Tables

ReportMill Tables User Guide

This document describes ReportMill's table component. The table component is the most common way to display data sets in ReportMill.

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Table Features

One of the most powerful features of ReportMill is the table tool. The table tool is one of ReportMill's "dataset" elements, which provide a means to display a list of objects. The table is the most common and straight forward of these, but it is also the most powerful. In addition to simply displaying a row of data for each object provided, it also has these features:

Grouping: Tables can break the list of objects up by any attribute of the objects. Each level of grouping can selectively have headers, details and footers.
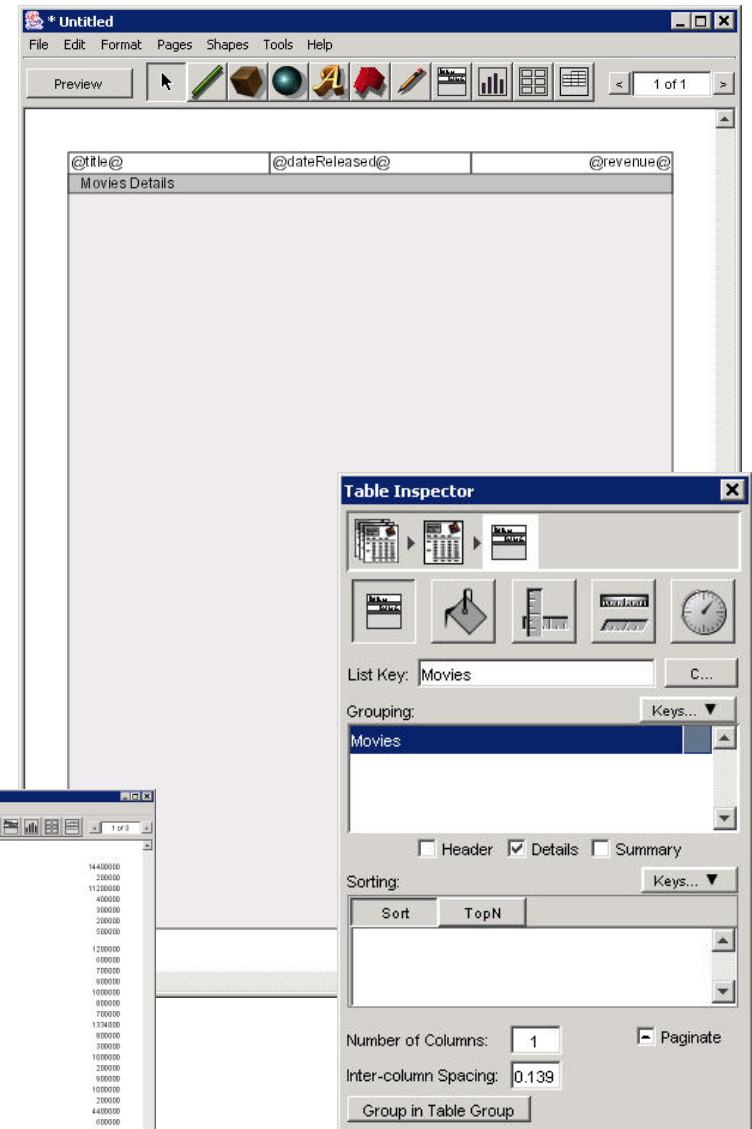
Sorting: Tables can sort objects by any attribute of the objects and multiple sort keys can be provided for each level of grouping. TopN sorting is also available to trim or collate less relevant data.

Widow/Orphan Control: Groups can be configured to "stay with" a specified number of peer objects, to gracefully control how or whether groups cross a page boundary.

Row sizing/splitting: Automatic row sizing and row splitting is supported to accommodate text blocks of arbitrary length.

Row Versioning: Different row templates can be configured to achieve effects such as grey-bar reports or "Continued" headers.

Table Groups: Tables can have child tables, defined by a nested "List Key", to support Master-Detail type constructs or embedded reports.

