
AIMMS User's Guide - Project Settings and Options

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Chapter 20

Project Settings and Options

Several aspects of AIMMS, including its startup behavior, its appearance, the inner workings of the AIMMS execution engine or the solvers used in a session, can be customized to meet the requirements of your project. This chapter describes the various tools available in AIMMS for making such customizations.

This chapter

20.1 AIMMS execution options

Many aspects of the way in which AIMMS behaves during a session can be customized through the AIMMS execution *options*. Such options can be set either globally through the options dialog box, or from within the model using the `OPTION` statement. As every project has its own requirements regarding AIMMS' behavior, option settings are stored per project in the project file.

Options

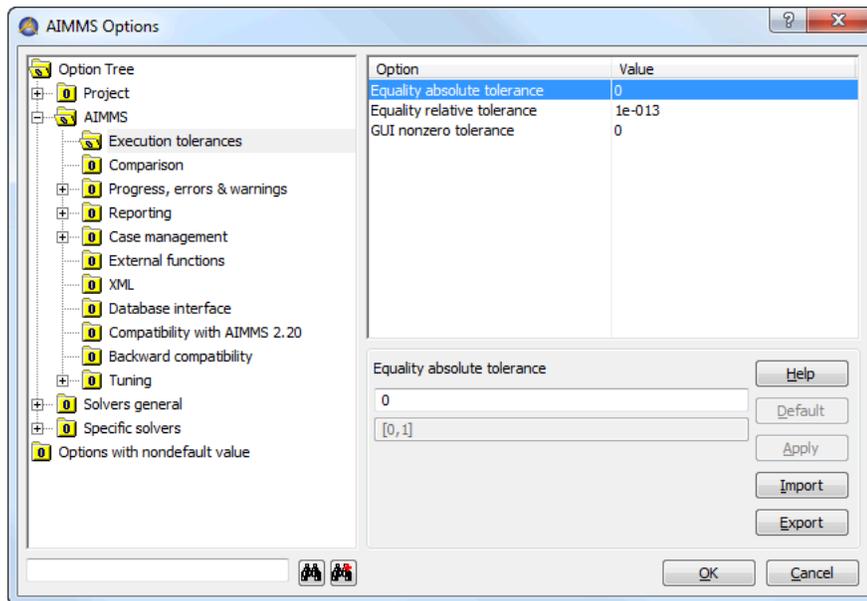
AIMMS offers options for several aspects of its behavior. Globally, the AIMMS execution options can be categorized as follows.

Option types

- **Project options:** how does AIMMS behave during startup, and how does AIMMS appear during a project.
- **Execution options:** how does the AIMMS execution engine with respect to numeric tolerances, reporting, case management and various other execution aspects.
- **General solver options:** how does AIMMS behave during the matrix generation process, and which information is listed.
- **Specific solver options:** how are the specific solvers configured that are used in the project.

Through the **Settings-Project Options** menu you can open the global AIMMS **Options** dialog box illustrated in Figure 20.1. In this dialog box, an *option tree* lists all available AIMMS execution and solver options in a hierarchical fashion.

Option dialog box

Figure 20.1: The AIMMS **Options** dialog box

After selecting an option category from the left-hand side of the **Options** dialog box, you can modify the values of the options in that category on the right-hand side of the dialog box. As illustrated in Figure 20.1, AIMMS lists the currently selected value for every option (in the first edit field) along with the allowable range of all possible option values (in the second field). Option values can be either integer numbers, floating point numbers or strings, and, depending on the option, you can modify its value through

- a simple edit field,
- radio buttons,
- a drop-down list, or
- a wizard in the case where the value of an option is model-related.

With the **Apply** button, you can commit the changes you have made to the value of a particular option and continue changing other options; the **OK** button will commit the changes and close the option dialog box. With the **Default** button at the right-hand side of the dialog box, you can always reset the option to its default value. It is only active when the option has a nondefault value.

