# **Pager API**

### Pager Overview

The Pager component allows users to break up long lists of items into separate pages. Users can decide if they want paging and how many items should be presented per page.

#### Renderer Use

While the Pager *can* be used in a 100% markup-driven mode, it is recommended to use the *d ata-driven mode*. This mode uses the Pager's built-in integration with Fluid's Renderer, and supports rendering of dynamic multi-page data-driven tables.

NOTE: At this time, the Renderer-based data-driven mode is NOT the default mode for the Pager. To use the data-driven mode, you must configure certain options. For specific information on how to do this, see #Options for the Data-driven Pager below. In future releases, the data-driven mode will be the default mode, and less of this configuration will be required

### **Subcomponents**

The Fluid Pager, like many Fluid components, is really one interface to a collection of Subcomponents that work together to provide a unified user experience. In particular, the Pager uses the following subcomponents:

- PagerBar
  - PageList
  - PreviousNext
- Summary
- PageSize
- RangeAnnotator
- BodyRenderer

(For a description of these subcomponents, and an example showing how they might fit together, see Pager Subcomponents.)

These subcomponents are instantiated and managed by the Pager, but each has options that can be used to configure and customize it. These subcomponents, and their options, are described individually below.

### Creation

fluid.pager(container, options);

#### Status

This component is in Preview status

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#### See Also

- Pager Component description
- Pager Tutorial Markup-driven
- Fluid Component API

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### **Parameters**

### container

The container parameter is is a selector, a single-element jQuery, or a DOM element specifying the root DOM node of the Pager markup.

#### options

The options parameter is an optional collection of name-value pairs that configure the Pager and its subcomponents, as described below in the fluid: Options section.

### Supported Events

The Pager component fires the following event:

Event	Туре	Description	Parameters	Parameter Description
onModel Change	default	Fired whenever the pager's model changes - that is, whenever there is a change to the displayed range of data for the pager, caused by a change to the page index, page size or underlying data	(newModel, oldModel, that)	newModel is a structure of type PagerModel and represents the updated state of the model. oldModel is a snapshot of this model before the event was fired. that is the overall component that

onRende rPageLi nks	default	Fired when the pager's pagerBar.pageList control is preparing to render the page links - this requires that the pageList control is of type fluid.pager.renderedPageList. This event supplies the component tree that will be sent to the Renderer which may be manipulated or decorated to adjust the rendering behaviour	(Links Component Tree) New in v1.1:(Li nks Component Tree, newModel)	The component tree for the links - this will be an array of components with ids beginning with the prefix page-link:  New in v1.1: A copy of the new PagerModel structure	
New in v1.4: afterRe nder	default	Fired after any rendering of the Pager triggered by a model change, such as a page change, change in number if items per page, etc. This event fires after the initial rendering of the Pager.	(that)	The overall Pager component object	

In addition, in this release, the Pager also supports the following events, which are however implementation-specific, and part of a transitional implementation strategy before the adoption of the Data Binder and BeanInvalidationModel:

Event	Туре	Description	Parameters	Parameter Description
initiateP ageChange	default	Fired when the implementation wishes to initiate the change of state corresponding to the selection of a new page	(pageReques t)	A structure which includes either the member pageIndex representing the new required page index, or relativePage representing an offset from the current page position.  New in v1.1: The pageRequest parameter may also include a member forceUpdate which, if true, causes the onModelChange event to be fired on page change even if the dataModel has not actually changed.
initiateP ageSizeCh ange	default	Fired when the implementation wishes to initiate the change of state corresponding to an updated page size for the visible range	(newPageSiz e)	an integer representing the desired new page size

For more information about events, see Events for Component Users.

