Axel Remote Management Version 3

Administration Software for Axel Terminals and Office Servers

June 2015 - Ref.: AxRM3E-12

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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)

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- 1 -
INTRODUCTION

This chapter introduces the main features of the AxRM software.

The AxRM software allows system administrators to manage and configure Axel TCP/IP products remotely over a network. The Axel device is selected by its IP address or network name. (The software can also assign an IP address to a new terminal that has not had an IP address previously set).

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,
- Obtain Ethernet and serial line configuration,
- Obtain network and device statistics,
- Obtain set-up configuration,
- Reboot the device,
- Remotely configure the device
- Download firmware,
- Remote access: take the remote control or enter the interactive set-up.

It is also possible:

- To download firmware via BOOTP,
- To set an IP address by using the device's MAC address.

This document covers:

- Installation / Removal of AxRM,
- Launching the software,
- Management of the device database,
- Terminal administration
- Auto-Configuration function,
- Other functions,
- Appendices.

- 2 -
INSTALLATION / REMOVAL OF THE SOFTWARE

This chapter gives details of installation and removal procedures.

2.1 - PREREQUISITES

AxRM is certified for Windows (NT4, 2000, 2003, 2008, 2008R2, 2012, XP, Vista, Seven and Windows 8).

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

2.2 - UPGRADING

If AxRM V3 is already installed on the Windows machine it is imperative to remove before loading a newer version. (See chapter 2.4).

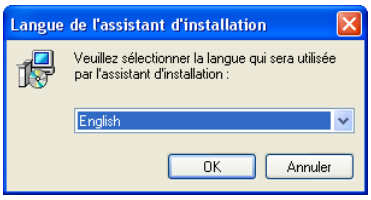
Note: AxRM V3 and AxRM V2 can be installed on the same computer.

2.3 - INSTALLATION

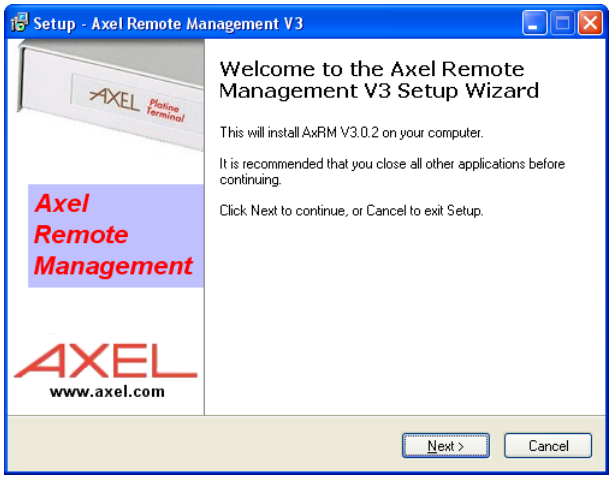
To start the installation, double click on the file ‘AxRMsetup.exe’ and follow the instructions.

Note: for Windows 7 and Windows 8, please run this installer 'as administrator'.

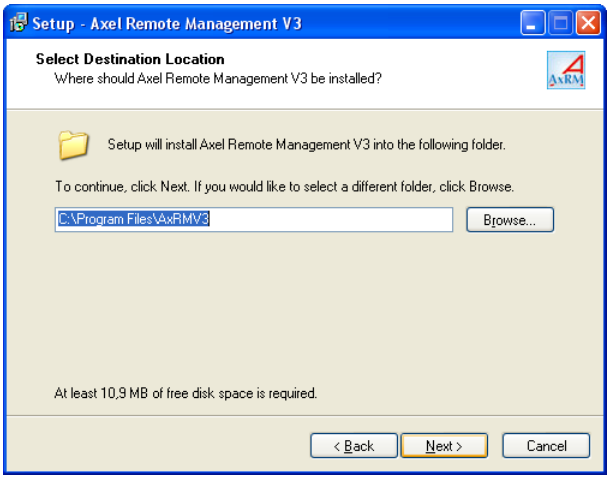
The first window is a language selection box:



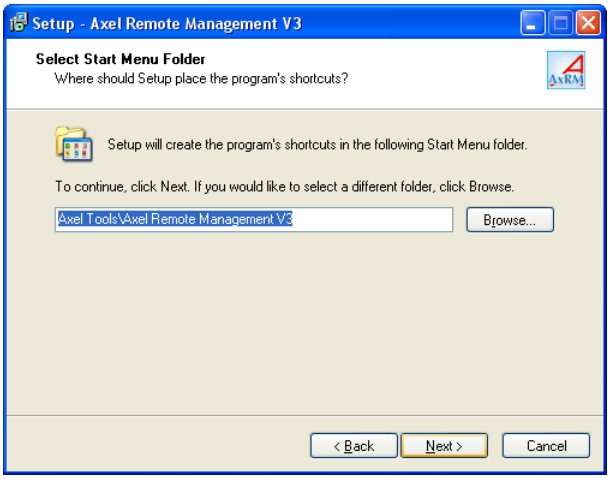
Click on **[OK]** to continue:



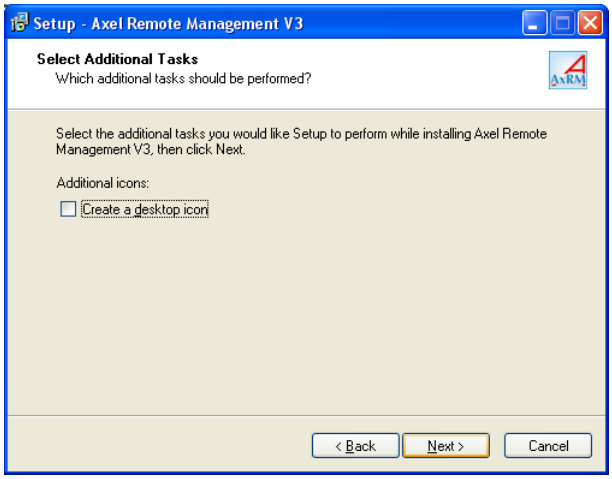
To continue the installation click on **[Next]**. The option to enter a different location for AxRM is offered:



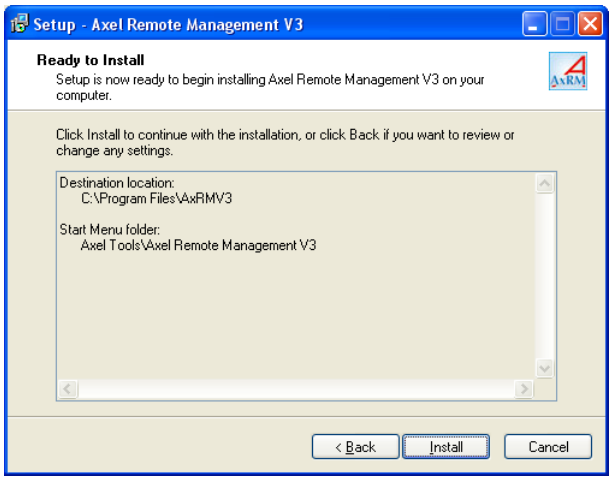
Click on **[Browse]** to select a different location. To continue installation, click on **[Next]**. The following window shows Start Menu folder where AxRM can be installed:



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

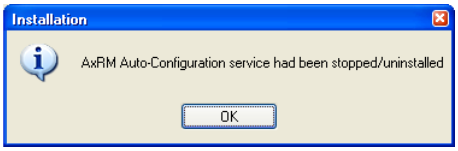


Click on **[Next]**. The installation summary is displayed:



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

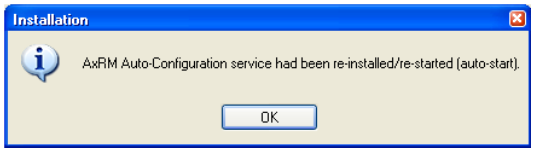
If the AxRM auto-configuration service is running (installed by a former AxRM version), the service is stopped and uninstalled:



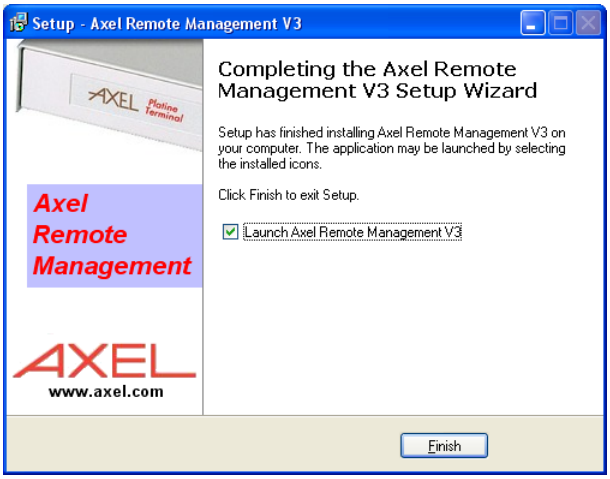
Now files are copied onto the Windows machine. Possible errors messages are:

- Error when installing fraplus1.ocx and btnplus1.ocx: see Appendix A.7.2.
- Error when installing SQLDMO.DLL: see Appendix A.7.3.

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



The installation is completed:



The following programs had been copied onto the installation folder:

- Axel Remote Management

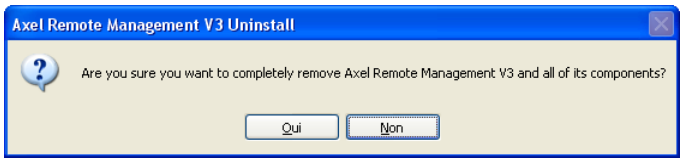
- Axel Viewer
- Uninstall Axel Remote Management

In the event of difficulties: Depending on the configuration and the version of Windows, it may be necessary to install extra DLL files. These can be found at http://www.axel.com. The DLL files should be copied into the system folder. (%SystemRoot%).

2.4 - REMOVAL

IMPORTANT: before uninstalling AxRM, stop the background auto-configuration service. See Chapter 6.2.

To remove AxRM, select "Uninstall Axel Remote Management" in the menu **[Start]-[Programs]-[Axel Tools]-[Axel Remote Management V3]**:



The following Window confirms AxRM has been successfully removed:

- 3 -
LAUNCHING THE SOFTWARE

This chapter covers AxRM's setup and startup operation.

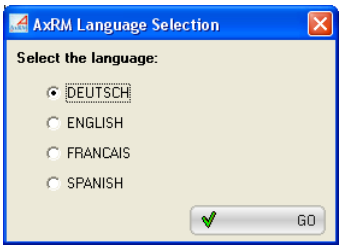
Note: To facilitate reading this document will refer to the Axel device (which can be a terminal or an Office Server) as simply the "terminal"

To launch the administration software, select **[START]-[Program Files]-[Axel tools]-[Axel Remote Management V3]**.

Before the main program is launched several dialog boxes will require completing.

3.1 - CHOOSE LANGUAGE

Select the required language as prompted:



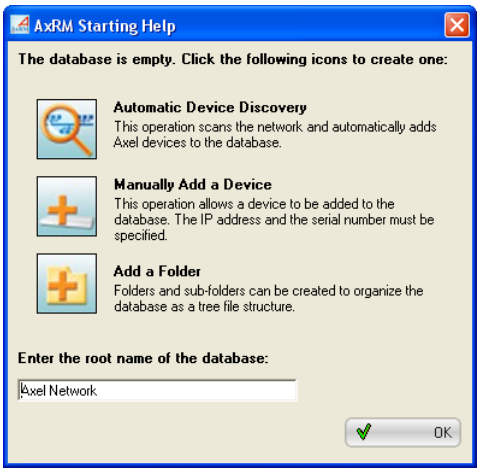
Note: the languages available depend on the 'LNG' files downloaded with the AxRM zip package

The language can be changed at a later time (see chapter 7.3.1).

3.2 - NAMING THE DATABASE AND SETTING ITS LOCATION

AxRM maintains a database of the Axel terminals. This database is presented in the form of tree structure.

The database is given a user selected name or the default 'Axel Network' will be used:



Note: the name of the database can be changed at a later date (see Chapter 4.2.1).

3.3 - PASSWORD

If the access to the AxRM is restricted the following dialog box is shown (see chapter 7.3.5):

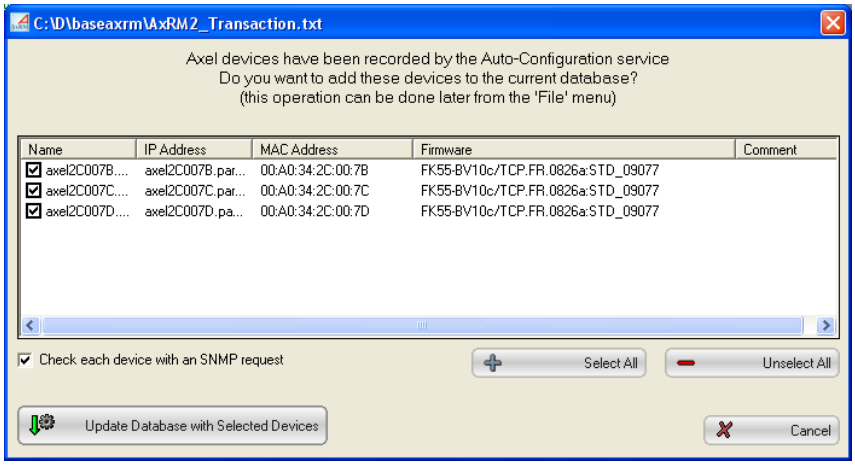
Enter the password to continue.

3.4 - IMPORTING TERMINALS FROM AUTO-CONFIGURATION

The Auto-Configuration function allows terminal updates to be automatically processed. (See Chapter 6)

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

Each time AxRM is run new devices recorded by the Auto-Configuration service are checked. If new terminal descriptions are found, or the terminal descriptors have changed, the following dialog box is displayed:



Select terminals to be added to the database.

Note: the terminal database may also be updated later. (See Chapter 4.4.4)

3.5 - WARNING MESSAGES

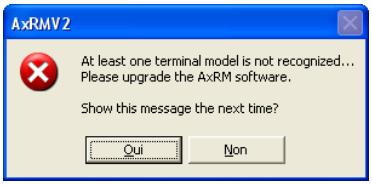
3.5.1 - DHCP Server

AxRM can be configured to 'listen' for DHCP requests sent by existing and virgin Axel terminals. If a DHCP server is already running on the Windows machine the following message is displayed:

To resolve this conflict disable the third party DHCP/BOOTP server or modify the AxRM settings. (See Chapter 7.3.1)

3.5.2 - Unknown Products

When AxRM is run of after terminals had been discovered, the following message may be displayed:



This shows unknown Axel products are listed in AxRM database. This can be met is AxRM version is older than new Axel terminals. To fix this, please upgrade AxRM.

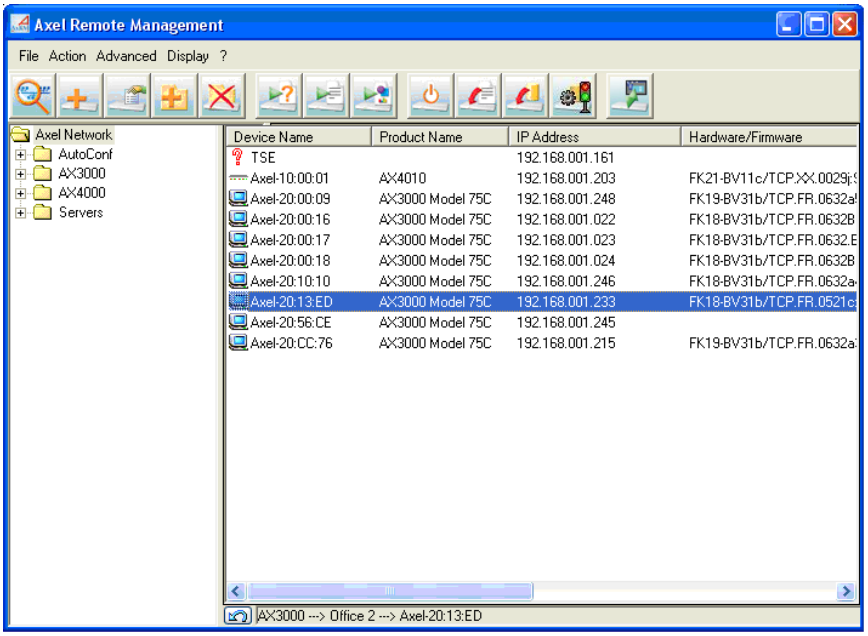
3.6 - THE CONSOLE WINDOW

The 'Console Window' is made up of the following:

- A horizontal menu providing manipulation of the database and certain terminal functions.

