
AIMMS User's Guide - Case Management

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Part IV

Data Management

Chapter 16

Case Management

Working with data is a central part of any modeling application. Data can come from external sources or from AIMMS' proprietary case files. This chapter introduces AIMMS' capabilities with respect to creating and managing a collection of case files. Furthermore, AIMMS' capabilities of working with data from multiple case files, both from within the language and from within graphical data objects on end-user pages, are illustrated.

This chapter

AIMMS uses a proprietary binary format for case files to store data compactly, quickly, and easily. This proprietary format makes case files unsuitable to exchange data with other programs. AIMMS' capabilities to exchange data with other programs is documented in the Language Reference:

Not in this chapter

- Chapter 27 "Communicating With Databases"
- Chapter 29 "Reading and Writing Spreadsheet Data"
- Chapter 30 "Reading and Writing XML Data"
- Chapter 34 "The Aimms Programming Interface"

Furthermore, the AIMMS SDK offers access to AIMMS data from Java, C#, and C++, see <http://download.aimms.com/aimms/AimmsSDK>.

16.1 Working with cases

A case file is a single file containing the data of some identifiers in an AIMMS model. The **Data** menu is the main tool through which you can accomplish tasks such as saving, loading, merging, and comparing case files. This menu item is part of the developer menu and is available by default on all end-user pages.

Case management tasks

In AIMMS, all the data that you are currently working with, is referred to as the *active case*. If you have not yet loaded or saved a case file, the active case is *unnamed*, otherwise the active case is *named* after the name of the last loaded or saved case file on disk. If the active case is named, its name is displayed in the status bar at the bottom of the AIMMS window.

The active case

When you save a named active case, AIMMS will save it to the associated case file on disk by default, thereby overwriting its previous contents. If the active case is unnamed, or when you try to save a case using the **Data-Save Case As** menu, AIMMS will open the **Save Case** dialog box illustrated in Figure 16.1. In

Saving a case file

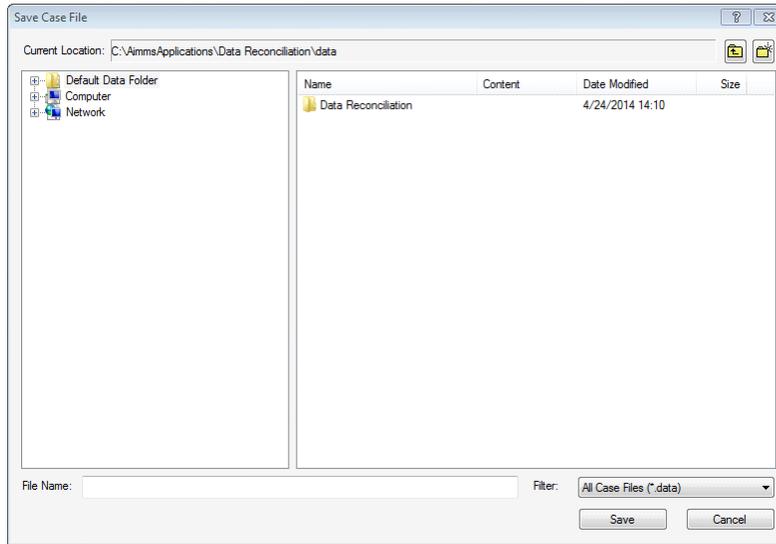


Figure 16.1: The **Save Case File** dialog box

the **Save Case File** dialog box you can enter the name of the case file, and, optionally, select the folder in which the case file is to be stored. After successfully saving a case file through the **Save Case File** dialog box, the active case will become named.

AIMMS supports three modes for loading the data of a case file, as summarized in the following table:

Loading a case file

mode	changes name of active case	replaces data	merges data
load as active	✓	✓	
load into active		✓	
merge into active			✓

The modes are explained in more detail below.

The most frequently used mode for loading a case file is loading the case file *as active*, through the **Data-Load Case-As Active** menu. Loading a case file as active completely replaces the active data of all identifiers in the case file being loaded. Data of identifiers that are not stored in the case file, remain unchanged. In addition, the active case will be named after the loaded case

Load as active

file. Before loading a case file as active, AIMMS will ask you whether the current active case data needs to be saved whenever this is necessary.

Loading a case file *into active*, through the **Data-Load Case-Into Active** menu, is completely identical to loading a case as active, with the exception that the name of the active case will not be changed. Thus, by loading data into the active case you can replace part, or all, of the contents of the active case with data obtained from another case file.

Load into active

Merging a case file *into active*, through the **Data-Load Case-Merge Into Active** menu, does not change the name of the active case either. Merging a case file into the active case partially replaces the data in the active case with only the nondefault values stored in the loaded case file. Data in the active case, for which no associated nondefault values exist in the merged case file, remain unchanged.

Merge into active

Using the **Data-New Case** menu item, you can instruct AIMMS to start a new, unnamed, active case. However, the data in the active case will remain *unchanged*. Before starting a new case, AIMMS will ask you whether the current active case data needs to be saved.