A Sample Preview

Tables (Continued)

Creating a Table

Method 1: Drag a Dataset Key from Keys Panel

Tables can be created in one of two ways. The first way requires that the current document be bound with a data source (use the "Connect to Data Source" button or simply drag an XML dataset file into the editor window). If your data source has any datasets associated with it, they will show up in the Keys Panel with a double-arrow icon beside them. Simply, drag a dataset key from the Keys Panel into an open document and ReportMill will respond with the "Dataset Key Element" selection panel. Table is the default, so simply click the "OK" button.

Method 2: Click the "Add Table" button in the tool bar

The second option works even if a data source hasn't been provided: simply click the add table button from the list of tools at the top of the open document. The first field in the table inspector is for the dataset key. You can type one in, or drag one down from the Keys Panel (this would be equivalent to method one).
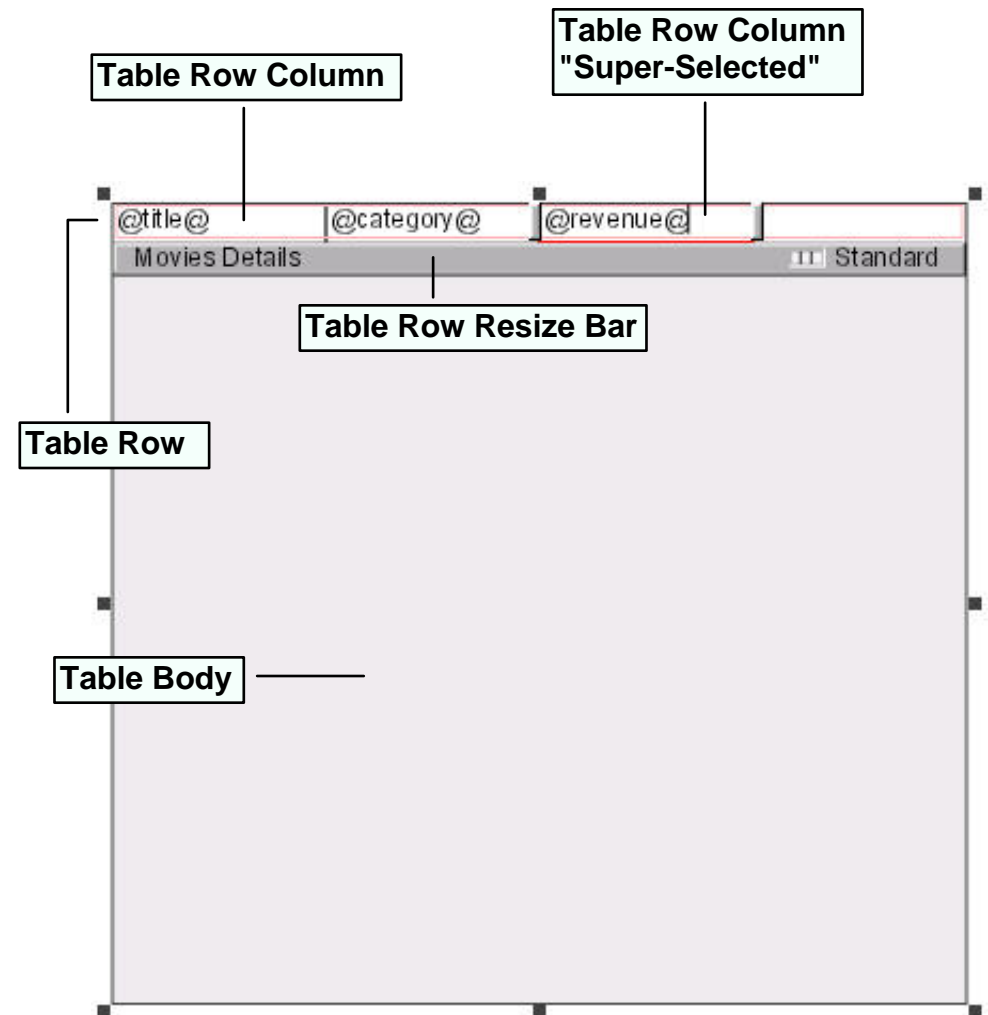
Table Anatomy

The table template is easy to work with and much is available via "Direct Manipulation" of this element. The basic parts of a table are described below.