- A 12 button toolbar (short-cuts to the functions in the menus mentioned above)
- A panel (on the left) representing the tree structure of the network
- A panel (on the right) allowing individual, multiple or groups of terminals to be selected for access.
- A status bar (below the right panel) displaying miscellaneous information.

Example:



Actions possible on the tree structure:

- Left click: selects one or more elements of the tree structure
- Right click: shows a "**contextual menu**" (commands available for execution...)
- Double-click from the left panel: editing the device characteristics.
- Double-click from the right panel: depending on the device:
    - Terminal with an IP address: run the 'Get Terminal Information' command.
    - Other: editing the device characteristics.

For more information see chapters 4.2 (management of the database) and 5.1 (selection of terminals).

The terminal list of the right panel can be sorted out by clicking the header of a column.

☺: depending on whether a terminal or folder is selected different information is displayed:

- A folder: terminal type (AX3000 and AX4000) is displayed.
- A single terminal (see screen shot): the location in the tree structure is displayed. The blue arrow (on the left) allows this terminal to be retrieved in the tree structure.

When the 'Archive Terminal Set-Ups' function is enabled (see Chapter 7.3.4), an information bubble is displayed when the mouse moves over the terminal list. This bubble gives a summary of the terminal configuration (if available)

The 'Display' Menu allows:

- The toolbar to be hidden.
- Some columns to the right panel to be hidden.
- Set-up bubbles to be hidden.
- Status bar to be hidden.

- 4 -
MANAGEMENT OF THE DEVICE DATABASE

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

The terminal database is presented in the form of tree structure. This presentation makes it possible to logically sort the terminals into groups and to easily locate any terminal or group of terminals on which an action is to be performed.

4.1 - THE DATABASE

The terminal database can be handled:

- By a single file (text format)
- By MS-SQL

4.1.1 - Text File Management

The text file is called "%systemroot%\AxRM2.axd" by default. The name can be modified (see Chapter 7.3.4).

The text file is automatically opened during the launching of the software. It is possible during use to force re-reading of the database by selecting the command **[File]-[Read Database]**.

On exiting AxRM the user is prompted to save changes. At any point during the operation of AxRM changes can be saved by selecting the following: **[File]-[Save Database]**.

4.1.2 - MS-SQL Management

The AxRM preferences allow the MS-SQL connection details to be given (See Chapter 7.3.4). 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.

4.1.3 - Import/Export functions

Some Import/Export functions are also available, specifically a migration from a text file database to a MS-SQL database. See Chapter 4.4.

4.2 - MANAGEMENT OF THE DATABASE

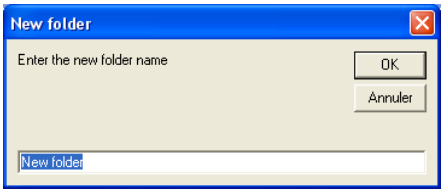
The terminal database can be logically organized by adding directories and sub-directories to contain terminals.

4.2.1 - The Directories

The creation of a directory is carried out by the horizontal menu **[Action]-[Add folder]**, by the contextual menu or by the toolbar.

Below is the Icon and corresponding dialog box:


icon



Simply enter the name of the directory, which is then created in the current database directory. The contextual menu (right click) lets a directory be created or deleted. A directory (and its contents) can be moved by drag and drop.

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

4.2.2 - Terminals

A terminal is an element in the database tree structure. The following icons represent the following devices.

-  : AX3000 Terminal

-  : Newly detected Terminal without IP address (See Chapter 4.3.1)
- : AX4000 Office Server
-  : Unknown IP device (PC, printer, etc)

AxRM recognizes terminals and Office Servers by their Ethernet MAC address. If the Ethernet address is not shown or is unknown, the device is represented by the icon '?' and no further action is possible.

For more information on adding and editing entries see the following chapter.

It is possible to move a terminal by dragging and dropping or using the contextual menu (click right) to delete or rename.

Note: devices with conflicting addresses are highlighted with an exclamation mark:

-  : AX3000 Terminal
-  : AX4000 Office Server
-  : unknown device.

4.3 - ADDING AND MODIFYING DATABASE ENTRIES

A terminal can be added manually or automatically.

4.3.1 - Automatic Detection of New terminals

AxRM can automatically detect new terminals (by default new terminals send out DHCP requests which AxRM will detect and analyze).

Notes:

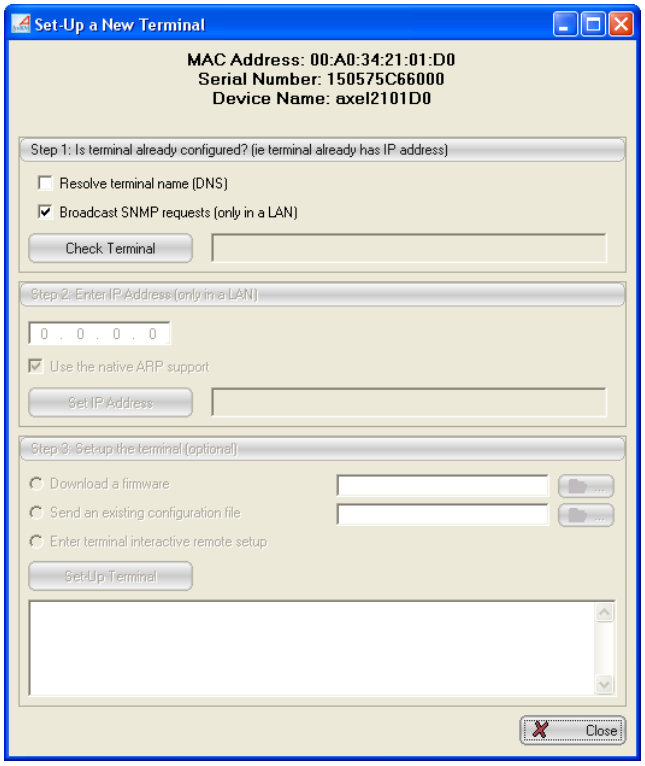
- AxRM doesn't act as a DHCP server. It only 'sees' DHCP requests sent by Axel terminal and will not issue IP addresses.
- This feature can be disabled. (See Chapter 7.3.1)

Detected terminals are added to the AxRM database. (See red terminal icon - Chapter 4.2.2). No commands can be performed on such terminals until they are given an IP address. (See below.) The only information collected is the MAC address and the terminal's DNS name.

A new terminal can be entirely configured from AxRM. Double-click the new terminal icon or click the icon on the toolbar or select the option **[Edit this Device]** (from the **[action]** horizontal menu or from the contextual menu).

Here is the icon and dialog box:

icon

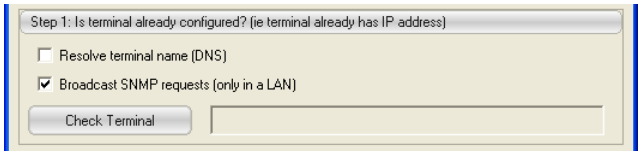


a) Step 1 - Check the Terminal

At this stage AxRM has received a DCHP request, but does not know if the DHCP request is from a new virgin terminal or an existing terminal that is configured to use DHCP.

This step checks to see if the terminal already has an IP address (obtained either from a DHCP server or has previously been assigned a static IP address

but is not yet recorded in AxRM's database - in both these cases it is assumed the terminal is not new):

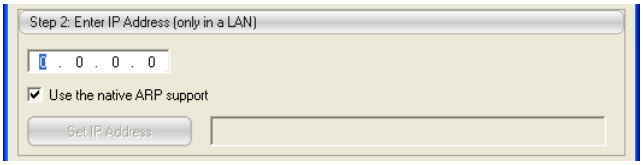


This check may be done by:

- Resolving the terminal's name (DNS server must be available but works over a WAN)
- And/or by sending an SNMP request (only works on a LAN).

If the above check indicates the terminal is 'new' and has no IP address the 'step 2' is enabled. If the terminal is found to have an IP address the terminal can be setup (step 3).

b) Step 2 - Set-Up an IP Address



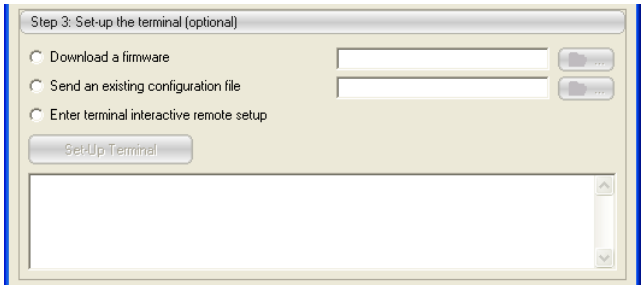
Enter the IP address to assign and click on **[Set IP Address]**.

The IP address is set by sending ping requests to the terminal (this works only in a LAN).

When the IP address is set, Step 3 is enabled.

c) Step 3 - Set-Up the Terminal

This step is optional: the terminal may be configured by the usual AxRM administration commands.



The terminal can be configured by:

- Downloading a firmware. (See Chapter 5.2.6)
- Sending an existing configuration file. (See Chapter 5.2.5)
- Entering the interactive set-up. (See Chapter 5.3.2 - a)

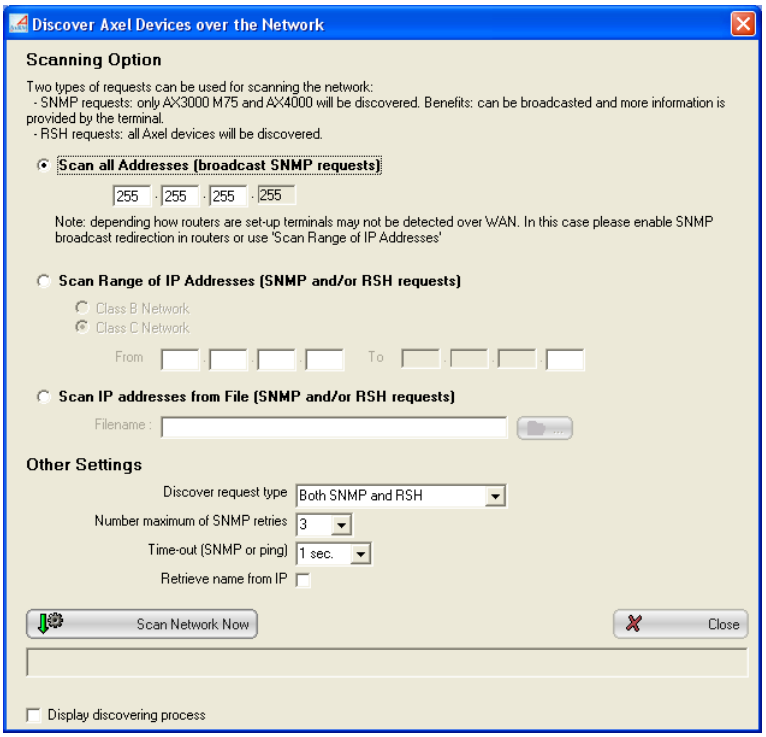
4.3.2 - Scanning for Terminals

The automatic scan adds all terminals found on the network to the database

The function is invoked from the horizontal menu **[Action]-[Discover Terminals]** or from the toolbar.

Here is the icon and dialog box:

icon



Three methods are available to scan the network:

- An SNMP broadcast is sent to the entire network.
- RSH and/or SNMP commands are sent to a range of IP addresses.
- RSH and/or SNMP commands are sent to IP addresses contained in a text file.

For these methods the setting 'Retrieve name from IP" can be used to obtain the device's DNS name. Tick this parameter only when one DNS server is available or the scan may take a very long time.

a) Scan via SNMP

The main benefit of SNMP is its speed. One SNMP request is sent to all the terminals simultaneously. But this may be limited to the LAN (depends on router configuration)

b) Scan via Range of IP Addresses

IP addresses tested by AxRM depend on both the range and the network class:

- Class C: the beginning and the end of the range are given by byte 4.
- Class B: the beginning and the end of the range are given by byte 4. But for each value of byte 3, AxRM tests all values of byte 4.

With this method the following actions are performed on each IP address

- Address pinged to check device presence.
- SNMP request (if enabled): obtains MAC address and firmware version.
- RSH command (if enabled): obtains MAC address and firmware version.
- In the event of problems with the RSH command the MAC address can also be obtained from the ARP table (only for LAN).

The time taken to execute this command will be relatively long

c) Scan via IP Addresses contained in a text file

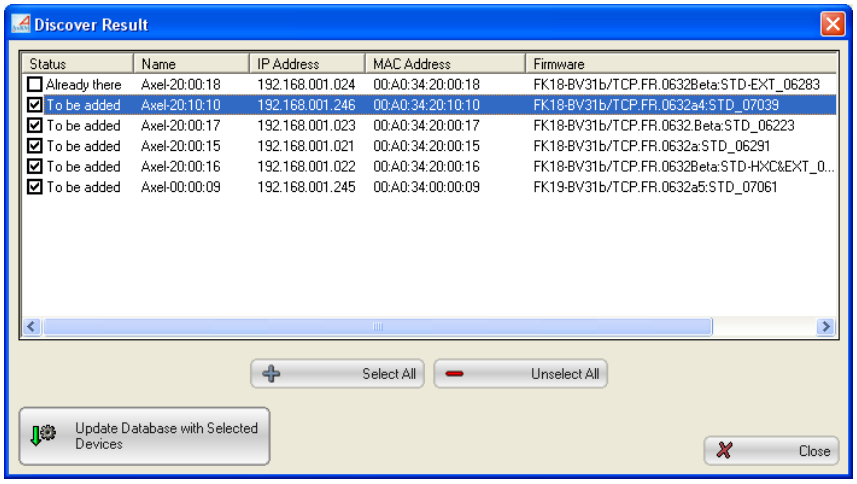
Each line of this text file can contain:

- Either 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 for this method are the same than the previous method.

d) Adding terminals to the Database

After the scan all terminals discovered are listed:



The status is given for each terminal:

- 'To be added': The terminal is not already entered in the database
- 'To be updated': The terminal is already entered but its details have changed.
- 'Already there': The terminal is recognized.

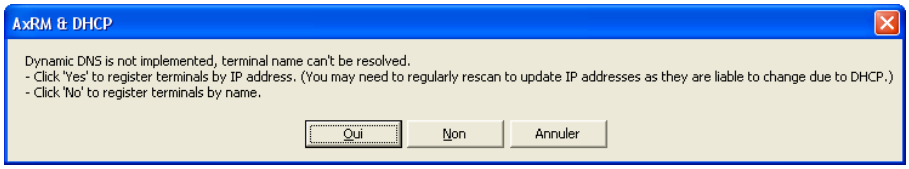
For each terminal a check box is available. Only the ticked terminals will be added to the database.

Note: when a terminal with a dynamic IP address is discovered by the SNMP protocol it is added to the database with its name as its unique identifier. (This name is a DNS name).

Note about terminal with a DNS name:

This requires DDNS to be setup (Dynamic DNS) - where the terminal (or DHCP) informs the DNS server of the DNS name of new devices. If DDNS is not used the Axel name will not be recognized on your network and the terminal will not be accessible.

Before the update of the terminal database, AxRM checks if the terminal name can be resolved. In event of failure the following box is displayed:



If 'Yes' is selected, terminals will be recorded with their IP addresses. This has a risk in that due to the dynamic nature of DHCP, the terminal may get a different address at some point in the future. In this situation the network will need to be rescanned to reflect the new IP address.

For more information about the DHCP terminal management, please consult the Appendix A.6.

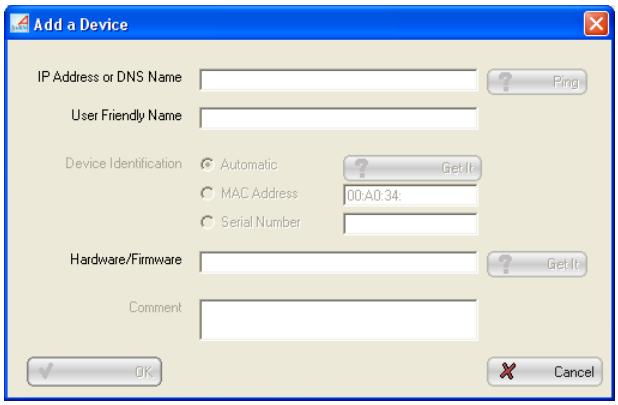
4.3.3 - Adding Terminals Manually

A terminal can be added manually to the database. In this case certain information is required.

