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Page Developer's Guide

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ATG Page Developer’s Guide

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1 Introduction

The *ATGPageDeveloper'sGuide* describes how to work with Nucleus components and JavaServer Pages—two core building blocks of any Web site.

Nucleus components are server-side JavaBeans and servlets that perform the back-end functionality of the Web application—for example, enabling database connectivity, logging, scheduling, and handling HTTP requests. Java developers create these components and link them together as applications in ATG's development framework, Nucleus.

Site visitors browse and interact with JavaServer Pages (JSPs), dynamic documents that conform to the JavaServer Pages 2.0 specification (http://jcp.org/aboutJava/communityprocess/final/jsr152/). The ATG platform's DSP tag library provides specialized markup tags to render content dynamically by linking Nucleus components directly to JSPs. The DSP tag library lets you connect JSP content to back-end Java code. Thus, the presentation layer and site application logic can be separately developed and maintained.

Nucleus and the DSP tag library let you accomplish the following tasks:

- Display component property values.
- Connect HTML forms to component property values, so information entered by the user is sent directly to the components.
- Reuse HTML content by embedding the contents of one page in other pages.
- Embed ATG servlet beans that display the servlet's output as a dynamic element in a JSP.

2 Creating JavaServer Pages

When a browser requests a JavaServer Page (JSP), the ATG platform locates the associated document, compiles it into Java code (unless it is pre-compiled), then converts the code into an HTML page for browser display. Because the HTML is generated at runtime, it can incorporate dynamic elements that customize the page for each user who requests it. JSP pages that run on the ATG platform can pass information to JavaBeans, servlets, and other Java conventions and receive the output of these operations.

Summary of JSP Functionality

An application built from JSPs has the following built-in capabilities available to it:

- Display property values of Nucleus components. See Displaying Dynamic Values (page 9) in this chapter.
- Display forms that connect to Nucleus component properties, so current property values can appear in input fields, and user-entered values can be saved to components. See the *Forms* (page 59) chapter.
- Invoke ATG servlet beans at specified points in a page, returning the output of the servlet as a dynamic element of the page. Components that generate HTML are derived from the Java Servlet standard. See Embedding Pages (page 23) in this chapter and Embedding ATG Servlet Beans in Pages (page 29) in the *Using ATG Servlet Beans* (page 29) chapter.
- Invoke servlet components with HTML passed in as parameters. In this way, servlet components can dynamically generate HTML, so specific HTML tags do not need to be embedded in the Java code. Thus, the HTML-generated display and Java-generated functionality can be maintained in separate files. See Embedding ATG Servlet Beans in Pages (page 29) in the *Using ATG Servlet Beans* (page 29) chapter.
- Set Nucleus components to a scope, which determines its availability to other application elements. See Changing a Component’s Scope and Description (page 348).
- Extract data stored in XML Data Object Models, transfer it to Nucleus components and render it in a JSP. See *Integrating XML With ATG Servlet Beans* (page 45).

This chapter shows how to build JSPs on the ATG platform, focusing on special features that are provided by the DSP tag library. The chapter contains these sections:

- Tag Converters (page 14)
- Page Parameters (page 20)
- Reusing Application Components (page 23)
- Wireless Device Documents (page 27)

Tag Libraries

The ATG platform supports JSPs as its primary authoring format. The ATG platform ships with two tag libraries, located at `<ATG9dir>/DAS/taglib`:

- JSTL (page 4)
- DSP (page 4)

Additional tag libraries might be provided with other ATG products and solutions.

JSTL

The JavaServer Pages Standard Tag Library (JSTL) from Sun Microsystems handles generic Web application tasks that are supported by all application servers. JSTL is comprised of four tag libraries:

- core: evaluate and display data
- xml: manage XML code
- fmt: handle internationalization
- sql: interact with SQL data sources

For more information, see http://java.sun.com/products/jsp/jstl/.

DSP

The DSP tag library lets you access all data types in ATG's Nucleus framework. Other functions provided by these tags manage transactions and determine how to render data in a JSP. You should use tags from the DSP tag library only for tasks that involve Dynamo Application Framework (DAF) resources. For generic Web application tasks, use JSTL tags.

In pages that import the DSP tag library, you should generally favor DSP tags over equivalent JSP tags. In general, the corresponding DSP tag library tags provide enhanced functionality, such as support for the passing of object parameters between pages. In particular, use dsp:include (page 158) and dsp:param (page 170) rather than their JSP equivalents.

The DSP tag library supports both scripting and the JSP Expression Language. For example, the following two tags are equivalent:

```
<dsp:valueof param="<%= currentCourse %>"/>
<dsp:valueof param="${currentCourse}"/>
```

Importing Tag Libraries

A JSP must import the ATG platform's DSP tag library so it access Nucleus components. The following page directive specifies the DSP tag library location and the `dsp` prefix to use for its tags:

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
```

Below the DSP tag libraries import statements, dsp:page (page 169) tags enclose the remaining document. These tags facilitate ATG page processing and must be included in each page as they are in this example.

Changing the tag library directive

There are two ways to deploy a tag library. By default, the DSP tag libraries `tld` files are kept in the tag library JAR file inside `WEBINF/lib`. The URI used in JSP page directives are defined in the `tld` itself.

The URI in the page directive must match the URI that is specified in either the tag library's `tld` file (as is the case with the DSP tag libraries) or `web.xml`. In order to define a different URI for the DSP tag libraries, specify the new URI and `tld` file location in `web.xml`. Then, the JSPs can use either the default or the new URI.

For information about making your J2EE application ready for deployment, see the pertinent documentation of your application server.

Setting Expression Language Variables

You can set any Nucleus component and Dynamic Bean to a variable that can then be referenced by the JSP Expression Language (EL). The DSP tag library provides three tags for setting components to EL variables:

- `dsp:getvalueof` enables access to standard JavaBean components, page parameters and constant values.
- `dsp:tomap` enables access to non-standard Dynamic Beans—for example, a RepositoryItem.
- `dsp:importbean`, which imports Nucleus components into a JSP, can also be used to set standard Java Bean components to EL variables.

Accessing Standard JavaBeans

dsp:getvalueof (page 153) lets you save a JavaBean component (page 6), Page parameter (page 6), or Static value (page 6) to a variable in the specified scope. Other tags such as `dsp:valueof` can then reference that value. The variable is also accessible to the JSP Expression Language.

`dsp:getvalueof` has the following syntax:

```
<dsp:getvalueof
   source-value var="var-name" [scope="scope-spec"] ] >
</getvalueof>
```

where *`source-value`* specifies the value source as a JavaBean component (page 6), Page parameter (page 6), or Static value (page 6):

- `bean="`*`nucleus-path/component-name`*`"`
- `param="`*`param-name`*`"`

- value="*static-value*"

JavaBean component

dsp:getvalueof can make JavaBean components available to EL. The following dsp:getvalueof tag sets the student variable to the Nucleus component /atg/samples/Student_01. The tag omits the scope attribute, so the default pageScope is applied:

```
<dsp:getvalueof bean="/atg/samples/Student_01" var="student"></dsp:getvalueof>
```

The student variable provides access on the current JSP to all Student_01 component properties. For example, you can use EL to render this component's age property:

```
You are <c:out value="${student.age}"/> years old.
```

Page parameter

dsp:getvalueof can make page parameters available to EL. In the next example, dsp:getvalueof sets the requestScope variable gender to reference the page parameter sex:

```
<dsp:getvalueof param="sex" var="gender" scope="request"> </dsp:getvalueof>
```

After you set this variable, it is accessible to other objects in the same request scope. In the following example, the c:when tag evaluates requestScope.gender in order to determine which content to display:

```
<c:choose>
   <c:when test="${gender == "female"}"/>
      Formal dresses are on sale!
   </c:when>

   <c:when test="${gender == "male"}">
      Tuxedos are on sale!
   <c:when>
</c:choose>
```

Static value

dsp:getvalueof can save a static value to an EL variable, as in the following example:

```
<dsp:getvalueof value="student" var="userType"> </dsp:getvalueof>
```

Subsequent references to the userType variable resolve to the literal string student.

Accessing Dynamic Beans

dsp:tomap (page 188) can save any dynamic value—JavaBean, Dynamic Bean or page parameter—as an EL variable. dsp:tomap has the following syntax:

```
<dsp:tomap var=var-name
   bean="nucleus-path/component-name.property[.property]...
   [scope="scope-spec"]
/>
```

For example:

```
<dsp:tomap bean="/atg/userprofiling/Profile" var="userProfile"/>
```

This tag creates the variable `userProfile` which can be used to reference all `Profile` component properties. The tag omits the `scope` attribute, so the default `pageScope` is applied. You can render this value later on the page as follows:

```
Welcome back, <c:out value="${userProfile.firstName}"/>!
```

Mapping to properties

In the previous example, the `firstName` property is referenced through the `userProfile` variable. `dsp:tomap` also lets you set an EL variable to a component property, enabling direct access to the property itself:

```
<dsp:tomap bean="/atg/userprofiling/Profile.firstName" var="name"/>
Welcome back, <c:out value="${name}"/>!
```

Accessing Dynamic Beans as properties

If a `dsp:tomap` tag sets its `recursive` attribute to `true`, all underlying Dynamic Beans are wrapped as Maps and can be accessed through the EL variable. This can help simplify code that accesses multi-dimensional data. For example, if the RepositoryItem `Profile` has a property `fundList` which is itself a RepositoryItem, you can provide direct access to the `fundList` property as follows:

```
<dsp:tomap bean="atg/userprofiling/Profile" var="profile" recursive="true"/>
I own these mutual funds: <c:out value="${profile.fundList}"/>
```

If desired, you can access the underlying Dynamic Bean rather than its Map wrapper through the DynamicBeanMap property `_realObject`. Thus, given the previous example, you might access the Dynamic Bean `fundList` as follows:

```
${profile.fundList._realObject}
```

dsp:getvalueof versus dsp:tomap

DSP tags `dsp:getvalueof` and `dsp:tomap` overlap in functionality. The following considerations can help guide your choice of one over the other:

- While both `dsp:getvalueof` and `dsp:tomap` provides access to JavaBean components, `dsp:getvalueof` is more efficient. `dsp:tomap` wraps all components including JavaBeans in a Map, where component properties are keys and the corresponding standard bean properties are values. Conversely, a variable created by `dsp:getvalueof` directly references the source JavaBean.
- `dsp:tomap` lets you set variables to component properties, while variables set by `dsp:getvalueof` can reference only components.

Importing Nucleus Components

You can import a Nucleus component with dsp:importbean (page 156), which is modeled after Java class imports:

```
<dsp:importbean bean="Nucleus-path" [var="attr-name" [scope="scope-spec"] ]
```

After a component is imported, references to it can omit its path and use its name only.

For example, the following tag imports the component `/samples/Student_01` and creates the EL variable `student`:

```
<dsp:importbean bean="/samples/Student_01" var="student"/>
```

This tag accomplishes two tasks:

- Imports the `Student_01` component into the `pageContext` so non-EL references to `Student_01` can exclude its full Nucleus path absolute component Nucleus address and just use the shorthand name (`Student_01`). For example:

  ```
  My favorite subject is<dsp:select bean="Student_01.subject">
  <dsp:option value="math">Math</dsp:option>
  <dsp:option value="music">Music</dsp:option>
  <dsp:option value="physicalEducation">Phys Ed</dsp:option>
  <dsp:option value="history">History</dsp:option>
  </dsp:select>
  ```

- Makes the Student_01 component available to EL. For example, other tags might use this feature as follows:

  ```
  My name is <c:out value="${student.name}"/>
  ```

By default, the `student` variable is set to page scope, which makes it accessible to any EL-enabled resources on the same page. You can define a larger scope for the `student` variable by setting the `scope` attribute to `request`, `session`, or `application`.

Note: `dsp:importbean` can import any JavaBean or Dynamic Bean component into a page; however, this tag can only set standard JavaBeans to an EL variable and make them accessible to EL. To make Dynamic Beans visible to EL expressions, use `dsp:tomap`.

EL Variable Scopes

An EL variable can be set to one of several scopes:

- `pageScope` constrains access to the current JSP.
- `requestScope` constrains access to the current request. The variable is not accessible to other requests, even if they originate from the same user session.
- `sessionScope` enables access to the user session. The variable persists for the duration of that session.
- `applicationScope` enables access to all application resources and users. The state of the variable is the same for all users of the application.

The default scope is `pageScope`, which is used when the variable declaration omits scope specification. You should specify the narrowest scope possible, in order to minimize the chance that two variables with the same name have overlapping scopes.

Setting Scripting Variables

You can use dsp:getvalueof (page 153) and dsp:tomap (page 188) tags to extract data from a component or parameter and place it in a scripting variable, which can then be referenced by other library tags that support Java expressions.

In the following example, dsp:getvalueof sets the bgcolor variable to the value held by the Profile.preferredColor property. When the ATG platform processes the body color code, it retrieves the bgcolor value and uses it to set the current page background color:

```
<dsp:getvalueof id="bgcolor" bean="Profile.preferredColor">
  <body bgcolor="<%=bgcolor%>">
</dsp:getvalueof>
```

DSP tags can also reference scripting variables in Object runtime expressions. In the following example, dsp:getvalueof sets the scripting variable profile to the Profile component. The dsp:param tag sets the page parameter userRole from the component's Role property, which it obtains from the runtime expression <%=profile.getRole()%>:

```
<dsp:getvalueof id="profile" bean="atg/userprofiling/Profile">
  <dsp:param userRole="value" value="<%=profile.getRole()%>"/>
</dsp:getvalueof>
```

Displaying Dynamic Values

You can use dsp:valueof (page 192) to display dynamic values—for example, the value of a Nucleus component property, or a page or servlet bean parameter. dsp:valueof tag uses this syntax:

```
<dsp:valueof value-source >
  [default-value]
</dsp:valueof>
```

where *value-source* specifies a dynamic value as follows:

- bean="*nucleus-path/component-name.property[.property]...*"
- value="$*EL-variable[.property]...*"
- param="*param-name*"

Specifying a Default Value

dsp:valueof can specify a default value to display by embedding it between the open and close tags. This value displays only if the component property or EL variable is empty, or undefined/null.

If no default value is required, you can use this simplified syntax:

```
<dsp:valueof dynamic-value-spec />
```

For example, you can access properties of the Student_01 component as follows:

```
Name: <dsp:valueof bean="Student_01.name"/><p>
```

```
Age: <dsp:valueof bean="Student_01.age"/><p>
```

Using EL to Display Property Values

If the `Student_01` component is referenced by an EL variable, you can use EL to display its property values, as in the following example. When the page is served, `dsp:valueof` tags are replaced by the values of the specified component properties. If a value is `null`, the default value No Name displays instead.

```
<dsp:getvalueof value="/samples/Student_01" var="student"> </dsp:getvalueof>
...
Name: <dsp:valueof value="${student.name}">No Name</dsp:valueof>
Name: <dsp:valueof value="${student.age}">No Name</dsp:valueof>
```

If no default value is required, you can use EL directly to specify display of the component property, as follows:

```
<dsp:getvalueof value="/samples/Student_01" var="student"> </dsp:getvalueof>
...
Name: <c:out value="${student.name}"/>
Name: <c:out value="${student.age}"/>
```

Referencing Nested Property Values

JavaBean property values can themselves be JavaBeans with their own property values. You can reference nested property values in JSPs with the following syntax:

`component-name.property.nested-property[.nested-property]...`

- *`property`* specifies a property of *`component-name`* that refers to another component
- *`nested-property`* specifies a property of the parent property

When you reference a property in a JSP, you can also reference a property of that property, with multiple levels of indirection.

For example, the JavaBean `PersonManager` has the property `currentPerson`. The value of this property is an instance of a `Person` class object which has an `age` property. A JSP can reference the age of the current person as follows:

```
<dsp:getvalueof value="/samples/PersonManager" var=pMgr></dsp:getvalueof>
<c:out value="${pMgr.currentPerson.age}"
```

Displaying Values that Contain HTML

The `dsp:valueof` tag's `valueishtml` attribute lets you display the value of a property or page parameter that contains HTML. For example, the `Student_01` component might have a `homepage` property whose value is a link to a Web page:

```
<dsp:valueof bean="Student_01.homepage" valueishtml="true"/>
```

This tag displays the value of the `homepage` property by interpreting its tags as HTML tags, rather than display the tags themselves.

Setting Component Properties

Two DSP tags let you set component properties on a JSP page:

- `dsp:setvalue` sets a bean property or a page parameter on the current page.
- `dsp:a` specifies a hyperlink that sets a property on activation.

Setting properties with dsp:setvalue

dsp:setvalue (page 179) sets a bean property or page parameters:

```
<dsp:setvalue target-spec [source-spec] />
```

where *`target-spec`* specifies the target to set in one of the following ways:

- `bean=`*`property-spec`*
- `param=`*`param-name`*

and *`source-spec`* specifies the source value in one of the following ways:

- `beanvalue=`*`property-spec`*
- `paramvalue=`*`param-name`*
- `value=`*`value`*

The value of the property is assigned by calling the appropriate accessor method on the target object. If no source value is specified, the target is set to null value.

For example, the following JSP fragment sets the bean property `Student_01.name` to the string value `Brian`:

```
<dsp:importbean bean="/samples/Student_01"/>

<p><dsp:setvalue bean="Student_01.name" value="Brian"/>
```

Setting properties with dsp:a

The anchor tag dsp:a (page 139) lets you set a property on activation of the hyperlink:

```
<dsp:a href="url" bean="property-spec" source-spec> link-text </dsp:a>
```

where *`source-spec`* specifies the source value in one of the following ways:

- `beanvalue=`*`property-spec`*
- `paramvalue=`*`param-name`*
- `value=`*`value`*

For example:

```
<dsp:a href="page2.jsp" bean="/samples/Student_01.name" value="Ron">
   If your name is Ron, click here!
</dsp:a>
```

When this link is clicked, the property `Student_01.name` is set to `Ron` before the browser opens the link.

Setting multiple properties

In order to set multiple properties within a dsp:a tag, use the following syntax:

```
<dsp:a href="url"
   <dsp:property bean=property-spec" source-spec />
   <dsp:property bean=property-spec" source-spec />
   [...]link-text </dsp:a>
```

Note: A dsp:a (page 139) tag can set a property only if the destination URL specifies a JSP in the same Web application.

Using Expression Language to Set Properties

The tags `dsp:setvalue` and `dsp:a` can use EL to set properties. For example:

```
<dsp:importbean bean="/samples/Student_01" var="student"/>
<dsp:importbean bean="/samples/Teacher1"/>

<dsp:setvalue bean="Teacher1.oldestStudent" value="${student.name"}/>
```

Note: EL can only be used to express the source value; the target expression must directly specify the component property to set.

Accessing Indexed Properties

JavaBeans supports indexed property values—that is, properties that store an ordered set of values in an array. In order to retrieve and set indexed properties, a JavaBean implements accessor methods that take an additional integer index parameter, as follows:

```
Object getX(int index);
void setX(int index, Object value);
```

where X is the property name. You can get and set the values of indexed properties by referencing the indexed property with this syntax:

`property-spec``[`*`array-index`*`]`

where *`array-index`* is one of the following:

- integer expression

- `bean:`*`property-spec`*
- `param:page`*`param`*

`array-index` can also be expressed in EL, where the expression resolves to an integer value, JavaBean property or page parameter.

In all cases, the array index must resolve to an integer between 0 and the array size. This integer is passed as an index argument to the accessor method for that property, which gets or sets the specified property element.

For example, the JavaBean `Student_01` might have a `Hobbies` property that manages a list of hobbies. The JavaBean defines the following accessor methods:

```
String getHobbies(int which);
void setHobbies(int which, String hobby);
```

Given these methods, you can use `dsp:valueof` to display a given hobby from this property:

```
<dsp:valueof bean="Student_01.hobbies[0]">no hobby</dsp:valueof>
```

Specifying an Index with Another Property

The value of the array index can be set from the value of another property. For example, if the `Student_01` object also has a `favoriteHobby` property that stores an integer value, it can be used to specify which hobby to display:

```
<dsp:getvalueof bean="/samples/Student_01" var="student"/>

<dsp:valueof value="${student.hobbies[student.favoriteHobby]}">
I have no favorite hobby.
</dsp:valueof>
```

When the page is rendered, it uses the array index specified by `favoriteHobby` and returns the property element's current value. All subsequent changes made to the array index property after the page is rendered to the browser have no effect on form submission.

Note: You can use array notation in some cases for a property that does not have the indexed `setX` and `getX`—for example, a property whose value is an array or a vector. However, if an ATG Servlet Bean needs to change the value of an element of your property because you referenced this property in a `setvalue` tag, it must have an indexed `setX` method.

Specifying an Index with a Page Parameter

The value of an array property index can also be set from a page parameter. For example, if a JSP has the page parameter `latestHobby` and it contains an integer value, the JSP can use that parameter as an index into the array property `Student_01.hobbies`:

```
<dsp:valueof bean="Student_01.hobbies[param:latestHobby]"/>
```

As with properties, you can also use EL to express the page parameter as an array index. The previous example might be modified as follows:

```
<dsp:getvalueof param="latestHobby" var="hobby"></dsp:getvalueof>
```

```
<dsp:param name="latestHobby" value="3"/>
<dsp:valueof bean="Student_01.hobbies[${hobby}]"/>
```

Note: While you can use a parameter as an array index, a parameter cannot itself be indexed.

Hashtable Property Values

You can reference property values in a Hashtable or Dictionary. If you have a property whose type implements the Dictionary interface, you can access its values as properties of the property itself. For example, if you have a bean called `MyBean` with a Dictionary (or Hashtable) property called `myHashtable`, you can access the value that corresponds to the key named `myKey` of that Hashtable as follows:

```
<dsp:valueof bean="MyBean.myHashtable.myKey">not set</dsp:valueof>
```

Tag Converters

To enable more control over data conversions, the ATG platform provides tag converter classes. Tag converters let you specify how data in forms is interpreted and displayed, and to control when exceptions are thrown. You specify tag converters through special attributes that ATG provides.

For example, your form might have the following field:

```
<dsp:input type="text" bean="MyBean.age"/>
```

The tag in this example creates a text input field whose value is used to set the value of the `age` property of the `MyBean` component on form submission. The ATG platform sets this property by calling `setAge()` for the class that is an instance of `MyBean`.

Because the `age` property has a data type of `int`, the user-supplied value must be converted from a string before the call to `setAge()`. Thus, if the user enters 26, the text string 26 is converted to `int` 26. However, if the user enters a string value such as `Hello`, the conversion fails and an exception is thrown.

You can specify tag converters in the following DSP tags:

dsp:a (page 139)
dsp:input (page 159)
dsp:param (page 170)
dsp:postfield (page 172)
dsp:select (page 176)
dsp:setvalue (page 179)
dsp:textarea (page 187)
dsp:valueof (page 192)

Explicit conversion

You can invoke a tag converter explicitly with the following syntax:

<*tag-name* bean="*property-spec*" converter="*converter-name*" *converter-name*="*format*">

- *`tag-name`* is the HTML tag that invokes the converter.

- *`property-spec`* identifies the property whose value you wish to convert.
- `converter` specifies the converter to use and the desired output format.

For example:

```
<dsp:input bean="Seminar.startDate" converter="date" date="M/dd/yyyy"/>
```

Implicit conversion

A tag can omit the `converter` attribute and implicitly invoke a tag converter by specifying only the converter name and format. In the following example, the `dsp:input` tag implicitly invokes the date converter:

```
<dsp:input bean="Seminar.startDate" date="M/dd/yyyy"/>
```

The following table lists the standard ATG tag converters:

Converter	**Inputdatatype**	**Outputdatatype**	**Function**
`creditCard`	numeric string	integer, float, etc.	Determines how a credit card number is displayed.

`currency`
`currencyConversion`
`euro`
	numeric string	string	Displays currency in a format appropriate for the locale

`date`	String	Date	Parses strings into Dates; displays Dates in a variety of formats.
`map`	Map	Map	Ensures that key-value pairs are parsed correctly for the specified map property.
`nullable`	any	any	If field is left empty, corresponding property is set to null
`number`	numeric string	integer, float, etc.	Displays numeric data-types in a variety of formats
`required`	any	any	Throws a form exception if the user specifies a null or empty value
`valueishtml`	string	string	Displays a string as formatted HTML text rather than escaped text.

The following sections discuss tag converters in greater detail.

creditCard

You can display a credit card number as a series of number groupings. You determine the number of items in each grouping by setting the `groupingsize` attribute. For example:

```
<dsp:valueof bean="CreditCard.number"converter="creditCard" groupingsize="4"/>
```

This example might render a credit card number with four numbers in each grouping as follows:

```
7845 5624 5586 1313
```

In general, you only want full display of a credit card number when a user enters it initially in order to facilitate visual confirmation. Afterward, you might only want to display portions of it so a user can recognize it without jeopardizing the user's privacy. With `numcharsunmasked`, you can indicate how many numbers you want to unmask, counting from right to left. The masking character is `X`, unless you specify otherwise using the `maskcharacter` attribute.

Here are some examples:

Tag	Result
`<dsp:valueof bean="CreditCard.num" converter="creditCard" numcharsunmasked="4"/>`	`XXXXXXXXXXXX3456`
`<dsp:valueof bean="CreditCard.num" converter="creditCard" maskcharacter="*" numcharsunmasked="12"/>`	`****567890123456`

Currency Converters

You can parse and convert currency amounts with these currency converters:

- `currency`
- `euro`
- `currencyConversion`

currency

The `currency` converter translates a value into the currency pattern of the recognized locale. For example:

```
<dsp:valueof bean="PriceInfo.amount" converter="currency"/>
```

In this example, no locale is specified, so the converter first looks for a request parameter named `locale`, which can be either a `java.util.Locale` object or a String that names a locale. If this parameter cannot be found, the converter gets the locale from the `RequestLocale`.

The following example explicitly specifies a locale:

```
<dsp:valueof locale="en_US" bean="PriceInfo.amount" converter="currency"/>
```

This example might display a value of `$13.89`. Each locale provides a default setting that determines:

- Currency symbol, when the symbol is part of ISO Latin-1 (ISO 8859-1)
- Separator such as a comma or period
- Format., such as extending the decimal to the tenths position

For more information on tailoring your site to an international audience, see the *Internationalization* chapter in the *ATG Programming Guide*.

euro and currencyConversion

If you need to display prices in more than one currency on your site, the `euro` and `currencyConversion` converters are especially useful. These converters are child classes of the `currency` converter. You can store prices in euros, and then use the `currencyConversion` converter to automatically convert the prices to another currency. For example:

```
<p>Price in Euros:  <dsp:valueof locale="en_UK"
   bean="PriceInfo.amountInEuros" converter="euro" symbol="&euro"/>
<p>Price in British Pounds:  <dsp:valueof locale="en_UK"
   bean="PriceInfo.amountInEuros" converter="currencyConversion"/>
```

In this example, the first `dsp:valueof` tag displays the price in euros. The `symbol` attribute is used to specify the HTML entity for the euro symbol because the ISO Latin-1 (ISO 8859-1) character set does not include this symbol. The `locale` attribute is used to determine how to format the output. The second `dsp:valueof` tag displays the price in British pounds, using the official exchange rate set by the European Union and published at http://europa.eu.int. (The exchange rate is stored in the resource file `atg/droplet/ExchangeRates.properties`.)

If the locale indicates a country that does not use the euro (such as the United States), these converters return null, and the `dsp:valueof` tag returns its default value. For example:

```
<dsp:valueof bean="priceInfo.amountInEuros" converter="currencyConversion">$5.00</
dsp:valueof>
```

In this tag, the `locale` attribute is not specified, so locale is determined as described above. If the locale is a country that uses the euro, the value of `priceInfo.amountInEuros` is converted to the appropriate currency (using the official exchange rates) and displayed in the appropriate format for that locale. If the locale is not a country that uses the euro, the price is displayed as $5.00.

The `currencyConversion` tool also includes a `reverse` attribute that you can use to convert from a locale-specific European currency (for example, British pounds) into euros. Again, the conversion is performed using the official EU rate.