# Options

The following options to the creator function can be used to customize the behaviour of the Pager component:

Name	Description	Values	Default
sele	Javascript object containing selectors for various fragments of the Pager component.	The object may contain any subset of the following keys:  pagerBar pagerBarSecondary summary pageSize headerSortStylisticOffset  Any values not provided will revert to the default.	<pre>selectors: {    pagerBar: ".flc- pager-top",    pagerBarSecondary:    ".flc-pager-bottom",    summary: ".flc- pager-summary",    pagesize: ".flc- pager-page-size", headerSortStylisticOffs et: ".flc-pager-sort- header" }</pre>
styl es	Javascript object containing CSS style names that will be applied to the Pager component.	The object may contain any subset of the following keys:  tooltip ascendingHeader descendingHeader  Any values not provided will revert to the default.	<pre>styles: {     tooltip: "fl-pager- tooltip",     ascendingHeader: "fl-pager-asc",     descendingHeader: "fl-pager-desc" }</pre>
stri ngs	Configuration of short messages and strings which the component uses in its UI	key-value structure with string values	<pre>strings: {   last: " (last)" }</pre>
sort	A function used to sort the table's rows with respect to a column as requested via the table's UI.	function(overallThat, model) Return: permutation	sorter: fluid.pager. basicSorter
list eners	JavaScript object containing listeners to be attached to the supported events.	Keys in the object are event names, values are functions or arrays of functions.	See Supported Events above
New in v1. 1: deco rato rs	Information used to modify columns in the results listing to be sortable or unsortable	One or two arrays of renderer decorator specifications, adding any desired decoration to the headers (e.g. special styling through the a ddClass decorator).	<pre>decorators: {     sortableHeader: [],     unsortableHeader: [] }</pre>

There are also options available to select and configure each of the subcomponents used by the Pager. These options are listed here, and their contents are described in detail in the relevant sections below.

Name	Description	Values	Default
page rBar	The overall "Pager Bar" subcomponent which is responsible for the previous/next, page size and page links controls	A subcomponent specification  {type: functionName,     options: pagerBarOptions}  Typically the functionName should remain as the default of "fluid.pager.pagerBar" Configuration of the options structure for PagerBar itself is described in its own section below.	<pre>pagerBar: {   type: "fluid.pager. pagerBar",   options: null }</pre>
summ	A small textual control representing an overall "summary" of the paging state. Typically holds a message reading similarly to "30-31 of 139 items"	A subcomponent specification  {type: functionName,    options: summaryOptions}  Configuration of the options structure for Summary itself is described in its own section below.	<pre>summary: {   type: "fluid.pager. summary",   options: {    message: "%first-% last of %total items"   } }</pre>
page Size	Configuration for a control allowing the user to select the number of items shown per page	A subcomponent specification  {type: functionName,     options: pageSizeOptions}  Configuration of the options structure for PageSize itself is described in its own section below.	<pre>pageSize: {   type: "fluid.pager. directPageSize" }</pre>
rang eAnn otat or	A tooltip that indicates the range of data included covered by each page link.	A subcomponent specification  {type: functionName}  Configuration of the options structure for RangeAn notator itself is described in its own section below.	<pre>rangeAnnotator: {     type: "fluid.pager. rangeAnnotator" }</pre>
body Rend erer	Used only if the pager is being run in "data-driven" mode. Contains a subcomponent specification for a component capable of responding to model update events in order to render the visible page segment.	A subcomponent specification  {type: functionName,     options: bodyRendererOptions}  Configuration of the options structure for BodyRenderer itself is described in its own section below.	bodyRenderer: {     type: "fluid. emptySubcomponent" }  This is a dummy implementation that does not render anything. It is used by the default, markupdriven mode of the Pager.

### **Options for the Data-driven Pager**

While the Pager can be used in a 100% markup-driven mode, it is recommended to use the Pager's built-in integration with Fluid's Renderer, which supports rendering of dynamic multi-page data-driven tables. If the Renderer is used, various configuration information **must** be provided for it.

 $To \ configure \ the \ Pager \ in \ data-driven \ mode, \ you \ must \ request \ the \ \verb|fluid.pager.selfRender| for the \ bodyRenderer \ option, \ as follows:$ 

```
bodyRenderer: {
   type: "fluid.pager.selfRender",
   options: selfRenderOptions
}
```

The selfRenderOptions are described below, in the #BodyRenderer subcomponent section.

When Pager is configured for data-driven paging by setting the bodyRenderer option to fluid.pager.selfRender, several other top-level Pager options become available. NOTE that when the self-rendering is *not* used, these options are ignored.