When you have selected an option, and need to know more about its precise meaning before changing its value, you can press the **Help** button at the right-hand side of the options dialog box. As illustrated in Figure 20.2, this will open a help window containing a more detailed description of the selected option.

Modifying options

Committing options

Option description

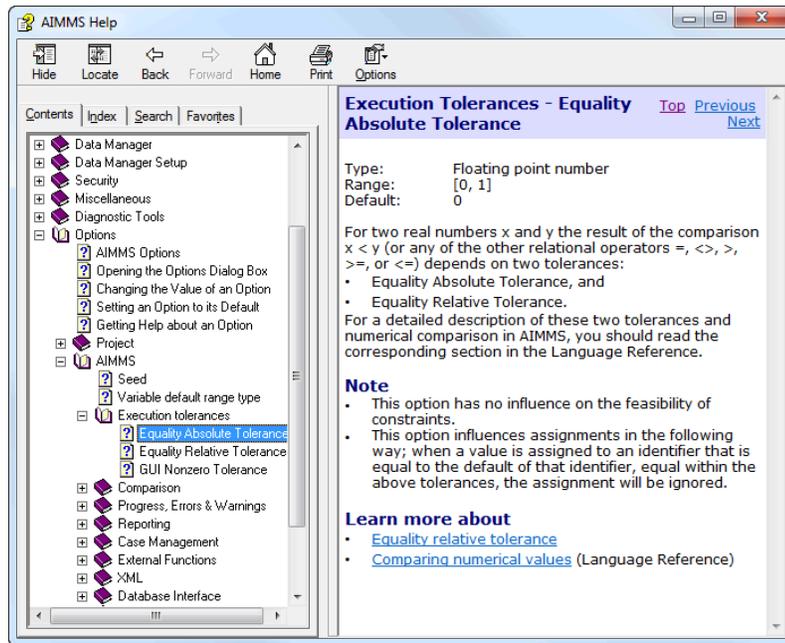


Figure 20.2: Option help

To help you quickly identify all the options which you have modified for a particular project, all modified options are summarized at the end of the options tree in a special section, **Options with nondefault value**. You can modify these options either in this section, or in their original locations. If you set a modified option back to its default value, it will be removed from the nondefault section. When you select an option from the **Options with nondefault value** section, the **Location in Tree** button will become available. Pressing this button will select the originating option category in the option tree.

Options with nondefault value

When you add a new version of some solver to the solver configuration (see Section 20.3 for a description of how to add a new solver), the options of this new solver will appear in the **Specific Solvers** category. To copy solver options from the old solver version (e.g. CPLEX 11.1 to CPLEX 12.6), select the source solver in the option tree and select the **Copy Option** command from the right-mouse popup menu. This will open the **Copy Options** dialog box as shown in Figure 20.3. By default this dialog will only show options that differ between both solvers plus options that are only available in one of the two solvers. Once you press the **Ok** button, all options that remain in this list (and are available in both solvers) are copied from the source to the destination solver.