Table Body: The grey region at the bottom of the table template doesn't do much, but it does perform one important function: it tells ReportMill how far down the page the resulting table should cover. That's why it's important to position and size the table appropriately (usually to cover most of the page).

Table Row: By default tables have a single table row of the form "<your_list_key> Details". However, you can selectively have a Header, Detail or Summary for each grouping in your table. Table rows are the heart of the table - they form the actual template that gets repeated for each object or grouping (or header/summary).

Table Row Column: These are available only in structured table rows (the default) and make editing basic table rows more convenient. Clicking on a structured table row column makes it **Super-Selected**, or ready for editing.

Table Row Resize Bar: Table rows can be arbitrarily tall or small, simply drag this bar to change the default size of each row (however, rows will grow automatically to accommodate their text). You can also click the resize bar to select and configure attributes of the table row.

Table Row Column

Table Row Column "Super-Selected"

@title@ @category@ @revenue@

Movies Details   III Standard

Table Row Resize Bar

Table Row

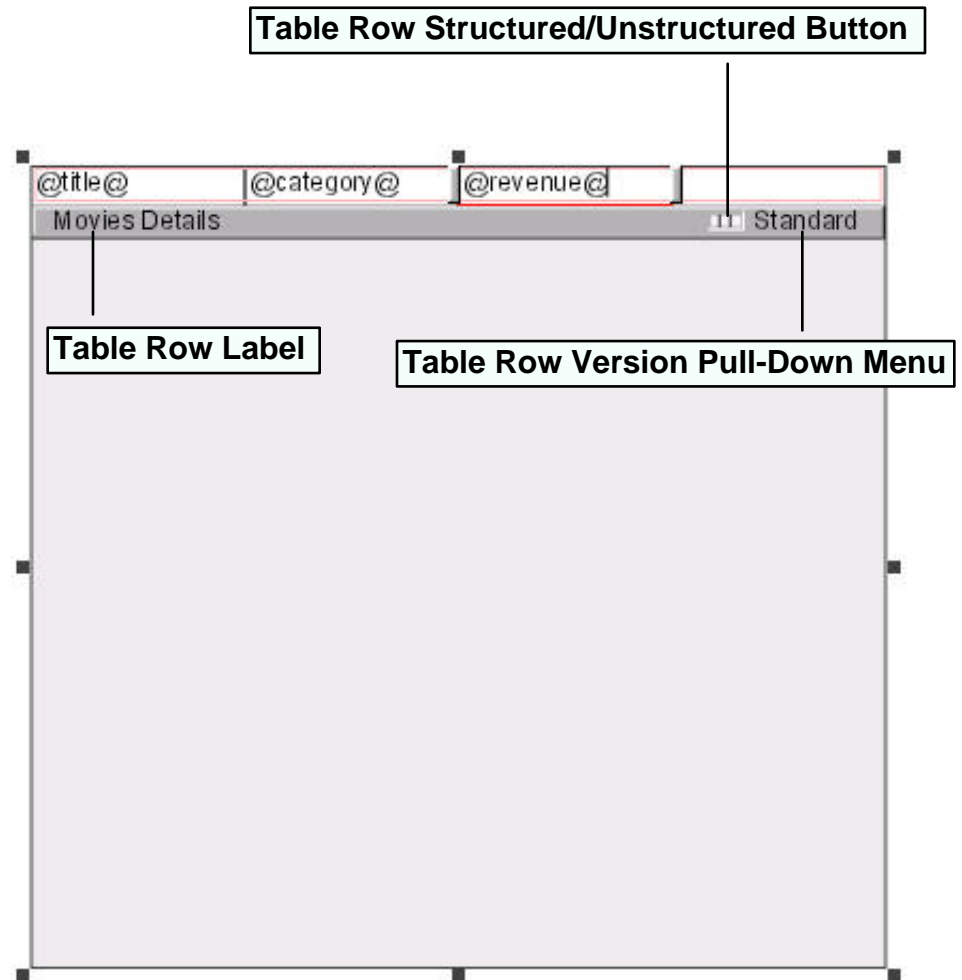Table Body

Table Anatomy (Continued)

Table Row Label

This simple text identifier is found under each table row and quickly tells you what grouping and what grouping part (Header/Details/Summary) the row represents.