```
<dsp:valueof locale="en_UK_EURO" bean="priceInfo.amountInEuros" reverse="true"
converter="currencyConversion" symbol="&euro;">no price</dsp:valueof>
```

In this example, the amount stored in `priceInfo.amountInEuros` is converted to euros and the optional `symbol` attribute is used to display the euro character. In addition, the `en_UK_EURO` value tells it to format the euro value appropriately for the specified locale—in this case, United Kingdom.

See the *Internationalization* chapter of the *ATG Programming Guide* for more information about locales.

date

You determine the way you want dates to be formatted in a form by using the `date` converter. The `date` converter uses the formatting and parsing methods and formats of the `java.text.SimpleDateFormat` class. For example, to format a date as `November 12, 1998`, use `date="MMM d, yyyy"`. If you want to format the same date as `11/12/98`, use `date="M/dd/yy"`. See the API reference for `java.text.SimpleDateFormat` in your JDK for full details of how the converter parses strings into Dates and formats Dates into strings for display.

Because the `date` converter does not flag an error if a two-digit value is entered when a four-digit value is expected for the year, you might need to add error checking to your form validation logic to handle this case. Also, if the field expects a two-digit year entry, the year is interpreted as being no more than 80 years before or 20 years after the current date.

This example uses the date converter to format a date:

```
<dsp:input bean="NewUser.lastActivityDate" date="MMMM d, yyyy"/>
```

This example defines a parameter that is a Date, not just a String:

```
<dsp:param name="lastActivityDate" value="3/4/98" date="M/dd/yy"/>
```

If your form contains a date input field, you might want to place a note near that field instructing users to supply the date in the expected format. If a date is entered in the wrong format, it is interpreted according to the format specified in the date converter, and as a result might store an incorrect date.

mindate/maxdate

You can use the `date` converter's optional `mindate` and `maxdate` attributes individually or together to restrict the range of dates a field accepts. For example, if you have a field for the user's birth date, you typically want to require that the user enter a four-digit year to make sure the date the customer enters is unambiguous, as in this tag:

```
<dsp:input bean="NewUser.birthDate" date="M/dd/yyyy"/>
```

If users enter a two-digit year instead, the date might be interpreted differently than expected. For example, 2/16/59 is interpreted as February 16, 0059. By using the `mindate` attribute, however, you can reject dates that are earlier than a certain date you specify. For example, the following tag includes a `mindate` (in the format specified by the date attribute) of January 1, 1900:

```
<dsp:input bean="Employee1.birthDate" date="M/dd/yyyy" mindate="01/01/1900"/>
```

In this case, if the user enters 2/16/59, the entry is rejected, because February 16, 0059 is earlier than the date specified by `mindate`.

When a user enters a date that is outside of the bounds specified by `mindate` and `maxdate`, the converter rejects the value and throws a `TagConversionException` with an `invalidDate` error code. You can include error handling in your form to display a message instructing the user to enter a valid date.

map

ATG's built-in `map` converter facilitates input of Map property values on forms. You can use it with dsp:input (page 159) as follows:

```
<dsp:input bean="FormHandler.map-property" converter="map"  value="key=value" />
```

Note: The `map` converter is not required by the *RepositoryFormHandler* (page 89), which can handle Map data in its own way (see Managing Map Properties (page 95) in the RepositoryFormHandler chapter).

By default, the map converter recognizes two separator characters:

- equals sign (=) as the key/value separator
- comma (`,`) as the separator between multiple key/value settings

The input tag can enable usage of different separator characters by including the following attributes:

- `keyvalueseparator` specifies the character that separates a Map key and its value.
- `separator` specifies the character that separates multiple key/value settings.

The `map` converter also lets you input multiple key/value pairs. For more information on using the map converter, see Map Properties (page 67) in the *Forms* (page 59) chapter.

nullable

If a user leaves a form field empty, by default the ATG platform does not call the `setX` method to change the value of the corresponding property. For example, your site might have a form where registered users can update their profiles, and includes a text field for entering a new home address. If the user leaves this field blank, the property that stores the address remains unchanged.

In some cases, you might want a blank form field to indicate that the corresponding property should be set to null. You can set the `nullable` converter to an expression of true to do this. For example:

```
<dsp:input type="text" bean="Person.address" nullable="true"/>
```

Primitive data types (such as `int`) , however, cannot be set to null. If you use the `nullable` converter with a property whose data type is a Java primitive, and the user leaves the field empty, an exception is thrown. You should use the `nullable` converter only with data types that are classes (such as `Integer`).

Like the `required` converter, the `nullable` converter can be used in conjunction with the `date` and `number` converters. For example, this tag specifies a number format, and makes the field nullable:

```
<dsp:input bean="NewUser.age" number="#" nullable="true"/>
```

number

The `number` converter uses the formatting and parsing methods and formats of the `java.text.DecimalFormat` class. For example, to truncate any decimals in a number, use `number="#"`. To display a number using comma as a grouping separator, and with up to two decimal places, use `number="###,###.##"`. To ensure that exactly two decimal places are displayed, even if the decimal digits are zero, use `number="#.00"`. See the API reference for `java.text.DecimalFormat` in your JSDK for full details about how the converter parses strings into numbers and formats numbers for display.

The following example displays a number with two decimal places and at least one digit before the decimal point (even if any of the digits is zero):

```
<dsp:valueof bean="CurrentPitcher.earnedRunAverage"
number="0.00"></dsp:valueof>
```

required

The `required` converter requires a user to populate the field before the form can be processed. `required` takes a Boolean expression and affects only the set operation. You can use it in the following form tags:

```
dsp:input
dsp:select
```

```
dsp:postfield
dsp:textarea
```

If the value in a required field is an empty string or contains white space, a `DropletFormException` for this element is thrown.

For example, the following input tag creates a form exception if the user submits the form with a null or empty value in the input field for `Person.userName`:

```
<dsp:input type="text" bean="Person.userName" required="true"/>
```

Note:`date` and `number` converters take `required` as an optional attribute. For example, this tag specifies a date format, and makes the field required:

```
<dsp:input bean="NewUser.lastActivityDate" date="MMM d, yyyy" required="true"/>
```

valueishtml

When a JSP is converted into HTML by the page compiler, all values provided by DSP tags are automatically enclosed in escape tags so they are treated as non-HTML code. This means that text is rendered as raw text:

```
This is how you code a word to appear <b>bold</b>.
```

rather than formatted HTML:

```
This is how you code a word appear bold.
```

In most circumstances, you want tag values to be displayed as literal text. However, when you want a tag value to appear as formatted HTML code, use the `valueishtml` tag converter. This tag converter accepts a Boolean value.

```
<dsp:param name="boldCode" value="<b>bold</b>"/>
Bold text looks <dsp:valueof param="boldCode" valueishtml="true"/>.
```

In a browser, this tag displays as follows:

```
Bold text looks bold.
```

Page Parameters

A page parameter is a named value that one page can pass on to another. A page parameter can be set to a component property, another parameter, or a constant value. Page parameters are typically appended to a URL as query strings or are submitted with a form. Tags that invoke other pages, such as dsp:a (page 139) and dsp:include (page 158), can set these query strings. A JSP can explicitly define its own page parameters through the tag dsp:param (page 170). An embedded page also inherits the page parameters of its parent page.

Passing Page Parameters

The following DSP tags let you pass parameters to the page that they invoke:

- dsp:a (page 139)
- dsp:frame (page 152)
- dsp:iframe (page 155)
- dsp:img (page 156)
- dsp:include (page 158)
- dsp:link (page 165)

You can pass parameters to the target page by embedding one or more `dsp:param` tags between the open and close tags. For example, you might set the `dsp.a` tag to create an anchor tag that passes a user's city as a query parameter:

```
<dsp:a href="homepage.jsp">Go to your home page
     <dsp:param name="city" beanvalue="Profile.homeAddress.city"/>
</dsp:a>
```

When a user clicks on this hyperlink, the tag resolves to a hyperlink string that embeds the parameter `city` as a query string, and might look like this:

```
<a href="homepage.jsp?city=Boston"></a>
```

When invoked, the target page `homepage.jsp` can access `city` as a page parameter. In the following example, the page tests this parameter with the JSTL tag `c:choose`:

```
<c:choose>
   <c:when test="${param.city ==  Boston}">
      A new store is coming soon near you!
   </c:when>

   <c:when test="${param.city == Atlanta}">
       There's a sale at your local store!
   </c:when>

   <c:when test="${param.city == Seattle}">
       The local store is going out of business. Visit the clearance sale.
   </c:when>

   <c:otherwise>
        Check our new products! Now you can purchase more products from the
        Web site.
   </c:otherwise>
</c:choose>
```

The query string `city` is held as an attribute of the `param` implicit object and referenced as `param.city`. Other operations that involve obtaining content from the request or response objects follow a similar format.

```
Click here to learn about our other stores:
<dsp:a href="${pageContext.request.requestURI}"?city= atlanta>Atlanta</dsp:a>
<dsp:a href="${pageContext.request.requestURI}"?city= boston>Boston</dsp:a>
```

In this example, when the user clicks the `boston` link, the current page reloads only this time it contains the query parameter `boston` so the page reflects information about the Boston location.

Note: Tags that invoke other pages like `dsp:a` and `dsp:include` can pass component property values to the target page; however, they cannot pass the component itself. In the previous example, the anchor tag passes the value of the JavaBean property `Game.score` to `results.jsp`; in order to obtain the component `Game`, the page must explicitly import it with `dsp:import`.

Page Parameter Scope and Inheritance

Page parameters are accessible only to the current page and its embedded child pages. A page that is embedded in another page automatically inherits the parameters that are visible to its parent page. Conversely, parameters that are defined on an embedded page are not automatically visible to its parent pages.

Overriding parameter values

If you use a DSP tag such as `dsp:include` to pass page parameters to a page, these override values inherited from parameters of the same name.

A page can also override an inherited parameter's value either by resetting it through dsp:setvalue (page 179), or by declaring a parameter of the same name with dsp:param (page 170).

To change the value of a parameter within a page, use `dsp:setvalue`. For example:

```
<dsp:setvalue param="price" beanvalue="member.discount"/>
```

Precedence of parameter values

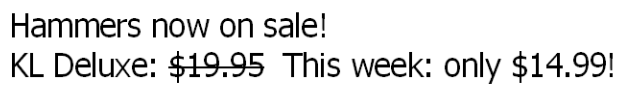
A parameter's value is always determined by its most proximate setting. In the following example, the value rendered by `dsp:valueof` tag varies according to the latest setting of the `price` parameter:

```
<dsp:importbean bean="/catalog/tools"/>
<dsp:setvalue param="price" beanvalue="hammers.KLDeluxe.price"/>

<p>KL Hammers now on sale!</p>
<p>KL Deluxe: <strike>
   $<dsp:valueof param="price"/>
</strike>&nbsp;&nbsp;

<dsp:setvalue param="price" beanvalue="hammers.KLDeluxe.discount_price"/>
This week: only $<dsp:valueof param="price"/>!
```

This might yield the following display:



Hammers now on sale!
KL Deluxe: ~~$19.95~~ This week: only $14.99!

Displaying HTML of a Parameter Set to a URL

If a parameter is set to a URL, you can specify to display the HTML of the specified link by setting the `valueishtml` attribute with the `dsp:valueof` tag. For example:

```
<dsp:valueof param="person.homepage"
valueishtml="true"></dsp:valueof>
```

This tag displays the value of `person.homepage` and interprets any HTML tags in the value, rather than showing the tags themselves.

Reusing Application Components

The ATG platform helps you build an application from reusable components. A JSP can embed components such as other JSPs or images, or access them via hyperlinks. For example, it is generally good practice to create a single JSP fragment that contains page header data, and embed in multiple JSPs across the application. Reusing this component provides two benefits:

- To change the header content, you only need to edit a single file.
- The embedded file can respond dynamically to each file context via parameters that it obtains from the calling JSP.

This section covers the following topics:

- Embedding Pages (page 23)
- Relative and Absolute URLs (page 24)
- Invoking Pages in Other Web Applications (page 25)
- Passing Parameters to Embedded Files (page 26)

Embedding Pages

A JSP can embed one or more child pages. The embedded page can be one of two types:

- A JSP fragment with a `.jspf` extension, embedded with the JSP `include` directive, and compiled together with the parent page.
- Another JSP, embedded with either `dsp:include` or `jsp:include`, and compiled independently of the parent page before it is included.

The DSP library also provides tags for embedding other HTML elements, such as frames (dsp:frame (page 152)) and images (dsp:img (page 156)).

JSP Fragments

A simple header that contains static elements can be stored as a JSP fragment (JSPF). The JSP `include` directive inserts the fragment into the parent page so it is processed as part of the parent page. For example:

```
<%@include file="header.jspf"%>
```

Dynamic elements in the child fragment can access values provided by the parent page, excluding those elements that are constrained to page or request scope. All URLs in `header.jspf`, including the calling URL (`file="header.jspf"`) resolve relative to the parent page. If the child page should resolve its URLs relative to itself, consider including it by calling `dsp:include`.

JSPs

A JSP can embed another JSP by calling dsp:include (page 158) or `jsp:include`. In both cases, the page compiler processes the child page before inserting it into the parent page. The embedded page must be a self-sufficient JSP with all required tags, including `dsp:page`. For example:

```
<dsp:include page="RegistrationForm.jsp"/>
```

`dsp:include` offers these benefits over `jsp:include`:

- It can pass page parameters from the parent page to the child page, including dynamic objects.
- Its `page` attribute lets you set absolute URLs. See Absolute URLs (page 25) for more information.
- URLs resolve relative to the current page, which removes the burden of managing URL paths in descendant pages.

Note: Always use `dsp:include` to embed a page that uses runtime expressions.

Relative and Absolute URLs

DSP tags that invoke other application components can reference those components with Relative URLs (page 24) or Absolute URLs (page 25). The following DSP tags support both URL types:

- dsp:a (page 139)
- dsp:frame (page 152)
- dsp:iframe (page 155)
- dsp:img (page 156)
- dsp:include (page 158)
- dsp:link (page 165)

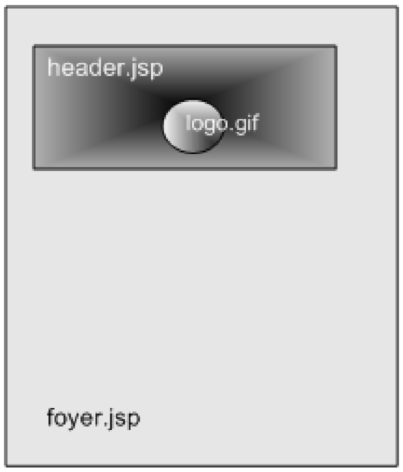
Relative URLs

The `src` and `page` attributes of DSP tags such as `dsp:include` and `dsp:a` lets you specify relative URLs. The ATG platform rewrites all relative links to embedded JSP files before including the contents of the file in the parent page. Relative links are resolved as relative to the page where they are defined. This allows entire directories of the document tree to be designed independently, so they can be reused by pages in separate directories or moved to another portion of the tree.

For example, the following file tree describes the relationship between the parent JSP `foyer.jsp` and two embedded files: `header.jsp` and `headerimage.gif`:

```
/testPages
foyer.jsp
/parts
header.jsp
logo.gif
```

`foyer.jsp` embeds `header.jsp`, which in turn embeds the graphic file `logo.gif`:



You can implement this presentation with two DSP tags that reference the embedded files with relative paths, as follows:

- In `foyer.jsp`:
  `<dsp:include page="parts/header.jsp"/>`
- In `header.jsp`:
  `<dsp:img src="./headerimage.gif"/>`

The header file `header.jsp` includes the image in `logo.gif`, which is in the same directory. Because the header file is likely to be included by other files in various locations, the reference in `header.jsp` to the image always to be relative to `header.jsp` itself.

In this example, when the ATG platform compiles `foyer.jsp` and resolves its links, it rewrites the `img` tag so it is embedded within `foyer.jsp` as follows:

```
<dsp:img src="/testPages/parts/headerimage.gif"/>
```

Absolute URLs

Tags that invoke other files such as `dsp:include` can set their page attribute to an absolute path. Absolute paths typically begin in the Web application's root directory (`war` file); however, they can begin in any location that is specified in the `war` file's `web.xml`. During page compilation, the ATG platform retrieves the request object's `contextroot` and adds it to the supplied page attribute value. Thus, the tag is rewritten to include the complete URL so the page holding the URL is not limited by complex hierarchies.

Invoking Pages in Other Web Applications

dsp:include (page 158)lets you designate a target page in any J2EE Web application. You can do this in three ways:

- Use the WebAppRegistry (page 26) to look up the application's context root.
- Use the src attribute (page 26)
- Use attributes src and otherContext (page 26)

Use the WebAppRegistry

You can access a page in another Web application by setting the `src` attribute to a string that starts with the name of a Web application registered in the WebAppRegistry, as follows:

```
src="webAppName:/path"
```

where the application’s WebAppRegistry maps *`webAppName`* to a context root. The *`path`*-specified page is searched within that context root.

Use the src attribute

To access a page in another Web application, set the `src` attribute to a full path that starts with a context path defined in `web.xml`. For example, this tag might appear in a JSP:

```
<dsp:include src="/QuincyFunds/en/guesthome.jsp">
```

where `/QuincyFunds` is a context path that is defined in `web.xml`.

You can configure the ATG platform to support multiple context paths. For example, the following fragment from `web.xml` defines two context paths delimited by colons: `/QuincyFunds` and `/dyn`:

```
<contextparam>
<paramname>atg.dynamo.contextPaths</paramname>
<paramvalue>/QuincyFunds:/dyn</paramvalue>
</contextparam>
```

Note: If you modify `web.xml`, you must reassemble, redeploy and restart the ATG platform application before changes take effect.

Use attributes src and otherContext

Used together, the `src` and `otherContext` attributes let you access pages in other Web application by identifying a context path that is not specified in the application’s `web.xml`. For example:

```
<dsp:include otherContext="/QuincyFunds" src="/en/guesthome.jsp">
```

This tag should resolve correctly to the desired JSP whether or not the including application’s `web.xml` defines the context path `/QuincyFunds`.

Passing Parameters to Embedded Files

An application typically contains embedded HTML and JSP files, which often rely on exchanging parameters. For example, two bicycle shops under the same ownership—Spinning Wheel and Power Wheel—run on the same site. The pages for each store use a header whose format and functionality are virtually identical, except for some customized content that identifies the individual store. In order to share the same header file, the JSP for each store calls the header file with `dsp:include`, which passes a parameter that identifies the given store.

For example, the applicable code for the Spinning Wheel site’s JSP looks like this:

```
<dsp:include page=header.jsp>
<dsp:param name="storename" value="Spinning Wheel"/>
</dsp:include>
```

The code for the sister store Power Wheel looks like this:

```
<dsp:include page=header.jsp>
```

```
<dsp:param name="storename" value="Power Wheel"/>
</dsp:include>
```

At runtime, the `dsp:include` tag passes in `storename` as a page parameter to `header.jsp`. This parameter is available to DSP tags in the header file, as in the following example:

```
<h1>Welcome to <dsp:valueof param="storename"/></h1>
```

At runtime, the `valueof` tag's `param` attribute resolves to the value supplied by the parent page—Spinning Wheel or Power Wheel—and displays in the included page header accordingly.

Wireless Device Documents

When you create wireless applications, a JSP page contains a directive that specifies WML (Wireless Markup Language) output format:

```
<%@ page contentType="text/vnd.wap.wml"%>
```

JSP pages that are designed for wireless devices should set the `dsp:page` tag's `xml` attribute so the page compiler produces XML-formatted tags.

Most DSP tags are valid for both HTML and WML output. The following DSP tags are incompatible with WML and must be replaced by wireless-friendly counterparts:

- dsp:postfield (page 172) posts response data to the server in WML.
- dsp:go (page 154) handles form processing much like `dsp:form` in HTML sites.

Like other DSP tag library tags, `dsp:postfield` and `dsp:go` can pass page parameters that are set on the fly and can use components to map updates to data in the database.

For general information about ATG platform wireless support, see *WirelessApplicationsandDynamo* in the *ATG Programming Guide*.

3 Using ATG Servlet Beans

Most applications require a way to dynamically generate HTML from a Java object. The `dsp:droplet` tag lets you do this by embedding an ATG servlet bean. The servlet bean produces output that is included in the HTML page.

ATG Adaptive Scenario Engine has a standard set of ATG servlet beans that you can use in your JSPs. Other ATG products, such as ATG Commerce, include additional servlet beans. Engineers at your site can also create servlet beans and make them available to you, as described in the *ATG Programming Guide*.

This chapter focuses on several ATG servlet beans that are frequently used in JSPs, with an emphasis on concepts that apply to all servlet beans. For full information about these and other ATG servlet beans, see Appendix B, *ATG Servlet Beans* (page 195).

This chapter includes the following topics:

Embedding ATG Servlet Beans in Pages

This section shows how to use ATG servlet beans in JSPs with an example that uses ForEach (page 232) servlet bean.

Using ForEach to Display Property Values

The ForEach (page 232) servlet bean lets you iterate over the elements of an array property, and specify the desired HTML to display each element. `ForEach` also provides these options:

- Specify the HTML to display before and after array processing,
- Specify the HTML to display if the array has no elements.

For example, the following JSP fragment uses the `ForEach` servlet bean to loop through the elements in the array property `Student_01.subjects`:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param name="array" bean="/samples/Student_01.subjects"/>
  <dsp:oparam name="outputStart">
    <p>The student is registered for these courses:</p>
  </dsp:oparam>
  <ul>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element"></dsp:valueof></li>
  </dsp:oparam>
  </ul>
</dsp:droplet>
```

Servlet Bean Parameters

Each servlet bean has a predefined set of parameters that control the servlet bean's behavior. Servlet beans have three types of parameters:

- Input
- Output
- Open

Input

Input parameters are passed into the servlet bean. The previous example supplies the input parameter `array` to identify the type of data to process—in this case, the component array property `Student_01.subjects`.

Output

Output parameters are set by the servlet bean. In the previous example, `element` is an output parameter that contains the value of the current array element. As the `ForEach` bean cycles through the `subjects` array, `element` is successively set to each element value. Thus, if there are five elements in the array, on each loop iteration `element` is set to five different values.

Open

Open parameters are marked by `dsp:oparam` tags, and specify code to execute at different stages of servlet processing. The previous example uses three `ForEach` servlet bean open parameters:

- `outputStart` executes just before loop processing begins. In the example, the open and close tags enclose HTML text and the `<ul>` tag to open the bulleted list.
- `output` executes for each array element. In the example, the open and close tags enclose a `dsp:value` tag that specifies to display the content of the current property element.
- `outputEnd` executes after loop processing is complete. In the example, it contains the close tag `</ul>` to close the bulleted list.

The HTML that is rendered by the example's open parameters might look like this:

```
<p>The student is registered for these courses:
<ul>
<li>Linguistics</li>
```

```
<li>Biology</li>
<li>Victorian Poetry</li>
<li>Latin</li>
<li>Philosophy</li>
</ul>
```

While output parameters are set by the servlet bean, they are rendered on the page only if they are referenced in an open parameter. In this example, the output parameter `element` is set by the servlet bean, but the `dsp:valueof` tag in the open parameter is used to display the `element` values.