Name	Description	Values	Default
data Model	A "pure data" data model which the pager control will operate on. EL paths expressed in component trees and configuration are expressed relative to this model	[data]	dataMode 1: undefined
colu mnDe fs	Configuration for the rules for extracting and presenting data from the data model into columns. One entry for each column which is to be rendered in the table. This data structure is described in its own documentation section below.	Array of columnDef objects, or the string "explode". If "explode" is used, the Renderer assumes that the keys in the data model map directly to the rsf:ids attached to the associated HTML elements in the table.	columnDe fs: "explode" In version 1.3.1 only: columnDe fs: [
data Offs et	An EL path, relative to the root of ${\tt dataModel}$ to which "standard columns" in ${\tt columnDefs}$ are to be referred. These standard columns have EL paths beginning with * the value held in ${\tt dataOffs}$ etwill be prepended in place of * . (together with the column index)	string	dataOffs et: ""
mode lFil ter	Specifies a function signature which will be used to perform the "filtering" portion of the data preparation work required by the bodyRenderer with respect to preparing the visible page view. The modelFilter is a function (model, pagerModel) -> data, where model is the value held in options.dataModel, pagerModel is the pager's model, and the return value is a segment of the data model in a form suitable to be supplied directly to the bodyRenderer. A basic implementation is supplied in fluid.pager.directModelFilter	function or function name	modelFil ter: fluid. pager. directMo delFilter

#### The ColumnDef structure

The configuration option columnDefs takes the form of an array of ColumnDef objects, one configuring each required column of the rendered table (a renderer must be in use).

NOTE: Understanding the ColumnDef object will be greatly facilitated by looking at the Renderer documentation.

The following table explains the layout and function of the fields in the  ${\tt ColumnDef}$  structure:

Name	Description	Values
key	The core field of the columnDefs structure. Represents a unique key which is used to identify the column	string
value binding	The EL path through the dataModel structure of the data this column is to be taken from. If this is of the form *.endPath, the dataOffset path will be applied as well as the row number. If it is of the form startPath.*.endPath, the * will be replaced by only the row number	string (EL path)
comp onen ts	A cloneable represention of the section of component tree to be used when rendering cells from this column with the [Renderer Fluid Renderer - Background]. Typically this will take the form of just a single component, maybe <code>UIBound</code> , <code>UISelect</code> or <code>UILink</code> . See further comments on component expansion below	component tree or function->c omponent tree
sort able	Boolean flag representing whether this column should be made sortable, by clicking on the column header toggle	boolean

### **Component expansion**

As this component is cloned, once for each cell in its column, it will undergo various forms of expansion - the most important of these is with respect to the special placeholder value fluid.VALUE. This may be placed where any string or UIBound component is expected, and will be expanded to hold either the value or binding of the correct column cell, with respect to the wildcard path specified in valuebinding. A further form of expansion also allows interpolation of read-only values in the middle of literal string, by use of a Smarty-like variable syntax. The string \${VALUE}\$ will expand to the same value as fluid.VALUE, whereas general EL expressions of the form which are supported for valuebinding are also supported.

Here is a sample of a ColumnDef object with a UILink type cell showing both forms of substitution:

```
{key: "user-link",
  valuebinding: "*.userDisplayName",
  components: {
   target: "/dev/sn/profile.html?user=${*.userId}",
   linktext: fluid.VALUE},
  sortable:true
}
```

Here, the linktext field will be bound to \*.userDisplayName, whereas the URL target will be formed by interpolation with a value from \*.userId. In this case both of these EL paths will be prefixed by any value in dataOffset before fetching.

### PagerBar subcomponent

The PagerBar is the most substantial subcomponent of the pager, and contains controls operating links for page navigation - these may include previous /next, first/last as well as an array of numbered page links. The dropdown control for selecting page size, PageSize may be physically nested within the same container as the markup managed by the PagerBar, but is not logically part of the same control.

Subcomponent Name: fluid.pager.pagerBar

Two PagerBars may be configured for a Pager control, under the names pagerBar and pagerBarSecondary which were mentioned in the top-level options structure above. These may appear at arbitrary positions in the overall markup (top/bottom, etc.), however, the pagerBar is primary in that if one of these bars is omitted, it must be the pagerBarSecondary.