Table Row Structured/Unstructured Button

Table Rows can be configured to be "unstructured", for complete freedom in configuring a table row (covered later in this document).

Table Row Version Pull-Down Menu

This is where you add, remove and select different table row versions (covered later).

Table Row Structured/Unstructured Button

@title@   @category@   @revenue@

Movies Details   Standard

Table Row Label

Table Row Version Pull-Down Menu

Tables (Continued)

The Table Inspector

The Table inspector is loaded with controls to configure table's many features, however, a quick tour will show how simple and intuitive advanced table configuration is.

Dataset Key Field: This field contains the key that ReportMill will use to get the list of objects from your datasource (if blank, ReportMill uses "objects" as the key). You won't need to change this often, but you can drag a List Key from the Keys Browser or simply type in a new key if this needs to change.

Groupings List: ReportMill can slice and dice your list of objects by any attribute of the objects - simply drag the key in from the Keys Panel (or type it in using the "Add..." menu item from the "Keys" pull-down menu on the right). When you add a key to the Groupings List, you will get a corresponding "Details" row by default in your table template. Configure this with keys appropriate for that level of grouping.

Header/Summary Switches: Each grouping gets a "Details" row by default, but Header/Summary rows are available at the flick of a switch (you can even turn details off for "Summary" style reports).

Sortings List: Each grouping can also have a list of sort keys associated with it. Drag a key from the Keys Browser down to this list and it will be associated with the currently selected grouping. Successive sorts will be used in the case of a tie. There is a **TopN** tab which lets you configure a sort that either trims or coalesces less-relevant objects (determined by the sort key and the "count" setting).

Multi-column table settings: A table can be configured to flow to a new column to the right of the table template, for the case of reports like a telephone directory. Simply enter the number of columns and the spacing between columns.

Dataset Key Text Field

Groupings List

Header/ Summary Switches

Sortings List

Multi-column table settings

The Table Inspector (Continued)

Page-Break Button: By clicking the grey box to the right of a grouping, you can add an explicit page break after a grouping. For instance, if you have a list of Movies broken down by Studio, you can have each Studio/Movie-list start on a new page by turning on the page break button to the right of Studio.

Ascending/Descending Button: Sorts can go both ways - you might want to see a list of movies with the most successful listed first (revenue, descending) or a list of movies with the lowest budget listed first (budget, ascending). The Ascending/Descending button either reads "ABC/123" or "321/ZYX" making it easy to choose between the two.

Paginate Switch: This is a three state switch (on, off, N/A) that you will rarely need to change. By default, tables paginate if the call to generateReport() specifies it (the default is yes). However, this is the key to how ReportMill automatically does the right thing depending on whether you are generating a paginated report (for PDF output) or a scrollable report (for Flash or CSV). On rare occasions, you might want to configure this switch to always get a scrollable report or a paginated report, regardless of the output file format.

Group in Table Group: Table groups make it possible to have nested child tables, or multiple peer tables that pick up where the previous one leaves off. Some reporting packages would call this feature "embedded reports" although ReportMill makes it significantly easier. Any table can have child tables by promoting it to a Table Group. This feature is covered in detail later.

Dataset Key: Movies

Filter Expr:

Grouping: Keys... ▼

getStudio

Movies

☐ Header   ☑ Details   ☐ Summary

Sorting: Keys... ▼

Sort	TopN	Values

total.getRevenue 321/ZYX

Number of Columns: 1   Paginate

Inter-column Spacing: 10   Make TableGroup

PageBreak Button

Ascending/ Descending Button

Paginate Switch

Make Table Group Button

Grouping

The ability to separate lists of objects into groups by different attributes is perhaps the table's most important feature. Application reporting requirements are frequently of the form "display all customers, broken down by region" or "display all products, broken down by category".

ReportMill makes this remarkably easy by allowing additional grouping keys to be added to the table inspector's "Groupings List" by simply dragging and dropping them from the Keys Browser (you can also type them in using the "Add..." menu under the Grouping list's "Keys" pull-down menu).