Access to this function is by the horizontal menu **[Action]-[Add device]**, by the contextual menu or by the toolbar.

Here is the icon and corresponding dialog box

icon



The following information is required:

- **IP address or DNS name**: (mandatory) to identify and verify the terminal on the network with ping.
- **User Friendly Name** (optional)
- **Identification**: (mandatory for admin functions - not mandatory to enter in database). Enter either serial number or MAC address, this is used to identify terminal then press “Get It’ button to get details directly from the terminal or manually enter details.
- **Hardware/Firmware**: this value can only be obtained by the button '?' located on the right.
- **Comment**: free field for user comments.

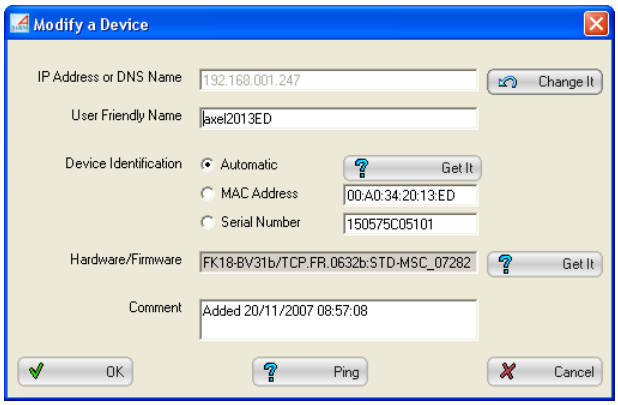
After validation the terminal is added to the current location in the database.

4.3.4 - Modification

Terminal characteristics can be changed from the Horizontal menu **[Action]-[Edit this device]**, or the contextual menu or the toolbar or by double clicking on the left panel on the terminal to be modified.

Here is the icon and corresponding dialog box

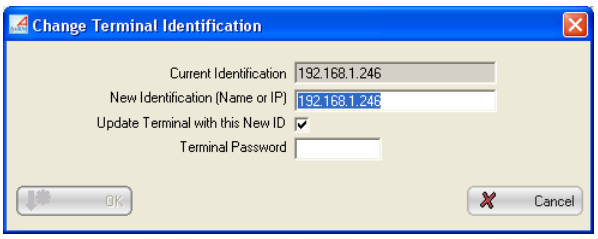
icon



Note: for more information about this dialog box, please see the previous chapter.

To modify the 'User Friendly Name', the 'Device Identification' or the 'Comment' simply enter the new value.

To modify the "**IP Address or DNS Name**" click the **[Change it]** button. The following dialog box is displayed:



Enter the new DNS name (or IP address) and click **[OK]** to update the database.

If the "**Update Terminal with this new ID**" tick box is selected the terminal will be updated and rebooted (confirmation will be requested). This allows the terminal to be synchronized with the AxRM database. Enter the **'Terminal Password**' if required.

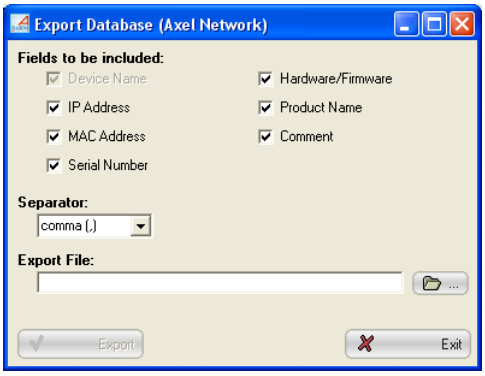
4.4 - IMPORT/EXPORT FUNCTIONS

The Import/Export functions are available through the **[File]-[Import/Export]** menu.

4.4.1 - Exporting the Database

The database can be exported as a text file compatible with Notepad, Excel, etc.

Select **[File]-[Import/Export]-[Export Database]**. The following dialog box is shown:



Select the fields to be imported. Only the terminal name is mandatory.

The de-limiter can be a comma, semi colon or tab as selected.

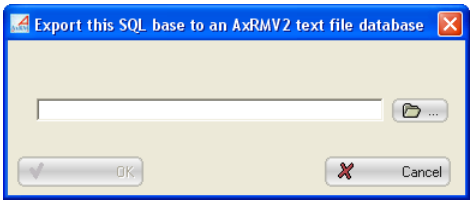
After entering name and location for the file press **[Export]**.

The export function is performed from the current folder of the database tree structure (shown in the windows title bar).

4.4.2 - Exporting an SQL Base to a 'Text File' Base

The content of the SQL base can be exported to an AxRMV2 text file.

Select the **[File]-[Import/Export]-[Export this SQL database to a text file database]** menu. The following dialog box is shown:



After the file selection and the confirmation the SQL database is exported.

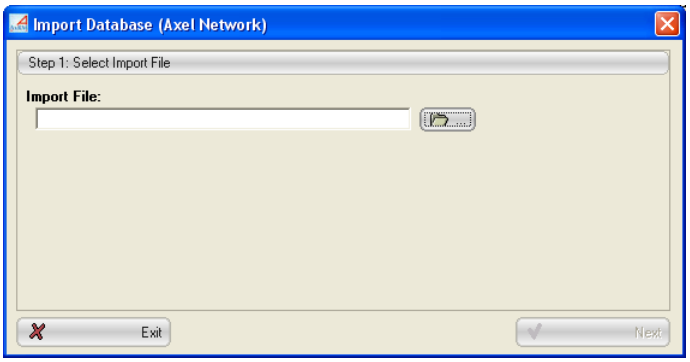
4.4.3 - Importing a 'Text File' Base to an SQL Base

A previously exported V2 database (see Chapter 4.4.1) can be imported to the current database.

Select the **[File]-[Import/Export]-[Import a text file database to this SQL database]** menu.

a) Step 1 - Selecting Import File

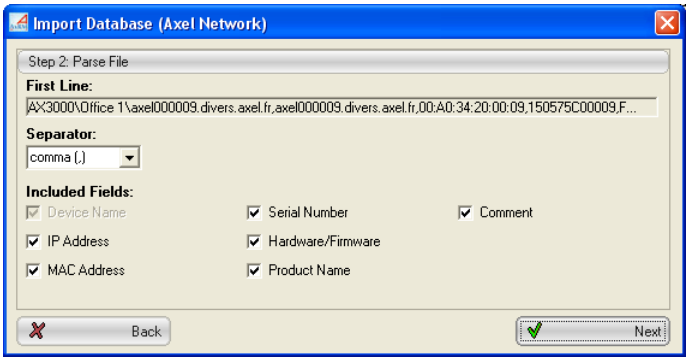
The following dialog box is shown:



Select the import file then press **[Next]**.

b) Step 2 - Parsing the file

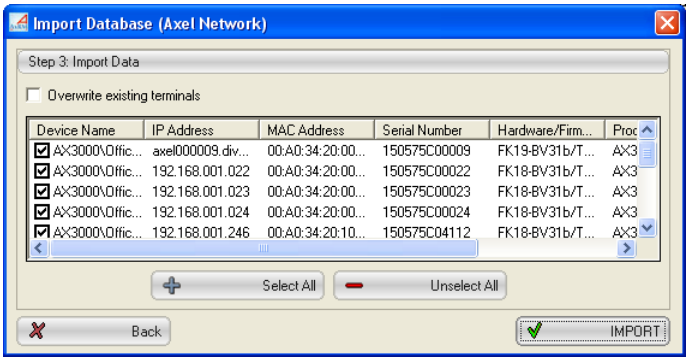
A new dialog box is shown where the first line of the Import file is displayed. From this line, AxRM detects the separator and the required fields:



The fields offered by AxRM can be changed. Then press **[Next]**.

c) Step 3 - Importing Devices

Terminals contained in the Import file are displayed:



Press **[IMPORT]** to start operation.

Only selected terminals are imported. AxRM determines if the terminal already exists in the database by its MAC address:

- New terminals: added to the database from the current folder of the database tree structure (shown in the windows title bar). If required, sub-folders may be created.
- Existing terminals: the update is done at the current location of this existing terminal. (Only if "Overwrite existing terminals" is set)

A summary is displayed at the end of this operation.

4.4.4 - Importing a Generic Database

A text file (compatible with Notepad, Excel, etc) can be imported in the current AxRM database.

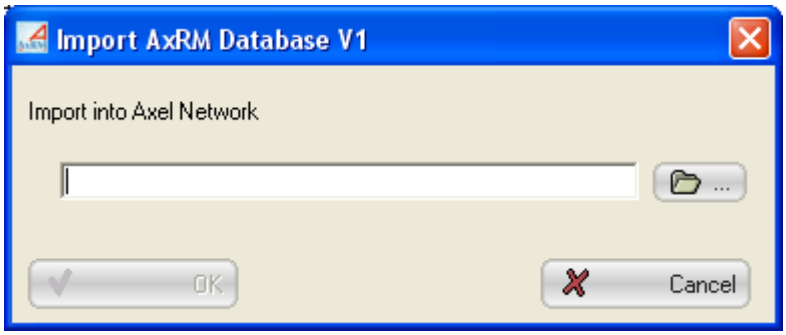
Select the **[[File]-[Import/Export]-[Import a Generic Database (text file)]** menu.

The operations are the same than thus described in Chapter 4.4.3

4.4.5 - Importing "AxRM V1" Database

The format of the database generated by the previous version of AxRM (V1) is not compatible with V2.

However the V1 database can be imported and converted using the **[File]-[Import/Export]-[Import AxRM V1 Database]** command. The following dialog box is shown:



The content of the V1 database is added in to the current folder of the database tree structure. The possible 'groups' of the V1 database are added as folders.

4.4.6 - Importing Devices Discovered with Auto-Configuration

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

To update the terminal database with this new information, use the **[File]-[Import/Export]-[Import Devices Discovered with Auto-Configuration]** command. After confirmation the importation is processed:

- New terminals are added to the current folder of the database tree structure.
- Existing terminals are updated.

4.5 - REFRESHING TERMINAL DATABASE

This function allows entries for existing terminals' in the database to be updated:

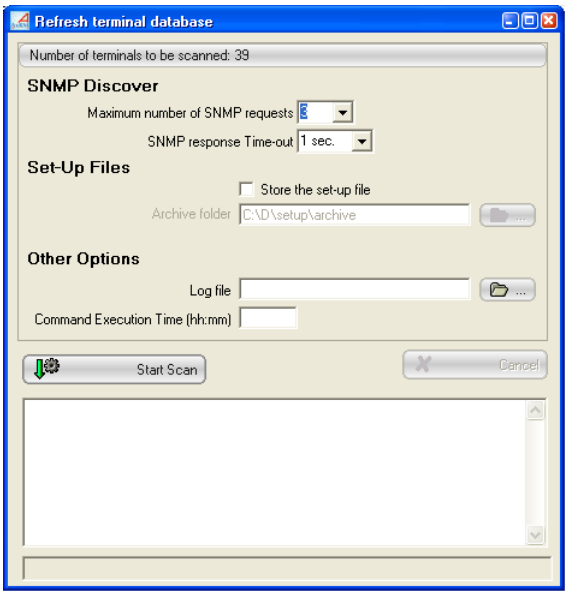
- Terminal information (terminal name, firmware revision…) is refreshed.
- And the terminal set-up can be optionally collected.

Note: this function will not discover new terminals. Only existing terminals in the database will be scanned.

The function is invoked from the horizontal menu **[Action]-[Refresh terminal database]** or from the toolbar.

Here is the icon and dialog box:

icon



Note: at the top of the box, the number of terminals to be scanned is given. These terminals are also displayed in the right panel of AxRM console before selecting the Refresh Database command.

4.5.1 - SNMP Discover

The scenario is the following: a unicast SNMP request is sent to each terminal. If no response is received before the "**SNMP response Time-out**" expiration another request is sent. Until the "**Maximum number of SNMP requests**" is reached or an SNMP response is received.

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

4.5.2 - Set-Up Files

With this function, terminal set-up files can also be collected. Just specify the "Archive Folder".

The set-up 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.

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

- 5 -
TERMINAL ADMINISTRATION

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

The administration of a terminal or a group of terminals is composed of two phases:

- Selection of the terminal(s)
- Selection and order of actions.

5.1 - SELECTION OF ONE OR MORE TERMINALS

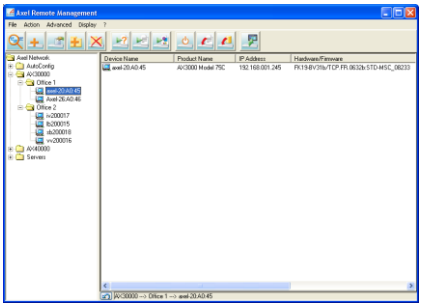
Most of the management commands can be executed on one or multiple terminals with one click.

The terminal database is displayed on two panels:

- Left panel: the tree structure itself. This tree structure is made up of directories and terminals. In this part only one element can be selected.
- Right panel: this list contains the terminals depending on the element selected in the left part

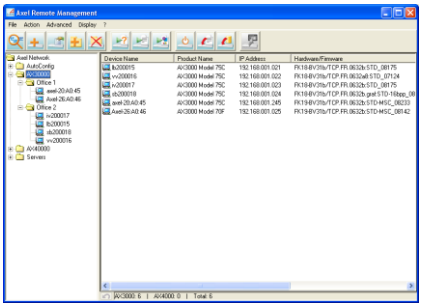
Examples according to the type of element selected in the tree structure:

A single terminal is selected:



Terminal selected is shown in right field

A directory is selected:

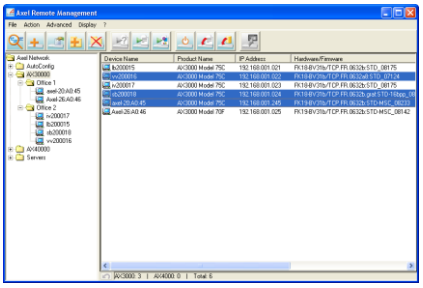


All terminals selected are shown in field on the right.

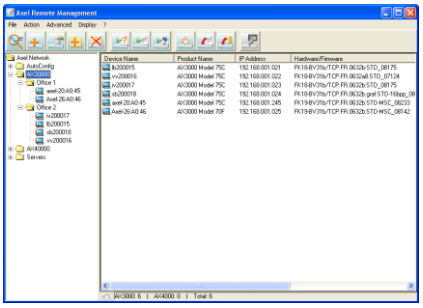
When a directory is selected in the left panel, it is possible to select one or more terminals in the right panel. This selection obeys the following rules:

- **<Left Click>**: only the clicked terminal is selected.
- **<Ctrl><Left Click>**: the terminal clicked is added to those already selected
- **<Shift><Left Click>**: all terminals between the current selection and previous selection are selected.

Examples:



The command is performed on the terminals selected



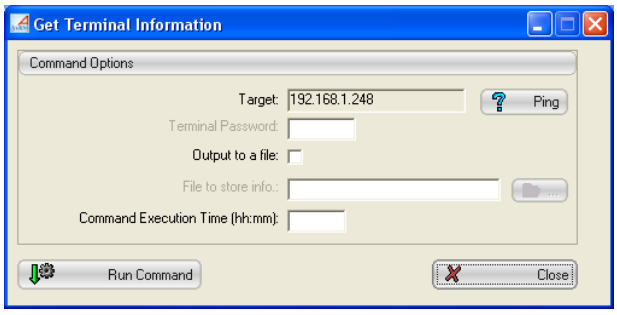
The command is performed on all the terminals on the right

Once selection is made use the contextual menu or toolbar buttons to choose and carry out operations required.

5.2 - EXECUTION OF ADMINISTRATION COMMANDS

The selection of a command is carried out from the horizontal menu **[Action]-[Terminal commands]**, by the contextual menu or one of the toolbar buttons

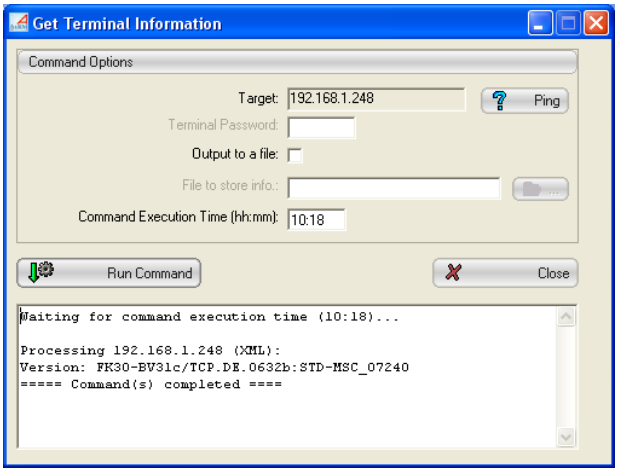
Apart from the 'Get Terminal Information' command, all the other dialog boxes of the commands are similar to the example below:



In this dialog box following items are displayed:

- "**List of targets**": this field shows terminals *previously* selected to be operated on.
- The **[Ping]** button makes it possible to check the accessibility of the selected terminals.
- The "**Password**" field for entering terminal password if required.
- The "**Command Execution Time**" allows command to be run at a given time. If this field is empty the command is run immediately.
- The other fields are parameters specific for the command selected.