Copying solver options

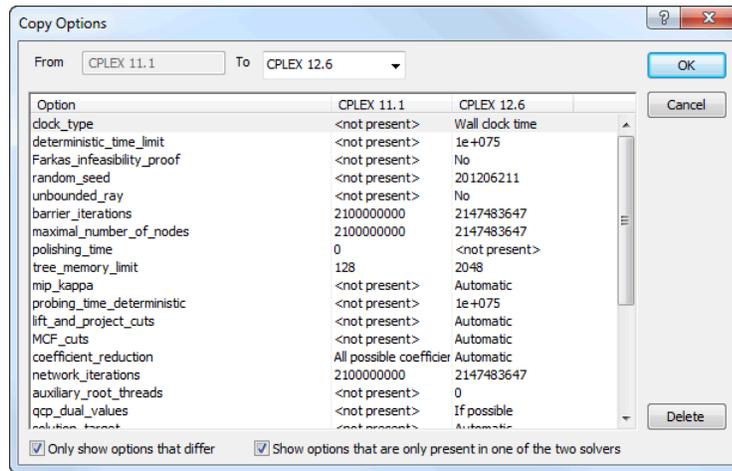


Figure 20.3: The Copy Options dialog box

When you know (part of) the name of an option, but do not know where it is located in the option tree, you can use the search facility in the lower left-hand part of the option dialog box to help you find it. When you enter (part of) an option name, AIMMS will jump to the first option in the tree whose name contains the entered string.

Searching for options

In addition to modifying option values in the options dialog box, you can also set options from within your model using the `OPTION` statement. The `OPTION` statement is discussed in the AIMMS Language Reference. While changes to option values in the options dialog box are stored in the project file and reused at the beginning of the next project session, run time option settings are lost when you close the project. Setting options during run time can be convenient, however, if different parts of your model need different option settings.

Setting options within the model

20.2 End-user project setup

A number of options and settings are of particular importance when you want to set up a project in such a manner that it is ready to be used by end-users. You can find these options in the **Project-Startup & authorization** and the **Project-Appearance** sections of the **Options** dialog box. This section discusses the most important options.

Setting up an end-user project

With the *startup procedure* option you can select a procedure within your model which you want to be executed during the start up of your project. Such a procedure can perform, for instance, all the necessary data initialization for a proper initial display of the end-user GUI automatically, thus preventing your end-users from having to perform such an initialization step themselves.

Startup procedure

With the *startup page* option, you can indicate the page which AIMMS will display at startup. It is important to specify a startup page for end-user projects, as all data communication with the model must take place through end-user pages designed by you. Therefore, you should also ensure that every relevant part of your application can be reached through the startup page.

Startup page

In a developer project you can by-pass the startup sequence by holding down the Shift key when you select the project to be opened.

Startup by-pass

By default, AIMMS will display the name of the currently loaded project in the title bar of the AIMMS window. Using the *project title* option you can modify this title, for instance to provide a longer description of your project.

Project title

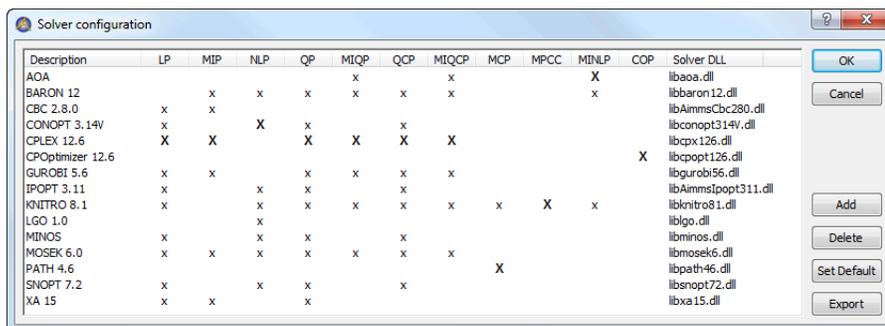
20.3 Solver configuration

With every AIMMS system you can obtain a license to use particular solvers to solve mathematical programs of a specific type. As AIMMS provides a standardized interface to its solvers, it is even possible for you to link your own solver to AIMMS. This section provides an overview of how to add solvers to your system or modify the existing solver configuration.