When you add a grouping key to a table, you immediately get a new details table row for that grouping. Usually you will add the grouping key itself to one of that row's columns (via drag & drop) and perhaps an aggregate calculation ("total.revenue"). It's also common to make text in these table rows bold and/or change the background color of these upper level groupings for emphasis.

Sorting

Sorting is another important table feature, allowing the user to see the most important information first. ReportMill provides quite a bit of flexibility in this area, by allowing multiple sort orderings for each level of grouping. Simply drag an attribute key from the Keys Browser to the sort list while the appropriate grouping is selected.

Basic Sorting

Basic sorting is pretty straight forward. Simply select a grouping and drag an attribute key into the sorting list. Click the Ascending/Descending button to the right of the key to change the order. Add successive sort keys to the list if you have the need to resolve a tie. Keys can also be typed in using the "Add..." menu item inside the "Keys" pull-down menu.
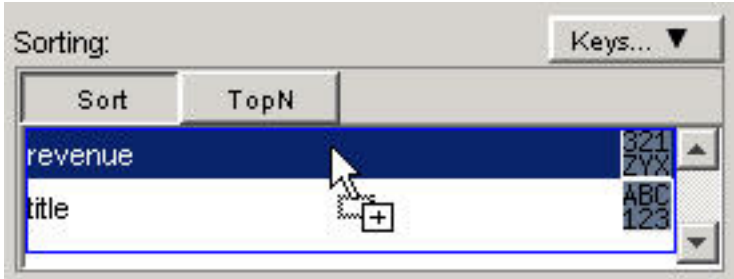
TopN Sorting

A more powerful sort is the TopN sort, available by clicking the TopN sort tab. This sort also takes a key (but only one) and a count. Once the list of objects for this grouping has been sorted by the given key, any objects beyond the specified count will be removed. However, if the "Include Others" switch is set, they will instead be coalesced into a composite object. All string keys for this object will resolve to "Others", while all number keys for this object will be summed. Alternatively, you can configure the "TopN Others" version of the table row to get a specific look for this row (table row versions are covered later in this document).
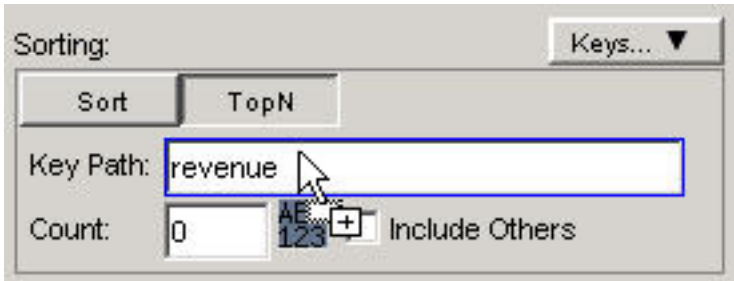
If you configure both a list of sort keys and a TopN sort, the TopN sort will be performed first in order to trim the list, then the remaining values will be re-sorted by the sort keys.

SALES REPORT

Product	Units Sold
Widget	10000
Gadget	5000
Device	100

Basic Sorting

Top N

Header/Summary Rows

The Table inspector includes switches for turning on the Header and Summary rows associated with each level of grouping (or even turning off the default Details row). When you add a Header or Summary, ReportMill adds a table row to the table template, which you can configure with text and keys relevant to a Header or Summary.

ReportMill doesn't include Header and Summaries by default in the table template to reduce clutter for the common case where they aren't needed.
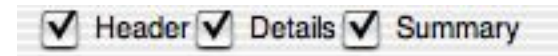
Header

It's common to turn on the Header switch to add such report features as column labels. When multiple levels of grouping are present, you might notice that it's often possible to use either the upper level Details or the current groupings Header for such things.

Summary

It's common to turn on the Summary switch to add a table row at the end of the current list of details rows for such things as totals.

Details

It's even possible to turn off the Details switch for a grouping. This is useful for summary reports, where all of the objects passed to ReportMill's generateReport() method contribute to the report, but not objects need to be shown. For instance, you might want a Movie Category report, which shows all of the existing categories for a list of movies, and the revenue associated with each category, however, you might not want to see the title of each individual movie. In this case, you would group the Movies by their category, but turn off the Movie details.