Note: Certain HTML tags cannot overlap different open parameters. For example, the open and close tags of `dsp:form`—`<dsp:form>` and `</dsp:form>`—must both be embedded in the same open parameter. This constraint applies to the following DSP tags:

```
<dsp:a href="...>
<dsp:form ...>
<dsp:textarea ...>
<dsp:select>
```

Parameter Scope

In general, the values of input, output, and open parameters are local to the servlet bean that uses them, and are not directly accessible outside the open and close `dsp:droplet` tags.

If the servlet bean has a parameter with the same name as the page parameter, the servlet bean parameter value temporarily overrides the page parameter within the servlet bean.

Accessing Servlet Bean Parameters with EL

You can make servlet bean parameters available to other EL-enabled tags by setting the servlet bean's `var` attribute:

```
<dsp:droplet name="servlet-bean-path" var="attr-name">
   ...
</dsp:droplet>
```

The `var` attribute creates a Map that is composed of the parameters and their values defined in the enclosing `dsp:droplet` tag, and provides a name to that Map.

For example, you can modify the previous `ForEach` example as follows:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach" var="fe">
    <dsp:param name="array" bean="/samples/Student_01.subjects"/>
    <dsp:oparam name="outputStart">
        <p>The student is registered for these courses:
        <ul>
    </dsp:oparam>
    <dsp:oparam name="output">
        <li><c:out value="${fe.element}"/></li>
    </dsp:oparam>
  <dsp:oparam name="outputEnd">
    </ul>
  </dsp:oparm>
</dsp:droplet>
```

In this example, the JSTL Core tag `c:out` replaces the `dsp:valueof` tag and uses EL syntax to render the property contents.

A servlet bean's `var` attribute can be set either to `page` (the default) or `request` scope. In general, it is good practice to confine the scope of a servlet bean's `var` attribute to the current page.

Scope of servlet bean parameters

If you set EL variables for nested servlet beans, each variable is accessible only within the bean where it was set and to its parameters, even if several variables use the same name. For example, in the following example, the `dsp:droplet` tags for both servlet beans set the EL variable `fe`. Each instance of `fe` has scope only within its own bean; so, the first-set `fe` is accessible only to outer-bean parameters, while the second instance of `fe` is accessible only to inner-bean parameters:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach var="fe">
…
     <dsp:droplet name="/atg/dynamo/droplet/ForEach" var="fe">
      …
     </dsp:droplet>
…
</dsp:droplet>
```

For more information, see Nesting Servlet Beans (page 34).

Importing Servlet Beans

You can use `dsp:importbean` to import a servlet bean into a JSP, in order to reference it more easily. For example:

```
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>
```

Subsequent references to the servlet bean can omit its full path, as follows:

```
<dsp:droplet name="ForEach">
```

Passing Component Names with Parameters

The previous example is hard-coded to display properties of the `Student_01` component. You can modify this example so it displays properties of any component of class `Student`. This is typically done through a query string in the calling URL that contains the desired property value—obtained, for example, via a form—which is accessible to the JSP as a page parameter.

The following example obtains the page parameter `StudentID` and uses `dsp:getvalueof` to set the EL variable `currentStudent`. This parameter is used to access a specific `Student` component and use its `subjects` property to set the servlet bean's `array` input parameter:

```
<dsp:param bean="/samples/Student1" name="currentStudent"/>
   <p>Student's name:  <dsp:valueof param="currentStudent.name"/>
   <p>Student's age:  <dsp:valueof param="currentStudent.age"/>

   <dsp:droplet name="/atg/dynamo/droplet/ForEach">
     <dsp:param param="currentStudent.subjects" name="array"/>
     <dsp:oparam name="outputStart">
       <p>The student is registered for these courses:
       <ul>
     </dsp:oparam>
     <dsp:oparam name="output">
       <li><dsp:valueof param="element"/></li>
     </dsp:oparam>
     <dsp:oparm name="outputEnd">
       </ul>
     </dsp:oparm>
</dsp:droplet>
```

Note: The `currentStudent` parameter is a page parameter available throughout the page. It is not a parameter of the servlet bean itself, although in this example it is used to set the value of the `ForEach` servlet bean's `array` parameter. In this example, the value of the `currentStudent` parameter is set explicitly, but in an actual site you would typically set the parameter dynamically, based on values the user enters in a form, other pages visited, or other criteria.

Displaying Nested Component Properties with Servlet Beans

Previous examples show how to pass an array of String values to the ForEach servlet bean and display elements of that array. This section shows how to pass an array of Nucleus components into a ForEach servlet bean, then use the servlet bean to display a specific property of each component.

For example, the Student components used in earlier examples might be complemented by Dormitory components, which contain two properties:

- `name`: a String that stores the name of the dormitory
- `students`: an array of Student components

The Dormitory class instantiated by dormitory components looks like this:

```
public class Dormitory {
  String name;
  Student[] students;

  public Dormitory () {}
  public void setName (String name) { this.name = name; }
  public String getName () { return name; }
  public void setStudents(Student[] students)  { this.students = students; }
  public Student[] getStudents()  { return students; }
}
```

In the following example, the `ForEach` servlet bean iterates through an array of Student components that are in a Dormitory component, and displays each Student component's name property:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param name="array" bean="/dorms/Markley.students"/>
  <dsp:param name="sortProperties" value="+age"/>
  <dsp:oparam name="outputStart">
    <p>The following students live in
         <dsp:valueof bean="/dorms/Markley.name"/>:<ul>
  </dsp:oparam>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element.name"/>%nbsp;%nbsp;
         dsp:valueof param="element.age"/> </li>
  </dsp:oparam>
  <dsp:oparm name="outputEnd">
    </ul>
  </dsp:oparm>
</dsp:droplet>
```

In this example, the `array` input parameter points to `Markley.students`, an array of Student components. As the `ForEach` servlet bean iterates through this array, each `element` output parameter points to the next Student component; the `dsp:valueof` tag displays the `name` property of each Student component.

Sorting elements on properties

This example uses the input parameter `sortProperties`, which specifies to sort elements on the Student component's `age` property, in ascending order.

In the compiled JSP, the ForEach servlet generates output like this:

```
<p>These students live in Markley Hall:
<ul>
<li>Susan Williams  19</li>
<li>Frank Thomas  20</li>
<li>Dwayne Hickman  23</li>
</ul>
```

Note: If servlet beans are nested, an inner servlet beans inherits from the outer servlet beans the most proximate `sortProperties` setting, unless it has its own `sortProperties` setting.

Nesting Servlet Beans

The HTML produced by open parameters can contain dynamic elements such as `dsp:valueof` tags. The open parameters of one servlet bean can also include other servlet beans.

The following example specifies to display a list of students who live in a dormitory, and under each student name list registered courses. It does this by nesting ForEach servlet bean: the outer servlet bean displays the student names, and the inner servlet bean displays the courses.

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
```

```
  <dsp:param bean="/dorms/Markley.students" name="array"/>
    <dsp:oparam name="output">
    <p><dsp:valueof param="element.lastName"/>&nbsp;,
       <dsp:valueof param="element.firstName"/>&nbsp;:</p>

     <dsp:droplet name="/atg/dynamo/droplet/ForEach">
       <dsp:param param="element.subjects" name="array"/>
         <dsp:oparam name="outputStart"> <ul>
         <dsp:oparam name="output">
           <li><dsp:valueof param="element"/> </li>
         </dsp:oparam>
         <dsp:oparm name="outputEnd"> </ul>
     </dsp:droplet>

    </dsp:oparam>
</dsp:droplet>
```

When this page is compiled, the following actions occur:

1. The outer ForEach sets its `array` parameter to `Markley.students`, an array of Student components. The outer ForEach `element` points to the first Student component in this array.
2. The outer ForEach bean displays the current value of `element.name`, the `name` property of the current Student component.
3. The inner ForEach bean sets its `array` parameter to `element.subjects`. This parameter points to the first `subjects` String in the current Student component.
4. The inner ForEach bean iterates over the elements of its `array` parameter, displaying each String in `element.subjects`.

   Note: The `element` parameter of a given servlet bean has scope only within that bean; changes to its value have no effect on the `element` parameters of servlet beans that are nested outside and inside the current bean.
5. After the inner ForEach processes all elements in `element.subjects`, it returns control to the outer ForEach.
6. The outer ForEach `element` parameter points to the second element of the `Markley.students` array.
7. Steps 3-5 repeat, this time using the next Student component.
8. This process continues for each component in the `Markley.students` array.

The previous example generates HTML as follows:

```
<p>Williams, Susan:</p>

<ul>
<li>Linguistics</li>
<li>Biology</li>
<li>Latin</li>
<li>Philosophy</li>
</ul>

<p>Thomas, Frank:</p>
<ul>
<li>Physics
<li>American History
```

```
<li>Psychology
<li>French
</ul>

...
```

Referencing parameters in outer servlet beans

Servlet bean parameters have scope only within the bean itself. When nesting occurs, the parameters within each bean are unaffected by corresponding parameters in the outer- and inner-nested beans. However, an inner bean can access the values of an outer bean parameter by using to define another parameter in the outer servlet bean, and setting it to the value of a parameter in the current bean that the inner beans can access.

For example, you can modify the JSP shown earlier and obtain similar output, as follows:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param bean="/dorms/Markley.students" name="array"/>
    <dsp:oparam name="output">
    <dsp:setvalue param="outerElement" paramvalue="element"/>

    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
    <dsp:param param="element.subjects" name="array"/>
       <dsp:oparam name="outputStart">
          <p><dsp:valueof param="outerElement.lastName"/>&nbsp;,
             <dsp:valueof param="outerElement.firstName"/>&nbsp;:</p>
          <ul>
          <dsp:oparam name="output">
            <li><dsp:valueof param="element"/> </li>
          </dsp:oparam>
       <dsp:oparm name="outputEnd"> </ul>
    </dsp:droplet>

    </dsp:oparam>
</dsp:droplet>
```

Other Commonly Used Servlet Beans

The ForEach servlet bean used in the previous sections is one of many servlet beans that are included with Dynamo Application Framework (DAF). Among those most often used

- Looping servlet beans (page 36)
- Switch servlet bean (page 37)

Looping servlet beans

Several standard servlet beans are similar to ForEach: they also provide ways to loop through array elements. They differ from ForEach primarily in the portion of the array they render, or how they format output. For example:

- Range (page 270) renders a subset of array elements.

- TableForEach (page 302) produces output in a two-dimensional format such as an HTML table.
- TableRange (page 305) renders a subset of array elements, and produces its output in a two-dimensional format.

For a descriptions of all ATG servlet beans, see Appendix B, *ATG Servlet Beans* (page 195).

Switch servlet bean

Switch (page 300) is a commonly used servlet bean that tests multiple open parameters against the input parameter `value`; if the open parameter and `value` parameter are identical, the servlet executes the open parameter's body.

For example, your site might recognize different user types and render content accordingly. You typically use Switch servlet beans to handle this.

Switch takes an input parameter called `value` and renders the open parameter whose name matches `value`. A Switch servlet bean can have any number of open parameters, depending on the number of possible values of `value`. You can optionally include an open parameter named `default` that is rendered if `value` does not match the name of any other open parameter.

In the following example, the Switch servlet bean gets the value of `currentStudent.gradtype`. If the value of this parameter is `grad` or `undergrad`, Switch executes the Redirect servlet in the corresponding `oparm` body and displays the appropriate JSP. If no match is found in any open parameter, Switch renders the `default` open parameter, which redirects the user to the welcome page:

```
<dsp:droplet name="/atg/dynamo/droplet/Switch">
  <dsp:param name="value" param="currentStudent.gradtype"/>

  <dsp:oparam name="default">
    <dsp:droplet name="/atg/dynamo/droplet/Redirect">
       <dsp:param name="url" value="http://www.umvs.edu/welcome.jsp"/>
    </dsp:droplet>
  </oparam>

  <dsp:oparam name="undergrad">
    <dsp:droplet name="/atg/dynamo/droplet/Redirect">
       <dsp:param name="url" value="http://www.umvs.edu/enrollment_ugrad.jsp"/>
    </dsp:droplet>
  </oparam>

  <dsp:oparam name="grad">
    <dsp:droplet name="/atg/dynamo/droplet/Redirect">
       <dsp:param name="url" value="http://www.umvs.edu/enrollment_grad.jsp"/>
    </dsp:droplet>
  </oparam>
</dsp:droplet>
```

See Switch (page 300) in Appendix B, *ATG Servlet Beans* (page 195) for more information.

4 Serving Targeted Content with ATG Servlet Beans

ATG Personalization lets you customize content for specific users and events, primarily through two mechanisms:

- Content targeters that match content to specific users.
- Slots that display their content in the context of certain events, or *scenarios*.

For example, a site that covers sporting events might use a content targeter to show users articles about those sports that match the locale specified in their individual profiles. The targeter might have these rules:

```
Show this content:
redsoxnews.jsp
to these people:
people in group BaseballLovers
whose homeAddress.city is Boston
```

The same site might also use slots in order to determine the content that users see when they navigate to certain pages—for example, slots that highlight certain items that are relevant to the current page, such as new items of sports clothing, or clearance items for camping equipment.

This chapter describes servlet beans for incorporating targeted content into JSPs. Each targeting servlet bean gathers the items defined by a specific targeter, and displays all or a subset of them.

For specific information about targeting servlet beans, see Appendix B, *ATG Servlet Beans* (page 195). For information about creating targeted content components such as content targeters and slots, see the *ATG Personalization Guide for Business Users*.

Targeting Servlet Beans

The ATG platform provides five targeting servlet beans. Four of them use a targeter to gather a set of items from a content repository, and render the items on the page. They differ only in how many items they actually display:

- TargetingForEach (page 313) displays all of the items returned by the targeter.
- TargetingFirst (page 311) displays the first *n* items, where *n* is a number you specify.
- TargetingRange (page 318) displays a range of items, such as the third through the seventh.
- TargetingRandom (page 316) displays *n* items chosen randomly.

TargetingArray (page 309) differs from the others in that it does not format the output of the targeting operation. Instead, you must use another servlet bean to format the output.

The following sections describe how to control the output of these servlet beans, covering the following topics:

- Sorting Results (page 40)
- Controlling Event Logging (page 41)
- Limiting Result Sets (page 41)

Sorting Results

ATG Personalization has two ways to sort the results of a targeting operation:

- The targeter's rules set, which can set the sort order for output from the targeting operation. If specified, the targeter's sort order determines the order in which items are retrieved from the repository.
- The targeting servlet bean can sort the result set through its `sortProperties` parameter. A sort order specified in the targeting servlet bean with the `sortProperties` parameter determines the order the items are presented for display.

It might be desirable to specify sorting in both places. For example, a targeter can retrieve the first five matching items in order of publication date, then sort publications by author as follows:

1. Create a targeter that retrieves a set of items and sorts them by publication date.
2. Use the `TargetingFirst` servlet bean with this targeter and specify to retrieve five items, and to sort output by author.

The tags for the servlet bean might look like this:

```
<dsp:droplet name="/atg/targeting/TargetingFirst">
  <dsp:param name="targeter"
   bean="/atg/registry/RepositoryTargeters/Features/AllFeatures"/>
  <dsp:param name="howMany" value="5"/>
  <dsp:param name="sortProperties" value="+author"/>
  <dsp:oparam name="outputStart"> <ul></dsp:oparm>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element.headline"/></li>
  </dsp:oparam>
  <dsp:oparam name="outputEnd"> </ul></dsp:oparm>
</dsp:droplet>
```

You can set the value of the `sortProperties` parameter to a string that specifies how to sort the list of items in the output array. Sorting can be performed on JavaBean and Dynamic Bean properties, and on Dates, Numbers, and Strings.

Sorting on JavaBeans and Dynamic Beans

To sort on JavaBean and Dynamic Bean properties, specify the value of `sortProperties` as a comma-separated list of property names, as follows:

`<dsp:param name="sortProperties" value="{+|}`*`property-name[,...]`*`"/`

The first instance of *`property-name`* specifies the primary sort, the second specifies the secondary sort, and so on. Each property name is prepended by a plus (+) or minus () sign to indicate whether to sort in ascending or descending order.

The following example specifies to sort an output array of JavaBeans by its `title` property in ascending order, then by its `size` property in descending order:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

Sorting on Dates, Numbers and Strings

To sort on Dates, Numbers, and Strings, set `sortProperties` to a + (ascending) or – (descending) sign, as in the following example, which sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

Sorting on a Map key

In order to sort elements of a Map, set `sortProperties` to the Map key as follows:

```
<dsp:param name="sortProperties" value="_key"/>
```

Controlling Event Logging

Each targeting servlet bean described in this chapter triggers a content view event and a content-type view event for each content item returned by the targeter. For example, a page with a `TargetingForEach` servlet bean returns an array of seven content items. When the ATG platform serves this page, seven content view events and seven content-type view events are triggered and sent to the Event Distributor's content channel and content-type channel, respectively.

You can disable this behavior for any targeting servlet bean by setting one or both of the following parameters in the servlet:

```
<dsp:param name="fireContentEvent" value="false"/>
<dsp:param name="fireContentTypeEvent" value="false"/>
```

For more information, see the *PersonalizationModuleLogging* chapter of the *ATG Personalization Programming Guide*.

Limiting Result Sets

Some targeting operations might return a large number of repository items. To prevent a servlet bean from loading large results sets into memory, limit the result set by setting its `maxNumber` input parameter. For example, you can set the maximum number of items returned by a `TargetingForEach` servlet bean as follows:

```
<dsp:param name="maxNumber" value="100"/>
```

By default, the `maxNumber` property is set to `–1`, which specifies no limit to the targeting result set size.

Using Slots

A slot is a Nucleus component that you can use, in conjunction with scenarios, to set up and display a series of personalized content items on one or more Web pages. Slots are containers that you use to display and manage dynamic items on your Web site. You use targeting servlet beans to include slots in site pages, and you use scenarios to fill them with content.

Slots provide some powerful features not available through targeters:

- Slots can be integrated with scenarios, providing more flexibility and control over delivery of dynamic content. With scenarios, you can set up an empty slot that generates its own request for content when a site visitor displays the page.
- Slots can display content other than repository items.
- Slots have better caching capabilities than targeters, facilitating faster display.

You typically create a slot in the ATG Control Center, as described in the *UsingSlots* chapter in the *ATG Personalization Programming Guide*. After you create the slot, you integrate the slot into your application as follows:

1. Add the slot to the JSP through the appropriate targeting servlet bean—for example, `TargetingForEach`.
2. Create a scenario for the slot (page 42) that specifies the content to display in the slot and the circumstances when it appears.

Create a scenario for the slot

A scenario can perform these tasks:

- Defines the events and circumstances that cause content to appear in the slot.
- Specifies the content that appears.

Note: Instead of using a scenario to determine slot content, you can use an existing content targeter.

For example, you might want to display a series of messages—a Welcome Back message and a list of new pages —to site members who log on to your site after an absence of eight or more weeks. To do so, you create a `WelcomeBack` slot and a scenario that performs these tasks:

- Tests whether eight weeks elapsed since a user’s last login.
- If the first condition evaluates to true, displays the appropriate items in the `WelcomeBack` slot.

Note: A slot can contain only items of the same type from a single repository. (The content item type is a setting that your database administrator or application developer defines when he or she sets up a repository. For more information, see the *ATG Repository Guide*.) The item type that you can include in a particular slot is specified by the `itemDescriptorName` property in the slot component. The repository is specified by the `repositoryName` property in the slot component.

You use the Control Center to create and enable scenarios for slots. For more information, see the *ATG Personalization Guide for Business Users*.

Setting Pages To Support Scenarios

Creating scenarios is a task that is often assigned to business users. Some scenarios use elements that listen for events fired from pages, or respond to changes in component properties. Such scenarios require you to design pages with these tasks in mind.

FormSubmission Event

A scenario can include a FormSubmission element, which listens for a FormSubmission event and responds by triggering the next scenario element. A FormSubmission event occurs on activation of a form submit control that has a form handler method associated with it. If the form handler's `sendMessage` property is set to true, the form handler method fires the FormSubmission event, and the scenario's FormSubmission element responds accordingly.

You can set the `sendMessage` property to true by defining a hidden input as follows:

```
<dsp:input type="hidden" bean="MyFormHandler.sendMessage" value="true"/>
```

Filtering FormSubmission events

A FormSubmission element can be configured to listen only for messages sent by a specific form handler component, such as ProfileFormHandler. Each FormSubmission event sets a `formName` parameter that is set to the name of its form handler's component name. This parameter enables FormSubmission scenario elements to respond only to the desired events.

For more information, see the *FormSubmissionEvent* section of the *UsingScenarioEvents* chapter of the *ATG Personalization Guide for Business Users*.

Clicks a Link

Clicks a Link scenario elements can track links that site visitors click, and their navigation habits. A Clicks a Link scenario element is enabled by setting the `dsource` parameter in a `dsp:a` anchor tag. For example:

```
<dsp:a href="content/month_discounts.jsp">
<dsp:param name="dsource" value="OnSale, MemberDiscount"/>
Click here to see this month's discounts!
</dsp:a>
```

The values that you specify for the `dsource` parameter—in this example, `OnSale` and `MemberDiscount`—are used to name a collection of data stored about that link. You can use a different value for each link or reuse a value such as `onsale` for similar links.

The Clicks a Link element contains the following optional parameters:

Thisparameter...	**TriggerstheClicksaLinkelementwhen…**
anywhere	A site visitor clicks any link whose anchor tag contains a `dsource` parameter.
from page	A site visitor clicks any link on the specified page, if the link contains a `dsource` parameter. Examples: *Clicksalinkfrompagenamed/welcome.jsp* *Clicksalinkfrompageinfolder/content/today/*
to page	A site visitor clicks any link that goes to the specified page, if the link contains a `dsource` parameter. Examples: *Clicksalinktopagenamed/thismonthonly.jsp* *Clicksalinktopageinfolder/content/monthlyspecials*

Thisparameter...	TriggerstheClicksaLinkelementwhen…
where source name list	A site visitor clicks a link with a specific `dsource` parameter. Examples: *Clicksalinkwheresourcenamelistincludes OnSale.* *Clicksalinkwheresourcenamelistincludesanyof[OnSale,MemberDiscount,MonthlyPromo]*

For more information, see the *ClickThroughEvent* section of the *UsingScenarioEvents* chapter of the *ATG Personalization Programming Guide*.

5 Integrating XML With ATG Servlet Beans

The ATG platform provides servlet beans for transforming data in XML documents. These servlet beans let you display all or part of an XML document in a JSP, or make the data in an XML document available to the ATG platform as a DOM document.

This chapter includes the following sections:

XML, XSLT, and DOM

XML is a markup language for documents that contain structured information. An XML document is a tree of nodes, where each node can have one or more attributes. It can also have one or more child nodes, each of them a different type than its parent.

XML specifies the structure of a document; it does not specify how to display it. XSLT is a language for transforming XML documents—for example, into a human-readable format such as HTML. ATG products provide XSLT and JSP templates that transform XML documents for display.

For more about XML and XSLT, see www.w3.org/XML and www.w3.org/TR/xslt.

XML and DOM

The Document Object Model (DOM) is a platform- and language-independent standard object model for representing HTML and XML formats. It defines the logical structure of documents and how they are accessed and manipulated.

The DOM represents an XML document as a tree of nodes, where a DOM document is an instance of `org.w3c.dom.Document`. Each node in a DOM document is an instance of some subclass of the Node class `org.w3c.dom.Node`. Node subclasses include Element, Text, and Comment. Node properties include `nodeName`, `nodeType`, `nodeValue`, `childNodes`, `firstChild`, and `lastChild`. The Node interface provides methods that let you determine whether a node has children, its type, and its value. You can use these methods to iterate over, manipulate, and display a DOM document and its nodes.

For more information about DOM, see the Document Object Model Level 2 specification at http://www.w3.org/DOM/DOMTR.

XML Transformation

The ATG platform includes four servlet beans that let you create and manipulate DOM components:

- XMLToDOM (page 333): Parses an XML document and transforms it into a DOM document, so the document's nodes and attributes are available as objects and object properties.
- NodeForEach (page 254): Given a DOM node, selects nodes that match a specified pattern and iterates over the selected nodes.
- NodeMatch (page 256): Given a DOM node, selects the next node that matches a specified pattern.
- XMLTransform (page 334): Given an XML document and an XSLT or JSP template, transforms and outputs the XML document, with the formatting provided by the template.

You can also accomplish these tasks with a non ATG-specific tag library such as Apache Xtags (http://jakarta.apache.org/taglibs/doc/xtags-doc/intro.html).

For example, an extranet application might let clients view the status of orders that are fulfilled through a supply chain. Because the supply chain can involve other companies, you establish a standard XML format to communicate order status via documents like this:

```
<?xml version="1.0"?>

<widget-orders version="1">

<order id="ID101010" account="86666">
  <order-status>
     "Shipped"
  </order-status>
</order>

<order id="ID939393" account="86667">
   <order-status>
     "Awaiting shipment"
   </order-status>
</order>

<order id="ID101011" account="86666">
  <order-status>
     "Shipped"
  </order-status>
</order>

</widget-orders>
```

In this example, the XML document is composed of several `order` nodes. Each node has two attributes:

- `id` identifies the order.
- `account` identifies the customer who placed the order.

Each `order` node has an `orderstatus` child node, which defines the order's status.

Note: This XML document omits an encoding declaration because it uses the default iso-8859-1 encoding. A document that uses another character encoding must include an encoding declaration. For example, if the document uses the UTF encoding, the first line must be:

```
<?xml version="1.0" encoding="UTF8"?>
```

For more information about character encoding, see the *Internationalization* chapter of the *ATG Programming Guide*.

Processing XML in a JSP

Given the previous XML document, you can use a JSP to read the XML document and retrieve data from it for display. The JSP performs these tasks:

1. Obtains the XML document and converts it into a DOM document.
2. Finds every `order` node with account number 86666.
3. Displays an HTML table with a row for each `order` node that satisfies the selection criteria as follows:

OrderID	**OrderStatus**
ID101010	Shipped
ID101011	Shipped

Transforming XML to DOM

The JSP processes the XML document by calling the servlet bean XMLToDOM (page 333) . XMLToDom obtains the XML document `widgetorders` and converts it into a DOM document. The servlet bean's `input` parameter is set to `orders.xml`—the relative URL of the XML document:

```
<%-- Convert the XML document into a DOM object --%>
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLToDOM">
  <dsp:param name="input" value="orders.xml"/>
  <dsp:param name="validate" value="false"/>

  <%--if conversion succeeds--%>
  <dsp:oparam name="output">
  ...
  </dsp:oparam>

  <%--if conversion fails--%>
  <dsp:oparam name="failure">
  ...
  </dsp:oparam>

</dsp:droplet>
```

XMLToDom has two open parameters whose bodies conditionally execute, depending on whether the transformation succeeds or fails:

- `output` specifies how to process the DOM document when transformation succeeds.
- `failure` specifies the message to display if the transformation fails.

Processing DOM nodes

If XMLToDOM succeeds, it executes the contents of its open parameter `output`. In this example, the `output` body calls the servlet bean NodeForEach (page 254), which iterates over the specified DOM nodes and performs these tasks:

- Gets each `order` node whose `account` attribute value is 86666.
- Gets the node's `id` attribute and sets its value in the appropriate HTML table cell.