Starting a new case

16.2 Managing multiple case selections

AIMMS allows you to simultaneously view the results of several case files within the graphical user interface. In addition, it is possible to reference data from multiple case files from within the modeling language, enabling you to perform advanced forms of case comparison.

Viewing multiple case files

AIMMS offers a tool to construct a selection of cases to which you want simultaneous access, either from within the graphical user interface or from within the model itself. You can add one or more selected cases from within the **Data** menu to the multiple case file selection through the **Data-Multiple Cases** menu. This will open the **Select Multiple Case Files** dialog box illustrated in Figure 16.2. It shows the current contents of the multiple case file selection. You can modify the order of the displayed cases, and add cases to or delete cases from the collection.

Multiple case selections

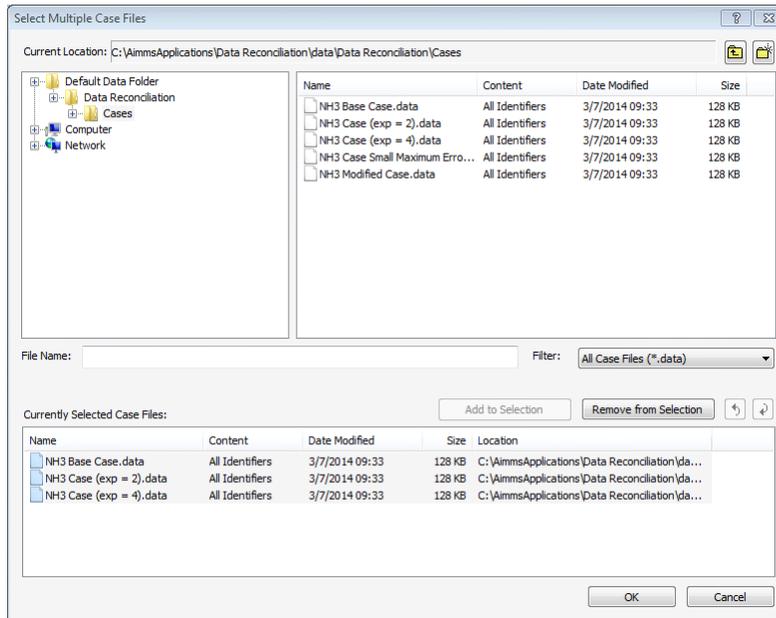


Figure 16.2: The **Select Multiple Case Files** dialog box

16.2.1 Viewing multiple case data

The prime use of multiple case selection takes advantage of AIMMS' capability of displaying data from multiple cases within its graphical objects. Figure 16.3 is an illustration of a table which displays the contents of a single identifier for all the cases in the case selection shown in Figure 16.2.

Viewing multiple case data

Case comparison of flows and compositions:

	NH3 Base Case			NH3 Case (exp			NH3 Case (exp		
	Meas	Flow	Error	Meas	Flow	Error	Meas	Flow	Error
Inflow	111.98	117.03	4.51	111.98	113.58	1.42	111.98	113.55	1.40
Mix		475.03			470.88			468.88	
NH3-Mix		475.03			470.88			468.88	
NH3-Flow	105.59	105.59		105.59	104.26	1.26	105.59	104.13	1.38
Residu		369.44			366.62			364.75	
Ar-Flow		11.44			9.32			9.42	
Feedback	358.00	358.00		358.00	357.30	0.20	358.00	355.32	0.75

Figure 16.3: Example of a multiple case object

A data object on a page in the graphical end-user interface can be turned into a multiple case object by checking the multiple case property in the object-specific options in the object **Properties** dialog box. Figure 16.4 illustrates the object-specific **Properties** dialog box of a table object. As a result of enabling

Creating multiple case objects

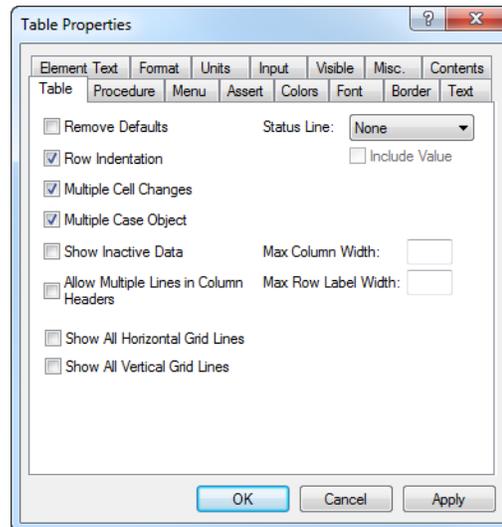


Figure 16.4: Table-specific **Properties** dialog box

multiple case display, the object will be extended with one additional virtual dimension, the case index, which will be displayed in a standard way.

AIMMS only supports the display of multiple case data in object types for which the added dimension can be made visible in a well-defined manner. The most important object types that support multiple case displays are tables, pivot tables, curves, bar charts and scalar objects. Because of the extra dimension, the bar chart object is only able to display multiple case data for scalar and 1-dimensional identifiers. During a single case display, a bar chart can also be used to view 2-dimensional identifiers.