### options

Name	Description	Values	Default
previousNext	A subcomponent, nested within the PagerBar, which operates the pair of previous/next links for navigating by single pages	A subcomponent specification	"flui d. pager previ ousNe xt"
pageList	A subcomponent, nested within the PagerBar which operates a list of links allowing quick random access to individual pages. This listens for changes in the pager's state, and updates the activity and appearance of the link list. It may also additionally take responsibility for rendering the link list dynamically, in response to the state of the user's data model	Standard implementations are fluid.pager.directPageList, which simply accepts a prerendered set of page index links which are already in the DOM, and simply takes charge of styling and binding, and fluid.pager.renderedPageList which can operate a dynamic strategy to render the page index links, in addition to the responsibilities of directPageList	"flui d. pager direc tPage List"

selectors	Javascript object containing selectors for various fragments of	The object may contain any subset of the following keys:	selec
	the PagerBar subcomponent.	of the following keys.	tors:
		pageLinks previous next	pageL inks:
		Any values not provided will revert to the default. Each of these selectors is expected to identify link components, most likely of tag <a></a>	flc- pager - pageL
			ink",  pageL inkSk ip: ". flc- pager
			pageL ink- skip"
			pageL inkDi sable d: ". flc- pager
			pageL ink- disab led",
			previ ous: ". flc- pager
			previ
			next: ". flc- pager
			next"
styles	Javascript object containing CSS style names that will be applied to the Page List subcomponent.	The object may contain any subset of the following keys:  currentPage	style s: {
		disabled  Any values not provided will revert to the default.	curre ntPag e: "fl- pager
			curre ntPag e",
			disab led: "fl- pager
			disab led" }

The PageList subcomponent is actually a second-level subcomponent of the overall Pager - it is nested within the PagerBar component configured at top level. PageList is responsible for managing, and optionally rendering, a list of page link controls which allow quick random access to different page views.

Two implementations are provided:

- fluid.pager.directPageList (the default) which simply accepts a pre-rendered and unchanging list of page links present in the DOM at startup, and
- fluid.pager.renderedPageList which treats the links in the DOM as a template, and accepts further configuration in order to generate a link list dynamically as the number of view pages alters.

The configuration for fluid.pager.directPageList is taken entirely from the pageLinks selector configured into the top-level components.

### Options for fluid.pager.renderedPageList

Name	Description	Values	Default
sele ctors	Allows configuration of a selector name root, which defines the root of the document section which is to form the HTML template for the rendered page links. This cooperates with the top-level selector pageLinks which is intended to identify individual nodes under this root which correspond to the actual links	Selecto r value for root	<pre>selector s: {    root: ".flc- pager- links" }</pre>
link Body	An optional selector which allows an "offset" to be specified between the nodes identified by pageLinks and the actual <a> tag to be the peer of the page index and UILink control.</a>	A selector string	"a"
page Stra tegy	A configurable strategy for generating the list of page indices which should have links generated for them, given a particular range of available page indices	A function that returns an array of the indices which should be supplie d with page links	fluid. pager. everyPag eStrategy , which simply generates an entry, and hence a link, for every page in the range

#### pageStrategy implementations

The framework includes three pageStrategy implementations:

- fluid.pager.everyPageStrategy, which generates an entry for every page in the range
- fluid.pager.gappedPageStrategy, which is a factory function which generates implementations which will collapse pages which are not near either the ends of the range or the currently visible page. For example, fluid. pager.gappedPageStrategy(3, 1) will return a page Strategy implementation which will return page numbers that are either within 3 pages of the end of the range, or within 1 of the current page position.
- fluid.pager.fluid.pager. consistentGappedPageStrategy, will always display same number of page links (including skip place holders)

Integrators can choose to use one of these strategies by overriding the pageStrategy options of the fluid.pager. renderedPageList subcomponent.

#### PreviousNext subcomponent

The PagerBar also has a PreviousNext subcomponent, which displays controls for navigating to the 'next' or 'previous' page. This subcomponent has no options of its own.

Subcomponent Name: fluid.pager.previousNext

### Summary subcomponent

The purpose of the summary component is to manage a small textual control representing an overall "summary" of the paging state. This typically holds a message reading similarly to "30-31 of 139 items"

Subcomponent Name: fluid.pager.summayr

### options

Name	Description	Values	Default
mess age	A string template for formatting the summary message. This may make use of substitution variables <code>%first</code> , representing the index position of the first visible item, <code>%last</code> , representing the index position of the last visible item, and <code>%total</code> , being the total length of the user's data model	A string templa te	"% first -% last of % total items"

## PageSize subcomponent

The PageSize component operates a control which allows the user to select the number of items shown at one time on a visible page of the control.