During the execution of the command (click **[Run Command]**) the dialog box shows the status of the command.



Depending on the command further information is available by pressing the button at the bottom of the window. (I.e. above pressing 'Display Terminal Information').

The various commands and associated parameters are described later.

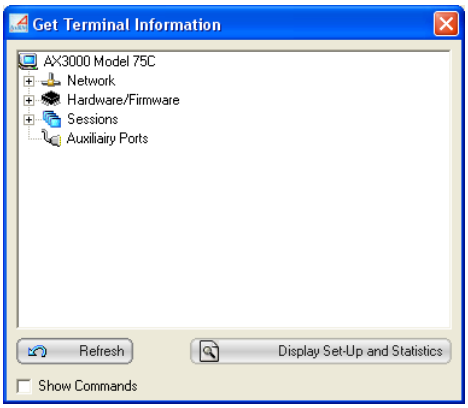
5.2.1 - Get Terminal Information

This command displays a terminal configuration summary and the status of connected sessions.

Note: this command is processed immediately when the dialog box is displayed.

Below is the icon and corresponding dialog box:

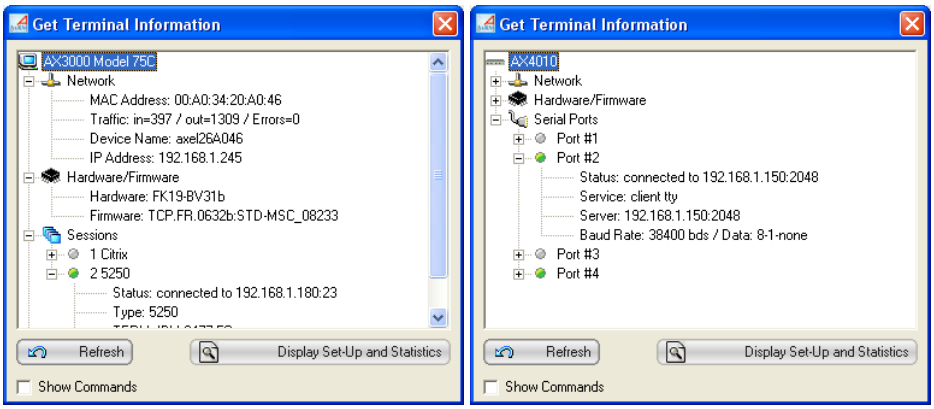
icon



Note: the displayed information is obtained by running automatically three administration commands: getting firmware revision, getting terminal configuration (See Chapter 5.2.3) and getting terminal statistics (see Chapter 5.2.2).

The terminal configuration is shown in a tree structure. Click on '+' icons to expand it.

☺: for each screen session and each auxiliary port an indicator shows the connection status (green when connected, gray when not connected). For example:

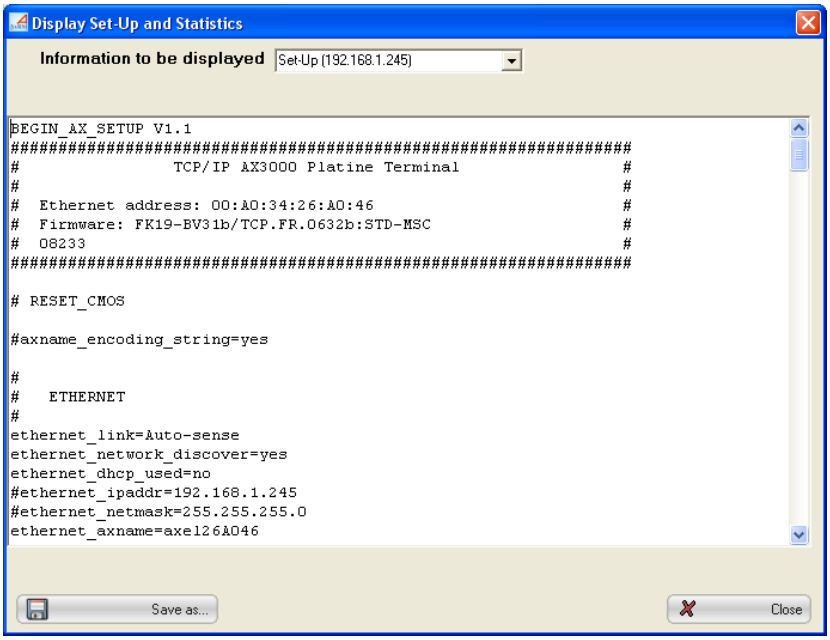


AX3000 Thin Client AX4000 Office Server

Use the **[Refresh]** button to run again the 'Get Terminal Information' command.

The '**Show Command**' option allows the administration commands to be displayed on a status box.

The **[Display Set-Up and Statistics]** shows dialog box where the set-up data and the statistics data can be consulted and saved onto the disk. For example:



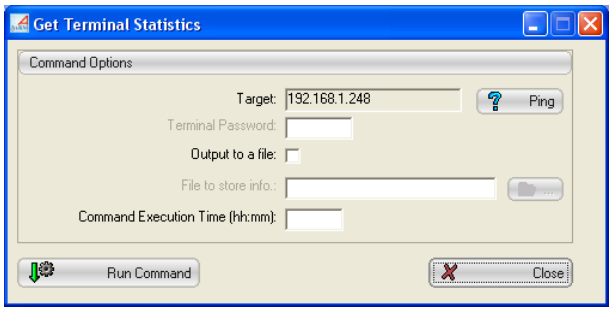
Within this box click the 'Information to be displayed' list to select terminal set-up or the statistics to be displayed.

5.2.2 - Terminal Statistics

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

Below is the icon and corresponding dialog box:

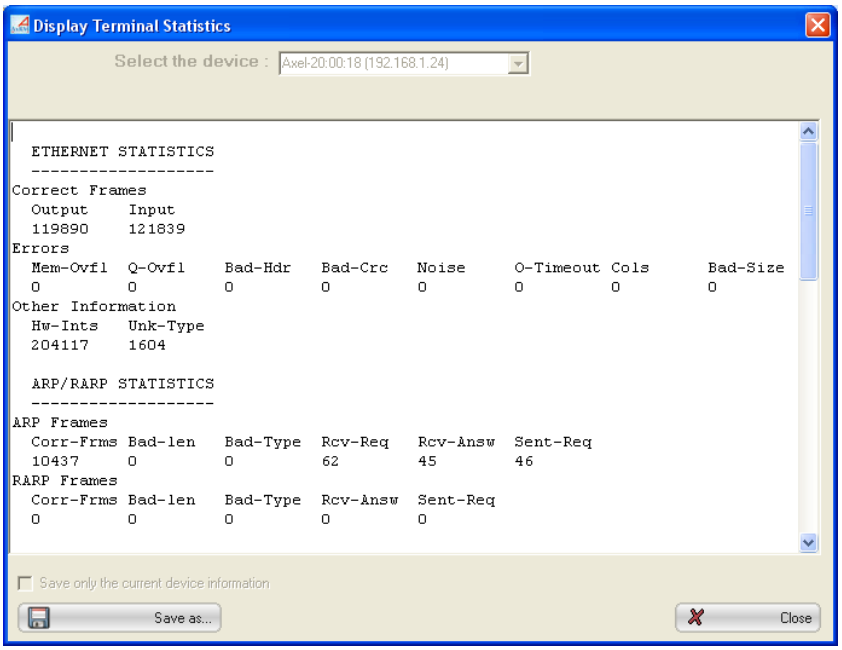
icon



To save this information in a file, tick the "**Output to a file**" box and provide a name in the field "**File to store info.**".

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

This command displays the statistics in a new window as shown below:



In this example statistics for several terminals are displayed. (Terminals shown in the 'Select the Device' window)

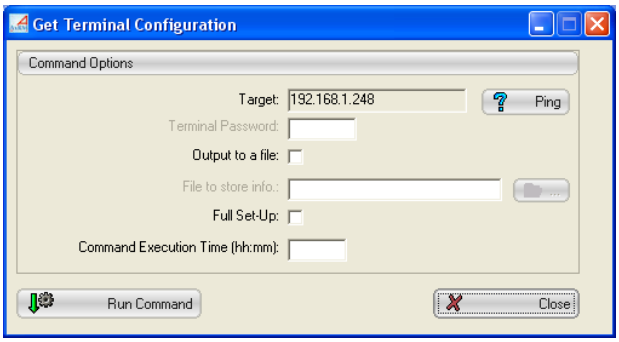
Click **[CLOSE]** or **[SAVE AS...]** depending if you wish to save the data or not.

5.2.3 - Get Terminal Configuration

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

Below is the icon and corresponding dialog box:

icon

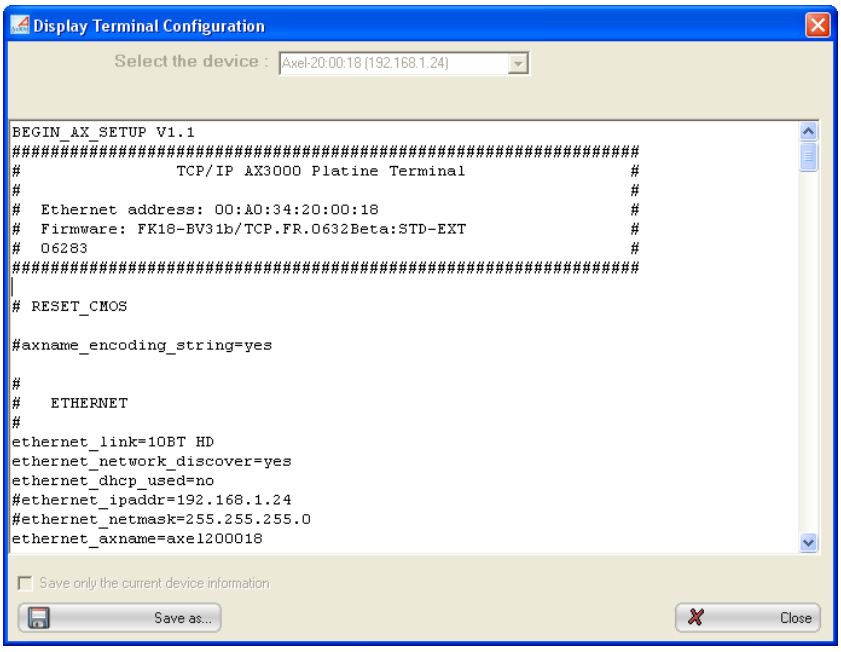


To save this information in a file, tick the "**Output to a file**" box and provide a name in the field "**File to store info.**".

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

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

Below is an example of the setup data file of a terminal:



If multiple terminals are selected use the ‘Select the Device’ option to choose an individual terminal.

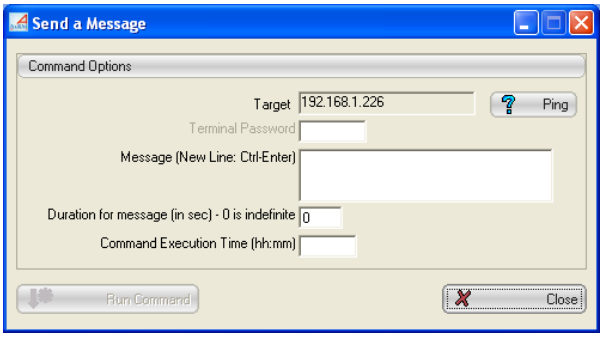
Click **[CLOSE]** or **[SAVE AS...]** depending if you wish to save the data or not.

5.2.4 - Sending a Message

A message can be sent to one or multiple terminals.

Below is the icon and corresponding dialog box:

icon



The 'Duration of message' sets the length of time the message is displayed. If set to Zero the message is displayed until the user clears it.

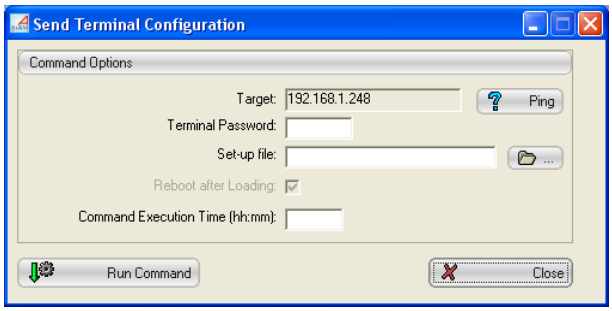
5.2.5 - Configuring the Terminal

AxRM lets a pre-defined setup file be applied to the terminal. This setup file is obtained beforehand from an already configured terminal (see chapter 5.2.3), written from scratch with a text editor, or obtained from an existing terminal and modified to suite with a text editor.

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

Below is the icon and corresponding dialog box:

icon



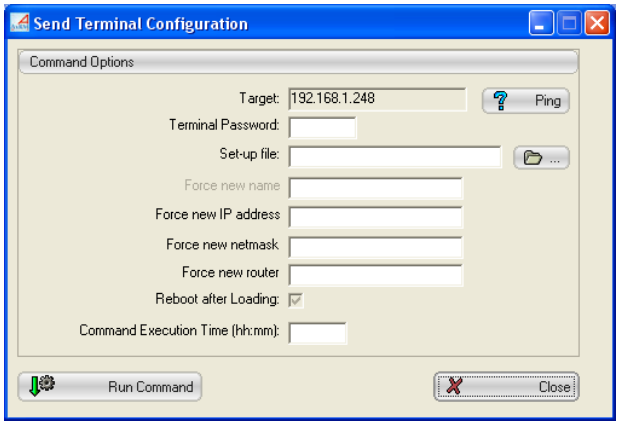
The name of the set-up file must be given in the "**Set-up File**" field.

Note: the [...] button can be used to navigate to the location of the setup file.

The "**Reboot after command**" box is always ticked. (The terminal will automatically reboot after receiving the new configuration and register the new changes.)

Note: if the terminal is password protected the password must be entered in the "**Password**" field.

An enhanced dialog box is displayed if AxRM is set in this way (see Chapter 7.3.2, sub-chapter b). Additional parameters are offered by this box:



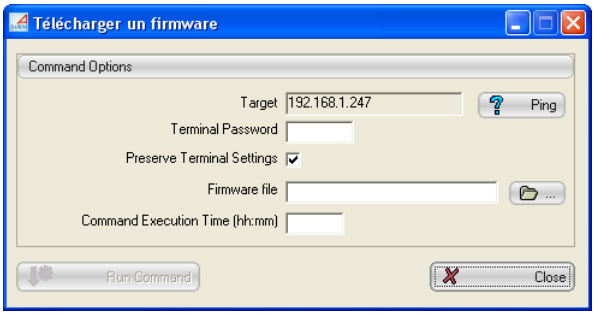
The fields "Force new name", "Force new IP address" and "Force new netmask" allow a 'common' set-up file to be sent to multiple terminals.

5.2.6 - Downloading Firmware

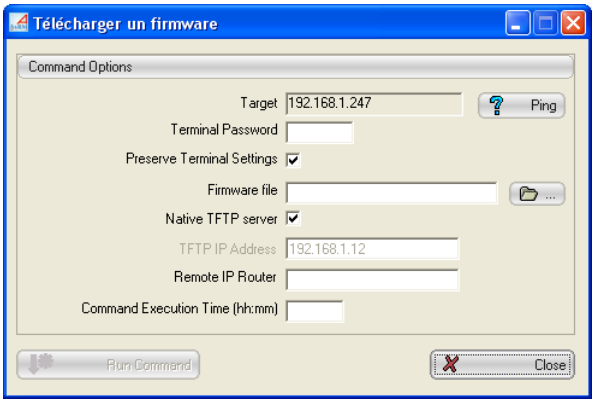
AxRM can be used to download firmware. This procedure uses an embedded TFTP server.

Below is the icon and corresponding dialog box. (This box depends on the selected administration protocol - See Chapter 7.3.2):

icon



"Only XML" Protocol



"XML& RSH" or "Only RSH" Protocols

The name of the firmware file must be entered in the **"Firmware filename**" field.

Note: the **[...]** button can be used to select the location of this file.