Header, Details and Summary Switches in Table Inspector

A table configured with Movie Header, Details and Summary. Summary is "unstructured" (covered later) for more flexibility.

Table Row Features

As mentioned earlier, the bulk of table configuration happens with the Table row. The most important concept is probably structured vs unstructured editing.

Structured table rows

Structured is by far the most commonly used table row setting. It makes it convenient to add many object attributes and resizing one column is automatically compensated for with the adjoining column. However, the draw-back to structured editing is that it only allows for text fields.

Unstructured table rows

By simply clicking the jail-cell looking button on the table row resize bar, you can switch a table row to unstructured. In this mode you can add images, rotate text, have multiple text fields stacked on top of each other or use any of the other drawing tools.

Unstructured table rows are most frequently used in the Header row of the top level grouping. The Standard version of this row will often have "Report Header" type elements, like a company logo or a fancy header block. Then the row will either be configured to not reprint, or it will be configured with a reprint version (covered later).

Structured Editing

Un-structured Editing

Table Row Inspector

Quite a few of table row's most advanced features are available in the table row inspector. You can access this inspector by clicking on the resize bar for a given table row (or by selecting the table row in the "Selection Path" area of the inspector). Below is a description of the settings.

Structured switch/Column count

An alternate way to turn structuring on or off is the first switch in the inspector. This is also the place to add or remove additional columns (although columns can also be removed by clicking and dragging them out of the table).

Sync with parent/alternates

With structured tables, it's often convenient to have column resizing be reflected in the row immediately above the current row (the parent) or with a table row's different versions (alternates). Once this is turned on, making an individual column wider will make the corresponding one in a parent or alternate row wider as well. This is particularly useful for to synchronize detail/header row changes.

Stay with this number of children

This is the heart of widow/orphan control. By default, a "Studio Detail" or "Movie Header" or "Movie Summary" is guaranteed to have at least one child in that group on the same page as that row. This prevents such rows from being printed all by themselves, which can be confusing to report readers. Increase this number if you want even more family bonding than that. If this number exceeds the number of objects in a group (or if it is set arbitrarily high), the group will never be broken across a page boundary.

Reprint when wrapped

When data over-runs the bottom of the page and starts on a new page, upper level grouping details and headers are reprinted, to retain context. Occasionally this doesn't makes sense. Simply select the row and click this switch to suppress this behavior. An alternative is to configure a "Reprint" version (covered later).

Table Row Inspector (Continued)