Subcomponent Name: fluid.pager.pageSize

The default implementation of the PageSize component has no options of its own. Its assumption is that the tag identified by the pageSize selector configured at the top-level component represents a standard HTML <select> control which has been populated with a list of the desired range of page sizes. By default as listed above, the type of the PageSize subcomponent is initialised to "fluid. pager.directPageSize".

### RangeAnnotator subcomponent

The RangeAnnotator subcomponent decorates the displayed page links with a tooltip displaying the range of data values held on that page. To use the RangeAnnotator, you must specify the rang eAnnotator option, as follows:

```
rangeAnnotator: {
   type: "fluid.pager.rangeAnnotator"
}
```

Note that if the RangeAnnotator is used you must provide toplevel the annotateColumnRange options. When the RangeAnnot ator is used, several other top-level Pager options become available. NOTE that when the RangeAnnotator is not used, these options are ignored.

### Top-level options for the RangeAnnotator

Please note that these options, while used to configure the RangeAn notator subcomponent, must be provided as top-level options to the Pager itself. In future releases, they will become options of the RangeAnnotator itself.

Name	Description	Values	Default
anno tate Colu mnRa nge	One of the values of the key fields in columnDefs, which will be used to highlight the range of values that a particular column will take, usually by displaying a tooltip as the mouse hovers over a page link. Requires a rangeAnnotator component to be configured.	string	annot ateCo lumnR ange: undef ined In version 1.3.1 only: annot ateCo lumnR ange: "colu mn1"
tool tipD elay	The delay, ms, in hovering over a control to displaying its tooltip	number	tooti pDela y: 300
tool tipId	The document id of the displayed tooltip (this markup is generated internally)	string	toolt ipIt: "tool tip"

### BodyRenderer subcomponent

The component configured as bodyRenderer, to the knowledge of the overall Page component, simply has the role of a standard listener to onModelChanegd. However, the special function of this subcomponent, if configured, is to perform the work of locating an HTML template suitable for rendering the actual paged view contents, and responding to changes in the pager's model for the purpose of keeping the rendered View updated.

The work of rendering the paged body is split into two parts - firstly, the part of preparing the direct (JSON) representation of the data to be renderered. This is performed by the top-level component configured as modelFilter. A ModelFilter is simply a function, whose signature and purpose is documented as part of the top-level component options - it need not actually make use its argument mod el to filter the data View, but there is a standard implementation flu id.pager.directModelFilter that simply takes the model (configured as the top-level that.options.dataModel) and extracts just those rows identified by the pagerModel.

The standard implementation of the BodyRenderer in fluid. pager.selfRender locates and makes use of the configured top-level ModelFilter in its listener implementation. The ModelFilter is invoked to do its work of preparing the data suitable for this event cycle, which is then handed to the Fluid Renderer - Background for rendering. Other implementations of BodyRenderer might use other rendering schemes.

### options

Description	Values	Default
		<pre>selectors: {    root: ".flc-pager-body- template" }</pre>
		keyStrategy: "id"
		keyPrefix: ""
		row: "row:"
		header: "header:"
		renderOptions: {}
	Description	Description Values

### Options for fluid.pager.selfRender

Name	Description	Values	Default
sele ctors	Javascript object containing selectors for various fragments of the selfRender subcomponent.		<pre>selectors: {    root: ". flc-pager- body- template" }</pre>
New in v1. 1 styl es	Javascript object containing CSS style names that will be applied to the selfRender subcomponent.		<pre>styles: {   root: ". fl-pager" }</pre>
rend erOp tions	An options structure, to be passed through to the Fluid Renderer when rendering the body of the table	An optio ns struc ture	{}
row	The rsf:id to be used for the container, when generating each successive row of the table	string (anrs f:id)	"row:"
head er	The rsf:id to be used for the container, when generating the table header row	string (anrs f:id)	"header:"

## The Pager Model

Where the component that is constructed by a line such as

```
var that = fluid.pager(component, options);
```

the returned object will have a data member called model:

```
that.model
```

This object is the "model" of the pager - note that this is not the same as the data model of the user:

- The Pager's model consists of the state of the paging component, which specifies the page index position, overall data range and page size.
- The user's data model consists of the actual data being paged, which is stored in that.options.dataModel.

