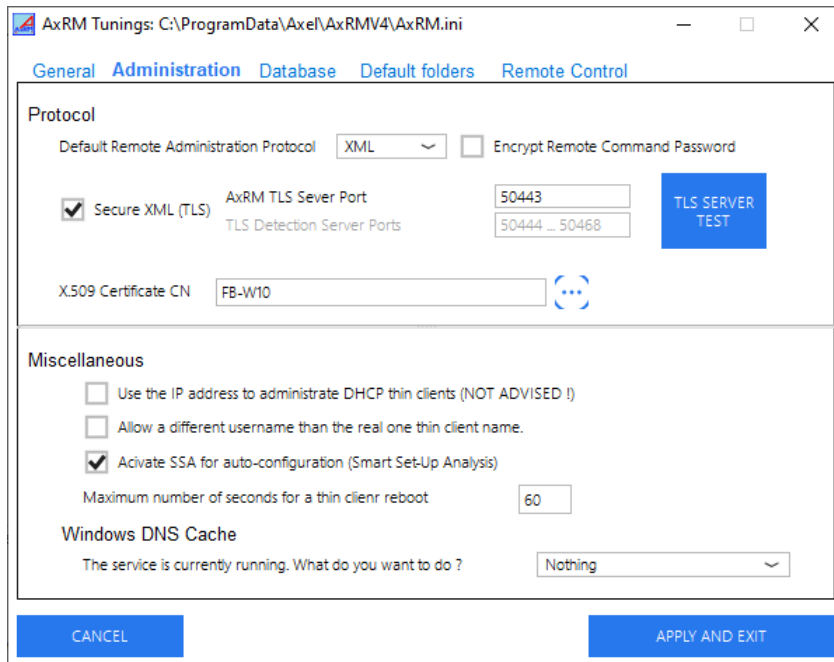
This parameter is used for the device detection button, it allows you to configure the desired type of detection.

Thin clients on the network can be detected using three different methods:

- **By ping**, this method is the fastest, but it does not certify that the peripheral which answered is indeed an AXEL thin client and does not allow checking the information of the database.
- **By ping + SNMP** check, this method is the default one, after the presence test by ping, an SNMP command is sent to check the consistency of the information between the thin client and the database.
Please note that SNMP frames in "unicast" mode must be authorized on the network.
- **By ping + setup check**, After the presence test by ping, a request configuration command is executed (can possibly overload the network). This method has the advantage of passing transparently on most firewall routers and other antiviruses. It is used to check the consistency of information between the thin client and the database.
Use this method to update the configuration files for the "Quick Exchange" mode autoconfiguration (see chapter [6.1.2.h](#)).
If the thin clients are password protected, only one password can be used, it must be set in the generic password area (See chapter [7.3.1.c](#))

7.3.2 - Administration Protocol

Click on the "Administration" tab:



a) Protocol

The "Remote Administration Command" option is:

- XML: default protocol using the TCP Port 80,
- RSH: historical protocol (firewall settings can be requested).

With the XML protocol,

- The password required by certain administration commands can be encrypted. (An error 114 will be sent back if this option is not supported by the thin client firmware)
- The TLS option can be used to secure communication. (Requires thin client firmware minimum version of 1626a). To do this, simply check the « **Secure XML (TLS)** » box.
 - In this case, AxRM behaves as a TLS server
 - It is mandatory to select an X.509 certificate by clicking the [...] or by manually entering the CN.
 - The base local TCP/IP port defaults is **50443**, but can be changed.
 - The following 24 TCP/IP ports must be available for the "Discover" function.
 - Click the **[TEST TLS SERVER]** button to check if everything is correct.

Note: Please read Appendix [A.9](#) form more information about TLS.

b) Miscellaneous

- **Use the IP address to administer DHCP thin clients (not recommended)**
By default, a thin client with a dynamic IP address is administered by its DNS name which requires the use of Dynamic DNS. If DDNS is not used, the IP address can be used, but this is not advised as the terminal's DHCP supplied IP address is liable to change at which

point it won't be consistent with the database.

For more information about DHCP thin client management, consult the Appendix [A.6](#).

- **Allow a different username than the real one thin client name.**
 - Keep the username when the discovered thin client already exists
 - Does not propose the physical modification of the thin client's name if it is modified in the database.

- **Enable SSA for auto-configuration:** "Smart Set-up Analysis" does not send a set-up to a thin client that has already received the same set-up file before. This operating mode must be confirmed for each group in the autoconfiguration setting (see section [6.1.3](#)). Enabling this feature changes the general behavior of autoconfiguration see differences in Appendix [A.11](#)
Note: This feature is only available from thin client firmware of "1626b or 1626c comp 19045".
- **Maximum number of seconds after a thin client reboot:** This number is initialized by default to 20 seconds and it is sized for most cases.

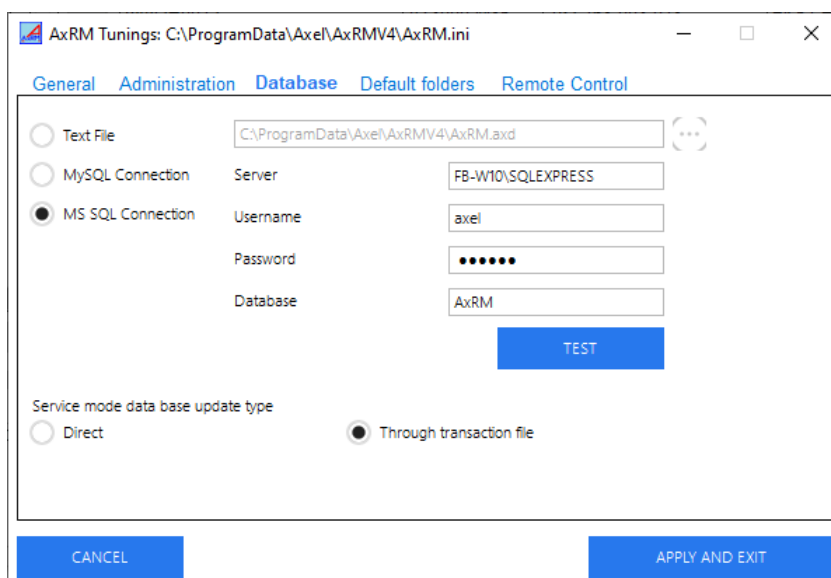
c) Windows DNS Cache

We strongly advise disabling the Windows DNS Cache when DHCP thin clients are used (see Appendix [A.6.2](#)).

The DNS service status (enabled/disabled) is shown. If enabled, the service can be temporarily or permanently disabled, you can also flush the local DNS cache.

7.3.3 - The Database

Click on the "Database" tab:



Three database types are available: Text-File MySQL and MS-SQL.

a) Text-File Database

The single option is the file name.

If this option is chosen, the type of update is grayed out because the auto-configuration service does not update a text-type database in real time, the update is always done by the intermediary of a transaction file.

By default, the text file name is "AxRM.axd". On Windows its location is "%ProgramData%\AxRMV4".

Note: This method does not allow the database to be updated simultaneously by multiple users.

b) MySQL or MS-SQL Database

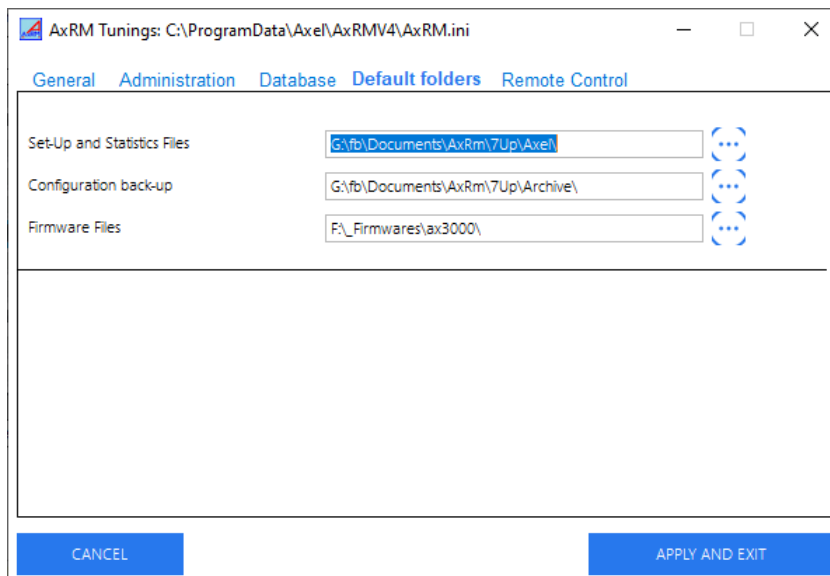
The database parameters are:

- **Server:** With MySQL it's simply the server IP address and with MS SQL ie the string <host>\<instance>.
- **Authentication:** **username** and **password** (this user must have 'database creation' permission)
- **Database Name.**
- **Service mode data base update type**
 - Real-time update of the database.
 - Update via a transaction file which allows the database to be updated manually. When a transaction file is detected, a question about updating the database is automatically asked each time the AxRM program is launched. It is also possible to import the transaction file using the import menu (see chapter [4.4.6](#))

The [TEST] button allows these settings to be tested. If the database doesn't exist it will be automatically created. For more information about the database structure see Appendix [A.4](#).