Configuring solvers

You can obtain a list of solvers currently known to your AIMMS system through the **Settings-Solver Configuration** menu. This will open the **Solver Configuration** dialog box illustrated in Figure 20.4. The dialog box shows an incidence

Solver configuration dialog box



Description	LP	MIP	NLP	QP	MIQP	QCP	MIQCP	MCP	MPCC	MINLP	COP	Solver DLL
AOA					x		x				X	libaoa.dll
BARON 12		x	x	x	x	x	x				x	libbaron12.dll
CBC 2.8.0	x	x										libAimmsCbc280.dll
CONOPT 3.14V	x		X	x		x						libconopt314v.dll
CPLEX 12.6	X	X		X	X	X	X					libcp126.dll
CPOptimizer 12.6											X	libcpopt126.dll
GUROBI 5.6	x	x		x	x	x	x					libgurobi56.dll
IPOPT 3.11	x		x	x		x						libAimmsIpo311.dll
KNITRO 8.1	x		x	x	x	x	x	x	X	x		libknitro81.dll
LGO 1.0			x									liblgo.dll
MINOS	x	x	x	x		x						libminos.dll
MOSEK 6.0	x	x	x	x	x	x	x					libmosek6.dll
PATH 4.6								X				libpath46.dll
SNOPT 7.2	x		x	x		x						libsnopt72.dll
XA 15	x	x		x								libxa15.dll

Figure 20.4: The **Solver Configuration** dialog box

matrix between all available solver and types of mathematical programs. An 'x' indicates the capability of a specific solver to solve mathematical programs of a particular type. A bold 'X' indicates that the specific solver is used as the default solver for mathematical problems of a particular type.

The buttons on the right-hand side of the dialog box let you globally modify the solver configuration of your AIMMS system. Through these buttons you can perform tasks such as:

Modifying solver settings

- modify the default solver for a particular model type, and
- add or delete solvers.

With the **Set Default** button you can set the default solver for a particular type of mathematical program. AIMMS always uses the default solver when solving a mathematical program of a particular type. A run time error will occur, if you have not specified an appropriate solver.

Selecting default solver

When you want to add an additional solver to your system, you can select the **Add** button from the **Solver Configuration** dialog box, respectively. This will open a **Solver Configuration Data** dialog box as shown in Figure 20.5. In this

Adding a solver

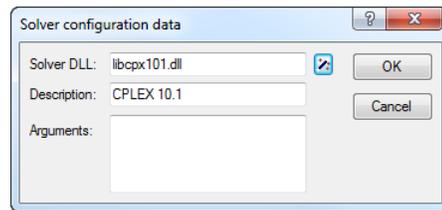


Figure 20.5: The **Solver Configuration Data** dialog box

dialog box you have an overview of the interface DLL, the name by which the solver is known to AIMMS and any appropriate arguments that may be needed by the solver.

In the **Solver DLL** area of the **Solver Configuration Data** dialog box you can select the DLL which provides the interface to the solver that you want to link to AIMMS. AIMMS determines whether the DLL you selected is a valid solver DLL, and, if so, automatically adds the solver name stored in the DLL to the **Description** field.

Select solver DLL

In the **Arguments** area of the **Solver Configuration Data** dialog box you can enter a string containing solver-specific arguments. You may need such arguments, for instance, when you have a special licensing arrangement with the supplier of the solver. For information about which arguments are accepted by specific solvers, please refer to the help file accompanying each solver.

Solver arguments

After you install a new AIMMS version, AIMMS will automatically add the solvers available in that installation to the **Solver Configuration** dialog box. If the newly installed solver is the first solver of a particular type, AIMMS will also automatically make the solver the default solver for that type. Thus, after installing a new AIMMS system, you do not have to worry about configuring the solvers in most cases, provided of course that your AIMMS license permits the use of the solvers you have installed.

Installation automatically adds

By modifying the value of the predefined element parameter `CurrentSolver` in the predefined `AllSolvers` during run time you can, at any time during the execution of your model, select a nondefault solver for a given mathematical programming type that you want AIMMS to use during the next `SOLVE` statement for a mathematical program of that type. At startup, AIMMS will set `CurrentLPSolver` to the default LP solver as selected in the solver configuration dialog box.