```
<%--if conversion succeeds--%>
<dsp:oparam name="output">

  <%--from first order node, select each node where account = 86666--%>
  <dsp:droplet name="/atg/dynamo/droplet/xml/NodeForEach">
    <dsp:param name="node" param="document.firstChild"/>
    <dsp:param name="select"
    value="/widget-orders[position()=1]/order[@account='86666']"/>

    <%-- Case where none found --%>
    <dsp:oparam name="empty">
      No orders found.
    </dsp:oparam>

    <%-- if data found, start output --%>
    <dsp:oparam name="outputStart">
      <table>
        <tr>
          <td>Order ID</td>
          <td>Order Status</td>
        </tr>
    </dsp:oparam>
    <%-- output value of order node's id attribute --%>
    <dsp:oparam name="output">
      <tr>
        <td> <dsp:valueof param="element.id.nodeValue"/> </td>

        <%-- get child node order-status, display its value --%>
          <dsp:droplet name="/atg/dynamo/droplet/xml/NodeMatch">
          <dsp:param name="node" param="element"/>
          <dsp:param name="match" value="order-status/text()"/>
          <%-- Case where match is successful --%>
          <dsp:oparam name="output">
            <td> <dsp:valueof param="matched.nodeValue"/> </td>
          </dsp:oparm>
        </dsp:droplet>
      </tr>
    <%-- end NodeForEach output --%>
    </dsp:oparam>

    <%-- close table --%>
    <dsp:oparam name="outputEnd">
      </table>
    </dsp:oparam>

  <%-- close NodeForEach droplet --%>
  </dsp:droplet>
<%-- close XMLToDOM output --%>
</dsp:oparam>
```

Handling DOM conversion failure

If the XML-to-DOM conversion fails, the XMLToDOM servlet bean executes its open parameter `failure`:

```
<%-- If conversion fails --%>
<dsp:oparam name="failure">
  Failure to parse XML document: <dsp:valueof param="input"/> <br/>
</dsp:oparam>
```

Transforming XML Documents with Templates

The servlet bean XMLTransform (page 334) (`/atg/dynamo/droplet/xml/XMLTransform`) lets you use templates to transform XML documents. The template can be an XSLT template or a JSP. The document to transform, accessible as a URL, DOM document, or input stream, is specified by the servlet bean's `input` parameter.

You can specify the template to use in several ways. The ATG platform uses the template specified according to the following order of precedence:

1. The input parameter `template` that is set by the XMLTransform servlet bean.

2. The global XMLTemplateMap Component (page 51)—specified by the `xmlTemplateMap` property of the component`/atg/dynamo/droplet/xml/XMLTransform` —which defines a mapping from document type to template, or from URL to template.

3. A globally defined default template, specified by the `defaultTemplate` property of the XMLTemplateMap Component (page 51).

4. The template defined by the XML document itself, using an embedded `xmlstylesheet` processing instruction.

For more details on the embedded `xmlstylesheet` directive, see the specification at http://www.w3.org/TR/xml-stylesheet. An XSL directive must have a recognized XSL type, such as `text/xml` or `text/xsl`, to distinguish it from CSS stylesheet directives. If the source document contains multiple XSL directives, the stylesheets are concatenated before the transformation is applied. If you want an embedded stylesheet directive to take effect, the `xmlTemplateMap` must not produce a match. You can achieve this by setting the `xmlTemplateMap` property to `null`, or having an empty match table and empty default value.

In the case of a JSP template, the XMLTransform servlet bean passes a DOM document as a parameter local to the execution of the JSP. The name of this parameter can be controlled by the XMLTransform servlet bean parameter `documentParameterName`.

The transformation yields a DOM object that is bound to the `document` parameter. The name of this parameter can be controlled by the XMLTransform parameter `documentOutputName`.

Unless you specify otherwise with the `output` parameter, XMLTransform outputs the transformed document to the page.

Applying a Template to an XML Document

The following example uses the `widgetorders` XML document shown earlier, and this XSLT template:

```
<?xml version="1.0"?>

<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">

<xsl:template match="widget-orders">
  <table>
     <tr>
       <td>Order Id</td>
       <td>Order Status</td>
     </tr>
   <xsl:for-each select="order[@account='86666']">

     <xsl:sort select="@id"/>
       <tr>
         <td> <xsl:value-of select="@id"/> </td>
         <td> <xsl:value-of select="order-status"/> </td>
       </tr>

   </xsl:for-each>
   </table>

</xsl:template>
</xsl:stylesheet>
```

The example uses the servlet bean XMLTransform as follows:

- The servlet bean's `input` parameter specifies the XML document to transform—`widgetorders`—by supplying its relative URL `orders.xml`.
- The `template` parameter supplies the XSLT template shown earlier, `orderstemplate.xsl`.
- No `output` parameter is specified, so the servlet bean displays the transformed XML document in the current JSP.

```
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
     <dsp:param name="input" value="orders.xml"/>
     <dsp:param name="template" value="orders-template.xsl"/>

     <dsp:oparam name="failure">
       Failure to transform XML document: <dsp:valueof param="input"/>
       <br/>
     </dsp:oparam>
```

```
</dsp:droplet>
```

The `orders.xml` document is transformed by this template to yield the same output as shown in the XMLToDOM example shown earlier (in Processing XML in a JSP (page 47)). The XSLT template performs the same selection and formatting as the servlet beans XMLToDOM, NodeForEach, and NodeMatch.

XMLTemplateMap Component

The ATG platform includes a global component `/atg/dynamo/service/xml/XMLTemplateMap` whose mappings enable ATG servlet beans to locate templates. `XMLTemplateMap` has the following service Map properties:

- `urlTemplateMap` maps an absolute URL/URI of an XML file to the absolute URI/URL of a template. For example:

  ```
  urlTemplateMap=/xml/orders.xml=/xml/orderstemplate.jsp
  ```

- `docTypeTemplateMap` maps a DTD document-type name to a template.
- `defaultTemplate` specifies a template to use when no template is found for an XML file. You can set this property to either a URL or a URI in the document root.

XML Document Cache

Transforming XML to DOM can incur considerable overhead. The ATG platform includes a separate document cache for XML documents, located at `/atg/dynamo/service/xml/DocumentCache`. This component can be used to cache the results of an XML to DOM parser. The servlet bean XMLTransform uses a document cache for XML input documents, and another for XSL stylesheet templates.

The XML document cache is similar to ATG's file cache. It uses an LRU (least-recently-used) policy to maintain the cache, determining which entries to flush based upon expiration times and timestamps.

The XML document cache has the following configurable properties. A value of -1 indicates that the value is unlimited.

Property	Default	Type	Description
`maximumCacheEntries`	-1	`int`	Maximum number of cache entries.
`maximumCacheSize`	2000000	`int`	Maximum size of the cache, in bytes
`maximumEntryLifetime`	-1	`long`	Time in milliseconds before a cache entry expires.
`maximumEntrySize`	-1	`int`	Maximum size for any single entry in the cache, in bytes.

The following read-only properties provide information about cache efficiency:

Property	Description
`accessCount`	Total number of cache accesses.
`hitCount`	Number of cache hits.
`hitRatio`	Number of cache hits divided by total number of cache accesses.
`timeoutCount`	Number of times out of date entries were invalidated.
`usedCapacity`	Ratio of cache entries to maximum cache entries.
`usedMemory`	Amount of memory in bytes used by cache entries (includes keys).

XML Transformation and Targeting

You can use XML transformation servlet beans together with targeting servlet beans. The following example applies XMLTransform to the results obtained by `TargetingForEach`, as follows:

1. The targeter retrieves a result set from an XML repository, where each member of the result set is an XML document.
2. The TargetingForEach output parameter `output` invokes XMLTransform.
3. XMLTransform processes each element of the result set: the servlet bean transforms the XML document into a DOM document, and displays the document as specified by the template.

Note: This example assumes that a display template is associated with the XML documents. For more information about XML transformation and templates, seeTransforming XML Documents with Templates (page 49).

```
<dsp:droplet name="/atg/targeting/TargetingForEach">
  <dsp:param bean="/atg/registry/RepositoryTargeters/myXmlRepository"
  name="targeter"/>
  <dsp:oparam name="outputStart">
    <b> Formatted Output </b>
     <ul>
  </dsp:oparam>

  <dsp:oparam name="output">

     <dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
     <dsp:param name="input" param="element.document"/>
     <dsp:oparam name="failure">
       Failure to transform XML document: <dsp:valueof param="input"/>
       <br/>
     </dsp:oparam>
     </dsp:droplet>

  </dsp:oparam>
  <dsp:oparam name="outputEnd">
     </ul>
  </dsp:oparam>
</dsp:droplet>
```

Optimizing performance

Transforming an XML document into a DOM object can incur considerable overhead. To obtain better performance, you can make some part of an XML document an attribute of the content item. In this way, you can access these attributes directly, rather than first transform the XML to a DOM and manipulate the DOM, or apply a template to the whole document.

For example, in the Quincy Funds demo application, the Funds list at `fundlist.jsp` uses a targeter to locate and display the names and symbols of all stock funds. The fund descriptions are XML documents. Rather than transform the XML document into DOM objects and extract their fund name and symbol properties, the Funds repository treats the `fundName` and `symbol` as attributes of the repository item. Parsing an XML document into a DOM object for display occurs only when a user wants to view the entire XML fund description.

```
<dsp:droplet name="/atg/targeting/TargetingForEach">
   <dsp:param bean="/atg/registry/RepositoryTargeters/Funds/stockFunds"
   name="targeter"/>
   <dsp:oparam name="outputStart">
     <b>Stock Mutual Funds </b>
     <ul>
   </dsp:oparam>
   <dsp:oparam name="output">
     <dsp:a href="fund.jsp">
        <dsp:param name="ElementId" param="element.repositoryId"/>
        <dsp:valueof param="element.fundName"/></dsp:a> -
     <dsp:valueof param="element.Symbol"/><br/>
   </dsp:oparam>
   <dsp:oparam name="outputEnd">
     </ul>
   </dsp:oparam>
</dsp:droplet>
```

Passing Parameters to XSL

You can pass parameters from the JSP environment through the XMLTransform servlet bean to an XSL stylesheet. The parameters are matched by name to top-level `<xsl:param>` elements in the stylesheet. The XMLTransform servlet bean parameter `passParam` determines which parameters are passed to the stylesheet. To pass parameters, set `passParams` parameter to one of these scopes, listed in order of precedence:

Scope	Parametersthatarepassed
none (default)	No parameters are passed to the XSL stylesheet.
`local`	Parameters defined in the XMLTransform servlet bean.
`query`	URL query parameters from a GET request.

Scope	Parametersthatarepassed
`post`	Form parameters from a POST request.
`all`	Every parameter that is in scope for XMLTransform. Local parameters have highest precedence, followed by enclosing scopes within the same JSP.

If more than one parameter exists for a given name, only the first is passed. If `passParam` is set to `all`, local parameters have the lowest precedence, up through other enclosing scopes, and eventually to the request `query` and `post` parameters.

For more information about XSL `param` elements, see http://www.w3.org/TR/xslt.

Sample stylesheet

The following stylesheet shows how to define top-level parameters for an XSL stylesheet; this stylesheet is used in later examples, to show how to set parameter values from URL query parameters and local JSP variables.

This simple stylesheet has two parameters, `p1` and `p2`. The parameters are just displayed in the page, but they can be used to build other values, or tested for conditional branches.

```
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
    <xsl:output method="xml" encoding="iso-8859-1" media-type="text/html"/>
    <xsl:param name="p1"/>
    <xsl:param name="p2" select="'p2 default'"/>
    <xsl:template match="/">
      <html>
        <body>
          <p>P1: <xsl:value-of select="$p1"/></p>
          <p>P2: <xsl:value-of select="$p2"/></p>
        </body>
      </html>
    </xsl:template>
</xsl:stylesheet>
```

The `paramp1` does not have a default value, but `p2` has a default text string. Note the use of single-quotes inside the `select` attribute. These can be omitted when the string is inside the element body:

```
<xsl:param name="p2">p2 default</xsl:param>
```

You can invoke this stylesheet in two ways.

- Use URL query parameters (page 54)
- Use local parameters in the XMLTransform servlet bean scope (page 55)

Use URL query parameters

You can invoke a stylesheet through `query` parameters on a GET request URL. The JSP looks like this, with the `passParams` set to `query` scope:

```
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
```

```
   <dsp:param name="input" value="dummy.xml"/>
   <dsp:param name="template" value="param.xsl"/>
   <dsp:param name="passParams" value="query"/>
</dsp:droplet>
```

An appropriate URL might look like this:

```
paramquery.jsp?p1=563&p2=not+default+value
```

Use local parameters in the XMLTransform servlet bean scope

You can also invoke a stylesheet by using local parameters in the scope of the XMLTransform servlet bean: the `passParams` value is set to `local`, and the two parameters, `p1` and `p2`, are defined as DSP tag library `<dsp:param>` elements.

```
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
    <dsp:param name="input" value="dummy.xml"/>
    <dsp:param name="template" value="param.xsl"/>
    <dsp:param name="passParams" value="local"/>
    <dsp:param name="p1" value="563"/>
    <dsp:param name="p2" value="not default value"/>
</dsp:droplet>
```

XSL Output Attributes

The ATG platform supports output properties that are defined by the `<xsl:output>` element in an XSL stylesheet. The XSLT standard specification (http://www.w3.org/TR/xslt) and the ATG platform implementation differ in some important respects. The default values for several of the attributes are changed to match the existing ATG platform behavior, so XSL stylesheets without an `<xsl:output>` element use default values from the request-handling pipeline, instead of those defined in the XSLT standard. The most important changes are for the `encoding`, `method` and `mediatype` attributes.

Encoding

Encoding is used for character conversion on the output stream. It is written to the `charset` field of the `contentType` HTTP response header, and it is part of the XML declaration at the head of the serialized output. Encoding can be explicitly set in the stylesheet through the `encoding` attribute: `<xsl:output encoding="x"/>`. If none is provided, the ATG platform checks the `contentType` property of the `DynamoHTTPServletResponse` component to see if it was already set by a JSP. If it is null, the ATG platform uses the default encoding specified for the active locale—for example, `iso88591` for English.

It is generally desirable that the encoding type for the XML file match the encoding used by the JSP that embeds it, depending on the contents of both files. If the JSP renders text, the XML in it might be unreadable if it uses a different character set. In this case, you might want to set encoding in both `<xsl:output>` and the JSP that uses the servlet bean, or not set it in either place so both use the default encoding.

You can set encoding for a JSP by invoking the `setContentType` method either in the page directly so it applies to the proceeding contents in the page or in the page directive:

```
<%@ page contentType="text/html; charset=iso106461"%>
```

For more information, see *InternationalizingaDynamoWebSite* in the *ATG Programming Guide*.

Method

The XSL output method determines the default MIME type, and also some aspects of syntax in serialized tags:

- An explicit `<xsl:output method="..."/>` in the stylesheet
- Otherwise, the default is HTML
  - It is not the usual XSL default of XML. If you want XML then make it explicit in the stylesheet

The XML declaration is written by default, for output method XML. This is appropriate for a complete XML document written from a single transform. If the XML output is written as a series of nested fragments, then the XML declaration must be disabled for the embedded output using an extra flag on the `<xsl:output>` element. For example:

```
<xsl:output method="xml" omitxmldeclaration="yes"/>
```

MIME Type

The `Contenttype` HTTP response header specifies the MIME type. Different flavors of XML can have different MIME types. For example:

- XHTML: MIME type `text/html`
- SVG: MIME type `image/svgxml`

The recent *XMLMediaTypes* specification (ftp://ftp.isi.edu/in-notes/rfc3023.txt) suggests more variations, such as `image/rdf+xml` for RDF, and `image/xslt+xml` for XSLT.

The ATG platform determines which MIME type to use in the following order of precedence:

1. The MIME type that is set explicitly in the stylesheet via the `mediatype` attribute: `<xsl:output mediatype="a/b"/>`.
2. The MIME type indicated in the `DynamoHTTPServletResponse` (response)
3. The default used by the application server for the specific file type. The default for JSPs is `text/html`.

Because the default MIME type is not the expected XSL default mechanism based on the method or the expected `text/xml`, it is advisable to set the MIME type explicitly in the stylesheet. For information about overriding the default MIME type, see the *ATG Installation and Configuration Guide*.

Multiple XMLTransform Servlet Beans in a Page

If a JSP has multiple XMLTransform servlet beans and each uses a different encoding/ MIME type value pair, the pairs might not be applied to their respective servlet beans as expected.

Nested XMLTransform Servlet Beans

In the following example, one XMLTransform servlet bean encloses another to produce a two-stage chained page transformation. Each XMLTransform servlet bean has a MIME type and encoding pair set in their respective `<XSL:output>` that is distinct from the other:

```
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
  <dsp:param name="input"    value="test-page.xml"/>
  <dsp:param name="template" value="../../doc.xsl"/>
  <dsp:oparam name="output">

    <dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
      <dsp:param name="input"  param="document"/>
      <dsp:param name="template"   value="../xhtml-xinclude.xsl"/>
      <dsp:param name="passParams" value="query"/>
      <dsp:oparam name="failure">
        <HTML>
          <HEAD>
            <TITLE>XML/XSL Error</TITLE>
          </HEAD>
          <BODY>
            <H1>XML/XSL Error processing <dsp:valueof param="input"></dsp:valueof>
            </H1>
          </BODY>
        </HTML>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam><%-- output --%>
  <dsp:oparam name="failure">
    <HTML>
      <HEAD>
        <TITLE>XML/XSL Error</TITLE>
      </HEAD>
      <BODY>
        <H1>XML/XSL Error processing <dsp:valueof param="input"></dsp:valueof>
        </H1>
      </BODY>
     </HTML>
  </dsp:oparam><%-- failure --%>
</dsp:droplet>
```

When the servlet beans are processed, the first XMLTransform writes its encoding and MIME type settings to the HTTP response object. Although those settings are applied to the content associated with that XMLTransform , they are overwritten immediately by the settings provided by the second XMLTransform . As a result, the settings provided by the second XMLTransform servlet bean are saved to the HTTP header and applied to the content associated to both the first and second XMLTransform servlet beans.

If the second XMLTransform references a stylesheet that does not explicitly set the encoding and MIME type, the values from the first XMLTransform persist and are applied to the content associated with the first and second XMLTransform servlet beans.

Serialized XMLTransform Servlet Beans

To insert two XML fragments in a page, you include two XMLTransform servlet beans that are adjacent and equal in the page hierarchy:

```
<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
  <dsp:param name="input"    value="test-page.xml"/>
  <dsp:param name="template" value="../../doc.xsl"/>
  <dsp:oparam name="failure">
    <HTML>
      <HEAD>
        <TITLE>XML/XSL Error</TITLE>
      </HEAD>
      <BODY>
        <H1>XML/XSL Error processing <dsp:valueof param="input"></dsp:valueof>
        </H1>
      </BODY>
    </HTML>
  </dsp:oparam>
</dsp:droplet>

<dsp:droplet name="/atg/dynamo/droplet/xml/XMLTransform">
  <dsp:param name="input"  param="document"/>
  <dsp:param name="template"   value="../xhtml-xinclude.xsl"/>
  <dsp:param name="passParams" value="query"/>
  <dsp:oparam name="failure">
    <HTML>
      <HEAD>
        <TITLE>XML/XSL Error</TITLE>
      </HEAD>
      <BODY>
        <H1>XML/XSL Error processing <dsp:valueof param="input"></dsp:valueof>
        </H1>
      </BODY>
    </HTML>
  </dsp:oparam>
</dsp:droplet>
```

Both servlet beans might be provided with their own encoding/ MIME type pair from their respective stylesheets. When the servlet beans are processed, each servlet bean uses its own encoding and MIME type pair to translate its content, but the pair used by the second `XMLTranform` are current at the end of the page so they are written to the HTTP header. This can cause an error if the content of the first XMLTransform is incompatible with the encoding enforced by the second XMLTransform. If encoding and MIME type are not set explicitly in the JSP, the settings provided by the second XMLTransform are applied to the entire page.

6 Forms

Many Web applications obtain information from users by having them fill out forms. A form might need to handle user input in a variety of formats, check input for validity, handle errors, and pass input to a servlet for processing, or to a database for storage.

Through the use of special attributes, JSPs can associate HTML form tags with Nucleus components properties:

- A page can automatically display the value of a Nucleus component property as the default value of a form element.
- When a form is submitted, its values can be written to component properties. A single form can set any number of properties in Nucleus components.
- Forms can interact directly with a SQL database. Form input can be stored in a database, or used to query a database for information to display.
- When a form is submitted, its input elements can trigger actions in the application.

This chapter shows how to use forms in JSPs. It covers the following topics:

Form Basics

An ATG form is defined by the dsp:form (page 150) tag, which typically encloses DSP tags that specify form elements, such as dsp:input (page 159) that provide direct access to Nucleus component properties. For example, the following JSP embeds a form that accesses the properties in the `Student_01` component:

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<dsp:page>
```

```
<html>
<head><title>Form Entry</title></head>
<body><h1>Form Entry</h1>

   <dsp:form action="/testPages/showStudentProperties.jsp" method="POST">
     <p>Name: <dsp:input bean="/samples/Student_01.name" type="text"/>
     <p>Age: <dsp:input bean="/samples/Student_01.age" type="text" value="30"/>
     <p><dsp:input type="submit" bean="/samples/Student_01.submit"/>
      value="Click to submit"/>
   </dsp:form>
</body>
</html>

</dsp:page>
```

In this form, two input tags are associated with the `name` and `age` properties of the Nucleus component `/samples/Student_01`. When this page is displayed, the field for the `name` property is filled in with its current value; the field for the `age` property specifies the `value` attribute, so that value is displayed instead of the current property value.

The form user can enter new values in these fields and submit the form. On submission, the values entered in the form replace the current values of the specified properties, and `showStudentProperties.jsp` is invoked, as specified by the form tag's `action` attribute.

Note: The `dsp:form` tag requires you to specify the `action` attribute.

DSP Tags and HTML Conventions

The DSP library provides form processing tags that are similar to their HTML equivalents. In general, these tags support standard HTML attributes. On page compilation, these attributes are simply passed through to the HTML page. For example, the `text` input tag has a `size` attribute that specifies the width of the text input field. If you specify `size=25` for a `text` input tag, after page compilation the resulting field is 25 characters wide.

Name attribute

Unlike standard HTML, which requires the `name` attribute for most input tags; the `name` attribute is optional for DSP form element tags:

- If an input tag omits the `name` attribute, the ATG platform assigns one when it compiles the page.
- If an input tag specifies the `name` attribute, the ATG platform uses it

Note: If `name` attributes are used, they must be unique for each property set in the form.

Attribute values

Unlike HTML forms, ATG forms require an explicit value for all attributes. For example, an HTML `input` tag that creates a checkbox can specify the `checked` attribute without supplying a value, in order to specify that the checkbox is selected by default. For example, the following HTML specifies to check the `primary` checkbox:

```
<p>Real estate owned:</p>
Primary residence
```

```
<input type="checkbox" name="re" value="primary" checked />
<br />
Vacation home:
<input type="checkbox" name="re" value="vacation" />
<br />
Other:
<input type="checkbox" name="re" value="other" />
```

This construction is invalid in JSP tags, which require that all attribute to be explicitly set to a value. Thus, the corresponding `dsp:input` tag must use this form:

```
<p>Real estate owned:</p>
Primary residence
<dsp:input type="checkbox" name="re" value="primary" checked="true" />
...
```

Embedding Pages in Forms

The example in Form Basics (page 59) shows a form that is defined in a single JSP. You might want to set the form's `dsp:form` tags in one JSP and define the form contents in another, as in this example:

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<dsp:page>
<html>
<head><title>Form Entry</title></head>
<body><h1>Form Entry</h1>

<dsp:form action="/testPages/servbeantest.jsp" method="POST">
  <dsp:include page="formbody.jsp/>
</dsp:form>
</body>
</html>
</dsp:page>
```

The embedded JSP `formbody.jsp` contains the form's input elements:

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<dsp:page>

  <p>Name: <dsp:input bean="/samples/Student_01.name" type="text"/>
  <p>Age: <dsp:input bean="/samples/Student_01.age" type="text" value="30"/>
  <p><dsp:input type="submit" value="Click to submit"
      bean="/samples/Student_01.submit"/>

</dsp:page>
```

Note: An included page can contain element tags such as `dsp:input`, `dsp:textarea`, and `dsp:select` only if the page is a complete JSP—that is, it imports the required tag libraries and contains the `dsp:page` tag. Form elements cannot be embedded in a JSP fragment (`.jspf`) file).