7.3.4 - Default Folders

Click on the "Default Folders" tab:

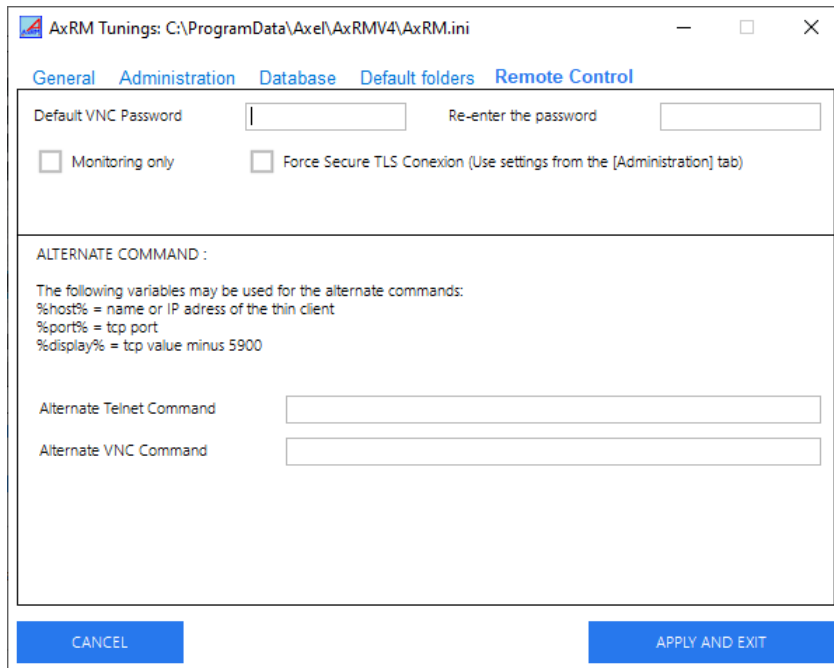


Three types of folders are shown:

- **Set-Up and Statistics Files:** default location for the set-up and statistics files.
- **Firmware Files:** default location for firmware files
- **Configuration back-up:** default folder for set-up files to be automatically archived. This folder is also used by the Quick Exchange autoconfiguration mode. By default, its location is "%ProgramData%\AxRMV4". See Chapter [5.2.1](#).

7.3.5 - Remote Control

Click on the "Remote Control" tab:



To avoid entering the VNC password for each Remote Control with AxelViewer, it is possible to enter a default password.

It is possible to launch a “**monitoring**” mode, in this case the mouse and the keyboard will not be active

“**Force secure TLS connection**”, allows you to prohibit non-TLS connections for remote control.

The remote control is usually done with the built-in Axel Viewer software but alternative commands can be used ((Telnet client, RealVNC, UltraVNC, etc.).

For these alternative commands, the **%host%**, **%port%** and **%display%** substitution variables allow the Axel IP address, the TCP port and the display number to be programmed

a) Alternate Telnet Command

Prerequisite of a third party emulator:

- ANSI emulation (with color support)
- TERM value: ansi
- Screen size: 80x25
- Scrolling mode disabled

Note : for using the Microsoft telnet client as the scrolling mode cannot be disabled with this telnet client, the DOS box size must be set to 80 columns and **26 rows**.

b) Alternate VNC Command

The single prerequisite is enabling the '**full color**' mode.

Example:

```
/usr/bin/vncviewer.exe %host%:%port%
```

7.4 – THIN CLIENT DETECTION



[Activate detection] button

Function to scan the network to check if the thin clients in the folder are running.

7.4.1 - Parameters

This feature is configured in the general settings of AxRM see chapter [7.3.1.d](#)

7.4.2 - Operation mode

The principle consists in detecting the presence and checking the thin clients listed in the current folder, AxRM loops through the list starting from the first to the last and so on until the user disables the feature by clicking the button again.

When the user clicks on the detection button, a new column is displayed to the left of the list of thin clients, it indicates the thin clients active presence on the network, this column disappears when the detection is disabled.

It is possible to continue to work with the AxRM when the presence detection is in progress, this function is not blocking for the use of AxRM.

When detection is active, the button changes color:

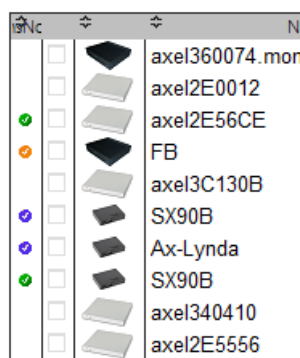


- The orange color means that the detection is in progress and that it is the first round of the loop (all the thin clients have not yet been detected).



- The green color means that the detection is in progress and that it is the last round of the loop (all the thin clients have been detected).

In the column, there are three types of presence indications, each corresponding to a different color icon:



- **Orange** indicates that the thin client is pingable, so at least turned on.
- **Blue** indicates that it responds favorably to AxRM commands, but that certain information is different from that present in the database (MAC address or Version).
- **Green** indicates that the information received by the thin client corresponds to that present in the database.
- If the thin client is not powered on or is not accessible via the network, no icon is displayed.

APPENDIX

This Appendix gives information for administrators who wish to learn more about the abilities and internal workings of the AxRM Software.

A.1 - ADDITIONAL SOFTWARE

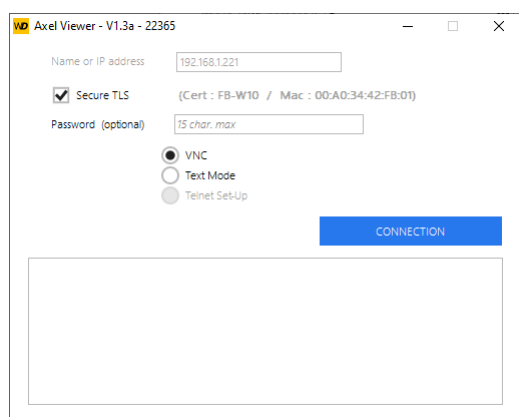
Two additional software packages are available in the AxRM installation folder.

A.1.1 - AxViewer: Remote Control

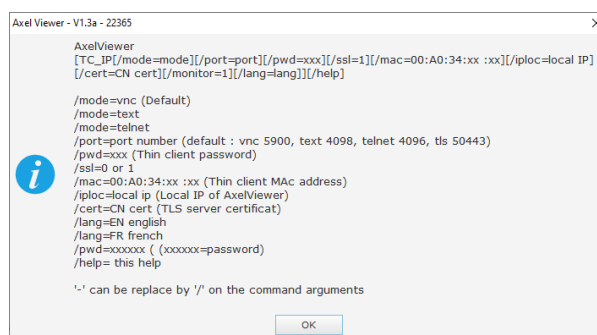
AxViewer allows the thin client remote control without the need of AxRM.

In the VNC remote control window, a menu of thin client management keys (Ctrl Alt Del, Ctrl Alt Esc, etc.) is available by clicking on the icon at the top left of the viewing window.

Here is the dialog box when AxViewer is launched without option.



To access Help, run the following command:
AxelViewer -help <RC>



Usage:

```
AxelViewer [AXEL_TC [/mode=mode] [/port=port] [/pwd=xxx] [/ssl=1] [/mac=00:A0:34:xx :xx]
[/iploc=Local IP] [/cert=CN cert] [/monitor=1] [/lang=langue]] [/help]]
```

Description:

- AXEL_TC Thin client IP address. In this case the IP address can't be modified in the dialog box.
- mode=xxx Remote control mode: vnc, text or telnet (default vnc)
- port=xxx TCP port. (Default : vnc 5900, text 4098, telnet 4096)
- pwd = xxxxx Login password, optional, can also be entered at the time of connection.
- ssl=n SSL/TLS connection (locale IP, local port, Mac Address and certificate are mandatory)
- mac=00 :A0 :34 :xx :xx Thin Client Mac Address for TLS connection
- iploc Local IP address locale for TLS connection
- cert CN of certificate used for TLS connection
- lang=xxx Possible values: EN (English) or FR (French)
- help Display help.

Note 1: '-' can be replace by '/' on the command arguments

Note 2: when the /mode option is given, the remote control is immediately launched (the dialog box is not displayed).

For more information, see Chapter [5.4](#).

A.1.2 - AxRAC: Remote Administration Command

AxRAC allows administration commands without the need of AxRM.

AxRAC can be used in 'Background' mode or in 'Interactive' mode. Both the XML and RSH protocols can be used for administration commands.

Usage:

```
AxRAC [AxelDevice [Command [/Option1=aaa] ... [/OptionN= zzz] ] ]
```

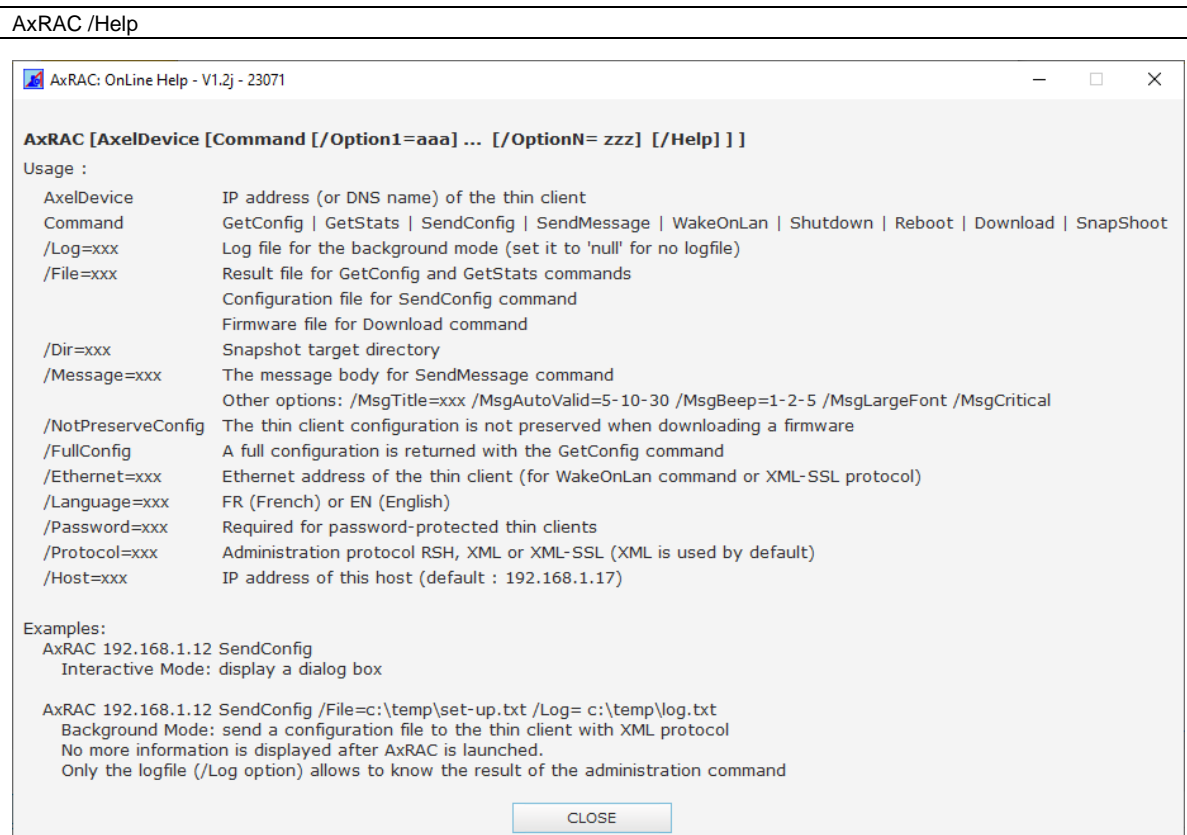
Description:

- AxelDevice IP address (or DNS name) of the thin client
- Command GetConfig | GetStats | SendConfig | SendMessage | WakeOnLAN | Shutdown | Reboot | Download | SnapShot
- /Log=xxx Log file for the Background mode (could be set to NULL when a logfile is not needed)
- /File=xxx Result file for GetConfig and GetStats commands
Configuration file for SendConfig command
Firmware file for Download command
- /Dir=xxx SnapShot zip file target directory
- /Message=xxx Message for SendMessage
- Additional options: /MsgTitle=xxx /MsgAutoValid=5-10-30 /MsgBeep=1-2-5
/MsgLargeFont /MsgCritical
- /NotPreserveConfig The thin client configuration is not preserved when downloading a firmware
- /FullConfig A full configuration is returned with the GetConfig command
- /Ethernet=xxx Thin client Ethernet address for the WakeOnLAN command
- /Language=xxx FR (French) or EN (English)
- /Password=xxx Required for password-protected thin clients
- /Protocol=xxx Administration protocol RSH or XML (default)
- /Host=xxx IP address of this host
- /TLSCertificate=xxx Name of X.509 certificate (XML-TLS protocol)
- /Help Display this help

IMPORTANT: By default, AxRAC operates in Interactive mode (with a dialog box). The Background mode is used only when the 'Log' option is specified.

The following are examples:

A.1.2 a Display online help



A.1.2 b Background Mode

AxRAC 192.1.1.12 SendConfig /File=c:\temp\setup.txt /Log= c:\temp\log.txt

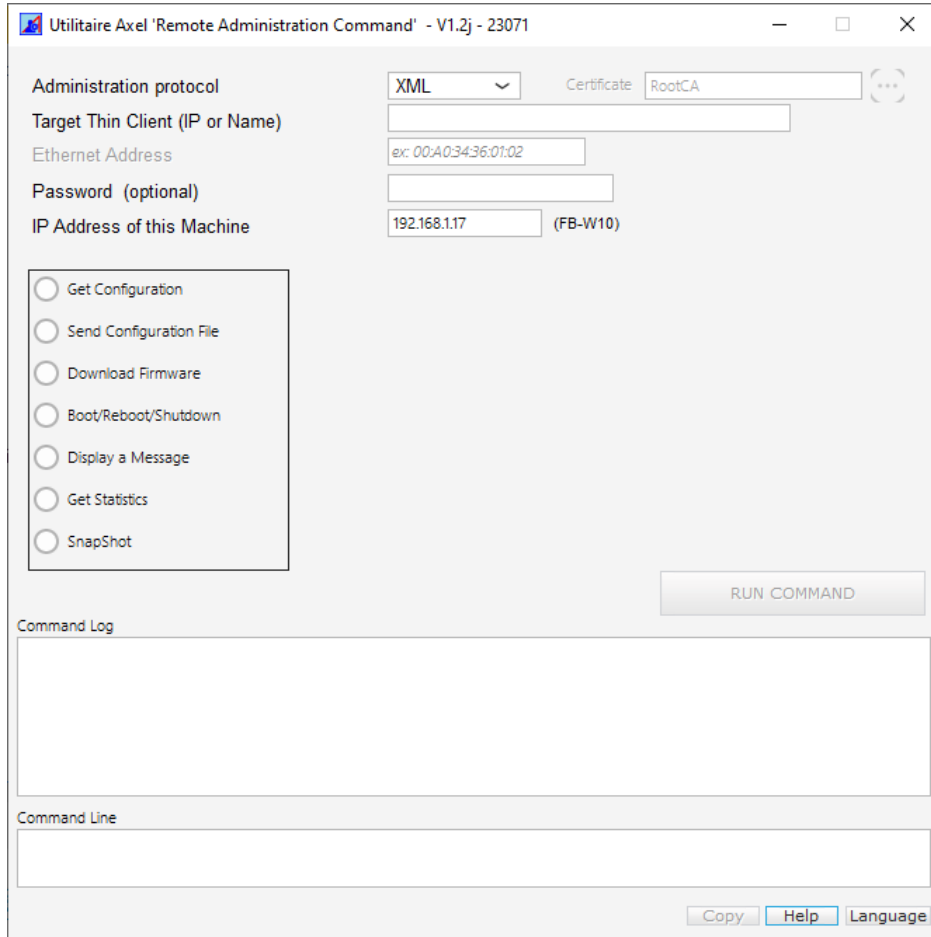
A configuration file is sent to the thin client in XML protocol without dialog box because /Log option is specified.

IMPORTANT: No more information is displayed after AxRAC is launched. Only the logfile (/Log option) allows the results of the administration command to be seen.

A.1.2 c - Interactive Mode

AxRAC 192.168.1.12 SendConfig

Display the dialog box with the given options (from the command line):



A.2 - USING WITH A FIREWALL

The AxRM tool uses the following commands:

- PING: checking thin client availability,
- XML, RSH or TLS: running administration commands,
- SNMP: discovering new thin clients,
- TFTP: downloading firmware,
- TELNET: entering thin client set-up,
- BOOTP: "repairing" a thin client when the firmware is lost,
- WOL (WakeOnLAN): booting up a thin client (Only supported from AX3000 M9x models).

If you have a firewall there is a high chance that some services will be blocked by default.

There are three ways to resolve this issue.

1. Connect the thin client to a non-firewalled PC, (maybe direct with crossover Ethernet cable) thereby avoiding the firewall.
2. Turning off the firewall for the duration of the download
3. Enabling AxRM to work through the firewall. This is covered in more detail below.

Enabling PING

The ICMP protocol must be allowed.

Enabling XML

Enable the outgoing TCP port **80**.

Enabling XML-TLS

The outgoing TCP port **80** and the configurable incoming ports (see chapter [7.3.2](#)) must be authorized.

Incoming ports used by default:

- AxRM commands: **50443**
- Autoconfiguration: **443**
- Dynamic detection: **50444 -> 50468**

Enabling RSH

From the PC/Firewall, RSH requires an outgoing and an incoming port. When 'RSH' is allowed within the firewall:

- An outgoing port is enabled (**514**),
- A range of incoming ports starting at **1024** by default

Enabling SNMP

Enable the outgoing UDP port **161**.

Enabling TELNET

By default, the telnet TCP port is **4096**. This incoming port must be enabled.

Enabling TFTP

Enable UDP port **69** - this is the port TFTP listens to.

Enabling BOOTP

Enable UDP port **70** - this is the port TFTP listens to.

Enabling WOL

Enable the outgoing UDP port **9**.

A.3 - FORMAT OF THE TEXT-FILE DATABASE

The format of the database file must adhere to the following rules:

- The first line of the file must be "**AXEL DATABASE V2.0**".
- All lines beginning with # are comments and are not interpreted.
- Uncommented lines must contain the following fields (a comma is used as separator):
 - Identifier of the element's parent in the tree
 - Identifier of this element (Nxxx for a folder, Lxxx for a thin client)
 - Name of this element
 - Ethernet Address,
 - IP address or DNS name,
 - Firmware/Hardware revision,
 - Comment.

A.4 - FORMAT OF THE SQL DATABASE

The SQL database contains two tables:

- T_LEAFS: thin client table,
- T_NODES: folder table.

These tables are created as shown below:

```
CREATE TABLE T_LEAFS (
  leaf_key varchar(10) NOT NULL,
  leaf_parent varchar(10) NOT NULL,
  leaf_name varchar(45) NOT NULL,
  leaf_IP varchar(80) NOT NULL,
  leaf_MAC varchar(17) NOT NULL,
  leaf_FW varchar(80) NOT NULL,
  leaf_comment varchar(80) NOT NULL,
  PRIMARY KEY (leaf_key)
)

CREATE TABLE T_NODES (
  node_key varchar(10) NOT NULL,
  node_parent varchar(10) NOT NULL,
  node_name varchar(45) NOT NULL,
  PRIMARY KEY (node_key)
)
```

A.5 - AXRM CONFIGURATION FILE

The AxRM configuration file is "AxRM.ini". On Windows, it's located in "%ProgramData%\Axel\AxRMV4".