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

- Get Terminal Configuration (saved as a temporary file)
- Download Firmware
- Send Configuration (send file generated above)
- Reboot (the device).

For the "XML & RSH" or "Only RSH" protocols:

- The AxRM software uses the TFTP protocol. The embedded TFTP server can be used (recommended) but by unticking the "Uses native TFTP" box it is possible to use a separate TFTP server and enter the IP address of the TFTP server.
- If the Axel terminal and the AxRM machine are not on the same local area network, it is imperative to complete the "Remote Router IP" field. The address required is the IP address of the router on the side of the Axel terminal.

Notes:

1 - If the terminal is password protected the password must be entered in the "Password" field.
2 - The database is updated automatically if the auto-update function is enabled. (See chapter 7.3.4)

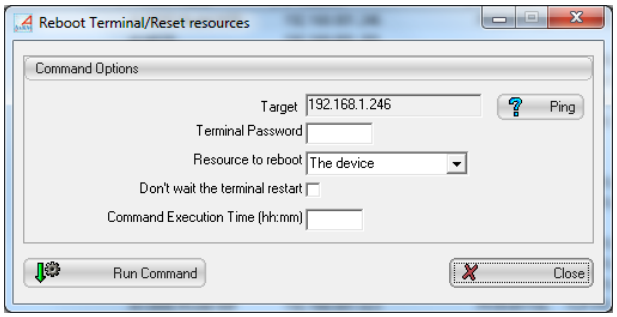
5.2.7 - Rebooting the terminal / Resetting a Resource

AxRM allows the administrator to:

- Reboot a terminal - equivalent to power cycling the terminal.
- Re-initialize a terminal resource (screen session, serial or parallel port).

Below is the icon and corresponding dialog box:

icon



Select the target from the "Resource to reboot":

- "**The device**": reboot of the complete terminal (equivalent to power cycle)
- "**Session 1**" to "**Session 8**": resets AX3000 individual session.
- "**Aux1 port**", "**Aux2 port**" or "**Parallel port**": resets AX3000 auxiliary port.
- "**NetX port**": resets AX3000 TCP Logical Port.
- "**UsbX port**": resets AX3000 USB Logical Port.
- "**Channel 1**" to "**Channel 8**": resets the Office Server AX4000 serial ports.

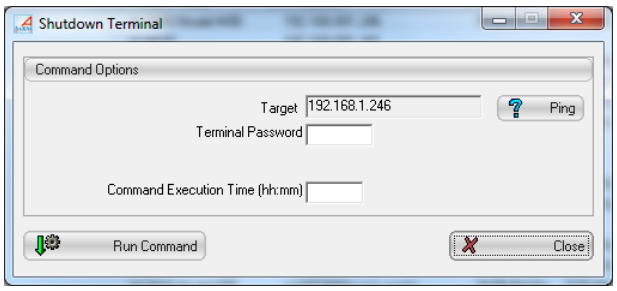
Note: if the terminal is password protected, the password must be entered in the "**Password**" field.

5.2.8 - Shutting Down the Terminal

Note: this command is only available for AX3000 models 90.

Below is the icon and corresponding dialog box:

icon



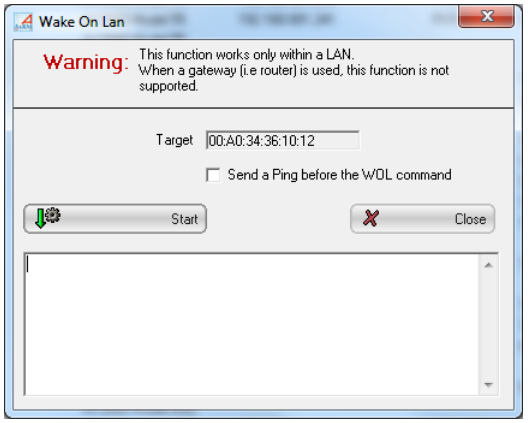
Note: if the terminal is password protected, the password must be entered in the "**Password**" field.

5.2.9 - Booting Up the Terminal (Wake On LAN)

Note: this command is only available for AX3000 models 90.

Below is the icon and corresponding dialog box:

icon



Note: this command works only within a LAN.

The UDP "Wake On LAN" command (magic packet) with the terminal Ethernet address is broadcasted.

Note: to check if the device is currently available (or not) a ping command can be sent before the "Wake On LAN" command.

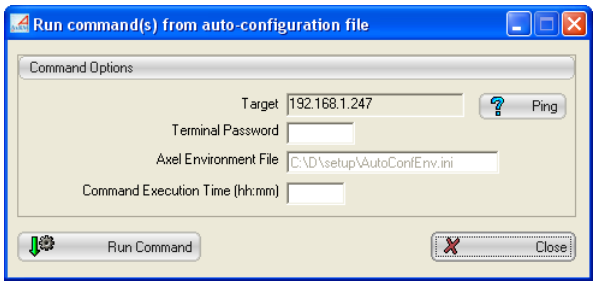
This command doesn't wait to check if the terminal is actually booted up.

5.2.10 - Running command(s) from Auto-Configuration File

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

Below is the icon and corresponding dialog box:

icon



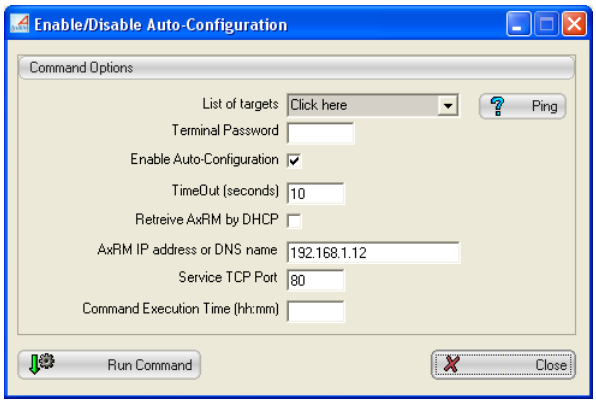
The name of the environment file is issued from the auto-configuration settings.

5.2.11 - Enabling/Disabling Auto-Configuration

AxRM can be used to enable/disable terminal auto-configuration feature.

Below is the icon and corresponding dialog box:

icon



This dialog box contains the terminal auto-configuration options.

A check-box allows the auto-configuration to be enabled/disabled.

The "TimeOut" 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 terminal continues the usual boot scenario).

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

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

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

5.3 - REMOTE ACCESS TO A TERMINAL

A remote access to a terminal is either taking the control of a remote terminal (see Chapter 5.3.1) or entering the interactive set-up of a remote terminal (see Chapter 5.3.2).

This function is launched via the toolbar button, the contextual menu, or via **[Action]-[Terminal commands]-[Remote Access]** and gives direct accesses to the terminal over network.

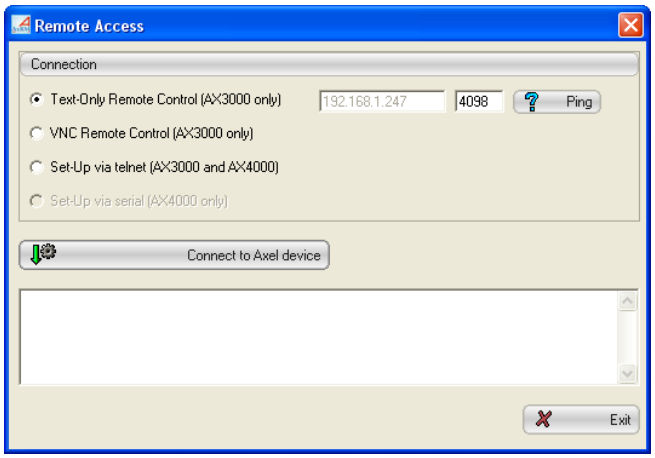
☺: The remote access is also offered by a separate software (Axel Viewer) installed in the same time than AxRM.

Only one terminal can be accessed at a time.

Note: these remote access functions can be enabled/disabled through the terminal set-up.

Below is the icon and corresponding dialog box:

icon



5.3.1 - Text-Only Remote Control

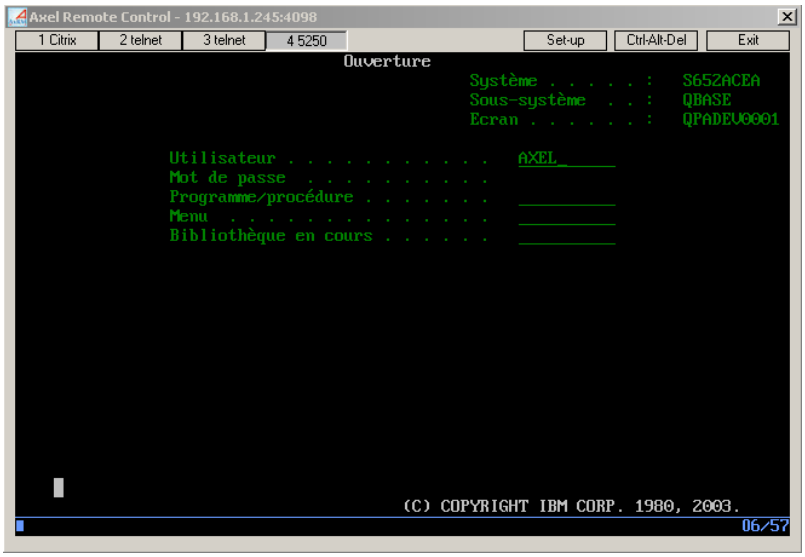
This functionality allows an administrator to remotely take control of a terminal. The administrator can passively watch the users screen or actively take control with his own keyboard for various support or administration purposes.

Supported products: AX3000 Models 65C and AX3000 Series 7, 8 & 9.

To open a 'remote control' session:

- Select the 'Remote Control' connection type,
- Enter port TCP (default 4098),
- Click on **[Connect to Axel device]**.

A window showing the display of the Axel terminal is opened:



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

The buttons on the left are the terminal sessions. Click on of these buttons to switch the session.

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

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

The **[Exit]** button quit 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 terminal user may be requested to allow to remote control connection.

5.3.2 - VNC Remote Control

This functionality allows an administrator to remotely take the total control of a terminal (text and graphical modes).

Supported products: AX3000 Series 8 & 9.

To open a 'remote control' session:
- Select the 'VNC Remote Control' connection type,
- Enter port TCP (default 5900),
- Click on **[Connect to Axel device]**.

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

Access control capabilities (see the AX3000 User's Manual):
- The remote control can be password-protected.
- An authorization from the terminal user may be requested to allow to remote control connection. In this case the VNC client keyboard is disabled until the terminal user accepts the remote control.

The remote control console can be closed either by clicking the cross on the upper right corner or by pressing an optional and customizable keystroke (see AxRM preferences - Chapter 7.3.6).

5.3.3 - Interactive Set-Up

This functionality allows remotely entering the terminal interactive set-up.

a) Via the Telnet Protocol (AX3000 and AX4000)

Supported products: AX4000 Office Server, AX3000 Models 65C and AX3000 Series 7, 8 & 9.

To open a 'telnet set-up' session:
- Select the 'Set-up via telnet' connection type,
- Enter port TCP (default 4096),

- Click on **[Connect to Axel device]**.

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

Note: on the terminal side, the set-up is also displayed. But to avoid conflict the terminal keyboard is locked. The 'TELNET SETUP' label allows distinguishing 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 terminal. It is also possible to use a generic telnet client with the correct parameters (see chapter 7.3.6).

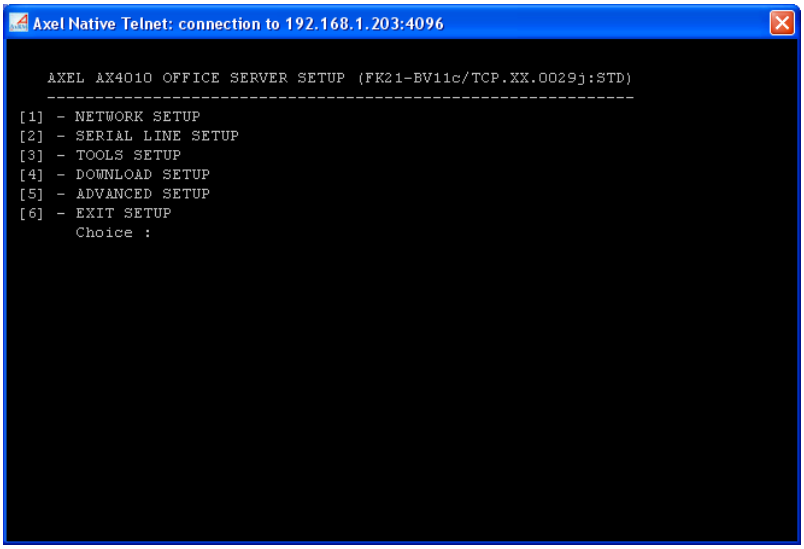
b) Via a COM Port (AX4000 only)

Supported products: AX4000 Office Server.

The AX4000 Office Server can also give access to the interactive set-up via a serial connection. To open a ' serial set-up' session on a Server Office:

- Select the "Set-Up via serial",
- Select the Windows port COM used,
- Click on **[Connect to Axel device]**.

An "empty" window is displayed. Actuate the "Admin Mode" switch on the back of the Server Office to enter the setup mode:



After exiting the set-up, click the cross (x) on the upper-right corner to close this window.

5.4 - MANAGING THE TERMINAL LOCAL STORE

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

- TSE License: sent by a TSE server.
- Logo: a JPEG bitmap (only one logo can be stored).
- Security Certificate: PFX, PEM, P12 and CER are supported.
- TSE Printer Configuration: sent by a TSE server.

This function is launched from the toolbar button, the contextual menu or by **[Action]-[Terminal commands]-[Manage AX3000 Store]**.

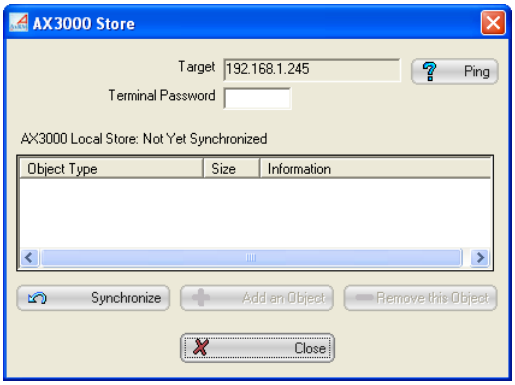
Notes:

- The AX3000 Local Store is not available when the administration protocol is 'RSH Only' (See AxRM Preferences - Chapter 7.3.2)

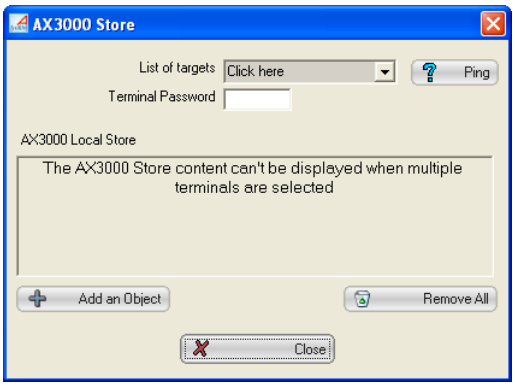
- The AX3000 Local Store command works with a single or multiple target terminals.

Below is the icon and corresponding dialog boxes:

icon

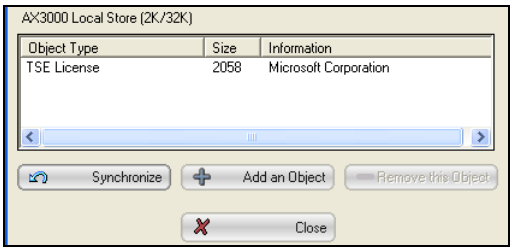


Only one terminal is selected



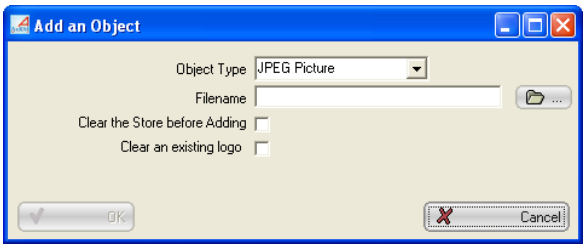
Multiple terminals are selected

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



5.4.1 - Adding an Object

To add an object, click the [Add an Object] button. A new dialog box is displayed:

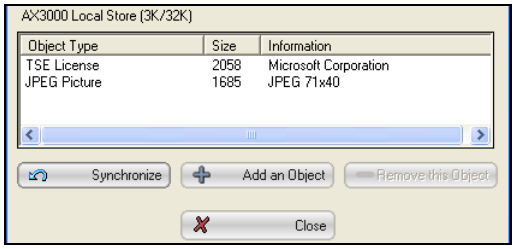


Parameters are the following:

- **Object Type**: "Picture" or "Certificate".
- **Filename**: click the 'File' icon to browse the disk.
- **Clear the Store before Adding**
- **Clear an Existing Logo** (only for the Picture type): only one logo can be stored
- **Certificate Type** (only for the Certificate type): select "Personal" or "Authority (CA)".
- **Certificate Friendly Name** (only for the Certificate type): this name is displayed in the "Information" field of the local store. This allows the certificate to be selected when needed.
- **Certificate password** (only for the Certificate type): this password is required for the certificate installation. If it's not given now, it will have to be given later from the terminal interactive set-up.