By separating a form's `dsp:form` tag from its actual contents, you can customize the form for different user types. For example, the `dsp:form` tag might embed a Switch (page 300) servlet bean that renders different forms for different genders—for example, specifies to include `formbodyFemale.jsp` for female users and `formbodyMale.jsp` for male users.

Setting Property Values in Forms

HTML forms can set the values of Nucleus component properties by using the `bean` attribute to associate a form element with a Nucleus component property. This section describes DSP tags that extend HTML form elements to set property values.

A single form can set the properties of various Nucleus components. In general, only one input tag in a form can be associated with a given property or with a given element of an indexed or array property. One exception applies: multiple submit inputs on a form can be associated with the same property (see Using Submit Controls to Set Property Values (page 68)).

The following sections describe how to set values for the following property types:

- Scalar (Non-Array) Properties (page 62)
- Array Properties (page 65)
- Map Properties (page 67)

This section also shows how to Set Property Values via Hidden Inputs (page 67).

Scalar (Non-Array) Properties

Several different form controls can set the values of scalar properties, depending on the data type of the property, and whether you want to provide the user with a predetermined set of choices.

Checkboxes

Using a checkbox, a user can set the value of a boolean property. For example, the `Student_01` component might have a property called `emailOK` that indicates whether your site can send promotional email. Users can indicate their preference on a registration form that contains this input tag:

```
<dsp:input
bean="/samples/Student_01.emailOK" type="checkbox"/>Send email
```

The current value of the property `emailOK` sets the checkbox's initial display: checked (true) or unchecked (false). To override the initial setting, set the `checked` attribute to true. For example, you might want the checkbox to be checked when the page displays, regardless of the property's current setting . The input tag looks like this:

```
<dsp:input
```

```
bean="/samples/Student_01.emailOK" type="checkbox" checked="true"/>Send email
```

You can also use the `default` attribute to specify a value for the input element to display, in the event the property has no value:

```
<dsp:input
bean="/samples/Student_01.emailOK" type="checkbox" default="true"/>Send email
```

Radio Buttons

To create a set of radio buttons, set a `dsp:input` tag's `type` attribute to `radio`. The following example uses a group of radio buttons to present users with a set of choices, for setting the `favoriteSport` property:

```
<p>Choose your favorite outdoor sport:
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="swimming"/>Swimming
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="biking"/>Biking
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="hiking"/>Hiking
...
```

In contrast to standard HTML, the `name` attribute is optional; grouping is based on sharing the same `bean` attribute—in this example, `Student_01.favoriteSport`.

Unless you specify otherwise, the page is initially displayed with the current value of `favoriteSport`, assuming it matches one of the five options specified here. You can override this behavior by using the `checked` attribute. The previous example can be modified so the `hiking` radio button is initially selected no matter how the `favoriteSport` property is set:

```
<p>Choose your favorite outdoor sport:
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="swimming" checked="false" />Swimming
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="biking" checked="false" />Biking
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="hiking" checked="true" />hiking
...
```

Within a selection group, only one input tag can set its `checked` attribute to true; all others must set their `checked` attribute to false.

The `default` attribute specifies a value to use if the component property has no value. To specify a value as the default, set the `default` attribute of its input tag to true, and set `default` to false for all other input tags:

```
<p>Choose your favorite outdoor sport:
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="swimming" default="true" />Swimming
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="biking" default="false" />Biking
<dsp:input bean="/samples/Student_01.favoriteSport"
   type="radio" value="hiking" default="false" />hiking
...
```

Drop-Down Lists

To create a set of choices in a drop-down list, use a `dsp:select` tag. For example:

```
<dsp:select bean="/samples/Student_01.favoriteSport">
  <dsp:option value="swimming">Swimming</dsp:option>
  <dsp:option value="biking">Biking</dsp:option>
  <dsp:option value="hiking">Hiking</dsp:option>
  ...
</dsp:select>
```

Unless you specify otherwise, the control displays the bean's current value as the initial selection.. To override this behavior, set the `dsp:select` tag's `nodefault` attribute together with the `dsp:option` tag's `selected` attribute. For example, the following tags specify `climbing` as the initial selection regardless of the current value in `favoriteSport`:

```
<dsp:select bean="/samples/Student_01.favoriteSport" nodefault="true">
  <dsp:option selected="false" value="swimming">Swimming</dsp:option>
  <dsp:option selected="false" value="biking">Biking</dsp:option>
  <dsp:option selected="true" value="hiking">Hiking</dsp:option>
  ...
</dsp:select>
```

Only one `dsp:option` tag can set `selected` to true; the others must set it to false.

Note: Use the `nodefault` attribute only to ignore a property's current value. If a form gathers data for a property that has no value—for example, for a new user profile—you can omit the `nodefault` attribute and set the desired selection through the `selected` attribute only.

`dsp:select` can also be used to create a Multiple-Selection List Box (page 66), through its `multiple` attribute.

Text Entry Fields

You can create text entry fields with two DSP library tags:

- dsp:input (page 159) creates a single-line text-entry field if its `type` attribute is set to `text`.
- dsp:textarea (page 187) creates a multi-line area for longer text entries.

dsp:input (page 159) creates a text entry field that is primarily used to enter text values; it can also be used for other types of data. For example, you can associate a text field with a property whose data type is Integer, such as `Student_01.age`. On form submission, the ATG platform converts the value from a String to the appropriate data type before it writes the value to the component property. If the conversion fails, the property remains unchanged.

A text input field displays the component property's current value unless the `dsp:input` tag also includes the `value` attribute. The `value` attribute overrides the property's current value. In the following example, the `dsp:input` tag for `Student_01.name` specifies to display the property's current value, while the tag for `Student_01.age` includes a `value` attribute that specifies the field to show a value of 30:

```
<p>Name: <dsp:input bean="/samples/Student_01.name" type="text"/>
<p>Age: <dsp:input bean="/samples/Student_01.age" type="text" value="30"/>
```

The user can change the values that appear in the fields, or leave them unchanged. When the user submits the form, the field entries are written to the specified properties.

dsp:textarea (page 187) creates a multi-line field where users can enter longer text. For example:

```
<dsp:textarea bean="/samples/Student_01.evaluation"></dsp:textarea>
```

`dsp:textarea` accepts standard HTML attributes such as `rows` and `cols`, which set the size of the text area on the page.

The text area initially contains the property's current value unless you supply the `default` attribute to override that value. The default text can be a String constant, the value of another property, or a page parameter. For example:

```
<dsp:getvalueof var="standardEval" bean="ReportCard.summary"></dsp:getvalueof>
<dsp:textarea bean="/samples/Student_01.evaluation" default="${standardEval}"/>
```

Alternatively:

```
<dsp:textarea
bean="/samples/Student_01.evaluation" default="Enter your evaluation here/>
```

You can set a textarea's value between its open and close tags. For example:

```
<dsp:textarea bean="/samples/Student_01.evaluation">
Enter your evaluation here
</dsp:textarea>
```

If a `dsp:textarea` tag uses both methods, the `default`-specified value has precedence.

Note: To display the current property value, make sure no white space or other characters appear between the open and close tags <`dsp:textarea`></`dsp:textarea`>; otherwise, those characters are interpreted as the default and override the property value.

Array Properties

To set the values in an array property, the user needs a control that allows selection of multiple values. When the user submits the form, the selected values are written to array elements.

A form can set values in an array property through a grouped set of checkboxes or a multiple-selection list box. Both controls are functionally equivalent, each possessing different layout advantages: a drop-down list typically requires less space because it uses scrollbars for long lists; while checkboxes make all choices visible.

Grouped Checkboxes

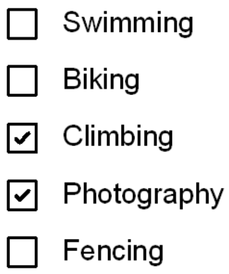
You can use a group of checkbox input tags to set an array of values. The following example creates a group of checkboxes that lists hobbies:

```
<dsp:input
  bean="/samples/Student_01.hobbies" type="checkbox" value="swimming"/>Swimming
<dsp:input
  bean="/samples/Student_01.hobbies" type="checkbox" value="biking"/>Biking
<dsp:input
  bean="/samples/Student_01.hobbies" type="checkbox" value="climbing"/>Climbing
<dsp:input
  bean="/samples/Student_01.hobbies" type="checkbox" value="photo"/>Photography
<dsp:input
  bean="/samples/Student_01.hobbies" type="checkbox" value="fencing"/>Fencing
```

In this example, each checkbox is associated with the `hobbies` property, which is an array of Strings. When this page is displayed, any checkbox whose `value` attribute matches a value in the `hobbies` property appears as preselected. Each checkbox input tag can also set the `checked` attribute to true, in order to override current property settings.

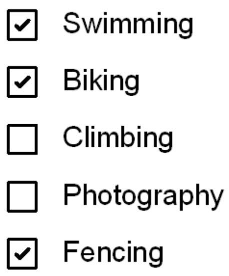
Users can check or uncheck any combination of the checkboxes. On form submission, the values of all selected checkboxes are written to the array's elements.

Given the previous example, if the array property `hobbies` has two elements set to `climbing` and `fencing`, the climbing and fencing checkboxes are initially checked, while the others are unchecked:



☐ Swimming
☐ Biking
☑ Climbing
☑ Photography
☐ Fencing

The user can change these selections—for example, deselect climbing and photography, and select swimming, biking, and fencing checkboxes:



☑ Swimming
☑ Biking
☐ Climbing
☐ Photography
☑ Fencing

Given these selections, on form submission the `hobbies` array property is set to three elements that contain the values `swimming`, `biking`, and `fencing`.

You can group checkboxes with the name attribute only if all tags in the group supply the same name setting. You can save a value to the array property if no checkboxes are selected by setting the `default` attribute to true for one checkbox in the group. Only one checkbox tag in the group can set its `default` attribute to true; all other checkbox tags must set their `default` attribute to false.

Multiple-Selection List Box

dsp:select (page 176) creates a multiple-selection list box if its `multiple` attribute is set:

```
<dsp:select multiple="true" bean="/samples/Student_01.hobbies">
  <dsp:option value="swimming">Swimming</dsp:option>
  <dsp:option value="biking">Biking</dsp:option>
  <dsp:option value="climbing">Climbing</dsp:option>
  <dsp:option value="photo">Photography</dsp:option>
  <dsp:option value="fencing">Fencing</dsp:option>
</dsp:select>
```

In this example, each option is associated with the `hobbies` property, which is an array of Strings. When this page is displayed, any option whose `value` attribute matches a value in the `hobbies` array is initially selected.

You can override these initial selections and determine which options to select on initial display by qualifying each `dsp:option` tag with the `selected` attribute, set to true

The user can select any combination of options. On form submission, the values of all selected options are used to set the new elements of the array.

For example, the `hobbies` array property might have two elements, `climbing` and `fencing`; in that case, the climbing and fencing options are shown as selected when the form displays. If the user selects the swimming, biking, and fencing, on form submission the `hobbies` property is set to an array of three elements with those values.

Map Properties

ATG's built-in map (page 18) converter facilitates the entry of map property values on forms. You can use it with dsp:input (page 159) as follows:

```
<dsp:input bean="FormHandler.map-property" converter="map"  value="key=value" />
```

Note: The `map` converter is not required by the *RepositoryFormHandler* (page 89), which can handle Map data in its own way (see Managing Map Properties (page 95) in the RepositoryFormHandler chapter).

For example:

```
<dsp:input bean="FormHandler.address" converter="map" value="street=" />
<dsp:input bean="FormHandler.address" converter="map" value="city=" />
<dsp:input bean="FormHandler.address" converter="map" value="state=" />
<dsp:input bean="FormHandler.address" converter="map" value="zip=" />
```

The `converter` attribute is set to the map (page 18) tag converter, which ensures that on form submission, the Map settings are applied correctly to the target Map property.

You can also use a hidden input control to set a Map property with multiple key/value pairs, as in the following example:

```
Please verify the following address:<br/><br/>

Street:&nbsp;<c:out value="${emp.street}"/>  <br/>
City::&nbsp;<c:out value="${emp.city}"/>     <br/>
State::&nbsp;<c:out value="${emp.state}"/>   <br/>
Zip code::&nbsp;<c:out value="${emp.zip}"/>  <br/>

<dsp:input type="hidden"
  bean="FormHandler.address" converter="map"
  value="street=${emp.street},city=${emp.city},state=${emp.state},zip=${emp.zip}"
/>
```

Set Property Values via Hidden Inputs

A component might contain one or more whose values are not visible on the form and which are set programmatically, often computed from other user-supplied values. A form can set these properties through hidden input tags. On form submission, these input tags write their values to the properties associated with them.

For example, the `Student_01.lastSubmit` property stores the timestamp of the last form submission. You can set this property from the ATG platform component `/atg/dynamo/service/CurrentDate` through a hidden form input, as follows:

```
<dsp:input type="hidden"
bean="/samples/Student_01.lastSubmit"
beanvalue="/atg/dynamo/service/CurrentDate.secondAsDate"/>
```

Hidden input tags are commonly used to save and restore values of the properties of a request-scoped component from one request to the next. This lets you retain those values across multiple requests—typically, for the duration of the current session.

Submitting Forms

On form submission—typically triggered when the user clicks the form's submit control—Dynamo Application Framework (DAF) sets the property values as specified in the form, and displays the page specified in the `action` attribute of the `form` tag.

Submit Input Tags

The input tag for a form submit control can have one of these two formats:

```
<dsp:input type="submit"
[bean="prop-spec" [submitvalue="value"] value="value"]/>
```

```
dsp:input type="image" {src|image}=path
[bean="prop-spec" submitvalue="value""]/>
```

The `type` setting determines whether the submit control displays as a button or image. If set to `submit`, the tag specifies to display a submit button; if set to `image`, it defines a submit control that uses the image specified by the `src` or `page` attribute.

You can also specify one of the following attributes:

- `bean` specifies a component property to set when the user clicks the submit control.
- `value` specifies the text to display on the submit button, if `type` is set to `submit`. If the attribute `submitvalue` is omitted, the value is also used to set the `bean`-specified property. This attribute is not valid if `type` is set to `image`.
- `submitvalue` specifies value to set on the `bean`-specified value when the user clicks on this submit control. If `type` is set to `submit`, this attribute overrides the `value`-specified value, which is otherwise used to set the property.

Using Submit Controls to Set Property Values

A submit control can set the `bean`-specified property through the standard `value` attribute. The control can override its own `value` setting through the non-standard `submitvalue` attribute. Used together, `value` specifies only the button label text (if the input `type` is set to `submit`), and `submitvalue` sets the property value. For example, the following tag creates a submit button with the label Click Here, and specifies to set `Student_01.age` to `34`:

```
<dsp:input type="submit" bean="/samples/Student_01.age" submitvalue="34"
value="Click Here"/>
```

You typically set property values through data entry inputs and hidden inputs. Occasionally, however, you might want to associate property settings with submit controls. For example, a form might have multiple submit buttons, where each sets the same property to a different value. The following input tags define two submit buttons, each specifying the Boolean property `Student_01.emailOK`:

```
<dsp:input type="submit" bean="/samples/Student_01.emailOK"
value="Send email" submitvalue="true" name="OK"/>
<dsp:input type="submit" bean="/samples/Student_01.emailOK"
value="Do not send email" submitvalue="false" name="notOK"/>
```

The first submit button sets the property to true; the second to false. Because the two input tags specify the same property, each requires a unique `name` attribute.

Note: In general, two controls cannot be associated with the same property. In the previous example, the submit buttons can be associated with the same property because only one of them can be executed for a given form submission.

Using Images as Submit Controls

An image can act as a submit control. When the user clicks the image, the image input submits the form. The `src` or `image` attribute specifies the pathname of the image file. As with a submit button, the `bean` attribute specifies a property to set on form submission, and `submitvalue` specifies the value. For example:

```
<dsp:input bean="/samples/Student_01.emailOK" type="image"
src="clickpic.gif" submitvalue="true"/>
```

If you omit the `submitvalue` attribute, the image pixel coordinates are submitted as the value.

Order of Tag Processing

On form submission, DAF sets all properties from form input tags in a predetermined order. The ATG platform uses its own algorithm to determine the default order for processing form tags. You can also explicitly set the sequence in which input tags are processed.

Default order

The ATG platform assigns a default priority to all form controls, which determines the order in which they are processed on form submission. Every form element is assigned a positive or negative integer, or zero, as its priority value:

- Input elements of type `submit` and `image` are assigned priority 10. They are assigned a low priority in order to ensure that the properties associated with them are set only after all other inputs are processed
- All other form elements are assigned priority 0.

On form submission, elements are processed in descending order of priority. Elements with the same priority are processed in the order they are initially rendered—typically, the same order of their appearance on the page. However, use of conditional logic such as servlet beans can cause the order of rendering elements to differ from their order of appearance on the page.

Manually set order

You can explicitly set the priority of specific input elements by setting their `priority` attribute. For example, you can ensure that a given property is always processed first by giving it a high priority setting as follows:

```
<dsp:input type="text" priority="10" bean="/samples/Student_01.name"/>
```

Any elements whose priority is not explicitly set use the default priority that the ATG platform assigns to them, as described earlier. Priority values must be literal integers; they cannot be represented by an expression.

Synchronizing Form Submissions

When you use a form to set property values, take into account the scope of the components whose properties are being set. As a general rule, it is a good idea to use request-scoped components; this ensures that only one request at a time can set their properties.

If a form sets properties of components that are not request-scoped, you must ensure that multiple requests do not access the component at the same time. This is especially important for globally-scoped components, which are highly vulnerable to multiple simultaneous requests from different sessions; with a session-scoped component, multiple simultaneous requests occur only if the user submits the form twice in very rapid succession.

To ensure that multiple requests do not access the same component simultaneously, use the `synchronized` attribute in your form tag. With this attribute, the ATG platform locks the specified component before setting any properties, and releases the lock only after form submission is complete. Other form submissions can set the component's properties only after the lock is released.

For example, the following `dsp:form` tag locks the `Student_01` component during form submission:

```
<dsp:form
method="post" action="servbeantest.jsp" synchronized="/samples/Student_01"/>
```

Preventing Cross-Site Attacks

Cross-site scripting attacks take advantage of a vulnerability that enables a malicious site to use your browser to submit form requests to another site, such as an ATG-based site. In order to protect forms from cross-site attacks, you can enable form submissions to automatically supply the request parameter `_dynSessConf`, which identifies the current session through a .randomly-generated long number. On submission of a form or activation of a property-setting dsp:a (page 139) tag, the request-handling pipeline validates `_dynSessConf` against its session confirmation identifier. If it detects a mismatch or missing number, it can block form processing and return an error.

You can control session confirmation for individual requests by setting the attribute `requiresSessionConfirmation` to true or false on the applicable dsp:form (page 150) or dsp:a (page 139) tag. If this attribute is set to false, the `_dynSessConf` parameter is not included in the HTTP request; and the request-handling pipeline skips validation of this request's session confirmation number. You can also set session confirmation globally; for more information, refer to *Appendix F: Servlets in a Request Handling Pipeline*, in the *ATG Programming Guide*.

7 Form Handlers

The forms described in the previous chapter are suitable for simple applications. More often, your applications are likely to require more sophisticated tools to process forms.

For more complex form processing, the ATG platform provides form handlers that can perform these tasks:

- Validate data before it is submitted.
- Detect missing information and display appropriate messages to the user.
- Direct users to different pages depending on form submission results.
- Read and write database or repository data.

Form Handler Classes

Form handlers are components that you typically build from one of the form handler classes provided by the ATG Adaptive Scenario Engine. All provided form handler classes are subclasses of `atg.repository.servlet.GenericFormHandle`, and inherit its properties and methods:

Formhandler	Purpose	Formoreinformation...
`SimpleSQLFormHandler`	Works with form data that is stored in a SQL database.	Appendix C, *SimpleSQLFormHandler* (page 337)
`RepositoryFormHandler`	Saves repository data to a database.	*RepositoryFormHandler* (page 89)
`ProfileFormHandler`	Connects forms with user profiles stored in a profile repository.	*User Profile Forms* (page 99)
`SearchFormHandler`	Specifies properties available to a search engine.	*Search Forms* (page 75)

Resetting a Form

Form handler components all support a cancel operation, which is invoked by a form's Cancel button. The input tag for a Cancel button uses the following format:

```
<dsp:input type="submit" value="button-label" bean="handler-component.cancel"/>
```

By default, the cancel operation redirects to the page specified in the form handler's `cancelURL`, property. A form handler typically provides its own implementation of this operation in `handleCancel()`, often using it to empty the form fields when the user clicks Cancel. For more information, see the description of `handleCancel()` in the *ATG Programming Guide*.

Redirecting to another page

The form handler property `cancelURL` specifies the page where users are redirected after they click Cancel. You can edit this property directly; however, it is better practice for a JSP to set `cancelURL` through a hidden input tag attribute to a value that is appropriate to the current context. The URL that you specify in `cancelURL` is resolved relative to the page designated in the form's `action` attribute, so setting `cancelURL` and `action` on the same page can help avoid URL errors. For example:

```
<dsp:input type="hidden" bean="MyFormHandler.cancelURL"
value="../index.jsp"/>
```

Form Error Handling

A Web application must identify and gracefully handle errors that might occur on form submission. For example, a user enters an alphabetic character in a field where an integer is required. If the property set by this field is of type `int`, on form submission an exception is thrown when the application tries to set this property from the field value.

If the form uses a form handler of class `GenericFormHandler` or one of its subclasses, exceptions that occur during form processing are saved to one of these form handler component properties:

Property	**Purpose**
`formError`	Boolean that is set to true if any errors occur during form processing.
`formExceptions`	A vector of the exceptions that occur during form processing.
`propertyExceptions`	A read-only property that returns a Dictionary of subproperties, one for each property set by the form. For each property that generates an exception, a corresponding subproperty in the `propertyExceptions` Dictionary contains that exception. For each property that does not generate an exception, the corresponding subproperty in the `propertyExceptions` Dictionary is unset.

Displaying Form Exceptions

If a form submission generates exceptions, you might want to display error messages that ask the user to correct those errors and resubmit the form. Form submission exceptions are of class `atg.droplet.DropletException`, or its subclass `atg.droplet.DropletFormException`. Both classes support the `errorCode` property, which indicates the type of error that occurred. The `DropletFormException` class has a `propertyName` property that indicates the form handler property associated with the exception.

To capture errors and display them to users, pass the value of the form handler component's `formExceptions` property to the ATG servlet bean ErrorMessageForEach (page 227). This servlet bean displays messages that are keyed to the `errorCode` and `propertyName` properties.

Detecting Errors

In the following example, the Switch servlet bean uses the form handler's `formError` property to determine whether any errors occurred when processing the form. If this property is true, the form handler's `formExceptions` property is passed to the servlet bean ErrorMessageForEach, which displays the message associated with each exception in the `formExceptions` vector.

```
<dsp:droplet name="Switch">
<dsp:param bean="MyFormHandler.formError" name="value"/>
<dsp:oparam name="true">
    <dsp:droplet name="ErrorMessageForEach">
      <dsp:param bean="MyFormHandler.formExceptions" name="exceptions"/>
      <dsp:oparam name="output">
      <dsp:valueof param="message"/>
      </dsp:oparam>
    </dsp:droplet>
</dsp:oparam>
</dsp:droplet>
```

Note: If your form handler is session-scoped, clear the `formExceptions` property after you display errors to the user.

Alerting Users to Errors

Use the `propertyExceptions` property to determine which form handler properties have exceptions associated with them, and to display a message near each field where an exception occurred. In the following example, the form includes a field where users are required to enter an email address. If no email address is entered, an exception is thrown and the error code for that exception is `missingRequiredValue`—the error code commonly used by form handlers when a required field is empty. The Switch bean renders the `missingRequiredValue` open parameter, which displays an error message immediately below the field.

```
<p>Email address:
<dsp:input bean="MyFormHandler.value.email" size="32" type="text"
required="true"/>
<dsp:droplet name="Switch">
  <dsp:param bean="MyFormHandler.propertyExceptions.email.errorCode"
    name="value"/>
  <dsp:oparam name="missingRequiredValue">
    <br/>You must provide an email address.
  </dsp:oparam>
```

```
</dsp:droplet>
```

Redirecting on Form Submission

ATG form handlers provide a number of submission operations that are specific to the form handler type—for example, the *RepositoryFormHandler* (page 89) supports create, update, and delete operations. Each submission operation typically supports a pair of navigation properties that can be set to redirect the user to another URL on the success or failure of the operation. If set, these navigation properties override the form's `action` attribute. Navigation property names have the following format:

`operation``SuccessURL`
`operation``ErrorURL`

Thus, the RepositoryFormHandler's update operation supports two navigation properties: `updateSuccessURL` and `updateErrorURL`.

Navigation properties are set through hidden input tags. For example, the following hidden input tag redirects users to `updateStockFailure.jsp` in the event that an update operation fails:

```
<dsp:input type="hidden"
bean="atg/dynamo/droplet/MyRepositoryFormHandler.updateErrorURL"
value="updateStockFailure.jsp"/>
```

For more information about navigation properties, see later chapters on specific form handlers.