Here is an example of configuration file:

```
[Global]
Configuration File Version=V1.2g
AxRM IP=192.168.1.17
Language=FR
Detection Method=2
[Administration]
Protocol=XML
XML over TLS=0
Encrypt XML Password=0
Use always IP address=1
Keep Friendly Name=0
Smart Setup Analysis=1
Allow Not Reboot After Send SetUp=1
Max Delay for Reboot=30
Max Detection thread=20
SSL Remote Control=0
SSL TCP port=50443
VNC Monitor only=0
[Database]
Method=MS SQL
Text File=G:\fb\Documents\AxRm\AxRM3.axd
SQL Server=FB-W10\SQLEXPRESS
SQL Username=axel
SQL Password=000FAC0C0A18080D3D0B7B091A8E10610E
SQL Database=AxRM
SQL AC Update Type=1
[Folders]
Set-up=G:\fb\Documents\AxRm\7Up\Axel\
Firmware=F:\_Firmwares\ax3000\
BackUp=G:\fb\Documents\AxRm\7Up\Archive\
[Display]
Log Is Visible=1
Toolbar Is Visible=1
Folder Tree Mode=1
Thin Client Recursive Mode=1
Thin Client Multiple Selection=0
Thin Client IP Conflicts=1
Hide Picture Column=0
Hide Product Column=0
Hide IP Address Column=0
Hide Hardware Column=0
Hide Firmware Column=0
Hide Ethernet Address Column=0
Hide Serial Number Column=0
Hide Comment Column=0
[Auto Configuration]
Last File=C:\ProgramData\Axel\AxRMV4\AutoConf.ini
Log File=F:\AxRm\AutoConfLog.txt
```

Transaction File=C:\ProgramData\Axel\AxRMV4\AutoConfTransaction.txt

```
[INFOSfromMAC]
;
00:A0:34:xx=SN|FKCHRO|FK|MODCHRO|MODEL|TYPE|AUDIO|ETHER|SERIAL|PS2|USB|PARA|VIDEO|WIFI|WOL|
VNC
00:A0:34:00=0508M55|---,---,---|FK3,FK5,FK7,FK11|---|AX3000 M55|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:01=0508M55|---,---,---|FK3,FK5,FK7,FK11|---|AX3000 M55|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:02=051255E|---,---,---|FK3,FK5,FK7,FK11|---|AX3000 M55E|1|---
|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:03=051255E|---,---,---|FK3,FK5,FK7,FK11|---|AX3000 M55E|1|---
|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:04=0512M56|---|FK7|---|AX3000 M56|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:05=0608M57|---|FK8|---|AX3000 M57|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:06=060857E|---|FK8|---|AX3000 M57E|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:07=0911M65|---|FK13|---|AX3000 M65|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:08=091165E|---|FK13|---|AX3000 M65E|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:09=1208M60|---|FK15|---|AX3000 M60|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:0A=120860E|---|FK15|---|AX3000 M60E|1|---|10|2|2|0|1|VGA|NO|NO|NO
00:A0:34:0B=1112M75|1|FK16|0|AX3000 M75|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:0C=111275E|1|FK16|0|AX3000 M75E|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:0D=141165B|---|FK17|---|AX3000 M65B|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:0E=141175B|1|FK16|0|AX3000 M75B|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:10=0802S10|---,---,---|FK21,FK22,FK24|100|AX4010|4|---|10|4|0|0|0|---|NO|NO|NO
00:A0:34:11=0802S10|---,---,---|FK21,FK22,FK24|100|AX4010|4|---|10|4|0|0|0|---|NO|NO|NO
00:A0:34:12=1001S20|---|FK23|101|AX4020|4|---|10|8|0|0|0|---|NO|NO|NO
00:A0:34:13=1001S20|---|FK23|101|AX4020|4|---|10|8|0|0|0|---|NO|NO|NO
00:A0:34:20=150575C|2,3,7|FK18,FK19,FK40|0|AX3000 M75C|1|---|100|2|2|2|1|VGA|NO|NO|NO
00:A0:34:21=150575C|2,3,7|FK18,FK19,FK40|0|AX3000 M75C|1|---|100|2|2|2|1|VGA|NO|NO|NO
00:A0:34:22=160465C|4,8|FK20,FK45|1|AX3000 M65C|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:23=160465C|4,8|FK20,FK45|1|AX3000 M65C|1|---|100|2|2|0|1|VGA|NO|NO|NO
00:A0:34:24=B70370W|5,---|FK30,FK31|2|AX3000 M70W|2|---|100|0|2|2|0|VGA|NO|NO|NO
00:A0:34:25=B70370W|5,---|FK30,FK31|2|AX3000 M70W|2|---|100|0|2|2|0|VGA|NO|NO|NO
00:A0:34:26=B70370F|6,---|FK35,FK36|3|AX3000 M70F|2|---|100|0|2|2|0|VGA|NO|NO|NO
00:A0:34:27=B70370F|6,---|FK35,FK36|3|AX3000 M70F|2|---|100|0|2|2|0|VGA|NO|NO|NO
00:A0:34:28=190675D|10|FK41|0|AX3000 M75D|1|---|100|2|2|2|0|VGA|OPT 802.11b/g|NO|NO
00:A0:34:29=190675D|10|FK41|0|AX3000 M75D|1|---|100|2|2|2|0|VGA|OPT 802.11b/g|NO|NO
00:A0:34:2C=B81180F|9|FK55|4|AX3000 M80F|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:2D=B81180F|9|FK55|4|AX3000 M80F|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:2E=1919M85|11|FK51|5|AX3000 M85|1|USB|100|2|2|2|1|VGA|OPT 802.11b/g|NO|YES
00:A0:34:2F=1919M85|11|FK51|5|AX3000 M85|1|USB|100|2|2|2|1|VGA|OPT 802.11b/g|NO|YES
00:A0:34:30=B10780G|12|FK56|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:31=B10780G|12|FK56|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:32=B10780M|13|FK57|6|AX3000 M80WMS|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:33=B10780M|13|FK57|6|AX3000 M80WMS|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:34=230185B|14|FK52|8|AX3000 M85B|1|USB|100|2|2|4|1|VGA|OPT 802.11b/g|NO|YES
00:A0:34:35=230185B|14|FK52|8|AX3000 M85B|1|USB|100|2|2|4|1|VGA|OPT 802.11b/g|NO|YES
00:A0:34:36=B509M90|15|FK60|9|AX3000 M90|3|1 Speak + 1 Mic|1000|0|0|6|0|DP & VGA|OPT
802.11b/g/n|YES|YES
00:A0:34:37=B509M90|15|FK60|9|AX3000 M90|3|1 Speak + 1 Mic|1000|0|0|6|0|DP & VGA|OPT
802.11b/g/n|YES|YES
00:A0:34:38=B60280S|16|FK58|10|AX3000 M80AS|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:39=B60280S|16|FK58|10|AX3000 M80AS|2|USB|100|0|0|4|0|VGA|NO|NO|YES
```

```
00:A0:34:42=B101M90|15|FK61|9|AX3000 M90|3|1 Speak & Mic|1000|0|0|6|0|DP & DP|OPT
802.11b/g/n|YES|YES
00:A0:34:43=B101M90|15|FK61|9|AX3000 M90|3|1 Speak & Mic|1000|0|0|6|0|DP & DP|OPT
802.11b/g/n|YES|YES
00:A0:34:3C=2906M95|19|FK65|12|AX3000 M95|1|USB|1000|2|0|4|1|DP & VGA|OPT
802.11b/g/n|YES|YES
00:A0:34:3D=2906M95|19|FK65|12|AX3000 M95|1|USB|1000|2|0|4|1|DP & VGA|OPT
802.11b/g/n|YES|YES
00:A0:34:3E=B90180G|12|FK56|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:3F=B90180G|12|FK56|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:40=B90680G|17|FK59|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
00:A0:34:41=B90680G|17|FK59|7|AX3000 M80G|2|USB|100|0|0|4|0|VGA|NO|NO|YES
```

[MACfromSN]

```
S10=00:A0:34:10,00:A0:34:11
S20=00:A0:34:12,00:A0:34:13
```

```
M55=00:A0:34:00,00:A0:34:01
55E=00:A0:34:02,00:A0:34:03
M56=00:A0:34:04
M57=00:A0:34:05
57E=00:A0:34:06
M65=00:A0:34:07
65E=00:A0:34:08
M60=00:A0:34:09
60E=00:A0:34:0A
M75=00:A0:34:0B
75E=00:A0:34:0C
65B=00:A0:34:0D
75B=00:A0:34:0E
75C=00:A0:34:20,00:A0:34:21
65C=00:A0:34:22,00:A0:34:23
70W=00:A0:34:24,00:A0:34:25
70F=00:A0:34:26,00:A0:34:27
75D=00:A0:34:28,00:A0:34:29
80W=00:A0:34:2A,00:A0:34:2B
80F=00:A0:34:2C,00:A0:34:2D
M85=00:A0:34:2E,00:A0:34:2F
80G=00:A0:34:30,00:A0:34:31,00:A0:34:3E,00:A0:34:3F,00:A0:34:40,00:A0:34:41,
80M=00:A0:34:32,00:A0:34:33
85B=00:A0:34:34,00:A0:34:35
M90=00:A0:34:36,00:A0:34:37,00:A0:34:42,00:A0:34:43
80S=00:A0:34:38,00:A0:34:39
M95=00:A0:34:3C,00:A0:34:3D
```

To make reading easier, the parameters are sorted out in sections. Most of these parameters are controlled within the AxRM preferences (see Chapter [7.3](#)).

[Global] Section:

- **Configuration File Version:** The version of this file.
- **AxRM Password** (encrypted)
- **VNC Password:** default password (encrypted)
- **CL Password:** generic password for thin clients.
- **AxRM IP:** IP address of this terminal.

- **Language:** Two values: EN (English) or FR (French).
- **Detection Method:** Interactive detection type method 1: ping, 2: ping + SNMP, 3: Ping + setup check

[Administration] Section:

- **Protocol:** Two values for the administration protocol: XML or RSH.
- **XML over TLS:** securing XML data with TLS (firmware > 1626a)
- **Encrypt XML Password:** With some administration commands (sending a configuration, or firmware...), the thin client's password is required. With the XML protocol this password can be encrypted ((firmware > 1626a)).
- **TLS Certificate:** X.509 certificate name
- **USE Always IP address:** Force a discovered thin client to be recorded with its IP address (not its DNS name).
- **Keep Friendly Name:** When a discovered thin client is already listed, this option indicates if its friendly name is updated or kept.
- **Smart Setup Analysis :** Allow SSA for autoconfiguration
- **Allow Not Reboot After Sending Setup:** Allows the option to not reboot the terminal as a config file is sent. (this is not advised)
- **Max Delay for Reboot :** maximum delay in seconds waiting after rebooting thin client (default 20).
- **Max Detection thread:** Number of concurrent threads allowed when enabling thin client detection. (default 20)
- **SSL Remote Control :** Enable TLS for remote control for VNC and Text Mode (Firmware >=2232a)
- **SSL TCP port :** Local TCP/IP port for the TLS server
- **VNC Monitor only :** Disables mouse and keyboard in VNC (view mode)

[Database] Section:

- **Method:** Three values: 'Text File', 'MySQL' or 'MS SQL'
- **SQL Server:** With MySQL it is the server IP address and with MS SQL it is the string <host>\<instance>.
- **SQL Username:** User name
- **SQL Password:** crypted password for the database
- **SQL Database:** Database name
- **SQL AC Update Type:** Type of update for autoconfiguration in service mode (1: direct, 2: by transaction file)

[Folders] Section:

- **Set-Up:** Default folder when opening or saving config and statistics files.
- **Firmware:** Default folder when opening firmware files.
- **BackUp:** Default folder when configuration files are automatically saved.