Note: adding an object is available only for AX3000 models 80 and 85.

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



5.4.2 - Deleting an Object

Note: only available when a single terminal is selected.

To delete an object, select it on the store content and click the [Remove this Object] button.

5.4.3 - Clear the Local Store

Note: only available when multiple terminals are selected.

Simply click the [Remove All] button.

- 6 -
AUTO-CONFIGURATION

This chapter describes the auto-configuration function.

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

On AxRM side terminal groups must be created. For each group, criteria of membership must be selected (terminal models, serial numbers...). And operations to be done must be defined (firmware upgrade, configuration update...).

Auto-configuration requests are sent by the terminal:

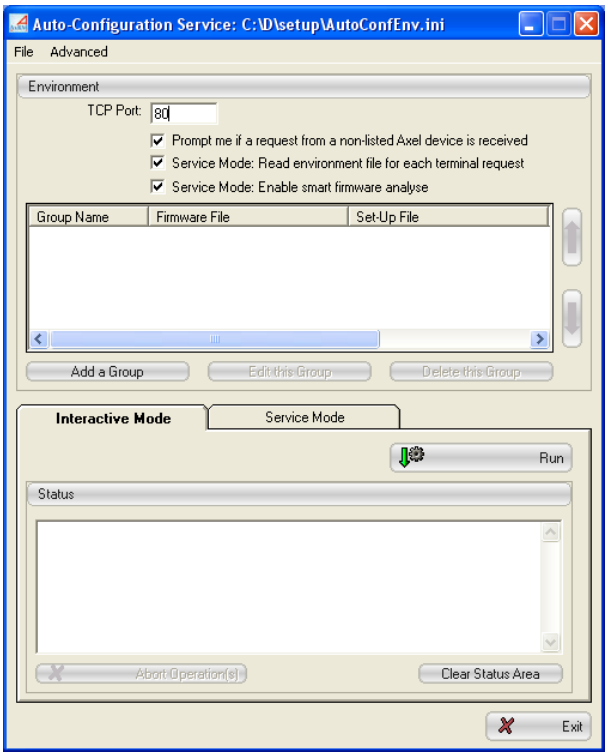
- Automatically at the very first power-on (i.e. Factory Settings),
- At each boot time (if this had been enabled in the terminal set-up).

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

Note: the auto-configuration function is available only on AX3000 Models 65C, 75, 75E, 75B, 75C, 75D, 80, 80G, 80WMS and 85.

6.1 - AUTO-CONFIGURATION SET-UP

The setup dialogue box is located in **[Advanced]-[Auto-configuration]**:



The TCP Port is the AxRM listens on for auto-configuration requests from terminals. By default the value 80.

6.1.1 - Use of Groups

Terminals can be sorted into multiple groups to allow different operations to be done:

A group is defined by:

- A name (user definable)
- A criteria of group membership:
  - By type (terminal model)

    - By FK code
    - By a range of serial numbers
    - By list of serial numbers
    - By subnet
    - All terminals
- The auto-configuration type. (Why the auto-configuration request had been sent?)
    - A new terminal (factory settings)
    - At each boot time
    - Any

Operations to be done are:

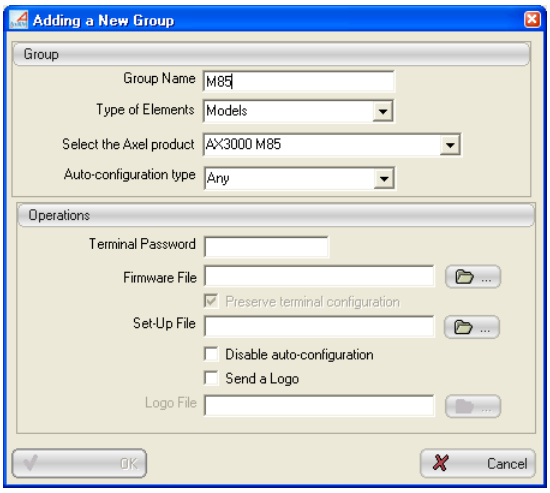
- Using a password (optional): if terminals are password-protected.
- Sending a firmware file (optional) with a 'preserve configuration' capability
- Sending set-up file
- Disabling the auto-configuration after a configuration is sent (optional)
- Sending logo file (optional)

To create a group, click on the **[Add a Group]** Button. The next dialog box differs according to the group selected.

Below are five examples of groups.

a) Type of model

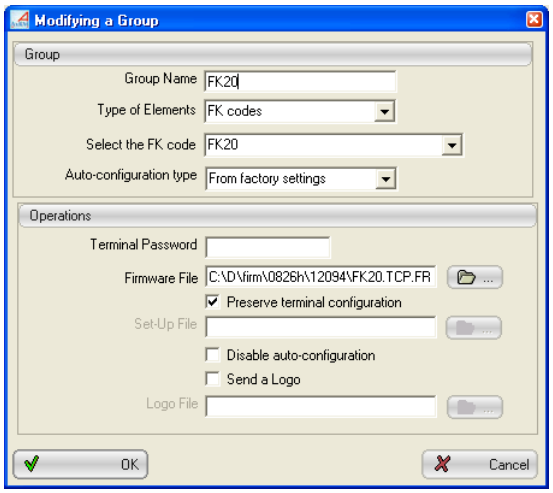
The "M85" group is associated with only a configuration file (no firmware will be sent). The membership criterion is the type of model. In this case when auto-configuration requests are received from an M85 the specified set-up file will be sent back.



b) FK Code

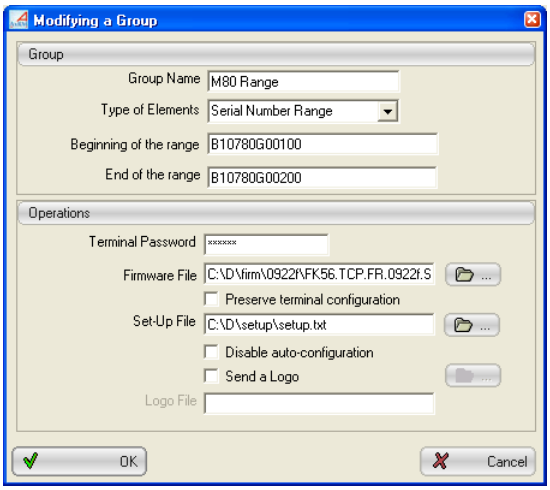
The FK code is the embedded terminal circuit board reference. For example M75, 75B and 75E were equipped with FK16. And M65C are equipped with FK20.

The "FK20" group is associated with only a firmware file (with the preserve configuration capability enabled). The membership criterion is the FK code. In this case when auto-configuration requests are received from an FK20 terminal the specified firmware file will be sent back.



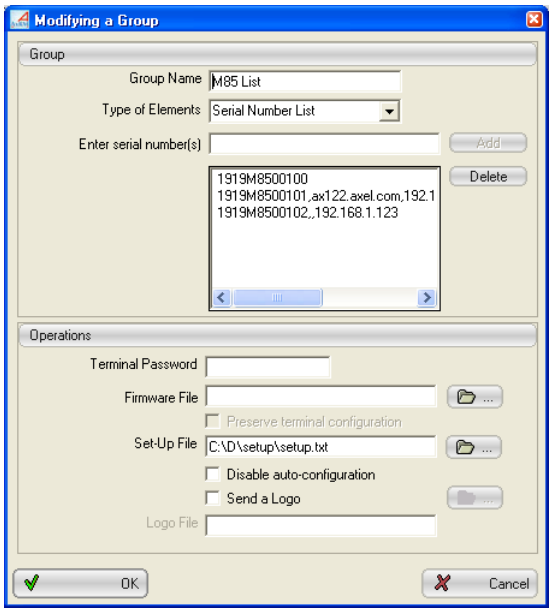
c) Range of serial numbers

The "M80 Range" group is associated with a firmware file and configuration file. The membership criterion is a range of serial numbers. In this case when auto-configuration requests are received from a terminal within the serial number range the specified set-up file and firmware will be sent back.



d) List of serial numbers

The "M85 List" group is associated with a set-up file. The membership criterion is the list of serial numbers. In this case when auto-configuration requests are received from a terminal with a specified serial number range the specified set-up file is be sent back.



Important: for each serial number entered in the list additional specific parameters can be provided in the following order: name of the terminal, IP address, network mask and router IP address. (These parameters are separated by commas.)

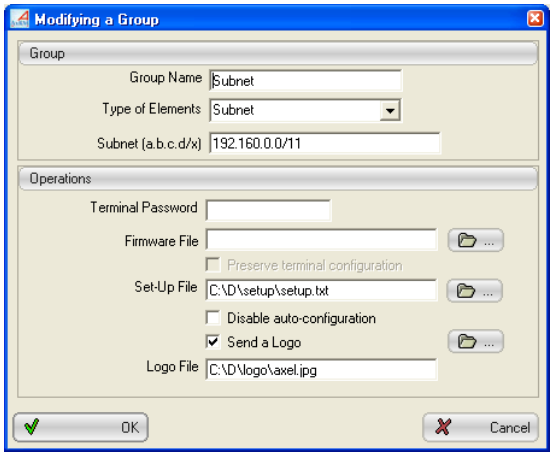
This optional information allows a common configuration file to be used whilst still being able to apply individual parameters specific to each terminal.

For example:

- `1919M8500101,ax122.axel.com,192.168.1.122`
  → Forces name and IP address
- `1919M8500102,,192.168.1.123`
  → Forces IP address

e) Subnet

The "Subnet" group is associated with both a set-up and a logo files. The membership criterion is a subnet:



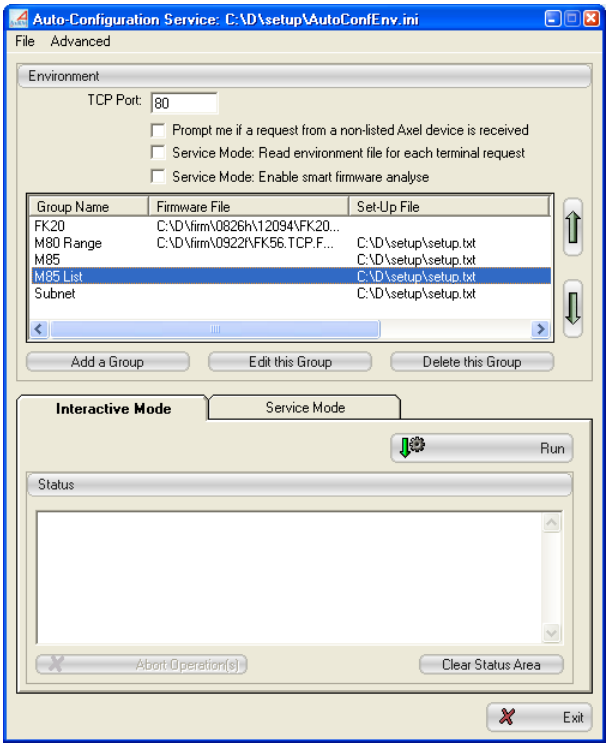
Note: a subnet is defined by both an IP address and a number of bits (consecutive bits in the netmask). In the example the number 11 is 255.224.0.0.

6.1.2 - Priority of the groups

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

For example serial number 1919M8500101 belongs to the group "M85" and "M85 List".

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)



6.1.3 - Manual management of an unknown terminal

The option 'Prompt me if a request from a non listed Axel device is received' will, if ticked, pops up a box where the configuration parameters can be manually entered. (An 'unknown' terminal is one not previously registered in AxRM). (See chapter 6.2.1)

This function is available only when using the Interactive Mode. See Chapter 6.2.

6.1.4 - Saving/Loading Environment File

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

These settings are automatically reloaded on startup.

Note: the checkbox "Service Mode: Read environment file for each terminal request" allows the settings to be modified without the need of stop and restart the auto-configuration service.

6.1.5 - Smart Firmware Analyze

This "Service Mode: Enable smart firmware analyze" option allows a firmware to be downloaded to a terminal only if this terminal is equipped with a different firmware.

6.2 - LAUNCHING THE AUTO-CONFIGURATION

To launch the auto-configuration select from the main console **[Advanced]-[Axel Auto-configuration]**.

Two modes are available:

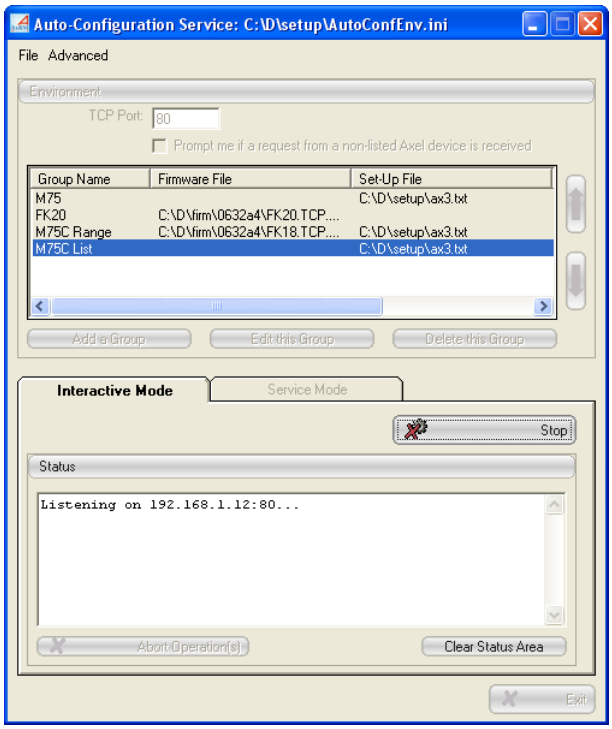
- Interactive mode: actions are performed and displayed in real time and the option "unknown terminals" is supported.
- Service mode: the auto-configuration service is run as a Windows service in the background. There is no need for the PC to be logged on. A log file is generated to view activity.

6.2.1 - Interactive Mode

The Interactive Mode can be started under the following conditions:

- At least one group is created/selected (see chapter 6.1.1),
- The unknown terminal option is enabled (see Chapter 6.1.3).

To start this mode, press the 'Interactive Mode' tab and click on **[Run]**:



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) Unknown terminal

If the terminal is unknown the behavior of AxRM depends on whether ‘activation of manual management’ is enabled (see chapter 6.1.3).