Using a nondefault solver

20.4 Print configuration

AIMMS offers two distinct facilities to create printed reports associated with your model, namely printouts of graphical end-user pages and print pages (see Chapter 14), and printouts of text files such as a text representation of a part of the model tree or the listing, log and PUT files. This section explains how you can configure the printing properties for both types of reports.

Print configuration

End-user pages and print pages are printed according to the settings that you have selected for these pages. These settings include:

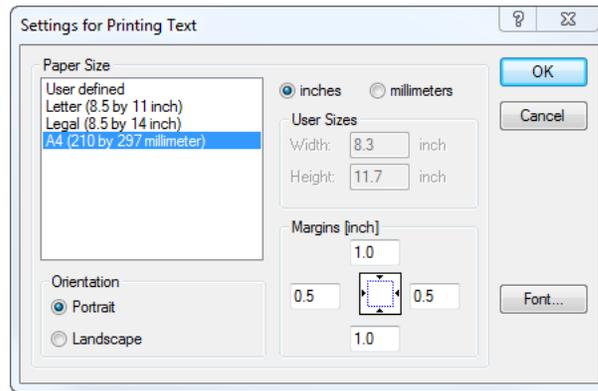
Printing end-user pages

- the selection of the paper type on which pages are printed (see Section 14.1), and
- the selection of object fonts and colors through the AIMMS font and color selection dialog boxes (see Section 11.2).

These settings must be fixed by you as the application developer, and cannot be changed by an end-user of your application. An end-user can, however, still select the printer to which the output must be sent, as explained below.

Text files can be printed from within AIMMS, either from the **File-Print** menu inside an AIMMS text editor window, or through a call to the `FilePrint` procedure from within a procedure in your model. The print properties of all text files that you want to print, in either manner, can be modified through the **Settings-Text Printing** menu. This will invoke the dialog box illustrated in Figure 20.6.

Text printing

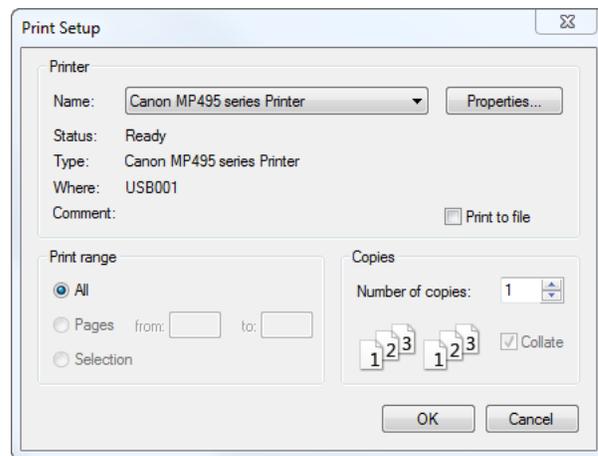
Figure 20.6: The **Text Printing** dialog box

In the **Text Printing** dialog box you can select the paper type and font with which you want all text files to be printed. For the paper type you can select one of the predefined paper types, or specify a user defined paper type by providing the page height and width, as well as the margins on each side of the page. By pressing the **Font** button on the right-hand side of the dialog box, you can select the font with which you want your text files to be printed. The text printing properties are stored globally on your machine.

Text printing properties

With the **File-Print Setup** menu you can select the printer on which print pages and text files associated with your project are printed, and modify the properties of that printer. This command will invoke the standard Windows **Print Setup** dialog box illustrated in Figure 20.7.

Printer setup

Figure 20.7: The **Print Setup** dialog box

The settings selected in this dialog box will only be valid during the current session of AIMMS. If you want to modify the default print setup globally, you can do this through the **Printer** section in the Windows **Control Panel**. There you can

Default settings

- select a **Default** printer from the list of all printers available on your system, and
- modify the **Document Defaults** (i.e. the printer settings with which each print job is printed by default) for every individual printer on your system.

Without a call to the **File-Print Setup** dialog box, AIMMS will use the default printer selected here, and print according to the document defaults of that printer.