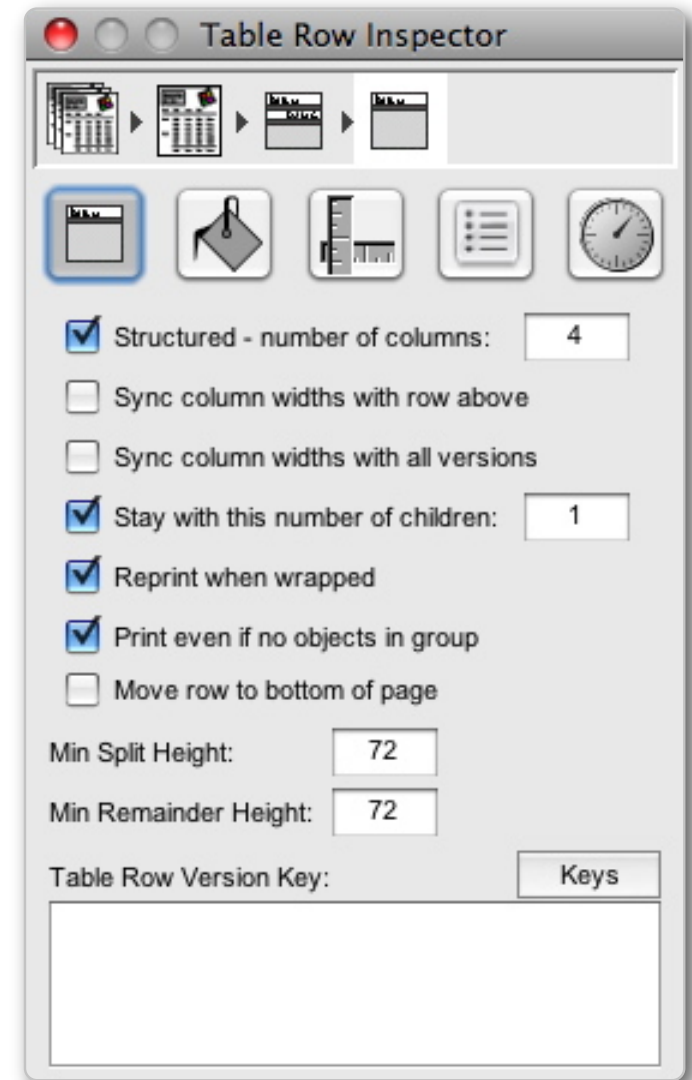## Print even if no objects in group

By default ReportMill will suppress headers and summary rows for empty lists of objects. However, occasionally you may prefer an indication of the missing data. Turn this switch on in this case.

Min Split/Remainder height

An advanced form of widow/orphan control is to be able to control how an exceptionally tall table row will break across a page (usually only the case when a large text block is involved).

By default ReportMill will only split a row when at least an inch (72pts) was available on the first page (min split height) and at least an inch will be carried over to the successive page (min remainder height).

Most table rows will never use these settings, however, if you prefer to have table rows use all of the potential page space and don't care about trying to keep related text on the same page, you might set both of these to 10pts or less. If on the other hand, you never want a row to split, you might set these to 999 (or the max height of the table itself).

Table Row Versioning

One of the most powerful table row features is versioning. This feature allows you to configure different looks for the same table row based on some common conditions, such as "First Row" or "Every Alternate Row". This provides an opportunity for many useful visual hints, all through configuration (as opposed to macro coding).

Use

To add a new table row version, simply select it from the pull-down menu found on the right hand size of a table row's resize bar. By default, your new version will look exactly like the standard version. Now simply change the attributes appropriate for this new version (change background color to grey for an Alternate version or add the word "Continued" to a reprint version of a upper level detail or header).

To remove a version, select it with the pull-down, then select "Remove" with the pull-down.

Built-in Versions

Alternate: Good for grey-bar reports
Reprint: Good for providing "Continued" type indicators for header rows or upper level details.
First Only: Good for showing header information without using an upper level detail row.
TopN Others: Good for configuring the special row associated with the "include others" switch of a TopN sort.
Split Header: Good for providing "Continued" type indicators for an individual row that has been split due to excessive height.
Mouse Over: Good for adding a hi-light color for interactive flash reports.

Custom Table Row Versions

The most powerful aspect of table row versions is the custom table row version. Select the "Add Custom..." menu from the Versions pull-down and type in an all-new version name, such as "Successful".

Configuring a Custom Row

Now you simply specify a "Table Row Version Key" at the bottom of the table row inspector that evaluates to a String that matches the version name you chose above, and resulting reports will use that specified version (defaulting to Standard, if version isn't found).

Table Row Version Key "method"

You might provide a custom method on your Java objects called versionString. When ReportMill evaluates the Table Row Version Key, your object will effectively provide a suggested layout descriptor.

Setting the Version Key

```
public String getVersionString()
{
   // If revenue greater than a million, return successful
   if(revenue>1000000)
      return "Successful";

   // If revenue less than 100 grand, return bomb
   if(revenue<100000)
      return "Bomb";

   // All else return "Standard" (or null would work)
   return "Standard";
}
```
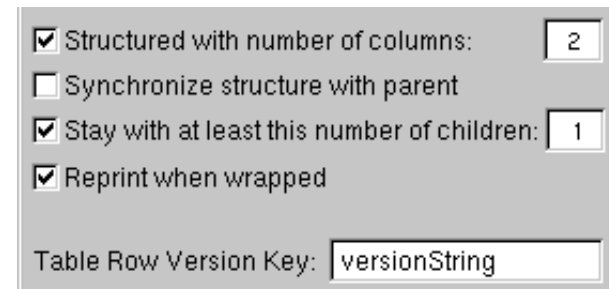
KeyChain Expression Version Key

Alternatively, you might want to specify a quick calculation in the form of a key chain expression

```
revenue>1000000? "Successful" : "Standard"
```

Resulting Visual Ques in Report