This, the Pager's model, should be treated as **read-only** via this interface, and should only be manipulated by use of the component's event system.

The pager model is laid out as following:

Field	Туре	Primary /Computed	Description
pageIn dex	intege r	Primary	The current index of the page, expressed 0-based amongst the range of pages
pageSi ze	intege r	Primary	The number of "items" which may be shown on a page
totalR ange	intege r	Primary	The total count of "items" in the underlying user's data model
pageCo unt	intege r	Computed	The limit of the range in which pageIndex is expressed
[fluid: pageLimit]	intege r	Computed	The limit of the range of items shown on the current page represented by the model
sortKey	string	Primary	The key the columnDef for a column whose data is to be used for sorting the table [Optional only supported for rendered views]
sortDir	-1 or 1	Primary	+1 represents sorting in ascending order by the s ortKey, -1 represents sorting in descending order

Note that pageLimit is not actually stored within the model at any point, but is supplied a computation function computePageLimit to match computePageCount by which pageCount is derived from the primary fields.

## Dependencies

The Pager dependencies can be met by including the minified Infu sionAll.js file in the header of the HTML file:

<script type="text/javascript" src="InfusionAll.
js"></script>

Alternatively, the individual file requirements are:

```
<!-- Stylesheets -->
<link rel="stylesheet" type="text/css" href="</pre>
framework/fss/css/fss-reset.css" />
<link rel="stylesheet" type="text/css" href="</pre>
framework/fss/css/fss-layout.css" />
<link rel="stylesheet" type="text/css" href="</pre>
components/pager/css/Pager.css" media="all" />
<link rel="stylesheet" type="text/css" href="lib</pre>
/jquery/plugins/tooltip/css/jquery.tooltip.css"
media="all" />
<link rel="stylesheet" type="text/css" href="lib</pre>
/jquery/ui/css/jquery.ui.theme.css" />
<!-- Scripts -->
<script type="text/javascript" src="lib/jquery</pre>
/core/js/jquery.js"></script>
<script type="text/javascript" src="lib/jquery</pre>
/ui/js/jquery.ui.core.js"></script> <!-- New
in v1.3 -->
<script type="text/javascript" src="lib/jquery</pre>
/ui/js/jquery.ui.widget.js"></script> <!--
New in v1.3 -->
<script type="text/javascript" src="lib/jquery</pre>
/ui/js/jquery.ui.position.js"></script>
New in v1.3 -->
<script type="text/javascript" src="lib/jquery</pre>
/plugins/bgiframe/js/jquery.bgiframe.js"><
/script> <!-- New in v1.3 -->
<script type="text/javascript" src="lib/jquery</pre>
/plugins/tooltip/js/jquery.ui.tooltip.js"><
/script> <!-- New in v1.3 -->
<script type="text/javascript" src="lib/json/js</pre>
/json2.js"></script> <!-- New in v1.3 -->
<script type="text/javascript" src="framework</pre>
/core/js/Fluid.js"></script>
<script type="text/javascript" src="framework</pre>
/core/js/FluidDOMUtilities.js"></script>
New in v1.3 -->
<script type="text/javascript" src="framework</pre>
/core/js/FluidDocument.js"></script>
                                        <!-- New
in v1.3 -->
<script type="text/javascript" src="framework</pre>
/core/js/jquery.keyboard-ally.js"></script>
-- New in v1.3 -->
<script type="text/javascript" src="framework</pre>
/core/js/DataBinding.js"></script>
<script type="text/javascript" src="framework</pre>
/core/js/FluidRequests.js"></script>
in v1.3 -->
<script type="text/javascript" src="lib</pre>
/fastXmlPull/js/fastXmlPull.js"></script>
<script type="text/javascript" src="framework</pre>
/renderer/js/fluidParser.js"></script>
<script type="text/javascript" src="framework</pre>
/renderer/js/fluidRenderer.js"></script>
<script type="text/javascript" src="components</pre>
/tooltip/js/Tooltip.js"></script> <!-- New in
v1.3 -->
<script type="text/javascript" src="components</pre>
/pager/js/Pager.js"></script>
```