Caution: If you set an errorURL property to the name of the originating form and the corresponding operation fails, on redirect all fields on that form are emptied of their previous values. In order to avoid this, the errorURL must explicitly pass back the field values you wish to retain.

8 Search Forms

Search forms can help find products that satisfy a set of criteria. For example, a search form might help find recipes that contain substring such as Cayenne, or recipes that are tagged with a keyword such as Cajun.

You build search forms with the form handler class `atg.repository.servlet.SearchFormHandler`. This handler uses the search criteria to return items from one or more repositories, and one or more item types from a given repository. `SearchFormHandler` is a subclass of `atg.repository.servlet.GenericFormHandle`, so it inherits properties and handler methods common to all form handlers.

Note: Some ATG applications might provide subclasses of `SearchFormHandler`.

The SearchFormHandler supports the following search methods:

- Keyword Search (page 76)
- Text Search (page 79)
- Hierarchical Search (page 80)
- Advanced Search (page 81)
- Combination Search (page 84)

Creating SearchFormHandler Components

The ATG distribution provides no components of the SearchFormHandler class; Because there are so many possible combinations of search options—keyword, text, hierarchical, advanced, combination—you should create a unique `SearchFormHandler`component for each search method that you use.

In order to provide a search engine for your Web site, complete these two tasks:

1. Create a `SearchFormHandler` component in the ACC. Define the component's Class and Scope properties as follows:
   - Class: `atg.repository.servlet.SearchFormHandler`
   - Scope: session
2. Configure the Basic SearchFormHandler Properties (page 76) that are common to all search types, then configure the properties that are specific to the desired search type.

Basic SearchFormHandler Properties

All search form handler components generally require you to set the following properties:

Property	Description
`allowEmptySearch`	Determines whether a search proceeds or throw an error when no search criterion is specified. The default value is true.
`allowRefine`	Determines whether search criteria include previously entered criteria. See Clearing Search Query Data (page 85) for details. The default value is false.
`enableCountQuery`	Determines whether the ATG platform numbers the items located by a search. See Search Results Properties (page 86) for an explanation of related properties. The default value is false.
`errorURL`	URL that opens when a search fails. Set this property to the URL of a page that describes the error and provides tools for starting another search.
`itemTypes`	Item types to include in the search. The item types must be defined for the repository specified in the `repositories` property.
`previouslySubmitted`	Tracks whether a query that uses this `SearchFormHandler` occurred during the current session. When a search begins, this property is set to true.
`repositories`	A comma-delimited list of repositories to include in the search. Specify the full path of each repository to the component.
`successURL`	URL that opens when a search operation succeeds. This property should point to the URL for the first search results page.

Keyword Search

A keyword search uses user-supplied data to query the contents of string properties that store keywords. For example, a keyword search might query items in a Recipes repository and return all items where the property Equipment contains the keyword “blender.”

Keyword strings that contain embedded spaces must be enclosed by single or double quotes—for example, `"summer squash"`.

Keyword Search Properties

To enable keyword searches in the form handler, you set the following properties:

- `doKeywordSearch` is set to true to enable keyword searching.

- `keywordSearchPropertyNames` specifies one or more single or multi-valued properties to include in searches. If this property is empty, the form handler searches all string properties of each repository item, except enumerated or non-queryable properties.

  This property is required to enable keyword searches on a content repository

You configure keyword searching with these properties:

Property	Description
`dokeywordSearch`	If true, enables this component for keyword searches.

`excludedStringPropertyNames`	An array of string properties to exclude from a keyword search, specified in this format:
	
	`item-type.property-name`
	
	For example, the following setting specifies to exclude properties `someDescription` and `someString` in items of type `descriptor1` from keyword searches:
	
	`excludedStringPropertyNames=\`
	`descriptor1.someDescription,\`
	`descriptor1.someString`

`keywordInput`	One or more keyword values, typically supplied by the search form user. Multiple keyword values are joined through the Logical Operators (page 78) AND, NOT, and OR.
`keywords`	List of keywords that are always used in a search. If no keywords are specified for this property, the keywords must be supplied by the user.
`keywordSearchPropertyNames`	The properties that are scanned during a keyword search, specified in this format: *`item-type.property-name`* If this property is empty, the keyword search looks at all string properties in the item types that are specified by the `itemTypes` property. If you specify multiple properties, the keyword search generates a query for each property, then ORs these queries together. If any query matches an item, the item is returned by the search operation.
`toLowerCaseKeywords`	If set to true, converts user-entered keyword to lowercase. If `toLowerCaseKeywords` and `toUpperCaseKeywords` properties are both set to true, `toLowerCaseKeywords` takes precedence. The default value is false.
`toUpperCaseKeywords`	If set to true, converts user-entered keyword to uppercase. The default value is false.

Logical Operators

Keyword searches support complex search expressions that use the following logical operators, listed in order of precedence:

- `NOT / !`
- `AND / &`
- `OR / |`

For example, a user might enter these search criteria:

```
(summer AND Mexican OR southwestern) AND NOT "fresh cilantro"
```

Given these criteria, the `SearchFormHandler` retrieves repository data as follows:

1. Excludes all items that contain the keyword `fresh cilantro`.
2. Of the remaining items:

   - Retrieves those that have both of these values: `summer` and `Mexican`.

   - Includes items that have the value `southwestern`.

Single-Value Property Searches

If a property specified in `keywordSearchPropertyNames` is single-valued—for example, of type String—the keyword search algorithm uses the query `QueryBuilder.CONTAINS` to examine each target value and see if it appears anywhere within the property's current value. For example, given a `keywordString` property of type String, a keyword search for the values `red`, `green`, and `blue` generates this query:

```
keywordString CONTAINS "red"
OR keywordString CONTAINS "green"
OR keywordString CONTAINS "blue"
```

Because `CONTAINS` performs a substring match, this query returns true for an item whose `keywordString` has the value `reduced calorie`, because it contains the substring `red`.

Multi-Valued Property Searches

If a property specified in `keywordSearchPropertyNames` is multi-valued—for example, of type String[]—the keyword search algorithm uses the query `QueryBuilder.INCLUDESANY` to perform a single search for an exact match between any property value and any search value. For example, given a `keywords` property of type String[], a keyword search for the values `red`, `green`, and `blue` generates this query:

```
keywords INCLUDES ANY ["red","green","blue"]
```

`INCLUDES ANY` searches only for exact matches, so this query does not return an item whose keywords contain substrings of the specified values. For example, while `reduced fat` contains a substring of the search value `red`, it is not an exact match and does not satisfy the query.

Quick Searching

A quick search is a hybrid of keyword and text search that uses a user-supplied value as a keyword and compares it to all text property values in a given repository. In effect, it is a keyword search that specifies all properties as keywords. To enable a quick search, leave the `keywordsSearchPropertyNames` property blank.

Unlike other search methods, a quick search and keyword search can share the same component, because the two searches are similar and the quick search requires only minor configuration.

Text Search

A text search takes a user-entered search string and performs text pattern matching on one or more text properties—for example, finds all recipes whose `longDescription` property contains "sauté."

In order to create a text search form handler you must:

- Configure the appropriate Text Search Properties (page 79).
- Enable Full-Text Searches (page 80) in your repository component and database.

Text Search Properties

To enable text searches in a form handler, you set the following properties:

- `doTextSearch` is set to true to enable text searching.
- `textSearchPropertyNames` specifies which properties to query.

The search string is specified by the `textInput` property, typically entered by the user through a form input field.

You configure text searching with these properties:

Properties	**Description**
`allowWildcards`	Determines whether a query can include the wildcard symbol (`*`). A wildcard can replace any set of characters in a search string. **Default:** true
`doTextSearch`	Set to true in order to enable this component to handle text searches. A text search compares the user-supplied value to a property value that is identified in `textSearchPropertyNames`.

Properties	Description
`searchStringFormat`	Format that the text should follow. Each repository component uses this property to specify the text format available to the database. Available options include: - `ORACLE_CONTEXT`: Oracle ConText - `MSSQL_TSQ`: Microsoft SQL Server - `SYBASE_SDS`: Sybase SpecialtyDataStore - `DBS_TEXT_EXT`: IBM DB2 with the Text Extender package
`textInput`	List of strings that are always used in a search. If no keywords are specified for this property, search strings must be supplied by the user.
`textSearchPropertyNames`	Properties that contain text intended as search criteria. If this property is empty, all properties are searched in the item type identified by the `itemTypes` property. The property should be set as follows: *`item-type.property-name`*

Enable Full-Text Searches

The implementation of text searching is RDBMS-specific and uses the database's text search facility, if any. If your database supports a full-text search engine, you must configure it as required by your application, and set the repository component's `simulateTextSearchQueries` property to false.

Simulated text searches

If a full-text search engine is unavailable—your RDBMS does not support one, or you are not licensed to use it—the SQL repository can simulate full-text searching by using the LIKE operator to determine whether the target value is a substring of any of the text properties being examined. To enable this feature, set the repository component's `simulateTextSearchQueries` property to true.

Note: Simulated full-text searching is useful for development purposes; however, performance is likely to be inadequate in a production environment. For production purposes, be sure to use a database that can handle full-text searching, and make sure `simulateTextSearchQueries` is set to false.

Hierarchical Search

A hierarchical search returns all parent and descendant items of the specified item. A hierarchical search looks in a family of items, starting from a given item level and extending to that item's descendants.

Each item type must have a multi-valued property whose value is a complete list of its ancestor IDs. Hierarchical searching restricts the search results to items whose ancestor items include the item specified in the `ancestorId` property.

The `ancestorPropertyName` property specifies the name of the ancestor item property. You can specify ancestor categories by setting properties manually.

Hierarchical search properties

To configure a hierarchical search tool, set these properties:

Properties	Description
`ancestorId`	Repository ID that represents an inheritance scheme or lineage. This property is set to the repository ID of the item whose descendants you want to search, typically obtained through a hidden input tag, or supplied by the form user through an input field
`ancestorPropertyName`	Name that represents an inheritance scheme or lineage.
`doHierarchicalSearch`	Set to true in order to enable the component for hierarchical searches.

Advanced Search

Also called parametric search, an advanced search provides search options for each property specified in the form handler's `advancedSearchPropertyNames` property. The advanced query is built from options selected by the search form users to further refine the catalog search.

For example, an advanced search might be based on a description, chef, and set of ingredients: find all recipes with the keyword breadmachine where the chef is Grandma and the ingredients include whole wheat flour.

Advanced search lets you manipulate HashMaps; it can also allow queries that involve other data types such as string, numeric, Boolean, and date.

Advanced Search Properties

To enable advanced searches, you set the following form handler properties:

- `doAdvancedSearch` property is set to true to enable advanced searching.
- `advancedSearchPropertyNames` specifies the set of properties to search . Advanced searches are limited to the set of properties named here.

In order to configure a component for advanced searches, set the following properties:

Properties	Description
`advancedSearchPropertyNames`	List of properties that are searched, where each property is specified in this format: *`item-type.property-name`*

Properties	Description

`advancedSearchPropertyRanges`	Property range used to narrow search results by integer values. The specified range is inclusive and uses this format:
	
	`item-type.property-name``.max`
	`item-type.property-name``.min`
	
	You can leave the search range open at either end by leaving the maximum or minimum value undefined.

`advancedSearchPropertyValues`	List of property values used in the search query. The format should appear as follows: *`item-type.property-name`*`=`*`value`*
`clearQueryURL`	The URL of the page to display when the `handleClearQuery()` method is invoked. The specified page should have search tools. If this property is empty, `handleClearQuery()` returns control to the current page. See Clearing Search Query Data (page 85) for more information.
`displayName`	The name displayed for an item type when it is used as search criteria. Each item type has a default display name; this property overwrites the default.
`doAdvancedSearch`	If set to true, enables advanced searching.
`propertyValuesByType`	Holds the properties in `advancedSearchPropertyNames` and their values in a HashMap key/value relationship. This only applies to those properties in `advancedSearchPropertyNames` that are enumerated, `RepositoryItems`, or collection of `RepositoryItems`. When the key is the name of a property, the value is a collection of possible values. When the key is a `repositoryId`, the value is a collection of values for a specific property. When the key is a collection of `repositoryIds`, the value is `repositoryIds.` The format should appear as follows: *`item-type.property-name`*

How Advanced Searches Operate

The `SearchFormHandler` property `propertyValuesByType` is a HashMap that contains one key/value pair for each property named in `advancedSearchPropertyValues` whose type is enumerated, `RepositoryItem`, or a collection of `RepositoryItems`. The key is the name of the property and the value is a collection of the possible values. `propertyValuesByType` is useful for building forms where search form users can select, for example, the size of an item, where size is an enumerated property with a set of predefined values such as Small, Medium, and Large.

The following example shows how to implement an advanced search:

```
<%-- Create a select field to choose size and a default option --%>
Size: <dsp:select bean="MyAdvancedSearchFormHandler.propertyValuesByType.size">

<%-- Create a default choice --%>
<dsp:option value="">Any size</dsp:option>

<%-- Now create an option for each defined value for size --%>
<dsp:droplet name="ForEach">
 <dsp:param name="array"
 value="MyAdvancedSearchFormHandler.propertyValuesByType.size"/>
 <dsp:oparam name="output">
   <dsp:option param="element"/>
   <dsp:valueof param="element">Unknown size</dsp:valueof>
 </dsp:oparam>
</dsp:droplet>

</dsp:select>
```

Searching a Range of Values

The advanced search feature lets you specify a range of values, as in this example:

```
Find all recipes that take between 5 minutes and 25 minutes to cook
```

The `advancedSearchPropertyRanges` property is a HashMap that you can set to hold maximum and minimum values. You create a range by setting a property's `max` and `min` keys and their respective values. For example:

```
<dsp:input type="text" bean=
 "MyAdvSearchFH.advancedSearchPropertyRanges.recipe.cookTime.min" value="5"/>
<dsp:input type="text" bean=
 "MyAdvSearchFH.advancedSearchPropertyRanges.recipe.cookTime.max" value="25"/>
```

In this example, `recipe` is an item type defined for the repository that supports this search component (`MyAdvancedSearchFormHandler`). The `cookTime` property is a primitive string. If another primitive type were used, a tag converter would be inserted as part of the `value` phrase.

Range settings are inclusive: in this example, the search result can include recipes that take 5 and 25 minutes to cook. You can leave the search range open at either end by leaving the maximum or minimum value undefined. For example:

```
Find all recipes that use at least 8 tomatoes
```

The code to implement this search might look like this:

```
<dsp:input type="text"
 bean="MyAdvSearchFH.advancedSearchPropertyRanges.recipe.tomatoes.min" value="8"/>
```

Combination Search

The `SearchFormHandler` class lets you specify multiple search types in a single request. For example, you can search on both keywords and text, or you can combine advanced searching with hierarchical searching to find only items in a particular category.

Search types are combined according to the following rules:

- Text and keyword searches are combined with the OR operator, so a match on either set of criteria selects an item for inclusion in the search results.
- Hierarchical and advanced searches are combined with the AND operator, limiting the scope of the search to items that satisfy the hierarchical or advanced search requirements in addition to any specified text or keyword search criteria.

The query can be expressed in this format:

```
(KeywordConditions OR TextConditions) AND HierarchicalConditions AND
AdvancedSearchConditions
```

For example, you have a set of recipes and you configure a `SearchFormHandler` to allow all four types of searches. The site visitor enters the following search criteria:

```
keywords=appetizer
textSearchPropertyNames=ingredients
textInput="boston lettuce"
hierarchicalCategoryId=vegan
propertyValues.fatContent="5 grams"
```

The search locates all appetizers plus all recipes whose ingredients mention Boston lettuce, but returns only the subset of those recipes that are found in the `vegan` category and have 5 grams of fat.

Search Form Submit Operations

The `SearchFormHandler` supports two submit operations:

- `search` launches the search.
- `clearQuery` removes all previous query data.

Executing the Search

You can define a submit control that invokes the `SearchFormHandler`'s `handleSearch()` method, in one of the following ways:

```
<dsp:input type="submit" [value="label"] bean="searchform-handler.search"/>
```

```
<dsp:input type="image" {page|src}=path bean="searchform-handler.search"/>
```

The search operation also stores search results in the handler's `searchResultsByItem` property and makes them available to the `searchResults` property for the duration of the component's scope (the current session).

Clearing Search Query Data

You can define a submit control that clears query data by invoking the handler's `handleClearQuery()` method, in one of the following ways:

```
<dsp:input type="submit" [value="label"] bean="searchform-handler.clearQuery"/>
```

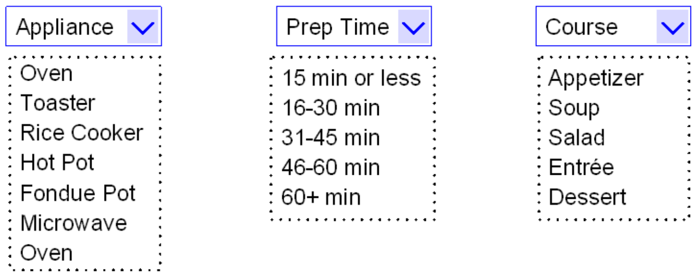
```
<dsp:input type="image" {page|src}=path bean="searchform-handler.clearQuery"/>
```

The default implementation of `handleClearQuery()` flushes all previous search query criteria and opens the page specified by the `ClearQueryURL` property. Providing this option to users is especially important if the property `allowRefine` is set to true. In this case, each successive query appends its search criteria to previous search criteria. Providing a Clear Query button allows users to start a fresh search.

Presenting Search Options

When you create a search form, it is good practice to provide users with a set of drop-down lists where they can specify the values to include in their search. The PossibleValues (page 259) component, an instance of `atg.repository.servlet.PossibleValues`, takes enumeration or `RepositoryItem` properties, queries the database for their values, and returns these values for use by a servlet bean such as ForEach, which can display the query results.

For example, you might want to query Recipe items on three properties: Appliance, PrepTime, and Course. You can construct three drop-down lists that display the complete set of property values:



A component that supports advanced searches can generate a list of possible property values without using the `PossibleValues` servlet bean as follows:

- Set `propertyValues` to hold the desired properties.
- Set `propertyValuesByType` to hold each property and its possible values in a key/value relationship.

For more information, see How Advanced Searches Operate (page 82).

Managing Search Results

SearchFormHandler class properties let you control the display of search results and help users access them. With these properties, you can:

- Set the maximum number of items returned by a query.
- Set the maximum number of items displayed on a single page.
- Get the number of items returned and the number of results pages.
- Set the current results page number and the total number of results pages.
- Provide links that enable browsing among multiple result pages.

Search Results Properties

In order to make query result properties accessible, set the `enableCountQuery` property to true. The SearchFormHandler defines the following search results properties:

Properties	**Description**
`currentResultPageNum`	1-based page number of active page. Set this property in order to display a given page. The default setting is 1.
`enableCountQuery`	Enables access to other query result properties.
`endCount`	1-based number of the last item on the current page.
`endIndex`	0-based index number of the last item on the current page. The form handler uses this property to calculate the `endCount` property.
`maxResultsPerPage`	Maximum number of items that display on a page.
`maxRowCount`	Maximum number of items returned from a search. A value of –1 (the default) returns all items that satisfy the search criteria.
`resultPageCount`	Number of pages that hold search results.
`resultSetSize`	Number of items returned from the search.
`startCount`	1-based number of the first item on the current page.
`startIndex`	0-based index number of the first item on the current page. The form handler uses this property to calculate the `startCount` property.

Note: These properties apply to a search that involves one item type. If your search form handler allows for multiple item types, these properties might not behave as expected.

Displaying Results Data

An application can distribute search results across several pages and provide cues that facilitate access to those pages. The following example uses search results properties together with the Compare servlet bean to set the range of items that appear on the first results page:

```
<dsp:droplet name="Compare">
  <dsp:param bean="MyAdvancedNavigationSearch.resultSetSize" name="obj1"/>
  <dsp:param bean="MyAdvancedNavigationSearch.maxResultsPerPage" name="obj2"/>
  <dsp:oparam name="greaterthan">
    Results
       <dsp:valueof bean="AdvancedNavigationSearch.startCount"/>
    &nbsp;-&nbsp;
       <dsp:valueof bean="AdvancedNavigationSearch.endCount"/>
    of
       <dsp:valueof bean="MyAdvancedNavigationSearch.resultSetSize"/>
  </dsp:oparam>
</dsp:droplet>
```

In this example, the Compare servlet bean compares the number of items returned from the search (`resultSetSize`) to the maximum number of items set to appear on a page (`maxResultsPerPage`). When the query returns more items than can be displayed on one page, the first results page displays the range of items with the properties `startCount` and `endCount`, and the total number of returned items with `resultSetSize`.

For example, given the following property settings:

```
resultSetSize=372
maxResultsPerPage=25
startCount=1
endCount=25
```

The previous code yields this display:

```
Results 1  25 of 372
```

Linking to Search Results

The `currentResultPageNum` property can be used to create links that enable access to multiple search results pages. For example:

```
<dsp:a
href="SearchResults.jsp" bean="MySearchFH.currentResultPageNum" value="3">3
</dsp:a>
```

Organizing Query Result Items

After executing a query, the `SearchFormHandler` makes the search results available in two properties, which organize the same information differently:

- `searchResults` contains all items returned by the query, undifferentiated by item type.
- `searchResultsByItemType` is a HashMap with one key/value pair for each item type returned by the query. The key is the item type name—the value specified in the form handler's `itemTypes` property—and the value is a collection of items of that type that were returned by the query.

For example, if you search for cuisine and recipe items in the food repository, the `searchResults` property contains items of type `cuisine` and `recipe`. The `searchResultsByItem` type property has a `cuisine` key whose value is a collection of cuisine items, and a `recipe` key called whose value is a collection of recipe items.

Within each collection, the items are in the order of their retrieval from the database. To sort the display order of items, use a servlet bean such as ForEach.

The following example uses ForEach to iterate over the `searchResultsByItemType` property, and display only the recipes returned by the search sorted by their display name:

```
<p>Your search returned the following products:</p>

<dsp:droplet name="ForEach">
 <dsp:param name="array" bean="CatalogSearch.searchResultsByItemType.recipe"/>
 <dsp:param name="sortProperties" value="+displayName"/>

 <dsp:oparam name="output">
   <li><dsp:valueof param="element.displayName">Unknown recipe</dsp:valueof>
 </dsp:oparam>

 <dsp:oparam name="empty">
   <p>No matching recipes were found.
 </dsp:oparam>
</dsp:droplet>
```

9 RepositoryFormHandler

Web application forms are commonly used to view and update database data. The `atg.repository.servlet.RepositoryFormHandler` class provides methods and properties for working with repository items. You can use a component of this class to add, update, and delete repository items that use the same item descriptor. A RepositoryFormHandler can be used with any repository type: HTML, XML, LDAP, and SQL.

The ATG platform also provides the class `atg.droplet.sql.SimpleSQLFormHandler`, which supports direct interaction with an SQL database. For more information about this form handler, see Appendix C, *SimpleSQLFormHandler* (page 337).

Note: Depending on the contents of your ATG software, your installation might include components that are based on a subclass of RepositoryFormHandler.

The `RepositoryFormHandler` offers several benefits:

- Requires only the repository item type for updates.
- Supports all repository types: HTML, XML, LDAP, and SQL.
- Caches repository data.
- Optimizes data access.

Before reading this chapter, you should have a basic understanding of repositories, components, forms, and form handlers. The following table shows where you can review these topics:

Topic	**Chapter**	**Manual**
Repositories	*Introduction*	*ATG Repository Guide*
Components	*Nucleus:OrganizingJavaBeanComponents*	*ATG Programming Guide*
Form handlers, `GenericFormHandler` class	*FormHandlersandHandlerMethods*	*ATG Programming Guide*

You might use a RepositoryFormHandler in a customer service application that requires internal employees to manage inventory. For example, a Web site that sells music might have an administration interface for tracking in-stock items. The site accesses a music repository, which defines three item descriptors: CDs, Artists, and Songs. This site requires three RepositoryFormHandler components, one for each item descriptor.

This chapter covers the following topics:

RepositoryFormHandler Properties

When you start an application that includes the ATG platform, the application uses a properties file to instantiate RepositoryFormHandler components and to set initial values in them. When you create a RepositoryFormHandler component, you should set the properties described in the following sections.

checkForRequiredProperties

A boolean, specifies whether the form handler checks that all required properties are present during operation.

clearValueOnSet

A boolean, specifies whether the `value` dictionary for an item is cleared and reset from the database when its `repositoryId` property changes. When this property is set to true, data in the `value` dictionary reflects the item's database values. When set to false, the `value` dictionary can retain some data as the `repositoryId` changes from one item to another.

If the `clearValueOnSet` property is set to true, any change to a `repositoryID` clears all other properties for that item from the `value` dictionary. To preserve other property changes, set `repositoryID` to false; alternatively, raise the priority for the `repositoryID` input field, so updates from this field occur before updates to other properties are written to the item's `value` dictionary. For example:

```
<dsp:input type="hidden" priority=10
bean="atg/dynamo/droplet/MyRepositoryFormHandler.repositoryId" value="Add CD"/>
```

createTransientItems

A boolean, specifies whether new items should remain transient. The default is false.

extractDefaultValuesFromItem

A boolean, specifies whether the default values for properties that use a `value` dictionary display in a form that renders these values available for modification.

itemDescriptorName

A string that specifies the item descriptor items handled by this `RepositoryFormHandler`.

removeReferencesToDeletedItems

A boolean, specifies whether deleting an item also deletes all references to that item. Set this property to false (the default) if the items to delete have no references, and avoids. This avoids unnecessary lookups and performance delays.