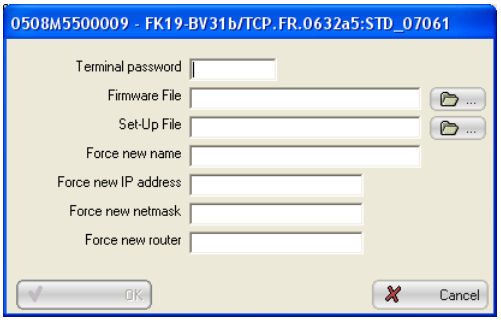
De-activated manual management (default)

If manual management is disabled the request is ignored and the status message below is given:

```
==== Connection from 192.168.1.220 ====
MAC Address: 00:A0:34:20:00:02
No group found.
==== Operation aborted. ====
```

Activated manual management

When activated the dialogue box below is displayed, allowing setup parameters to be manually entered:



The title of the dialogue box gives the serial number and firmware version of the 'unknown' terminal. The administrator can then enter the information specific for this terminal. On exiting, a group with name of the serial number of the terminal is created.

b) Downloading firmware

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

```
==== Connection from 192.168.1.220 ====
MAC Address: 00:A0:34:20:00:02
Selected group: M75

Processing 192.168.1.220 (XML):
Downloading firmware . . . . . .
OK
===== Command(s) completed =====
```

Once downloaded the terminal needs to reboot even though the auto-configuration process is not completed. (i.e. the configuration file is yet to be sent). After rebooting it does not send more auto-configuration requests.

c) Sending a configuration File

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

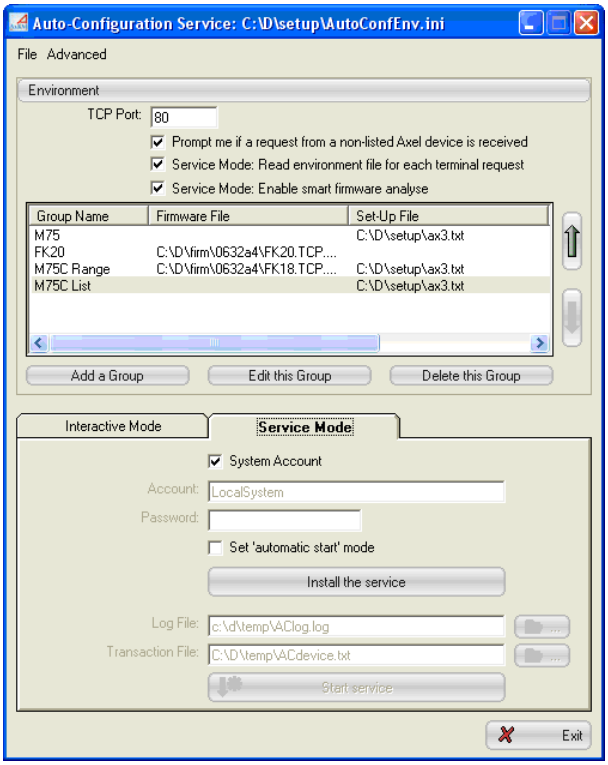
```
==== Connection from 192.168.1.220 ====
MAC Address: 00:A0:34:20:00:02
Selected group: M75

Processing 192.168.1.220 (XML):
Sending set-up
OK
===== Command(s) completed ====
```

When the entire process completes the terminal reboots and is ready for use.

6.2.2 - Service Mode

Select the 'Service Mode' tab:



IMPORTANT: with the service mode, no mapped network drive must be used for file location. (A network drive is created when the user logons. And there is no user logon with a service mode)

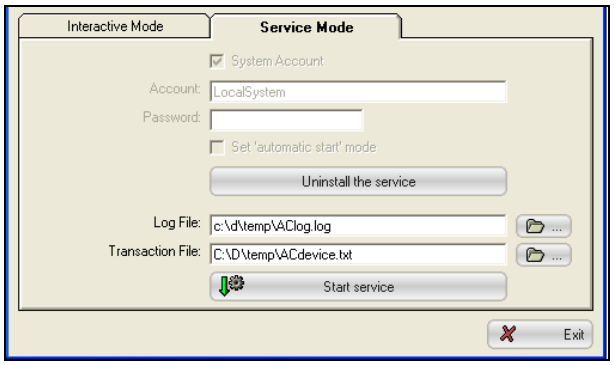
a) Installing the service

The first step is the service installation.

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

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.

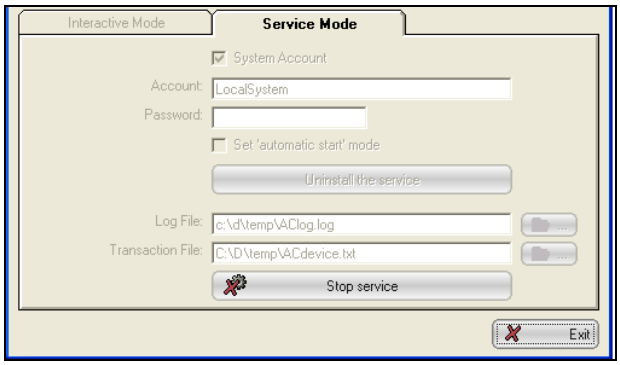


b) Starting the service

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 Terminal Database to be regularly updated. (See Chapters 3.4 and 4.4.4)

Click on **[Start service]**. When running only the **[Stop service]** button is available:

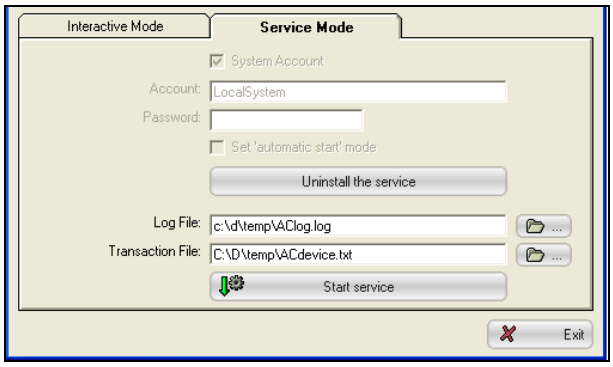


The service will remain running after exiting AxRM

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

c) Stopping the service

To stop the service click on **[Stop service]** (i.e. to change the environment file):

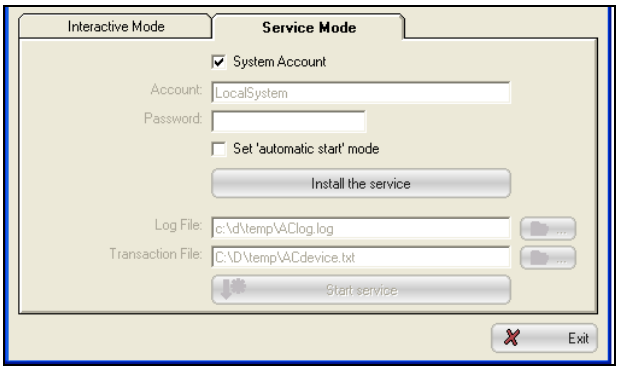


d) Uninstalling the service

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

IMPORTANT: Always uninstall the service before uninstalling AxRM.

Click on **[Uninstall the service]**:



6.3 - OVERVIEW OF ENTIRE PROCESS

When the terminal is switched on for the very first time, the auto-configuration function is automatically started. No human intervention is necessary.

The following happens:

- Terminal obtains an IP address by DHCP (optional).
- Terminal locates the AxRM server. (Via DHCP and DNS or by the terminal settings)
- Terminal sends auto-configuration requests.
- New firmware file received (optional).
- New configuration file received.

For more information on the behaviour of the terminal 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 terminal to already have a valid IP address.

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

Note: the serial number and the Ethernet address are given on the label on the bottom of the terminal.

Important: this function is only available if:

- The terminal 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).
- Firmware supports this function. (Firmware 0303a or higher for terminals or 9926a or higher for the Office Servers)

To launch this command select menu **[Advanced]-[Set an IP Address to a device]**:

Step 1 - enter new IP address IP to assign to the terminal

Step 2 - identify the terminal by either serial number of Ethernet MAC address

Step 3 - run command by pressing **[Set this IP Address to this Device]**

About "use the native ARP support": for Windows 95 and 95 or if multiple network interfaces are installed, it's recommended to uncheck this option (in this case a DOS command is used to address the ARP table).

After several seconds AxRM will confirm the command executed successfully as below:

Important: After the new IP address the terminal is automatically rebooted.

7.2 - USING BOOTP TO RELOAD FIRMWARE

7.2.1 - Basic Concept

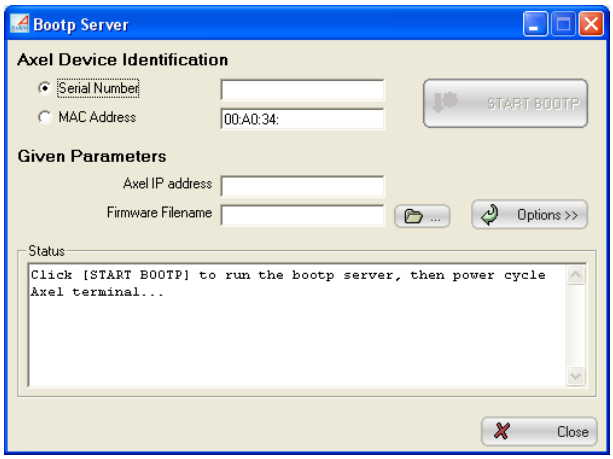
For certain Axel products firmware download comprises of a critical phase where the existing firmware is erased and the new firmware has not downloaded. If a problem occurs during this phase (i.e. network incident or corrupt firmware file) the Axel product can be left without valid firmware. In this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

The terminal sends out a BOOTP broadcast on the network to recover the parameters necessary download new firmware. These parameters are: terminal 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 reach the BOOTP dialogue box select: menu **[Advanced]-[Repair a device by BOOTP]**:



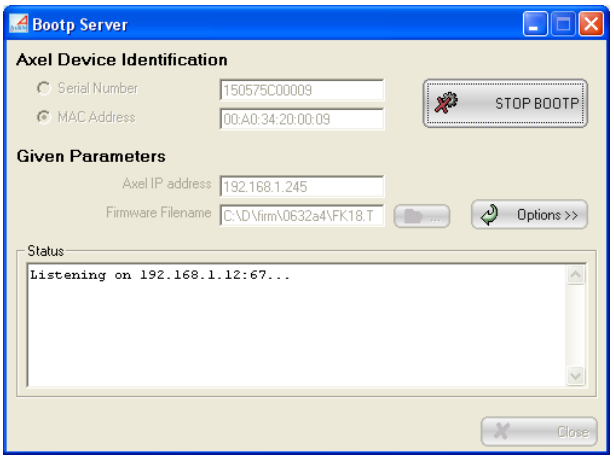
Select the method of identification (serial number or Ethernet address).

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

In this case, AxRM acts as both BOOTP server and a TFTP server 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:



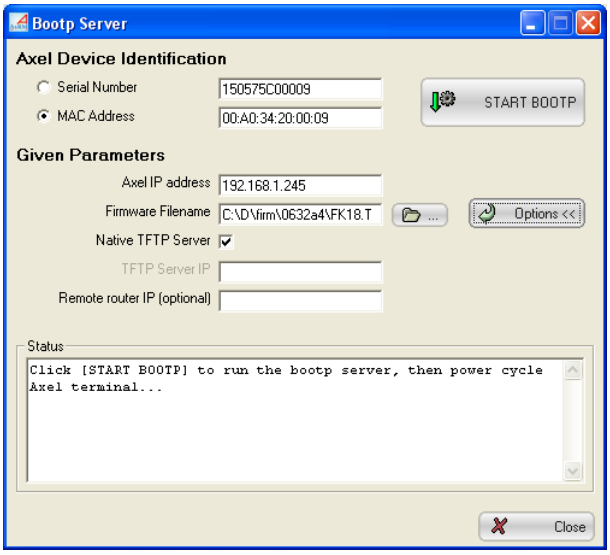
AxRM is now listening for BOOTP requests.

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

Power cycle the terminal 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 the BOOTP Server (Advanced)

The **[Options >>]** button gives access to the advanced settings:



To use a third party TFTP server (i.e. not the embedded AxRM TFTP server)

Untick the "Native TFTP Server" box and give the IP address of the third party TFTP server.

The terminal and AxRM are not on the same local area network

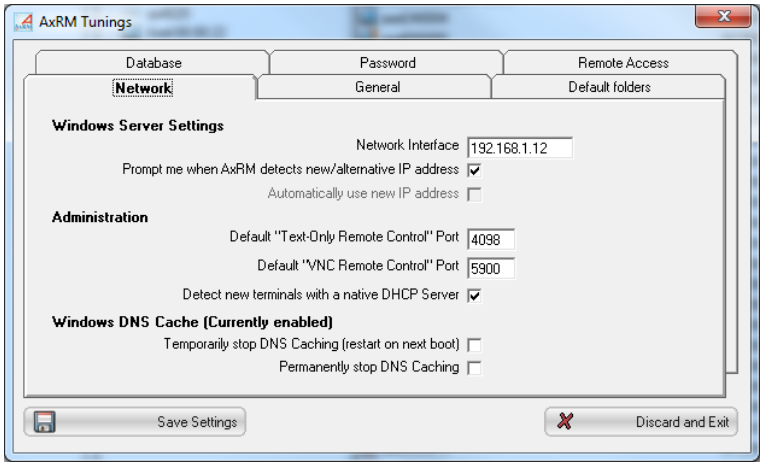
Enter the IP address of the router on the ‘other’ side in the "Remote Router IP" box.

7.3 - AXRM SETTINGS

To reach AxRM’s setting select **[File]-[Preferences]**.

7.3.1 - Network Parameters

Click on the "Network" tab for network parameters and to select language:



In order to work AxRM must know the IP address of its host Windows machine: "**Network Interface"**.

Note: by default the PC's first **"Network Interface"** IP address is selected. If more than one network interface is available this parameter must be modified manually so AxRM is connected to the same NIC/LAN as the terminal network.

Each time AxRM is run, the **"Network Interface"** value is compared with the current Windows IP address. If these addresses are different, the AxRM behaviour depends on the "**Prompt me when AxRM detects new/alternative IP address**" value:

- **Checked**: a warning message is displayed. The operator must select if the former IP address is overwritten by the new one.
- **Unchecked**: the former IP address is overwritten by the new one if "**Automatically use new IP address**" is checked.

Note: if the Windows IP address is given by DHCP, set AxRM to automatically use the new IP address. This will prevent a warning message being displayed each time AxRM is run.

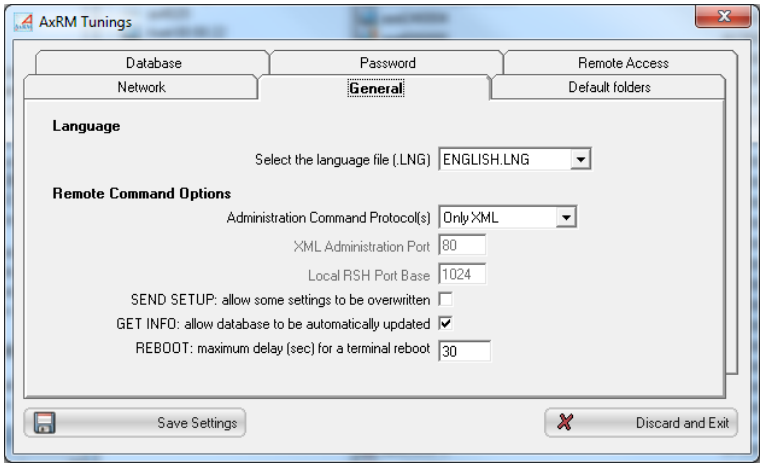
If needed change the **Default "Text-only Remote Control" Port** or **Default "VNC Remote Control" Port.** For more information see Chapters 5.3.1 and 5.3.2.

To detect new terminals, AxRM "listens" for DHCP requests sent by Axel terminals. The "**Detect New Terminals with a Native DHCP Server"** function is enabled by default. Disable this function in event of conflict with a DHCP/BOOT server already running on this machine (see Chapter 3.5).

DNS Cache: we strongly advise to disable the Windows DNS Cache when DHCP terminals are used (see Appendix A.6.2). The DNS service status (enabled/disabled) is shown. If enabled, the service can be temporarily or definitively disabled.

7.3.2 - General Parameters

Click on the "General" tab to select language and to set-up administration command options:



a) Language Selection

Select preferred language from list.

b) Command Options

The "**Administration Command Protocol(s)**" option is:

- XML and RSH,
- Only XML,
- Only RSH.

For the XML-based commands an **"XML Administration Port"** must be specified. The default value is 80. For more information see Appendix A.1.

For the RSH-based commands a local TCP port must be reserved. The **"Local RSH Port Base"** is the first value used by AxRM to find a free TCP port. This parameter can be modified in the event of a firewall preventing an RSH.

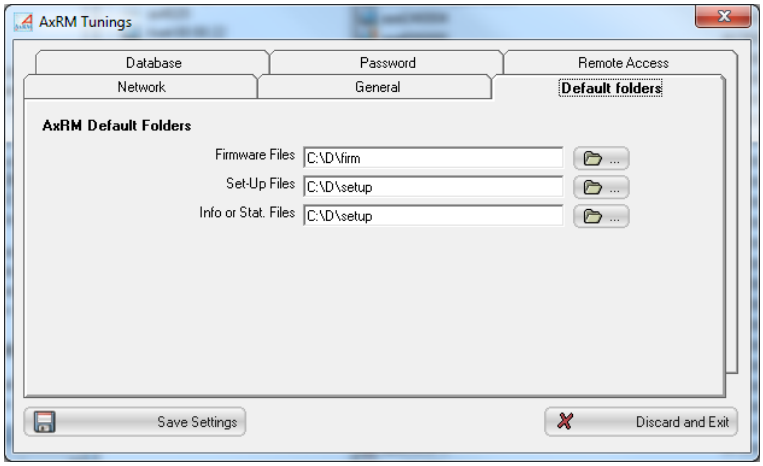
When the "**SEND SETUP**" box is ticked, an enhanced dialog box is available. This enhanced box offers additional parameters (Axel IP, Axel Netmask and Axel name) and allows a common set-up file to be used for setting up multiple terminals.