[Display] Section:

- **Log Is Visible:** Displaying (or not) the log area in the main console.
- **Toolbar Is Visible:** Displaying (or not) the button bar in the main console.
- **Folder Tree Mode:** Displaying (or not) folders as a tree structure.
- **Thin Client Recursive Mode:** Displaying (or not) thin clients in recursive mode.
- **Thin Client Multiple Selection:** enabling/disabling the thin client multiple selection.
- **Hide xxx Column:** Hiding/displaying the column 'xxx' (Thin Client panel).

[Auto Configuration] Section:

- **Last File:** Current auto-configuration environment file name.
- **Log File** Current file name for the execution of the auto-configuration Service log.
- **Transaction File:** Name of the current file to store auto-configuration service transactions.

[INFOSfromMAC] Section:

- Correspondence table between the MAC base address (first four digits) and the different components of the thin clients separated by « | »:
00:A0:34:xx=SN|FKCHRO|FK|MODCHRO|MODEL|TYPE|AUDIO|ETHER|SERIAL|PS2|
USB|PARA|VIDEO|WIFI|WOL|VNC

[MACfromSN] Section:

- Correspondence table between models and MAC base addresses separated by « ; ».

A.6 - MANAGING DHCP THIN CLIENTS

A.6.1 - IP Address vs DNS NAME

To open a connection to a thin client (i.e. to remotely administrate a thin client), AxRM must know the ID of the thin client.

When static IP addresses are used the IP address is suitable for this identifier.

However when the IP address is provided by DHCP, the IP address can't be used as the IP address is liable to change. In this situation the ID must be the DNS name.

Note: by default, AxRM uses the DNS name to administrate a thin client with a dynamic IP address. It's not advised, but this can be changed through the AxRM tunings (see Chapter [7.3.2](#)).

When the ID is the DNS name, DDNS (Dynamic DNS) must be used. In this scenario the DHCP server collaborates with the DNS server, updating the DNS server with the new thin client's DNS name.

Using a DNS name allows AxRM to administer thin clients in a dynamic-IP-addressing environment.

Care needs to be taken over the 'DNS Cache' on the machine where AxRM is running.

A.6.2 - The Windows DNS Cache

When a TCP/IP device opens a connection in a DNS environment, the DNS name of the destination must first be "resolved". This DNS resolution allows the IP address to be obtained from the DNS name, allowing the connection to be established. (This IP address can be dynamic when using a DHCP environment).

Each time a DNS name has to be resolved a DNS request is sent to the DNS server(s).

'DNS Cache' Overview

To reduce the number of DNS requests, a DNS cache is maintained on Windows machines. This is an array where known associations between name and IP are stored. The Windows machine first searches for an entry in its DNS cache before sending a DNS request to the server.

This causes a potential problem in the following scenario:

The thin client boots, obtains an IP address via DHCP, the DHCP server updates the DNS server. The first time AxRM contacts this thin client it resolves the thin client's DNS name and obtains the IP address. Connection is established, remote commands work and the PC caches the thin client's DNS name and IP address. When the thin client reboots it will re-contact the DHCP server to request an IP address. This IP address may be different to the address previously provided. Now, when the AxRM PC tries to contact the thin client, it will first access its own DNS cache, lookup the DNS name and find the old IP address is still associated to the DNS, and the connection will fail....

Solution:

The solution is to disable the DNS cache so each time a DNS name is resolved a new DNS request is sent.

The AxRM preferences allow the DNS cache to be disabled. See Chapter [7.3.1](#).

To manually disable the DNS cache, enter the following command from a DOS prompt.

```
net stop dnscache
```

Note: To disable the DNS cache permanently in Windows, use the Service Controller tool or the Services tool to set the DNS Client service startup type to Disabled. Note that the name of the Windows DNS Client service may also appear as "Dnscache".

For more information consult the Microsoft knowledge base: <http://support.microsoft.com/kb/318803>.

A.7 - RSH-BASED COMMANDS

The preferred mode for administrative commands is XML. XML provides the following benefits over RSH:

- Easy firewall administration (only one outgoing TCP port)
- Firmware downloading is faster and does not require TFTP.

Various standard TCP/IP commands are embedded in the AxRM Software (rsh, arp, tftp and ping). Depending on your operating system these commands may also be included in Windows.

RSH-based administration commands can be emulated from a DOS prompt. The following table gives for each administration command the equivalent generic DOS command:

Commands AxRM	Commands TCP/IP
Get thin client information	rsh axname ax_version
Get thin client statistics	rsh axname ax_getstat
Get thin client configuration	For full set-up info: rsh axname setup_get > file For partial set-up: rsh axname setup_get_lite > file
Reboot thin client	rsh axname ax_reboot [passwd]
Send thin client configuration	To send the set-up: rsh axname setup_send [passwd] < file To reboot automatically: rsh axname ax_reboot [passwd]
Firmware download	To obtain and save current set-up: rsh axname setup_get > file To download firmware: rsh axname ax_download [passwd] [File] [TFTP] [Router] To send the saved set-up: rsh axname setup_send [passwd] < file To reboot automatically: rsh axname ax_reboot [passwd]
Close session	rsh axname ax_reboot [passwd] sessX ('X' is the session number : sess1, sess2...)
Switch session	rsh axname ax_switch sessX ('X' is the session number : sess1, sess2...)

Set IP address	To modify the arp table: arp -s axname MACaddr And to force IP address: ping axname
----------------	--

Note: for more information about RSH commands supported by Axel products, please consult the *User's Manual* of the thin client / Office Server.

A.8 - SNMP SUPPORT

To discover thin clients, SNMP requests can be sent by AxRM over the network (broadcast or IP address scan).

Only one SNMP command is supported: sysDescr (MIB-2 / OID .1.3.6.1.2.1.1.1 / Community=public)

When receiving a sysDescr command the terminal sends back a character string composed by peers « attribute:value ». A space is used as a separator between peers. The attribute of the first peer is always 'AXEL'.

Note: To respond to this command you must have authorized network discovery in the thin client set-up (allowed by default).

Example:

AXEL:00:a0:34:30:01:4d FW:FK56-BV11e/TCP.FR.1236d:STD_16235 IP:STATIC	IPV4_ADDR:192.168.1.247
NAME:axel30014D	

The possible attributes are listed below:

Attribute	Value
AXEL	MAC address of Ethernet interface (00:A0:34:aa:bb:cc)
IPV4_ADDR	IP address of Ethernet interface (0.0.0.0 when the interface is not enabled)
IP	Equals to 'DHCP' when IPV4_ADDR obtained by DHCP. Otherwise equals to 'STATIC'.
WAXEL	MAC address of WiFi interface
WIPV4_ADDR	IP address of WiFi interface (0.0.0.0 when the interface is not enabled)
WIP	Equals to 'DHCP' when WIPV4_ADDR obtained by DHCP. Otherwise equals to 'STATIC'.
FW	Hardware and firmware information
NAME	Name of thin client (only if FQDN is not specified).
FQDN	Full Qualified Domain Name of the thin client (given only when the IP address and the default domain name are obtained with DHCP).
COMMENT	Optional commentary issued from the thin client set-up

A.9 - SECURING XML WITH TLS

Note: the full name of the protocol is SSL/TLS will be referred to as TLS for the rest of this chapter for the ease of reading.

Both XML administration commands and auto-configuration can be secured with TLS.

The TLS offers two levels of security:

- Data encryption,
- With authentication: the server identity (i.e. AxRM) can be checked by the thin client

For both XML administration commands and auto-configuration, AxRM acts as an TLS server, for this it uses local TCP/IP ports which are by default 443,50443, 50444 to 50468 which must be available and open at firewall or antivirus level (see appendix [A2](#)). It is also necessary to install an X.509 certificate with private keys on the machine.

IMPORTANT: This X.509 certificate must be installed in the personal store of the AxRM user. This can be achieved with Internet Explorer or with the 'Certificate' Snap-in of MMC.exe.

When the X.509 certificate is correctly installed, the [...] button can be used to access it (in AxRM preferences or AxRM auto-configuration dialog box).

The TLS server will fail if the X.509 certificate is not available or if this certificate can't be used for authentication.

A.9.1 - Auto-Configuration

With auto-configuration the thin client initiates the connection so the thin client acts as the TLS client and AxRM as the TLS server.

The thin client opens an TLS connection to the AxRM auto-configuration service. If the connection is accepted, the XML administration commands are sent over this secure channel.

A.9.2 - Administration Commands

With XML administration commands AxRM initiates the connection so AxRM acts as a client and the thin client as a server.

However in XML-TLS mode, this must be reversed because AxRM is the TLS server. Performing an XML-TLS command is described as:

Step 1: AxRM starts the TLS server and sends an XML (not secured) to the thin client. This command requests an TLS connection from the thin client. This command includes:

- The name and the IP address of the AxRM machine
- The Ethernet address of the thin client

Step 2: This request can be denied by the thin client (for example if the Ethernet address contained in the request doesn't match the actual Ethernet address of the thin client). If the request is accepted, an XML 'OK' response is sent back to AxRM and the thin client opens an TLS connection to AxRM.

Step 3: When the TLS connection is established, the thin client must confirm its identity (an XML packet is sent over this secured channel. If AxRM agrees, the administration commands are sent over this secured channel.