If set to true, an item deletion automatically invokes the `RepositoryUtils.removeReferencesToItem` method, which locates all items that reference the target item and deletes them first. For more information on this method, see the Development, Testing and Debugging with the SQL Repository in the *ATG Repository Guide*.

repository

Specifies the repository where items are added, updated, and deleted. This property contains a pointer to the repository component, but can be null if the RepositoryFormHandler's `repositoryPathName` property is set to the repository's Nucleus path.

requireIdOnCreate

A boolean, specifies whether an item ID must be user-supplied when an item is created. If set to true (the default), an error is thrown if no ID is provided. If set to false and no ID is provided, an ID is generated for the item on the fly.

RepositoryFormHandler Submit Operations

The RepositoryFormHandler supports the following operations for form submission:

Operation	Function
`create`	Creates a repository item based on the value set in the form and adds it to the repository. If the `repositoryId` property is specified in the form, the new item is created with the given repository ID; otherwise, an auto-generated ID is used.
`delete`	Deletes from the repository the item specified by `repositoryId`.
`update`	Updates the item described by `repositoryId` from the form values.

You associate one of these operations with a submit input tag. For example, the following input tag defines a submit button that creates a repository item:

```
<dsp:input type="submit"
bean="atg/dynamo/droplet/MyRepositoryFormHandler.create" value="Add CD"/>
```

Updating Item Properties from the Value Dictionary

In order to use the RepositoryFormHandler to update item property values from a form, reference the item property in this format:

```
bean="nucleus-path/formhandler-component.value.property"
```

For example:

```
<dsp:input type="input-type"
bean="atg/dynamo/droplet/MyRepositoryFormHandler.value.name"/>
```

The RepositoryFormHandler's `value` property is a Dictionary of property/value pairs that temporarily stores all pending property values. The RepositoryFormHandler writes all values from this dictionary on form submission as a single transaction, thus preventing profile properties from being left in an inconsistent state.

Updating hierarchical properties

In order to update a property that is referenced by another property, use the following notation:

```
bean=
"nucleus-path/formhandler-component.value.property.sub-property[.sub-property]..."
```

For example, the following input tag references the `city` property, which is referenced from the `address` property:

```
<dsp:input type="text" bean="MyRepositoryFormHandler.value.address.city"/>
```

In this case, the `address` property points to an ID that represents an address item with its own set of properties, one of which is `city`.

RepositoryFormHandler Navigation Properties

After a form submission operation—create, update, or delete—is complete, the `action` attribute of the dsp:form (page 150) tag specifies the page to display. You might want to specify several different pages, where the user's destination depends on the nature of the form operation and whether or not it succeeds.

A RepositoryFormHandler has a set of properties you can use to control navigation after a form operation. These properties specify the URLs where the user is redirected on certain error and success conditions. Each submit operation has the corresponding success and failure URL properties:

RepositoryFormHandleroperation	**Success/failureURLproperties**
`create`	`createSuccessURL` `createErrorURL`
`update`	`updateSuccessURL` `updateErrorURL`

RepositoryFormHandleroperation	Success/failureURLproperties
`delete`	`deleteSuccessURL` `deleteErrorURL`

The value of each property is a URL relative to the page specified by the form's `action` attribute or a local URL defined absolutely from the root. The default value of each property is null, so you must set these properties explicitly. You can specify the values of these URL properties in the form handler component, or with `hidden` input tags in the JSP. If these property values are not set, the `action`-specified page is displayed on form submission.

For example, the following hidden input tag redirects users to `updateStockFailure.jsp` in the event that an update operation fails:

```
<dsp:input type="hidden"
bean="atg/dynamo/droplet/MyRepositoryFormHandler.updateErrorURL"
value="updateStockFailure.jsp"/>
```

Updating Multi-Valued Properties

By default, the `RepositoryFormHandler` updates a property value by overwriting its old value with the new one. In the case of multi-valued properties, you can modulate this behavior in the following ways:

- Add the form values to the current property values; or use the form values to remove any current property values that match.
- Specify the maximum number of values to add, update, or remove.

Note: These property options are available only if the `extractDefaultValuesFromItem` property is set to true.

updateMode

The `updateMode` property specifies how changes to a property value affect existing data. You can set `updateMode` to one of these values:

- `append` appends the new form values to the current ones.
- `prepend` prepends the new form values to the current ones.
- `replace` (the default behavior) overwrites old values with new values
- `remove` removes any existing values that match the selected form values.

Note: If `updateMode` is set to `append` or `prepend`, you must also set the numNewValues (page 94) attribute.

For example, the list property `hobbies` has the following string values:

```
Mountain Biking
Running
Canoeing
```

The form contains a hidden input tag that sets the update mode for the hobbies property with the following format:

```
<dsp:input type="hidden"
bean="myHandler.value.hobbies.updateMode" value="update-mode"/>
```

The following table shows the various values for *`update-mode`* and how various input scenarios set the property's value:

updateModevalue	**Userinput**	**Resultingpropertyvalue**

`append`	`Rafting`
	`Swimming`
		`Mountain Biking`
		`Running`
		`Canoeing`
		`Rafting`
		`Swimming`

`prepend`	`Rafting`
	`Swimming`
		`Rafting`
		`Swimming`
		`Mountain Biking`
		`Running`
		`Canoeing`

`replace`	`Rafting` `Swimming`	`Rafting` `Swimming`

`remove`	`Mountain Biking`
	`Canoeing`
		`Running`

numNewValues

If `updateMode` is set to `prepend` or `append`, you must also set `numNewValues` to a positive integer, to indicate the number of items to add.

For example, the following code specifies to add a single gift list to the list property `giftlists`:

```
Enter Gift list:
<dsp:input type="text" bean="MyRepositoryFormHandler.value.giftlists"/>
<dsp:input type="hidden"
  bean="MyRepositoryFormHandler.value.giftlists.updateMode" value="append"/>
<dsp:input type="hidden"
  bean="MyRepositoryFormHandler.value.giftlists.numNewValues" value="1"/>
```

Modifying Properties that Refer to Items by repositoryId

When a RepositoryFormHandler uses a `value` dictionary, it adds the sub-property `repositoryId` to all multi-valued properties. This property references other items and their property values so you can update a collection of items using their IDs.

A form might use a RepositoryFormHandler to update user information, such as access controls provided through user roles and organizational groups. For example, you might want to enable an administration user to edit a user profile `roles` property, which holds a set of ID objects that reference role items. Each user profile has a property called `currentOrganization`, which maintains the sub-property `relativeRoles`. Because a user can have more than one role, `relativeRoles` is a set of role ID objects that designate user responsibilities and access requirements.

This form is designed to add the current organization to a user's profile so the user acquires some of the roles associated with that organization. The form performs these tasks:

- Accesses the contents of the current organization's `relativeRoles` property so the form user can select one or more roles.
- Saves the selected roles to a user profile's `roles` property.

In order to implement this form, a ForEach servlet bean iterates through the `currentOrganizationrelativeRoles` property and presents each role ID it finds as a name in the form page, through a selection box:

```
<dsp:select bean="MyRepositoryFormHandler.value.roles.repositoryIds">
   <dsp:droplet name="ForEach">
      <dsp:param name="array" bean="Profile.currentOrganization.relativeRoles"/>
      <dsp:oparam name="output">
         <dsp:option param="element.repositoryId">
            <dsp:valueof param="element.name">unnamed role</dsp:valueof>
      </dsp:oparam>
  </dsp:droplet>
</dsp:select>
```

In this example, a `dsp:option` tag is generated for each role in the `relativeRoles` property. The option value is the ID of the role repository item.

The form user selects several roles; on form submission, the `MyRepositoryFormHandler.values.roles.repositoryIds` contains the list of `repositoryIds` checked by the user. These are used to update the user's `roles` property.

Managing Map Properties

In most ATG operations, you update a Map property by updating a specific key value as if it were a servlet bean property:

```
<dsp:input type="text" bean="MyBean.value.addresses.city"/>
```

While `addresses` is a Map property and `city` is a key, this tag represents `addresses` and `city` as properties. Making a change to a key's value requires entering text into a text box and submitting the operation.

In order to provide greater flexibility in updating Map properties, forms that use the RepositoryFormHandler provide access to several properties that let you manipulate Map properties like lists:

- editMapsAsLists (page 96) is a RepositoryFormHandler property that, set to true, lets you make changes to the Map keys and values.

- keysAndRepositoryIds (page 97) is a Map property that you can use to update the Map with a series of key/ repository ID pairs.
- keysAndValues (page 98) is a Map property that you can use to update the Map with a series of primitive key/value pairs.

Note: The approach described in this section for updating Map properties applies only to the RepositoryFormHandler. For a generic approach to setting Map properties in all forms, see the Map Properties (page 67) section in the *Forms* (page 59) chapter.

editMapsAsLists

You typically interact with Maps by treating them as servlet beans. For example, to expose a value, you specify the key as an input parameter. You cannot add new key/value pairs when you work with Maps in this way.

Alternatively, you can treat a Map as a list by setting the RepositoryFormHandler's property `editMapsAsLists` to true. This lets you use `dsp:input` and `dsp:setvalue` tags to expose or update a Map like any list property.

To use this feature:

1. Make sure `editMapsAsLists` is set to true (the default setting).
2. Set the Map's updateMode (page 93) property to `append`, `prepend`, `replace`, or `remove`. The default value is `replace`.
3. If `updateMode` is set to `prepend` or `append`, set the Map's numNewValues (page 94) property to the number of key/value pairs you wish to add. The default is 0, specifying that new values overwrite current values.
4. Define one or more text boxes that accept values for the Map entry to edit. The value can be a user-entered value or a page parameter that holds a `repositoryId`, which references another repository item.

For example, a page where users can enter home and work addresses might include this code:

```
<dsp:input type="hidden"
  bean="MyRepositoryFormHandler.value.addresses.numNewValues" value="2"/>
<dsp:input type="hidden"
  bean=MyRepositoryFormHandler.value.addresses.updateMode" value="append"/>

Enter Home Address:
     <dsp:input type="hidden"
       bean="MyRepositoryFormHandler.value.addresses.keys[0]" value="home"/>
     <br/>Street:&nbsp;
     <dsp:input  type="text"
       bean="MyRepositoryFormHandler.value.addresses[0].street" value=""/>
     <br/>City:&nbsp;
     <dsp:input type="text"
       bean="MyRepositoryFormHandler.value.addresses[0].city" value=""/>
     <br/>State:&nbsp;
     <dsp:input type="text"
       bean="MyRepositoryFormHandler.value.addresses[0].state" value=""/>
     <br/>Postal Code:&nbsp;
     <dsp:input type="text"
       bean="MyRepositoryFormHandler.value.addresses[0].postalCode" value=""/>

Enter Work Address:
     <dsp:input bean="MyRepositoryFormHandler.value.addresses.keys[1]"
     type="hidden" value="work"/><br/>Street:&nbsp;
```

```
    <dsp:input bean="MyRepositoryFormHandler.value.addresses[1].street"
    type="text" value=""/><br/>City:&nbsp;
    <dsp:input bean="MyRepositoryFormHandler.value.addresses[1].city" type="text"
    value=""/><br/>State:&nbsp;
    <dsp:input bean="MyRepositoryFormHandler.value.addresses[1].state"
    type="text" value=""/><br/>Postal Code:&nbsp;
    <dsp:input bean="MyRepositoryFormHandler.value.addresses[1].postalCode"
    type="text" value=""/>
```

This page supplies two sets of four text boxes, one set for home address data and identified by the key `home`, and the second set for work address and identified by the key `work`. Because `updateMode` is set to `append`, the addresses are added to the existing `addresses` Map. By setting the `numNewValues` property to `2`, the ATG platform creates two key/value pairs for the `addresses` Map, which are populated by the values that the user provides through the form. On form submission, the new keys and values are appended to the current values to `addresses`.

Note: A Map must have unique keys. If `home` and `work` already exist as keys in the `addresses` property, their values are replaced by the new ones supplied in the form, despite the `updateMode` setting.

keysAndRepositoryIds

The `keysAndRepositoryIds` property lets you simultaneously set a Map key and value, where the Map holds a series of keys that map to repository IDs. Without `keysAndRepositoryIds`, performing this operation requires two input tags.

```
<dsp:input type="text"
  bean="MyRepositoryFormHandler.value.favorites.keys[0] value=""/>
<dsp:input type="text"
  bean="MyRepositoryFormHandler.value.favorites.repositoryIds[0] value=""/>
```

The `keysAndRepositoryIds` property lets you accomplish this task with greater flexibility and power. Values saved to the `keysAndRepositoryIds` property must use this format:

```
key=repositoryId
```

Note: The separator used in this example is the default value assigned to the RepositoryFormHandler's `mapKeyValueSeparator` property. You can change the recognized separator by updating the value in this property.

You can use page parameters to set dynamic key repository ID values and configure a `Format` bean to provide the syntax. For example, you might want to track the brands each customer prefers. Each brand is associated with a business, and one business can maintain several brands; so you want to organize the brands by parent business. Therefore, you display the brands as text boxes. When checked, you want the `favorites` Map to save a business name and brand ID as the `key` and `repositoryId` respectively. You might design your code like this:

```
<dsp:form action="keysandids.jsp" method="post">
   <dsp:input bean="MyRepositoryFormHandler.value.favorites.updateMode"
   type="text" value="prepend"/>
   <br/>
   <dsp:droplet name="/atg/dynamo/droplet/RQLQueryForEach">
     <dsp:param bean="/atg/userprofiling/ProfileAdapterRepository"
     name="repository"/>
     <dsp:param name="itemDescriptor" value="business"/>
     <dsp:param name="queryRQL" value="all"/>
     <dsp:oparam name="output">
```

```
      <dsp:droplet name="/atg/dynamo/droplet/Format">
        <dsp:param name="key" param="index"/>
        <dsp:param name="repositoryId" param="element.repositoryId"/>
        <dsp:param name="format" value="{key}={repositoryId}"/>
        <dsp:oparam name="output">
           <dsp:input
             bean="MyRepositoryFormHandler.value.favorites.keysAndRepositoryIds"
             paramvalue="message" type="checkbox"/>
           <dsp:valueof param="message">Not set</dsp:valueof>
          <br/>
        </dsp:oparam>
      </dsp:droplet>
    </dsp:oparam>
  </dsp:droplet>
  <dsp:input bean="MyRepositoryFormHandler.update" type="submit" value="Update"/>
</dsp:form>
```

The `RQLQueryForEach` and the `ProfileAdapterRepository` retrieve the brands saved as business items in the repository. Assume that each brand displays in a text box in the page and when it is modified, the `Format` bean associates each business name and brand ID to the `key` and `repositoryId` properties of a Profile component `favorites` Map.

keysAndValues

You can configure keys and values that are primitive data types for Maps with the `keysAndValues` property. As with the keysAndRepositoryIds (page 97) property, you do so in the context of a JSP, with a similar format:

```
key=value
```

10 User Profile Forms

This chapter shows how to use forms in JSPs to create and modify user profiles. It includes the following sections:

- ProfileFormHandler (page 99) describes how to use the ProfileFormHandler, a component in ATG Personalization that associates values entered in forms with profile properties.
- Multi-Profile Form Handlers (page 106) describes how to use the form handlers MultiProfileAddFormHandler and MultiProfileUpdateFormHandler. These form handlers let you create forms that interact with multiple user profiles.
- Profile Form Examples (page 113) provides examples of various profile forms.

Before reading this chapter, you should be familiar with how the ATG platform works with forms, as described in the *Forms* (page 59) chapter.

You can also use the ATG Control Center to create JSPs that contain profile forms for standard registration and login. For more information, see Creating Profile Form Pages (page 365) in Appendix E, *ATG Document Editor* (page 355).

For information about setting up a profile repository, see the *SettingUpaProfileRepository* chapter in the *ATG Personalization Programming Guide*.

ProfileFormHandler

Sites usually create and modify profiles through forms that invoke the ProfileFormHandler. Its Nucleus location is at:

```
/atg/userprofiling/ProfileFormHandler
```

You can use the ProfileFormHandler to set user profile properties without writing any Java or SQL code. The ProfileFormHandler handles the following tasks:

- Profile creation and updates
- User login and logout.
- Assignment of existing roles and organizations to individual users and groups of users.

ProfileFormHandler Submit Operations

The ProfileFormHandler supports the following operations that can be specified for form submission:

Operation	Function
`cancel`	Cancels any changes the user has made to values in the form but has not yet submitted.
`changePassword`	Changes the password property of the profile to the new value entered by the user.
`clear`	Clears the `value` Dictionary.
`create`	Creates a permanent profile and sets the profile properties to the values entered in the form.
`delete`	Deletes the current profile.
`login`	Uses the `login` and `password` values entered by the user to associate the correct profile with that user.
`logout`	Resets the profile to a new anonymous profile and optionally expires the current session.
`update`	Modifies the properties of the current profile.

For example, when a user logs into a site, a form can invoke the login operation as follows:

```
<dsp:input bean="ProfileFormHandler.login" type="submit" value="Submit"/>
```

Each operation is associated with a handler method. For example, the previous example calls `handleLogin()`. For detailed information about ProfileFormHandler methods, see *WorkingwithUserProfiles* in the *ATG Personalization Programming Guide* for information.

Setting Profile Values

Input fields on a registration page are used to set the ProfileFormHandler's `value` property. The `value` property is a Dictionary of property/value pairs that temporarily stores pending values for an operation on the current profile. This enables the ProfileFormHandler to set all profile properties on form submission as a single transaction, so profile properties are not left in an inconsistent state.

For example, the following extract from a registration form gathers a user's name, email address, and gender. The `value` Dictionary stores user entries as property/value pairs. When the form is successfully submitted, the `ProfileFormHandler.create` operation creates a user profile and writes the contents of the `value` Dictionary to the corresponding profile properties.

```
First Name: <dsp:input bean="ProfileFormHandler.value.firstname" maxlength="30"
size="25" type="text"/>
Last Name: <dsp:input bean="ProfileFormHandler.value.lastname" maxlength="30"
 size="25" type="text"/>
Email Address: <dsp:input bean="ProfileFormHandler.value.email" maxlength="30"
 size="25" type="text"/>
<dsp:input bean="ProfileFormHandler.value.gender" type="radio"
 value="female"/>Female
<dsp:input bean="ProfileFormHandler.value.gender" type="radio" value="male"/>Male
<dsp:input bean="ProfileFormHandler.create" type="submit" value=" Save "/>
```

Property/value pairs in the `value` Dictionary do not always correspond to profile properties; some might be required by the form handler in order to perform its operations. For example, a Change Password form should provide three input text fields, as shown here:

```
<dsp:input bean="ProfileFormHandler.value.oldpassword" maxsize="35" size="35"
type="password"/>
<dsp:input bean="ProfileFormHandler.value.password" maxsize="35" size="35"
type="password"/>
<dsp:input bean="ProfileFormHandler.value.confirmpassword" maxsize="35" size="35"
type="password"/>
<dsp:input bean="ProfileFormHandler.changePassword" type="submit" value="Save New
Password"/>
```

The `value` Dictionary stores the values from all fields; but only one—`value.password`—is written to the profile. The other two—`value.oldpassword` and `value.confirmpassword`—are required by the ProfileFormHandler to verify the user's identity, and to confirm that the user entered the new password correctly, respectively. If both conditions are true, the `ProfileFormHandler.changePassword` operation updates the profile password; otherwise, it returns an error.

ProfileFormHandler Properties

ProfileFormHandler component properties are generally configured correctly for most situations. You can reset these properties in two ways:

- Reconfigure properties in the ProfileFormHandler component. The configured values are used to initialize each new instance of the component.
- Override a component's configured value by setting the property value from the current page. A value set this way applies only to the instance of the ProfileFormHandler that is associated with this page.

The following sections describe ProfileFormHandler properties that are

badPasswordDelay

Specifies in milliseconds the amount of time to wait before responding when a user submits an incorrect password. The delay serves to protect against a password-guessing hammering attack, where a large number of passwords are provided successively in an attempt to guess the correct one. The default value is 1000 (1 second).

clearValuesOnCreate

A Boolean, specifies whether to clear the `value` Dictionary on submission of a form to create a user profile. The default value is true.

clearValuesOnUpdate

A Boolean, specifies whether to clear the `value` Dictionary on submission of a form to update a user profile. The default value is true.

confirmPassword

A Boolean property, determines whether the user must confirm a password by reentering it. In general, this property's configured value should be false, so users only need to enter their passwords once—for example, on login. However, a new user registration page or reset password page should override the configured value and set `confirmPassword` to true, in order to prevent users from making mistakes when setting their passwords:

```
<dsp:input bean="ProfileFormHandler.confirmPassword" type="hidden"
value="true"/>
```

When this property is set to true, a form must have two text input fields for entering and reentering the password (see the Create a User Profile (page 114) example).

extractDefaultValuesFromProfile

A Boolean property, determines whether the values in the ProfileFormHandler's `value` Dictionary are initially set from the current user's profile. If set to true, form fields are populated from the corresponding profile properties.

The property's default setting is true. If set to false, form fields are not initially populated from the profile, which might yield undesired results. For example, if `extractDefaultValuesFromProfile` is false, a form for updating profile information, such as contact data, is initially rendered without existing profile data. This can yield empty fields and require the user to reenter data. If any form fields are left empty, the corresponding entries in the ProfileFormHandler's `value` Dictionary are also empty, and on form submission are written back as null values to user's profile.

In general, you should set this property to false only for appropriate pages such as a form to register new users, as follows:

```
<dsp:setvalue bean="ProfileFormHandler.extractDefaultValuesFromProfile"
value="false"/>
```

propertiesToCopyOnLogin

An array property that lists profile properties to copy from the transient profile to the permanent profile on user login. These values overwrite any values previously stored in the user's permanent profile.

For example, the multi-valued `pagesViewed` property in a user's transient profile lists the names of pages that the user visited before logging in. If `propertiesToCopyOnLogin` includes `pagesViewed`, the names of the site pages a user visited before logging in are written to `pagesViewed` in the user's permanent profile.

If a member visits five pages before logging in, the value of the `pagesViewed` property in the transient profile is a list of the names of these five pages. When the member logs in, this value is copied to the permanent profile, and the previously existing list of pages in `pagesViewed` is overwritten, rather than appended to.

trimProperties

An array that lists names of profile properties, where leading or trailing spaces are automatically removed on form submission. By default, this property includes the properties `login` and `email`.

For example, if a user includes a space before or after an email address when filling out the registration form, and `trimProperties` includes the `email` property, the extra space is automatically removed on form submission.

updateRepositoryId

Used together with the `update` operation to ensure that the correct profile is updated. The default value is null; when a page containing the `update` operation is rendered, a hidden input tag can set this property to the repository ID of the current profile. For example:

```
<dsp:input bean="ProfileFormHandler.updateRepositoryId"
beanvalue="ProfileFormHandler.repositoryId" type="hidden"/>
```

On form submission, the `update` operation is called and the ProfileFormHandler compares the current user profile ID to `updateRepositoryId`. The current profile is updated only if the two IDs match. A mismatch typically occurs for two reasons:

- The original session expired
- The original user logged out or logged in via a different window.

generateProfileUpdateEvents

A Boolean property, specifies whether to send a JMS message when a profile is updated. The `ProfileUpdateTriggers` fires a separate JMS event for every updated profile. The default value is false.

profileUpdateEvent

Holds the property update information when generating `ProfileUpdateEvents`.

For more information, see *UserProfilingTools* in the *WorkingwithUserProfiles* chapter of the *ATG Personalization Programming Guide*.

profileUpdateTrigger

Generates the `ProfileUpdateEvents` when requested.

Multi-Valued Properties

In order to facilitate updates to multi-valued profile properties, the ProfileFormHandler provides the `addMulti` operation. This operation appends a new value to a multi-valued property in the ProfileFormHandler's `value` Dictionary. `addMulti` can add multiple primitive values to types `array`, `set` and `list`. The `addMulti` feature cannot handle multiple `Map` type values, or multiple items, as opposed to primitive data. To add multiple items, you must write your own form handler, as described in the *WorkingwithFormsandFormHandlers* chapter of the *ATG Programming Guide*.

Unlike the other ProfileFormHandler operations, `addMulti` does not update the user profile when its submit button is clicked. Instead, it appends the entered value to the `value` Dictionary. Thus, the form user can add multiple values to the property before submitting them. Therefore, a page that implements an `addMulti` submit button must also provide a submit button that creates or updates the user profile.

The following code shows how a form might contain an `addMulti` operation:

```
<dsp:select multiple="true" bean="ProfileFormHandler.value.interests"
name="interests" size="4">
  <dsp:droplet name="ForEach">
    <dsp:param bean="ProfileFormHandler.value.interests" name="array"/>
    <dsp:oparam name="output">
       <dsp:option paramvalue="element" selected="true"/><dsp:valueof
       param="element">null</dsp:valueof>
    </dsp:oparam>
  </dsp:droplet>
</dsp:select>

<dsp:input name="Add Interests" type="hidden" value="AddMultiProperty_interests,
   AddMultiValue_interests"/>
<dsp:input name="AddMultiProperty_interests" type="hidden"
value="interests"/>
```

```
<dsp:input name="AddMultiValue_interests" type="text"/>
<dsp:input bean="ProfileFormHandler.addMulti" name="addMultiProperty"
type="submit" value="Add Interests">
```

This code example contains the following steps:

1. The dsp:select (page 176) tag specifies how many values for the `interests` field are available in the form.
2. The ForEach (page 232) servlet bean iterates through the array of Strings specified in the `bean.ProfileFormHandler.value.interests` parameter. If an interest is selected, it outputs the value; otherwise, it outputs null as the interest element value.
3. A hidden input tag defines two text strings; these strings link the next two subsequent input tags:
   - `AddMultiProperty_interests` is referenced by a hidden input tag's `name` attribute; this input tag's `value` attribute identifies the target Dictionary property.
   - `AddMultiValue_interests` is referenced by the text input tag's `name` attribute. Form users use this field to enter new values for the target property.