When the "**GET INFO**" box is ticked, the database is automatically updated when the "Get Terminal Info" command is run.

The "**REBOOT**" option allows the maximum delay for terminal reboot to be set.

7.3.3 - Default Folder Settings

Click on the "Default Folders" tab to access/change default file locations:

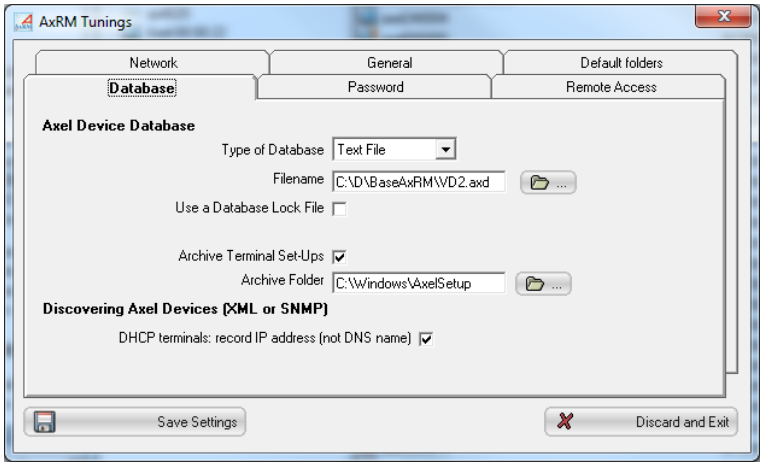


Three types of folders are shown:

- **Firmware Files**: Firmware files,
- **Set-Up Files**: configuration setup files
- **Info or Stat. Files**: files containing info and statistics.

7.3.4 - The Database

Click on the "Database" tab to access the database parameters:

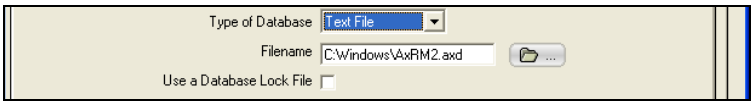


Two database types are available: Text-File and MS-SQL. For more information see sub-chapter a) and b).

Whatever the database type the following options are available:

- **Archive Terminal Set-Ups**: this function allows set-up files (received by the Get Set-Up command) to be automatically archived in the '**Archive Folder**'. A set-up file is saved as 00-A0-34-xx-yy-zz.txt. (This is the MAC address of the terminal.)
  The default 'Archive Folder' is "%SystemRoot%\AxelSetup".
- **DHCP terminals** when a terminal with a dynamic IP address is discovered (by XML or SNMP), the database is updated and the unique identifier of this terminal is its name. (The name is a DNS name). When this option is set the IP address is used as the unique identifier even though it's a dynamic IP address (and can't be guaranteed as the right IP address for this terminal).

a) Text-File Database



The database parameters are:

- **Database name** (by default: %SystemRoot%\AxRM2.axd).
- **Use a Database Lock File**. This function prevents two AxRM utilities working on the same database file at the same time. (To avoid database inconsistencies or data loss) When this function is enabled, a lock file is used. (The lock file name is the database filename ended by ".lock". The default lock file is "%SystemRoot%\AxRM2.axd.lock").

a) MS-SQL Database

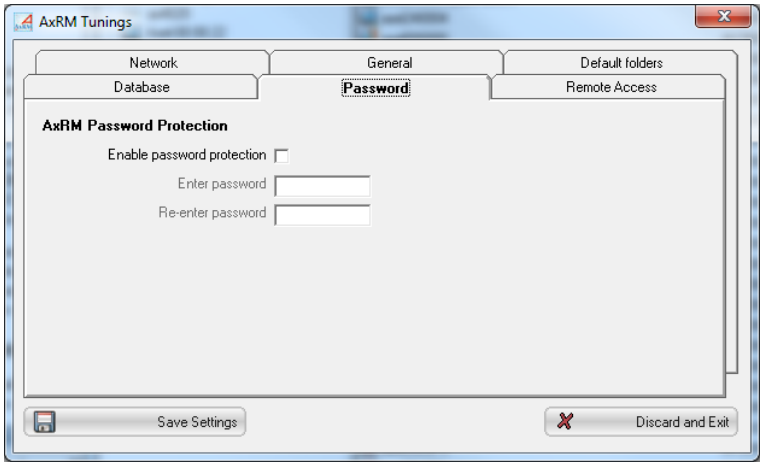
The database parameters are:

- **SQL Server Location**
- **Authentication:** username and password (this user must have 'database creation' permission)
- **Database Name**.

The [SQL Connection] 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.

7.3.5 - Using a password to protect AxRM

Click on the "Password" tab to access the password parameters:

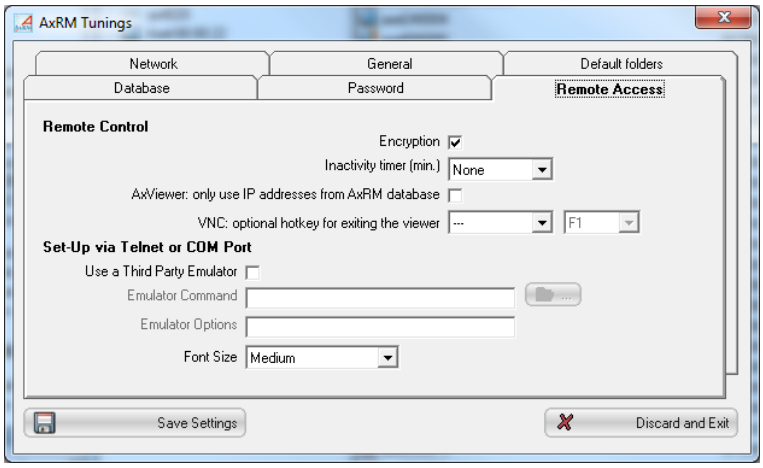


If necessary the control of AxRM can be controlled by a password. Select password and enter your chosen password.

The password is required the next time AxRM is launched.

7.3.6 - Remote Access

Click on the "Remote Access" tab to access the parameters for remote access features. (See Chapter 5.3):



a) Remote Control

The parameters are:

- **Encryption**: enabled by default.
- **Inactivity timer**: when a value is selected (from 5 to 30 minutes), the remote control session is disconnected after the timer expiration.
- **AxViewer: only use IP addresses from AxRM database**: AxViewer is separate remote control software. This option allows restricting devices addressed by AxViewer.
- **VNC: optional hotkey for exiting the viewer**: to provide a quick exit of the VNC console an hotkey can be selected.

b) Set-up via telnet or COM Port

To enter remotely the interactive set-up, AxRM offers an embedded emulator. We strongly advise to use this emulator. The single parameter is the font size.

To use a third party emulator, check the box "**Use a Third Party Emulator**" and enter the following information:

- **Emulator Command**: enter the pathname and the name of the emulator. (The **[...]** button allows to disk to be browsed).
- **Emulator Options**: enter the emulator parameters. The **%host%** and **%port%** substitution variables allows the Axel IP address and the set-up TCP port to be programmed.

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**.

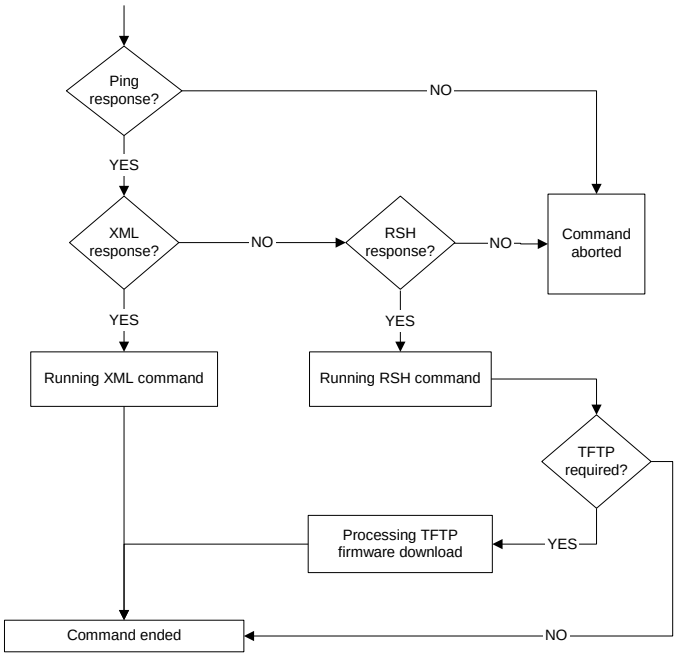
APPENDIX

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

A.1 - TCP/IP COMMANDS USED

A.1.1 - Flowchart

The following flowchart describes how an AxRM command operates:



The preferred mode for administrative commands is XML. Compared with RSH the benefits of XML are:

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

Note: XML commands are only supported by AX3000 M75 models equipped with firmware level 0521b2 and higher.

A.1.2 - RSH-Based Commands

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.

An 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 Terminal Information	**ping axname** **rsh axname ax_version**
Get Terminal Network Stats.	**ping axname** **rsh axname ax_getstat**
Get Terminal Configuration	**ping axname** For full set-up info: **rsh axname setup_get > file** For partial set-up: **rsh axname setup_get_lite > file**
Reboot	**ping axname** **rsh axname ax_reboot [passwd] [resource]**

Send Terminal Configuration	**ping axname** To send the set-up: **rsh axname setup_send [passwd] < file** To reboot automatically: **rsh axname ax_reboot [passwd]**
Firmware Download	**ping axname** 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]**
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 terminal / Office Server.

A.2 - USING WITH A FIREWALL

The AxRM tool uses the following commands:

- PING: checking terminal availability,
- XML: running administration commands (M75 only),
- RSH: running administration commands,
- SNMP: discovering new terminals,
- TFTP: downloading firmware,
- TELNET: entering terminal set-up,
- BOOTP: "repairing" a terminal when the firmware is lost,
- WOL (Wake On LAN): booting up a terminal.

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 terminal 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 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 are enabled.
  (Sometimes the 'Local RSH Port Base' default valued can be modified)

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 father in the tree
    - Identifier of this element (Nxxx for a folder, Lxxx for a terminal)
    - 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: terminal 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 - REGISTRY VARIABLES

AxRM uses the Windows "registry" to store internal variables. These variables are stored in **HKEY_LOCAL_MACHINE\SOFTWARE\Axel\AxRM V2** (and **HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Axel\AxRM V2** for a 64bit O.S.):

- **AllowNotRebootAfterSetUp** : allows the option "terminal reboot" to be available when sending a configuration file to a terminal.
- **ArchiveSetupFolder**: folder for storing configuration files
- **AutoConfFile**: auto-configuration parameter file.
- **AutoConfLogFile**: auto-configuration log file.
- **AxViewerList** : last IP addresses used by AxViewer.
- **AxViewerUseDB**: allowing or not AxViewer to address terminals not listed in the AxRM database.
- **DBAutoUpdate**: enabling or not the auto-update function.
- **DBFile**: terminal database filename.
- **DBTransactionFile**: new terminals recorded by the auto-conf service.

- **DBType**: database type: 0=text file / 1=MS-SQL.
- **DBUseAlwaysIP**: force a discovered terminal to be recorded with its IP address.
- **DBUseLock**: using or not a lock file for the terminal database access.
- **DHCPServer**: discovering new terminals.
- **DiscoverIPRange**: last IP address range used for the terminal discovery.
- **DontNotifyChangeIP**: displaying or not a warning message when the Windows IP address had been modified.
- **EnabledRSH** : set to 0 will disable RSH.
- **FirmwareFolder**: default folder for firmware files.
- **HostIP**: Windows IP address.
- **InfoStatFolder**: default folder for information/statistics files.
- **IPAutoUpdate**: automatically updating (or not) HostIP when the Windows IP address had been modified.
- **LanguageFile**: language filename.
- **LocalRSHPort**: base for finding a free RSH TCP port.
- **MaxWaitForRebooted**: maximum delay allowed for terminal reboot.
- **MoreSendSetupInfo**: enhanced dialog box for send set-up command.
- **Passwd**: AxRM password (encrypted).
- **RemoteControlEncrypt**: encryption type of the remote control session.
- **RemoteControlPort**: default TCP port of the remote control session.
- **RemoteControlTimer**: inactivity time-out of the remote control session.
- **SetupFolder**: default folder for set-up files.
- **SQLDatabaseName**: SQL database name.
- **SQLPassword**: password to be connected to the SQL database.
- **SQLServer**: SQL database location.
- **SQLUsername**: username to be connected to the SQL database.
- **TelnetCommand**: pathname and name of the emulator.
- **TelnetFont**: font size for the AxRM embedded emulator.
- **TelnetOption**: emulator parameters.
- **TelnetThirdParty**: using or not a third party emulator.
- **UseArchiveSetup**: automatic back-up of terminal configuration files.
- **UseHookMenu**: using or not the XP-like menu component.
- **VNCControlPort**: default TCP port of the VNC remote control.
- **VNCExitKey**: final key keycode of the 'VNC exit' keystroke.
- **VNCExitModifier**: modifer keycode of the 'VNC exit' keystroke.
- **XMLport**: TCP port for XML-based administration commands.

A.6 - MANAGING DHCP TERMINALS

A.6.1 - IP Address vs DNS NAME

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

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: to be compliant with this rule, when a terminal is discovered by AxRM, the ID associated in the AxRM database is either the IP address or the DNS name (depending if the terminal is running DHCP or not).

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 terminal's DNS name.

Using a DNS name allows AxRM to administrate terminals 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 terminal boots, obtains an IP address via DHCP, the DHCP server updates the DNS server. The first time AxRM contacts this terminal it resolves the terminal's DNS name and obtains the IP address. Connection is established, remote commands work and the PC caches the terminal's DNS name and IP address. When the terminal 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 terminal, 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 with fail....

Solution:

The solution is disabling the DNS cache. Then each time a DNS name is to be resolved a DNS request will be have to be 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 - TROUBLESHOOTING

A.7.1 - AxRM Terminates After the Splash Screen

Problem:
When running AxRM the splash screen is displayed then AxRM terminates.

Explanation:
AxRM execution is aborted by the DEP module (Data Execution Prevention). The DEP module does not recognize AxRM and prevents it from running.

Solutions:
Two methods can be used to fix this problem:

1. **Set AxRM as a trusted software**:
   In the control panel click on "system". On the "Advanced" tab, under Performance, click "Settings". On the "Data Execution Prevention" tab:
   - either select the option "Turn on DEP for essential Windows programs and services only"
   - or check the "Axel Remote Manager" item. Reboot the server to make this change take effect.
2. **Disable the XP-like menu component in AxRM (V2.3.3 minimum)**
   Run "regedit.exe". Got to [HKEY_LOCAL_MACHINE]-[SOFTWARE]-[Axel]-[AxRM V2] and set "UseHookMenu" to 0.

A.7.2 - AxRM Installation Problem (fraplus1.ocx and btnplus1.ocx)

During the installation of AxRM the following error messages may be seen:
An error occurred while registering the file c:\windows\system32\FraPlus1.ocx
An error occurred while registering the file c:\windows\system32\BtnPlus1.ocx

This error is due to an incompatibility of these components with the new Windows function 'DEP' (Data Execution Prevention)

Note: Data Execution Prevention is a set of hardware and software technologies that perform additional checks on memory to help prevent malicious code from running on a system. It's only used on some CPU processors.

To install AxRM it is necessary to restrict the function of DEP:

In the control panel click on "system". On the "Advanced" tab, under Performance, click "Settings" . On the "Data Execution Prevention" tab select the option "Turn on DEP for essential Windows programs and services only". Reboot the server to make this change take effect.

The AxRM installation will now proceed as normal.

A.7.3 - SQLDMO.DLL Installation Problem

During AxRM V3 installation, the SSQLDMO.DLL installation may fail. This can be fixed by installing the "Microsoft SQL Server 2005 Backward Compatibility" package.

Packages can be downloading from the Microsoft site:
http://www.microsoft.com/downloads/en/details.aspx?displaylang=en&FamilyID=b33d2c78-1059-4ce2-b80d-2343c099bcb4

In event of problem these packages are also available from the Axel web site:
- Package X86
- Package X64

Install the package. (Ensure that 'SQL Distributed Management Objects' is selected.)

AXEL

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