IMPORTANT: as described in Step 2, the thin client must open an TLS connection to AxRM. This assumes the IP address and the name of AxRM machine are known by AxRM. Check this information is correctly specified in AxRM preferences (see Chapter [7.3.1](#))

A.9.3 – Create a Self-Signed X509 TLS certificate on Windows

In order to use XML secured by TLS, AxRM needs a signed certificate containing a private key on which it relies as a TLS server. This certificate can be obtained by a recognized certification authority (for example Comodo, DigiCert, Verisign...), or by creating a self-signed certificate which can be used by AxRM.

The easiest way to create a self-signed TLS X509 certificate on Windows is to use the "New-SelfSignedCertificate" command in PowerShell.

The procedure has three steps:

- Creation of a certification authority by PowerShell
- Exporting the certificate as a file (mmc certificate console)
- Importing the certificate into the AxRM user account store.

A.9.3.a - Create the X509 certificate

Run PowerShell in Administrator mode and enter the following command:

```
New-SelfSignedCertificate -CertStoreLocation Cert:\LocalMachine\My -DnsName "mysite.local" -
FriendlyName "MySiteCert" -NotAfter (Get-Date).AddYears(10)
```

Where:

- mysite.local : computer DNS name
- MySiteCert : friendly name of certificate
- NotAfter (Get-Date).AddYears(10) : validity for 10 years

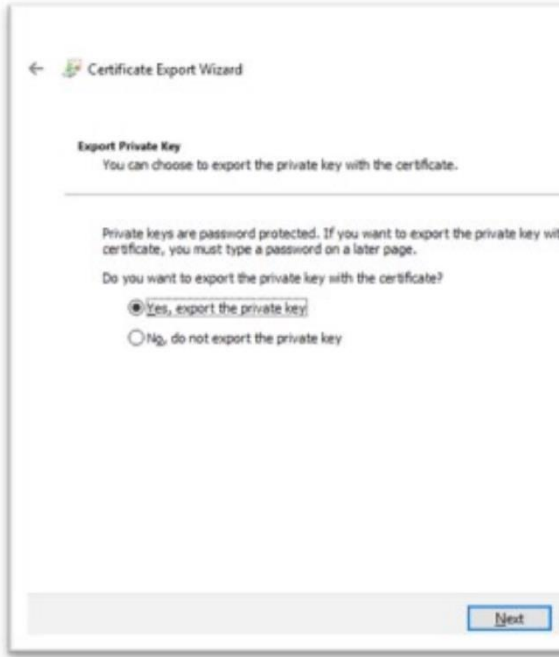
This command creates the certificate on Local Computer → Personal → Certificates

A.9.3.b - Export the X509 certificate

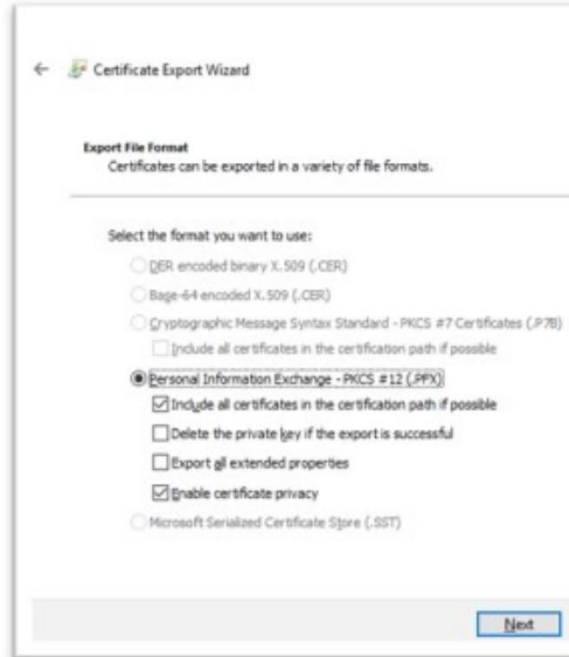
Open mmc console “Certificates”, In the left panel, navigate to Certificates - Local Computer → Personal → Certificates

Locate the just created certificate, With the right mouse button select All tasks -> Export...

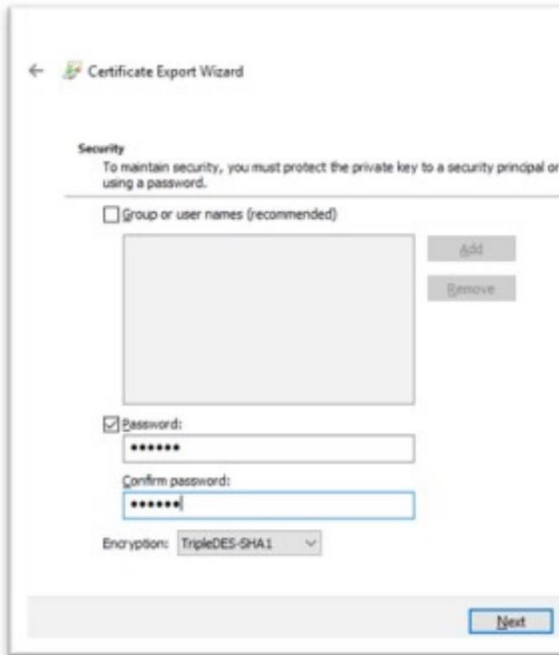
1



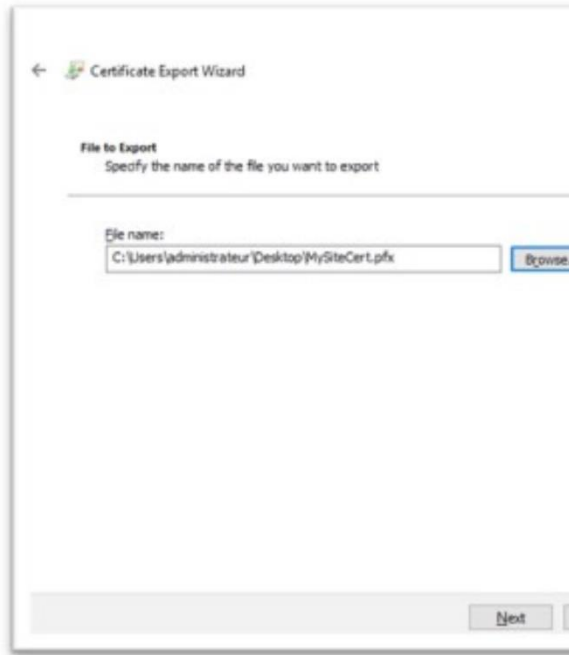
2



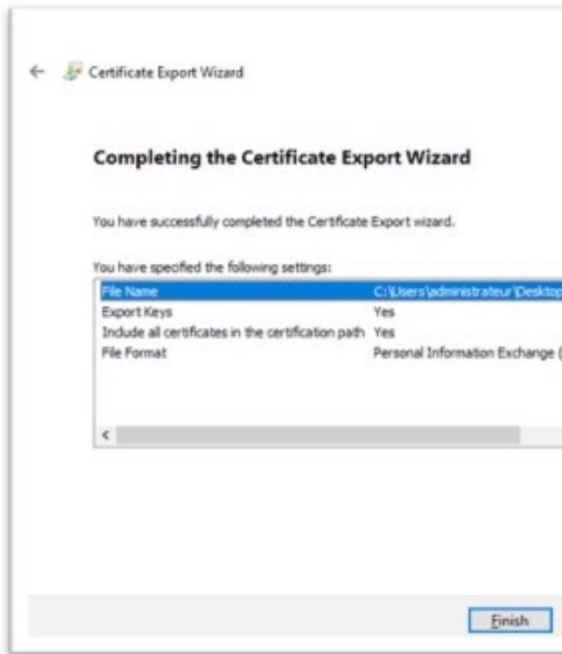
3



4



5



6



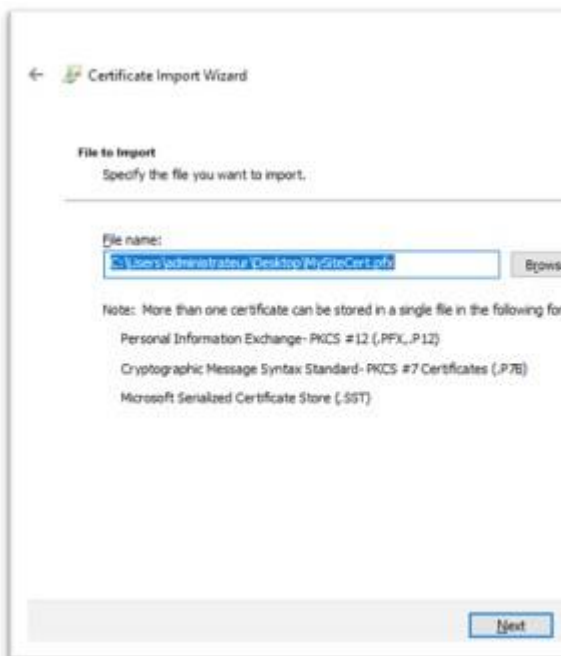
A.9.3.c - Import the X509 certificate on the personal AxRM user store