Restrictions

16.2.2 Case referencing from within the language

In addition to viewing data from multiple case files as graphical objects in the graphical user interface, AIMMS also allows you to reference the data of case files that are not currently active within the model. This allows you, for instance, to perform advanced forms of case file differencing by comparing the current values of particular identifiers in your model with the corresponding values stored in an inactive case.

Using inactive case data

The collection of all case files referenced via the AIMMS data menu, or via the intrinsic functions such as `CaseFileLoad`, and `CaseFileMerge` is available in the AIMMS language through the predefined integer subset `AllCases`. Each case file is represented by an integer element in this set, and, as explained in Section 17.3.5, AIMMS offers several built-in functions to obtain additional information about a case through its case number.

The set AllCases

AIMMS stores the case selection constructed in the **Select Multiple Case Files** dialog box presented above in the predefined set `CurrentCaseSelection`, which is a subset of the ever growing set `AllCases`. Through this set you get easy access within your model to the cases selected by your end-users in the **Select Multiple Case Files** window.

The set CurrentCaseSelection

You can reference the values of specific identifiers within a particular case by simply prefixing the identifier name with an index or element parameter in the set `AllCases` or any of its subsets. Thus, if `cs` is an index in the set `CurrentCaseSelection`, the following simple assignment will inspect every case in the user-selected multiple case selection, and store the values of the variable `Transport(i,j)` stored in that case in the parameter `CaseTransport`, which has one additional dimension over the set of `CurrentCaseSelection`.

Referencing case data

```
CaseTransport(cs,i,j) := cs.Transport(i,j);
```

The capability of referencing inactive case data, enables you to perform advanced forms of case comparison, which would be hard to accomplish without the AIMMS facilities for case referencing. As an example, consider the following statement.

Advanced case comparison

```
RelativeDiff(cs,i,j) := (cs.Transport(i,j) - Transport(i,j)) /$ Transport(i,j);
```

It computes the relative difference between the current values of the variable `Transport(i,j)` and those values stored for each case referenced.

Please note that `cs.Transport(i,j)` above, may contain inactive data, when index `cs` refers to the active case. In order to remedy this, you may want to use the **CleanUp** statement, see Section 25.3, at the start of procedures containing case referencing.

Inactive data

16.3 Working with selections of identifiers

Next to saving the contents *all* identifiers in a case file, it is also possible to save the data of *a selection of* identifiers in a case file. Such a selection of identifiers to be saved to a case file is called a *case content type*. A case content type is a subset of `AllIdentifiers`.

Case content type

The set `AllCaseFileContentTypes` contains all case content types. It is a subset of the predeclared set `AllSubsetsOfAllIdentifiers`. The set `AllCaseFileContentTypes` is initialized to contain only the case content type `AllIdentifiers`. By adding additional subsets of `AllIdentifiers`, you are allowing your end user to decide which selection of identifiers is to be saved. The predeclared element parameter `CurrentCaseFileType` is used to indicate the case content type selected by the end-user of your application.

Collection

You may add the predeclared set `CurrentInputs` to the set `AllCaseContentTypes`, which allows an end-user to decide whether to save the data of all identifiers in your model, or just of the collection of current input parameters. This is illustrated in Figure 16.5 where the **Save Case File** dialog box allows you to select between the case content types `AllIdentifiers` and `CurrentInputs`.

Example

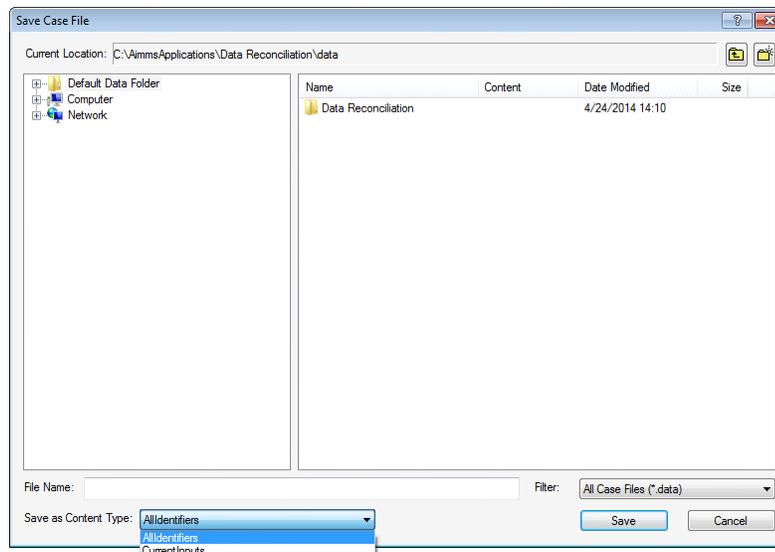


Figure 16.5: The **Save Case File** dialog box offering content types

When loading a case, all identifiers stored in the case file will be loaded; the current contents of the case content type by which the file is saved will be ignored.

Use during case load

Identifiers in an AIMMS model can have the `NoSave` property. Identifiers with this property will not be saved in any case file regardless of the current case content type. This property can be set via the attribute forms of the identifiers that can contain data.

Data not stored