Double click on the certificate created previously to open the import wizard

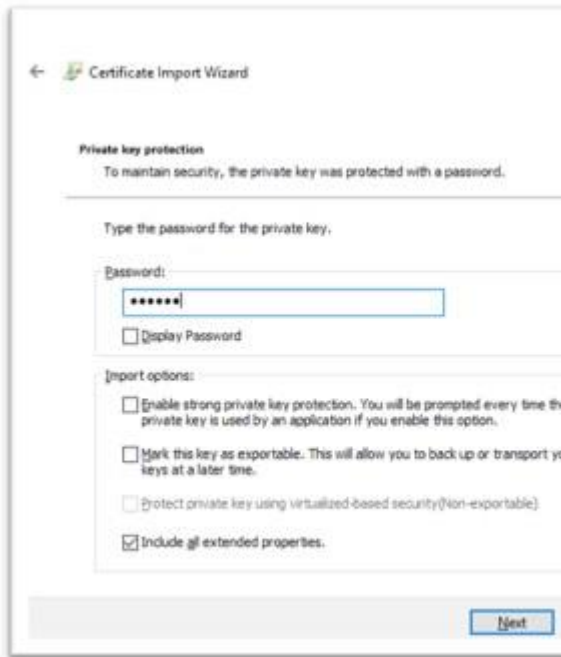
1



2



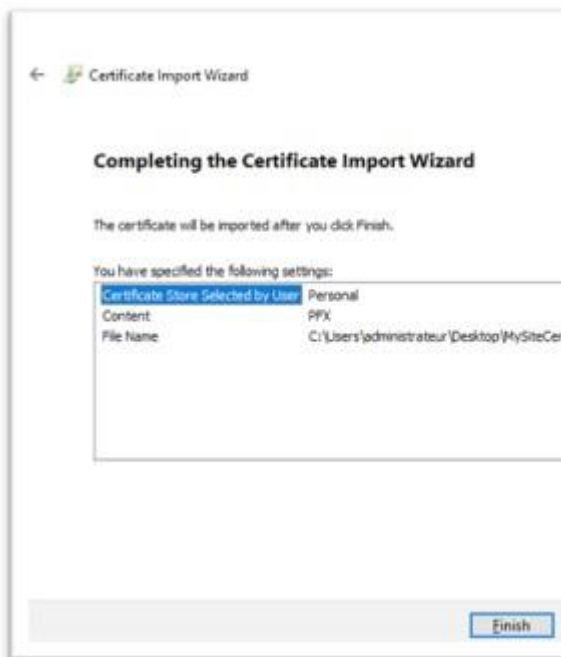
3



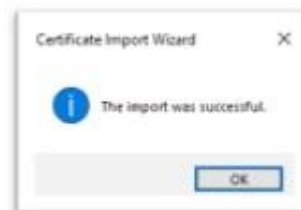
4



5



6



A.10 - AUTO-CONFIGURATION DHCP VENDOR OPTIONS

In addition to the standard options (IP addresses, DNS server...), the DHCP server can be used to communicate personalized information with options above 224.

Axel option can be used to specify the network location (IP address and TCP port) of the AxRM auto-configuration service.

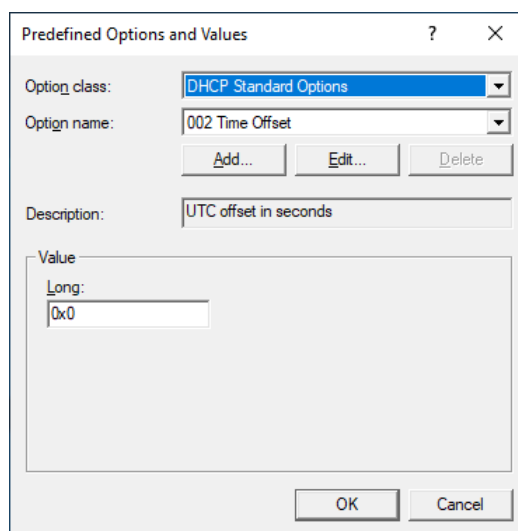
The Axel options are contained within the range of numbers from 231 to 240. The 'type' is always 'character string'. The format of the entry is as follows:

- Entry starts with a keyword followed by one or more parameters.
- The symbol « : » is used as separator.

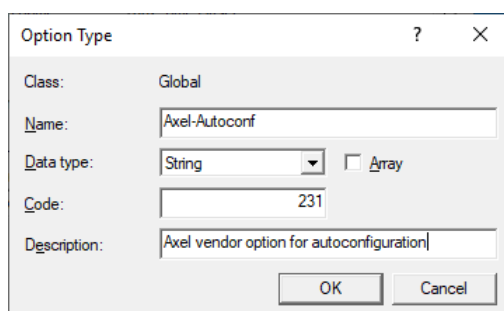
Note: In contrast to some implementations Axel uses a 'keyword' rather than a specific number. The actual number (231 to 240) is irrelevant so any non-conflicting number in this range can be used.

A.10.1 - Adding "Axel" option in Microsoft DHCP server

1. Launch the DHCP utility. Right click on « IPv4 » of the DHCP Server and on the « Actions » menu select « Set Predefined Options ».



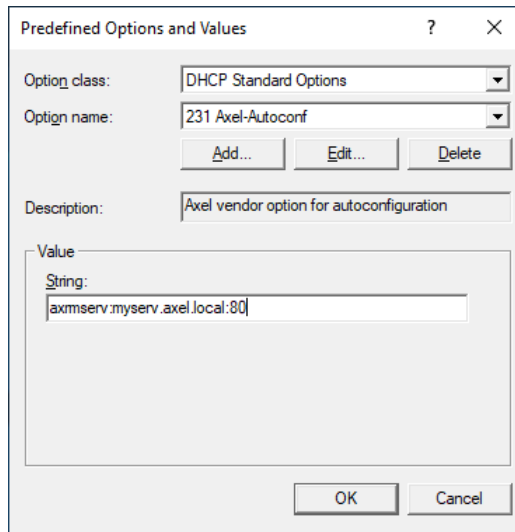
On the dialog box select **[Add...]**



Complete the fields as follows:

- Name = (User definable) for example **Axel Autoconf**
- Data Type = (mandatory) **string**
- Code = (mandatory) select unused number between **231** and **240**
- Description = (User definable) for example: **Axel vendor option for autoconfiguration.**

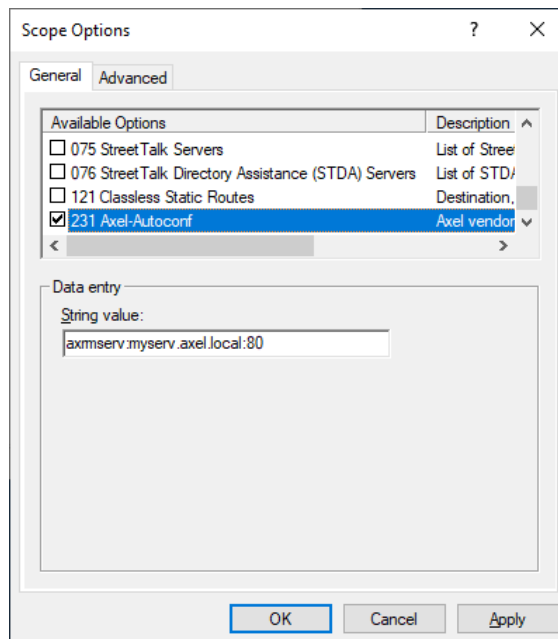
Click [OK] :



Then enter the option in the "**String**" area as defined in the following paragraphs.

Finally Confirm by [OK]

2. In the DHCP utility. Right click your « **Scope Options** » and tick the Axel option.



Confirm by [OK]

A.10.2 - 'axrmserv' Option: XML auto-configuration

The 'axrmserv' option specifies the network location (IP address and TCP port) of the AxRM auto-configuration service in XML mode.

The format is as follows:

```
axrmserv:param1:param2
```

The parameters are:

- The IP address or DNS name of the AxRM server
- The XML port AxRM is listening on (by default 80)

A.10.3 - 'axrmservTLS' Option: XML-TLS auto-configuration

The 'axrmservTLS' option specifies the network location (IP address and TCP port) of the AxRM auto-configuration service in XML-TLS mode.

The format is as follows:

```
axrmservTLS:param1:param2
```

The parameters are:

- The IP address or DNS name of the AxRM server
- The XML-TLS port AxRM is listening on (by default 443)

Note: When the both options 'axrmserv' and 'axrmservTLS' are published, 'axrmservTLS' takes priority.

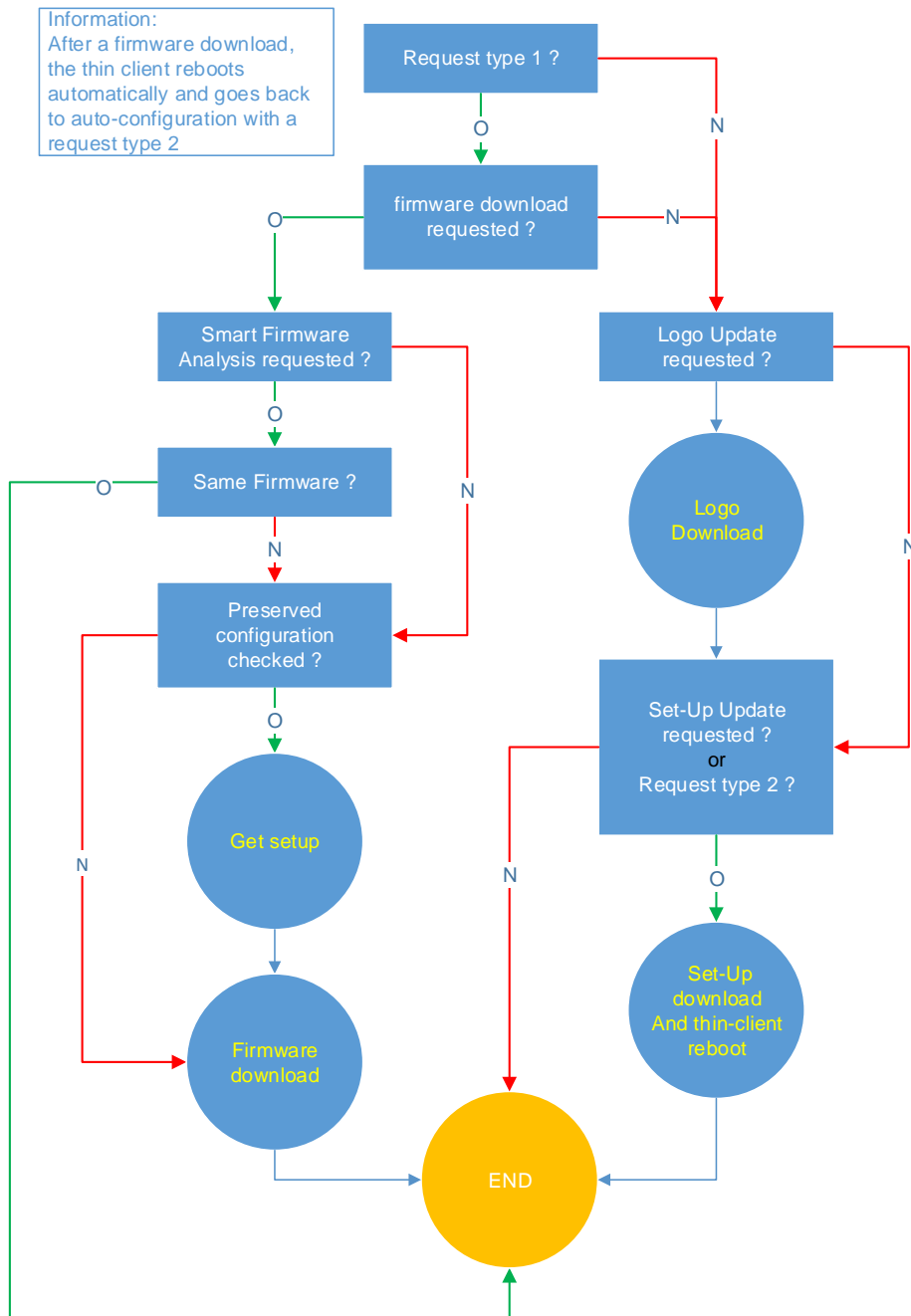
A.11 – OPERATION OF AUTO-CONFIGURATION

A.11.1 - 'AxRM 4.4a' compatible

This mode corresponds to the version:

- AxRM V4.3 and lower.
- AxRM V4.4a
- AxRM V4.4b and 4.4d with **SSA parameter for auto-configuration disabled** (see chapter [7.3.2](#))

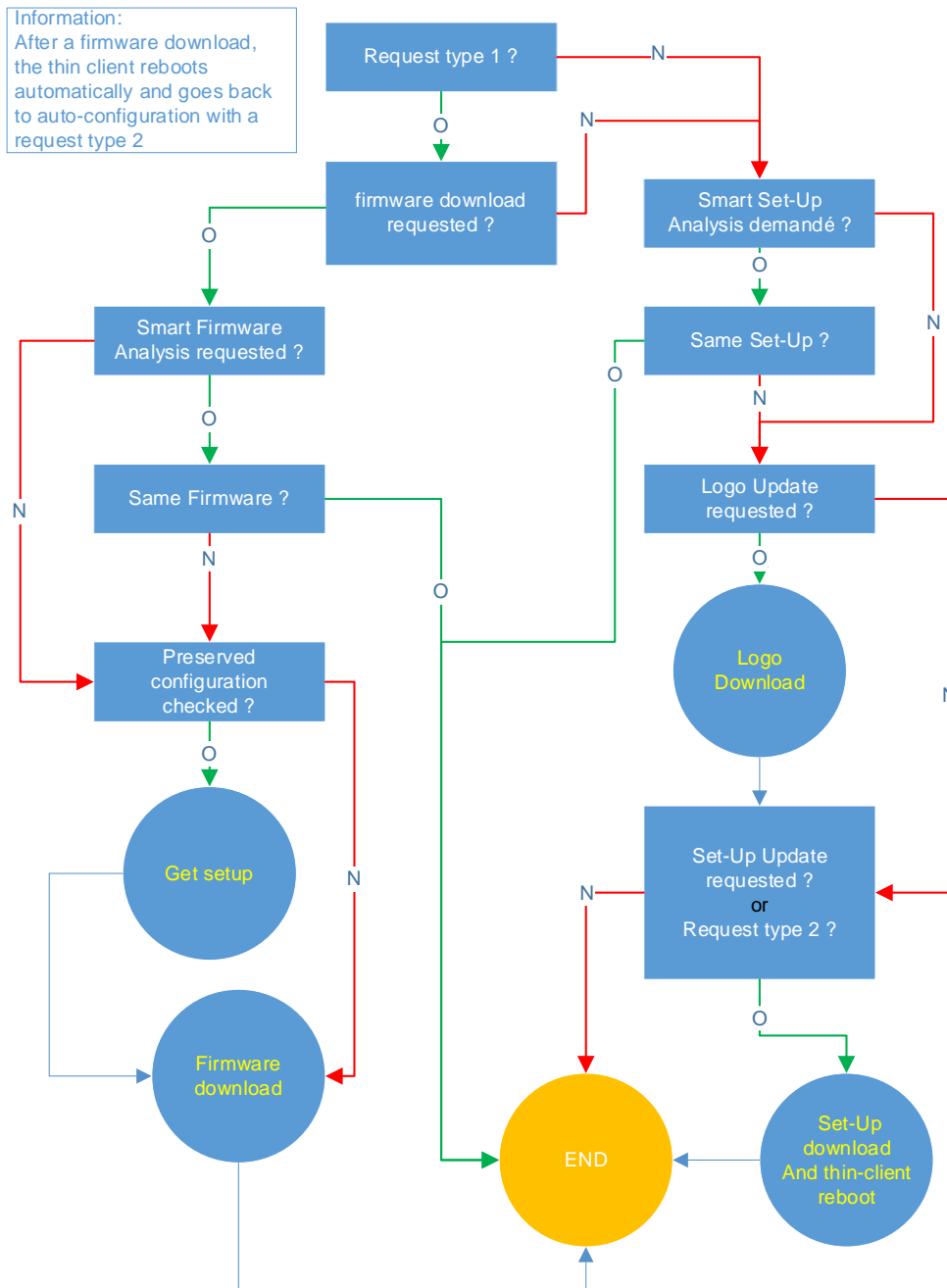
Diagram of the AxRM V4.4a auto-configuration



A.11.2 - AxRM 4.4b and 4.4d

This operating mode corresponds to the **AxRM V4.4b version with the SSA parameter for auto-configuration enabled** (see chapter [7.3.2](#)). If this parameter is unchecked, the behavior is identical to version AxRM V4.4a (see appendix [A.11.1](#))

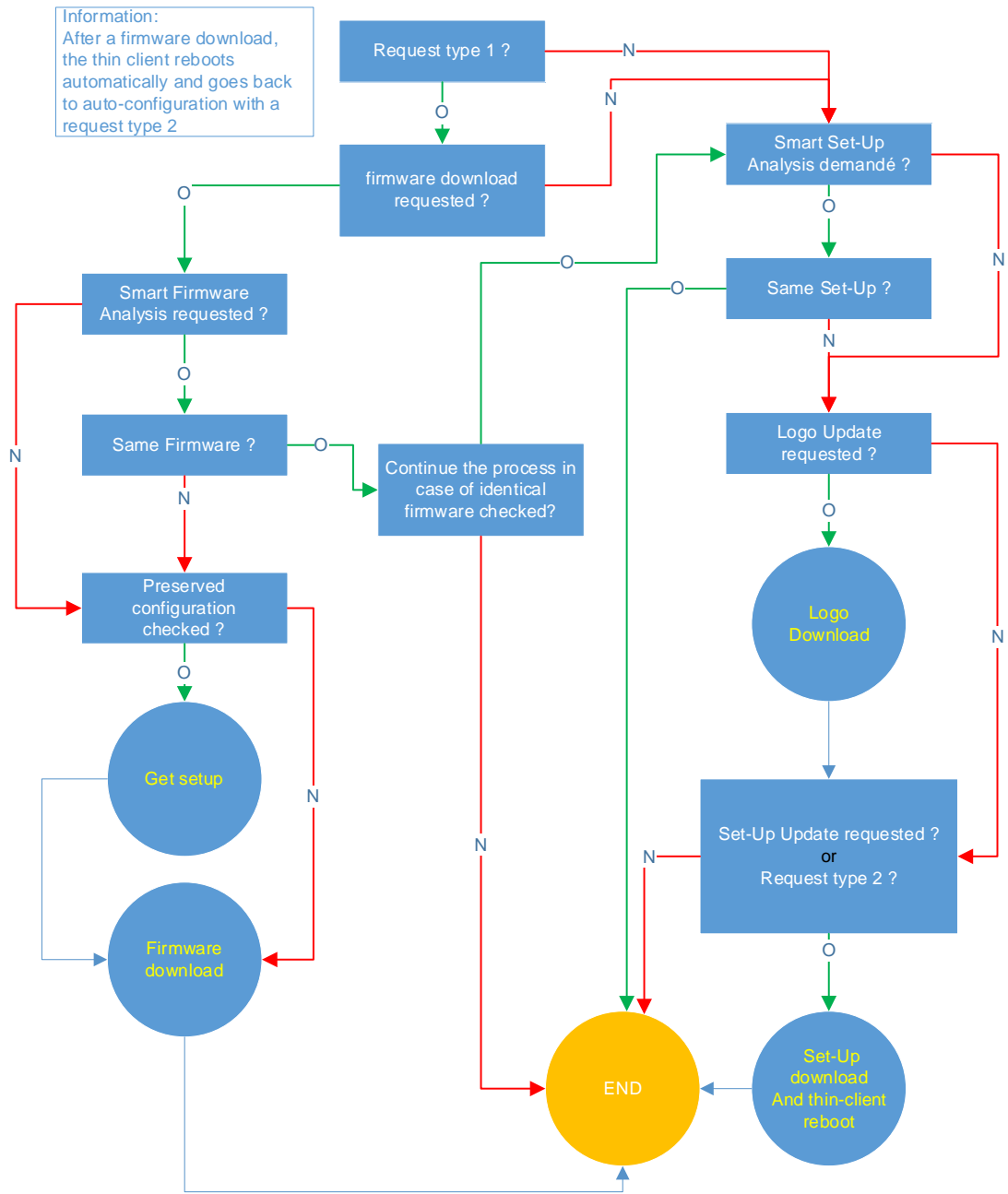
Diagram of the AxRM V4.4b auto-configuration



A.11.3 - AxRM 4.4e and more

This operating mode corresponds to that of the AxRM V4.4e version with the **SSA parameter for auto-configuration activated** (see chapter 7.3.2). If this parameter is unchecked, the behavior is identical to version AxRM V4.4a (see appendix A.11.1)

Diagram of the AxRM V4.4e auto-configuration



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