   The tag's `name` attribute is set to `Add Interests`; this links the Dictionary property and text input field with the `addMulti` submit button.
4. The tag that defines the `addMulti` submit button must set its `name` and `value` attributes as follows:
   - `name` must be set to `addMultiProperty`
   - `value` must be set to `Add Interests`

Note: In order to enable `addMulti` operations for several multi-valued properties on the same page, each property must have its own pair of unique identifiers as described above, and a unique string for its submit button's `value` attribute.

ProfileFormHandler Navigation Properties

After a profile form operation—registration, login, or logout—is complete, you might want to redirect the user to a new page. As in standard HTML, you can use the `action` attribute of the form tag to specify a page to display on form submission.

The `action` attribute can specify only a single page. You might want to specify several different pages, where the user's destination depends on the nature of the form operation and whether or not it succeeds.

The ProfileFormHandler has a set of properties you can use to control navigation after a form operation. These properties specify the URLs where the user is redirected on certain error and success conditions. Each operation except cancel has corresponding success and failure URL properties:

ProfileFormHandleroperation	Success/failureURLproperties
`changePassword`	`changePasswordSuccessURL` `changePasswordErrorURL`
`create`	`createSuccessURL` `createErrorURL`

ProfileFormHandleroperation	Success/failureURLproperties
`delete`	`deleteSuccessURL` `deleteErrorURL`
`login`	`loginSuccessURL` `loginErrorURL`
`logout`	`logoutSuccessURL` `logoutErrorURL`
`update`	`updateSuccessURL` `updateErrorURL`

Note: The cancel operation has only one navigation property, `cancelURL`.

The value of each property is a URL relative to the page specified by the form's `action` attribute or a local URL defined absolutely from the root. The default value of each property is null, so you must set these properties explicitly. You can specify the values of these URL properties in the form handler component, or with `hidden` input tags in the JSP. If these property values are not set, the `action`-specified page is displayed on form submission.

The following example sets the value of `loginErrorURL`, redirecting the user to `login_failed.jsp`. If the lookup operation succeeds, and the value of `loginSuccessURL` is not set, the user is redirected to the `action`-specified page `index.jsp`:

```
<dsp:form action="index.jsp" method="post">
<dsp:input
  bean="ProfileFormHandler.loginErrorURL" type="hidden" value="login_failed.jsp"/>
...
</dsp:form>
```

Single Profile Form Handler Error Messages

The ATG servlet bean ProfileErrorMessageForEach detects errors that occur when a user submits a form, and displays the error messages associated with these errors. ProfileErrorMessageForEach is an instance of the ErrorMessageForEach servlet bean, and has the following pathname:

`/atg/userprofiling/ProfileErrorMessageForEach`.

For an example of using `ProfileErrorMessageForEach` in a profile form page, see Create a User Profile (page 114). For information about modifying the messages this component displays, see Appendix B, *ATG Servlet Beans* (page 195).

ProfileFormHandler Scope

A ProfileFormHandler component can be request- or session-scoped. The default scope is request: each time a user accesses a page with a profile form, the ATG platform creates an instance of the ProfileFormHandler that uses the configured values of the component's properties. You can override the values of these properties using hidden input tags, but the values set this way do not carry over if the user accesses another page with a profile form.

Property values can persist across multiple pages if the ProfileFormHandler is session-scoped. For example, a long registration form might split across two pages, with the second page containing the form's submit control. Navigation controls enable the user to move between the two pages before submitting the form. In order to retain values from both pages, the ProfileFormHandler must be session scoped; otherwise, values from one page are lost when the user navigates to the other.

If you set the ProfileFormHandler to be session-scoped, be careful how you use hidden input fields to override default property values. The new values remain in effect throughout the session unless explicitly changed. For example, a registration page sets extractDefaultValuesFromProfile (page 102) to false. If during the same session, the user accesses another page to update profile information, the fields in this form are not filled in with values from the profile unless that page explicitly sets `extractDefaultValuesFromProfile` back to true.

After a user logs in or submits profile data, the ProfileFormHandler automatically calls the `clear` operation if `clearValuesOnCreate` or `clearValuesOnUpdate` is set to true—the default value for both. The `clear` operation clears the temporary `value` Dictionary. This prevents leftover keys from corrupting another form if the user enters new data. This method is useful for session-scoped form: the form can safely retain information across multiple pages in its `value` Dictionary for a given session, and ensure that the data is cleared on form submission. To call the `clear` operation on a form, insert this line:

```
<dsp:setvalue bean="ProfileFormHandler.clear" value=""/>
```

The clear operation executes when this line is rendered.

Multi-Profile Form Handlers

Two form handler components are available that let administrators create and update multiple user profiles at the same time:

- MultiProfileAddFormHandler sets up multiple user profiles.
- MultiProfileUpdateFormHandler updates multiple user profiles.

Both components can differentiate profile properties whose values are shared, from those that must be set for each user. Both handlers have the same Nucleus path, located in `/atg/userprofiling/`.

Because login and logout properties are designed for single users who update their own profiles, these are omitted from the multi-profile form handlers. A user who has access to multiple forms is typically an administrator is already logged into the Web site, and is granted the necessary permissions to modify multiple profiles. For example, in the Motorprise Reference Application, a user logs in as a Web site administrator and is then granted security permission to edit multiple profiles. For more information, see the *ATG Business Commerce Reference Application Guide*.

You can use multi-profile form handlers to perform the following tasks:

- Assign roles to a group of user profiles.
- Assign a group of user profiles to the same organization.
- Perform the same changes to a group of user profiles—for example, update contact information for relocated employees, or delete an entire group of user profiles.

For more information on working with roles and organizations see the *WorkingwiththeDynamoUserDirectory* chapter in the *ATG Personalization Programming Guide*.

Multi-Profile Form Handler Submit Operations

The following table lists operations that are supported by `MultiProfileAddFormHandler` and `MultiProfileUpdateFormHandler` that can be specified for form submission:

Operation	Function
`create`	Valid only for `MultiProfileAddFormHandler`, creates a group of user profiles with the profile properties specified in the form.
`update`	Updates a group of user profiles with the properties specified in the form.
`delete`	Deletes a group of user profiles.
`cancel`	Cancels any unsubmitted changes to form values.
`clear`	Clears the `value` Dictionary.

For example:

```
<dsp:input bean="MultiProfileAddFormHandler.create" type="submit"
value="Add New Users"/>
```

Calling the clear operation automatically

After a user submits profile data or deletes user profiles, the form handler automatically calls its `clear` operation, if the following properties are set:

- MultiProfileAddFormHandler has clearValuesOnCreate set to true.
- MultiProfileUpdateFormHandler has either clearValuesOnDelete or clearValuesOnUpdate set to true.

The `clear` operation clears the temporary `value` Dictionary. This prevents leftover keys from corrupting another form if the user enters new data. This method is useful for session-scoped form: the form can safely retain information across multiple pages in its `value` Dictionary for a given session, and ensure that the data is cleared on form submission. To call the `clear` operation on a form, insert this line immediately after the `dsp:form` tag:

```
<dsp:setvalue bean="MultipleProfileAddFormHandler.clear" value=""/>
```

Setting Values for Multiple Profiles

Setting values for multiple profiles is similar to setting values for a single profile. Input fields on a registration page are used to set the form handler's `value` Dictionary, where data is stored pending a form submit operation such as create or update. On form submission, all values in the dictionary are written to the selected user profiles as a single transaction.

For detailed information about setting profile values, see Setting Profile Values (page 100) earlier in this chapter.

Setting values for individual profiles

The `MultiProfileAddFormHandler` contains a `users` property, which is a list of all user profiles. This property provides access to the property values of individual profiles. The following example uses ForEach to iterate over all user profiles in `users`, and display text input fields for each one:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param bean="MultiProfileAddFormHandler.users" name="array"/>
  <dsp:oparam name="output">
     <dsp:input bean="MultiProfileAddFormHandler.users[param:index].firstName"
     type="text"/>
     <dsp:input bean="MultiProfileAddFormHandler.users[param:index].lastName"
     type="text"/>
     <dsp:input bean="MultiProfileAddFormHandler.users[param:index].birthDate"
     type="text"/>
     <dsp:input bean="MultiProfileAddFormHandler.users[param:index].phoneNumber"
     type="text"/>
  </dsp:oparam>
</dsp:droplet>
```

Note: The number of user profiles in `users` is set by the form handler's `count` and `maxCount` properties. The `count` property must be set in the handler before the form can be rendered. For more information, see the `count` property.

MultiProfileAddFormHandler Properties

The default values for MultiProfileAddFormHandler properties are generally configured correctly for most situations. You can reset the properties of a MultiProfileAddFormHandler component in two ways:

- Reconfigure the properties in the MultiProfileAddFormHandler component. the configured values are used to initialize each new instance of the component.
- Override a component's configured value by setting the property value from the current page. A value set this way applies only to the instance of the MultiProfileAddFormHandler component that is associated with this page.

The effect of property settings depends on the scope of the MultiProfileAddFormHandler instance. For more information, see Multi-Profile Form Handler Scope (page 113).

The `MultiProfileAddFormHandler` also shares a number of properties with the ProfileFormHandler, which serve the same purpose. These include `trimProperties` and `confirmPassword`.

clearValuesOnCreate

This property uses the `handleClear` method to clear the `value` Dictionary when a form creating users is submitted. This property is set to true by default.

count

An integer that represents the number of users to be processed by the form; serves as a dimension of the `users` list. The default value is 0.

This property must be set before the form is rendered on the page. For request-scoped form handler components, a hidden input tag must restore the state of the `count` property before the `</dsp:form>` close tag. For example:

```
<dsp:setvalue bean="MultiProfileAddFormHandler.count" value="2"/>
<body>
   <dsp:form action="MultiProfileAdd.jsp" method="post">
      ...
      ...
      <dsp:input type="hidden" bean="MultiProfileAddFormHandler.count"/>
   </dsp:form>
</body>
```

currentUser

Contains the `UserListItem` object of the user currently being updated.

You can use this property in the `postCreateUser()` method when you need to extend the functionality of the MultiProfileAddFormHandler. See *MultipleProfileFormHandlers* in the *WorkingwithUserProfiles* chapter of the *ATG Personalization Programming Guide* for more information.

defaultPassword

A String that contains the default password, set when the `generatePassword` property is set to true.

extractDefaultValuesFromItem

Identical to the ProfileFormHandler property `extractDefaultValuesFromProfile`.

generatePassword

A Boolean, indicates whether to generate the password automatically when the form is submitted with the `create` operation. The default value is false. If set to true, the default password is set to the value of the `defaultPassword` property.

maxCount

The maximum value allowed for this form's `count` property. The default value is 0—that is, no maximum value. If set to a value greater than 0, `maxCount` always overrides the `count` property.

Note:`maxCount` must be set in the page before the `count` property.

minCount

The minimum value that the `count` property can be set to in this form. The default value for this property is 1. If `count` is less than `minCount`, and `minCount` is greater than 0, then `count` is set to `minCount`. You must set the `minCount` property in the page before you set the value of the `count` property. The `minCount` value must be greater than 0.

profileTools

This property contains a link to the `ProfileTools` component. The `MultiProfileAddFormHandler` uses this component to perform operations that are common to all ProfileFormHandlers. See *UsingProfileFormHandlers* in the *WorkingwithFormsandFormHandlers* chapter of the *ATG Programming Guide*.

userListItemClass

This String is the name of the class that the form uses to create the list of users to add. The default class is `UserListItem`. The `UserListItem` class is a subclass of `RepositoryFormHandler`. It provides a means to handle form exceptions for individual users. The `user` array instantiates this class so you can extend this class and pass added functionality to the objects in the user list.

users

A `List` of objects that contains the form update values for properties that apply to each user profile. For example, each user profile might have the properties `firstName`, `homeAddress`, and so on. For per-user property values, each object in the list contains a `value` Dictionary . This `value` Dictionary is used in the same way as the `value` Dictionary in the single ProfileFormHandler. It stores the values before the form is submitted.

Updating Values in Multiple Profiles

The MultiProfileUpdateFormHandler updates or deletes sets of profiles. Because the profiles are items that already exist in the repository, each one is identified—for update or deletion—by its unique `repositoryId`. These identifiers can be accessed in the handler's repositoryIds (page 111) property .

Form data is stored in the `value` Dictionary, pending a form submit operation such as update or delete. On form submission, all values in the dictionary are written to the selected user profiles as a single transaction. To clear the `value` Dictionary after an update, invoke the handler's clear property at the beginning of a form:

```
<dsp:setvalue bean="MultipleProfileUpdateFormHandler.clear" value=""/>
```

For more information about setting values in profiles, see Setting Profile Values (page 100) earlier in this chapter.

MultiProfileUpdateFormHandler Properties

The default values for MultiProfileUpdateFormHandler properties are generally configured correctly for most situations. You can reset the properties of a MultiProfileUpdateFormHandler component in two ways:

- Reconfigure the properties in the MultiProfileUpdateFormHandler component. the configured values are used to initialize each new instance of the component.
- Override a component's configured value by setting the property value from the current page. A value set this way applies only to the instance of the MultiProfileUpdateFormHandler component that is associated with this page.

The effect of property settings depends on the scope of the MultiProfileUpdateFormHandler instance. For more information, see Multi-Profile Form Handler Scope (page 113).

The MultiProfileUpdateFormHandler also shares a number of properties with the ProfileFormHandler, which serve the same purpose. These include `trimProperties` and `confirmPassword`.

clearValuesOnDelete

A Boolean, clears the `value` Dictionary on submission of a form that deletes users. The default value is false.

clearValuesOnUpdate

A Boolean, clears the `value` Dictionary on submission of a form to update users. The default value is true.

confirmOldPassword

A Boolean, specifies whether the user is required to confirm an old password when changing the `password` property. The default value is false.

extractDefaultValuesFromItem

Identical to the ProfileFormHandler property `extractDefaultValuesFromProfile`.

generateProfileUpdateEvents

A Boolean, specifies whether to send a JMS message when a profile is updated. The default value is false.

profileTools

Contains a link to the `ProfileTools` component. The `MultiProfileUpdateFormHandler` uses this component to perform operations that are common to all ProfileFormHandlers. See *UsingProfileFormHandlers* in the *WorkingWithFormsandFormHandlers* chapter of the *ATG Programming Guide*.

profileUpdateEvent

Holds the property update information when generating `ProfileUpdateEvents`.

profileUpdateTrigger

Generates the `ProfileUpdateEvents` when requested.

repositoryIds

A String array that represents the list of existing user profiles to update or delete. You must provide this list in order to update or delete existing repository profiles.

Multi-Profile Form Handler Navigation Properties

After a profile form operation—registration, login, or logout—is complete, you might want to redirect the user to a new page. As in standard HTML, you can use the `action` attribute of the form tag to specify a page to display on form submission.

The `action` attribute can specify only a single page. You might want to specify several different pages, where the user's destination depends on the nature of the form operation and whether or not it succeeds.

The MultiProfileUpdateFormHandler and MultiProfileAddFormHandler have a set of properties you can use to control navigation after a form operation. These properties specify the URLs where the user is redirected on certain error and success conditions. Each operation except cancel has corresponding success and failure URL properties:

Handleroperation	Success/failureURLproperties
`create`	`createSuccessURL` `createErrorURL`

Handleroperation	Success/failureURLproperties
`delete`	`deleteSuccessURL` `deleteErrorURL`
`update`	`updateSuccessURL` `updateErrorURL`
`cancel`	`cancelURL`

The value of each property is a URL relative to the page specified by the form's `action` attribute or a local URL defined absolutely from the root. The default value of each property is null, so you must set these properties explicitly. You can specify the values of these URL properties in the form handler component, or with `hidden` input tags in the JSP. If these property values are not set, the `action`-specified page is displayed on form submission.

The following example sets the value of create`ErrorURL`, redirecting the user to `create_failed.jsp` if the create operation fails. If the create operation succeeds and the value of `createSuccessURL` is not set, the user is redirected to the `action`-specified page `index.jsp`:

```
<dsp:form action="index.jsp" method="post">
   <dsp:input bean="MultiProfileAddFormHandler.createErrorURL"
   type="hidden" value="create_failed.jsp"/>
   ...
</dsp:form>
```

Multi-Profile Form Handler Error Messages

Multi-profile form handlers use the ATG servlet bean ProfileErrorMessageForEach to display error messages. For more information about this servlet bean, see Single Profile Form Handler Error Messages (page 105).

You can also access the `MultiProfileAddFormHandler.formExceptions` property to find a summary of exceptions, one for each type of exception that is generated during a submit operation. You can also obtain exceptions for each user profile through this syntax:

`MultiProfileAddFormHandler.users[`*`index`*`].formExceptions`

For example, the following code collects a summary of form errors:

```
<%-- To handle the summary list of errors - duplicate exceptions eliminated --%>
<dsp:droplet name="Switch">
   <dsp:param bean="MultiProfileAddFormHandler.formError" name="value"/>
   <dsp:oparam name="true">
      <dsp:droplet name="ProfileErrorMessageForEach">
         <dsp:param bean="MultiProfileAddFormHandler.formExceptions"
         name="exceptions"/>
         <dsp:oparam name="output">
            <dsp:valueof param="message"/>
         </dsp:oparam>
      </dsp:droplet>
   </dsp:oparam>
</dsp:droplet>
```

The following code collects errors generated by specific user profiles:

```
<%-- To see the errors generated for each user --%>
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
   <dsp:param bean="MultiProfileAddFormHandler.users" name="array"/>
   <dsp:droplet name="Switch">
      <dsp:param bean="MultiProfileAddFormHandler.users[param:index].formError"
      name="value"/>
      <dsp:oparam name="true">
         <dsp:droplet name="ProfileErrorMessageForEach">
            <dsp:param
            bean="MultiProfileAddFormHandler.users[param:index].formExceptions"
            name="exceptions"/>
            <dsp:oparam name="output">
               <dsp:valueof param="message"/>
            </dsp:oparam>
         </dsp:droplet>
      </dsp:oparam>
   </dsp:droplet>
</dsp:droplet>
```

Multi-Profile Form Handler Scope

A multi-profile form handler component can be request- or session-scoped. The default scope is request: each time a user accesses a page with a profile form, the ATG platform creates an instance of the form handler that uses the configured values of the component's properties. You can override the values of these properties using hidden input tags, but the values set this way do not carry over if the user accesses another page with a profile form.

Property values can persist across multiple pages if the form handler is session-scoped. For example, a long registration form might split across two pages, with the second page containing the form's submit control. Navigation controls enable the user to move between the two pages before submitting the form. In order to retain values from both pages, the form handler must be session scoped; otherwise, values from one page are lost when the user navigates to the other.

If you set a form handler to be session-scoped, be careful about using hidden input fields to override default property values. The new values remain in effect throughout the session unless explicitly changed. For example, a registration page sets `extractDefaultValuesFromItem` to false. If, during the session, the user subsequently accesses a page to update profile information, the fields in this form are not filled in with values from the profile unless that page explicitly sets `extractDefaultValuesFromItem` back to true.

Profile Form Examples

The following sections provide three examples of profile forms, which perform these tasks:

- Create a User Profile (page 114).
- Create Multiple User Profiles (page 116)
- Update Multiple User Profiles (page 118).

Create a User Profile

The following example defines a page that contains a registration form. Embedded comments explain how the form works.

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>

<dsp:page>

<HTML>
<HEAD>
<TITLE>Registration Form</TITLE>
</HEAD>

<dsp:importbean bean="/atg/userprofiling/ProfileFormHandler"/>
<dsp:importbean bean="/atg/userprofiling/ProfileErrorMessageForEach"/>
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>

<%-- The next line sets the Profile Form Handler's extractDefaultValuesFromProfile
     property to false, to ensure that the fields in the form are blank when the
     user accesses the page.  --%>
<dsp:setvalue bean="ProfileFormHandler.extractDefaultValuesFromProfile"
value="false"/>

<BODY>

<%-- The Switch bean checks whether the current profile is a transient profile.
     If it isn't, this means that the user is logged in and therefore cannot
     register, so a warning message is displayed. If the current profile is
     transient, the registration form is displayed.  --%>
<dsp:droplet name="Switch">
   <dsp:param bean="ProfileFormHandler.profile.transient" name="value"/>
   <dsp:oparam name="false">
    You are currently logged in. If you wish to register as a new user
    please logout first.
   </dsp:oparam>

   <dsp:oparam name="default">

<%-- The next two lines set the action page for the form and the createSuccessURL
     page. The createErrorURL is not defined, so if there is an error, the user
     is directed to the action page. In this example, the action page is the
     same as the current page, so the page is redisplayed with the appropriate
     error messages. --%>
   <dsp:form action="register.jsp" method="post">
      <dsp:input bean="ProfileFormHandler.createSuccessURL" type="hidden"
      value="create_success.jsp"/>

<%-- This line sets the confirmPassword property to true, so the user is
     required to confirm the password entered. --%>
      <dsp:input bean="ProfileFormHandler.confirmPassword" type="hidden"
      value="true"/>

<h3>Register as a user:</h3>

<%-- The Switch bean checks the value of the formExceptions property. If the
     value of this property is true, there were errors when the form was
     submitted. The ProfileErrorMessageForEach bean cycles through the
     formExceptions array, and displays the message associated with
     each error. --%>
<dsp:droplet name="Switch">
<dsp:param bean="ProfileFormHandler.formError" name="value"/>
<dsp:oparam name="true">
  <UL>
    <dsp:droplet name="ProfileErrorMessageForEach">
      <dsp:param bean="ProfileFormHandler.formExceptions" name="exceptions"/>
      <dsp:oparam name="output">
     <LI> <dsp:valueof param="message"/>
      </dsp:oparam>
    </dsp:droplet>
    </UL>
</dsp:oparam>
</dsp:droplet>

<%-- This hidden input tag sets the member property of the value Dictionary
     to true. When the form is submitted, the member property of the permanent
     profile is therefore set to true, indicating this user is a member rather
     than a guest. --%>
<dsp:input bean="ProfileFormHandler.value.member" type="hidden"
value="true"/>

<table width=456 border=0>

<%-- The next 30 or so lines create the actual fields the user fills in, and
     uses these fields to set properties in the Profile Form Handler's value
     Dictionary. When the form is submitted, the values in the value Dictionary
     are then copied to properties in the user's permanent profile. --%>
  <tr>
    <td valign=middle align=right>User Name:</td>
    <td><dsp:input bean="ProfileFormHandler.value.login" maxsize="20" size="20"
type="text"/></td>
  </tr>

  <tr>
    <td valign=middle align=right>Password:</td>
    <td><dsp:input bean="ProfileFormHandler.value.password" maxsize="35" size="35"
type="password"/></td>
  </tr>

<%-- When the user submits the form, the Profile Form Handler checks
     whether the value in the confirmpassword field matches the value in
     the password field. If the values don't match, the Profile Form Handler
     produces an error, and does not create the new profile. --%>

  <tr>
    <td valign=middle align=right>Password Confirmation:</td>
    <td><dsp:input bean="ProfileFormHandler.value.confirmpassword" maxsize="35"
size="35" type="password"/></td>
  </tr>

  <tr>
    <td valign=middle align=right>Email Address:</td>
    <td><dsp:input bean="ProfileFormHandler.value.email" maxsize="30" size="30"
type="text"/></td>
  </tr>

  <tr>
    <td valign=middle align=right>Gender:</td>
    <td>
    <dsp:input bean="ProfileFormHandler.value.gender" type="radio"
value="male"/>Male
    <dsp:input bean="ProfileFormHandler.value.gender" type="radio"
value="female"/>Female
    </td>
  </tr>

<%-- This line invokes the Profile Form Handler's create operation, which creates
     a new permanent profile using the values in the value Dictionary. --%>
  <tr>
    <td valign=middle align=right></td>
    <td><dsp:input bean="ProfileFormHandler.create" type="submit"
value="Register"/></td>
  </tr>
</table>

</dsp:form>
</dsp:oparam>
</dsp:droplet>

</BODY>
</HTML>
</dsp:page>
```

Create Multiple User Profiles

The following example shows how to create multiple user profiles. In a real-life application, a preceding page contains the user count and that value is passed as a parameter to this page and set according by the `<dsp:setvalue>` function.

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>

<dsp:page>
<HTML>
<HEAD>
<TITLE>Create Multiple Profile Forms</TITLE>
</HEAD>

<dsp:importbean bean="/atg/userprofiling/MultiProfileAddFormHandler"/>
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>

<%-- The next line sets the form handler's count property to the number of users
to be added by this form. For demonstration purposes, the count value has been
hard-coded here. In reality, a preceding page would specify the user count and
pass it as a parameter to this page to be set accordingly using <dsp:setvalue
value="null"/>. --%>

<dsp:setvalue bean="MultiProfileAddFormHandler.count" value="2"/>

<BODY>

<%-- The next line sets the action page for this form to be the same
as the current page --%>
<dsp:form action="MultiProfileAdd.jsp" method="post">

<%-- The following hidden input tag makes sure that the count value is set and
```

```
carried over for a request scoped (the default) form handler. Placing it at the
beginning of the form ensures it will be set before the get is done on the users
array property which is where the allocation of the array is done --%>

<dsp:input bean="MultiProfileAddFormHandler.count" type="hidden"/>

<%-- The next two lines set the form redirection locations for success or failure.
--%>
<dsp:input bean="MultiProfileAddFormHandler.createSuccessURL" type="hidden"
value="MultiProfileUpdate.jsp"/>
<dsp:input bean="MultiProfileAddFormHandler.createErrorURL" type="hidden"
value="myAdderror.jsp"/>

<%-- The next two lines initialize the setting of a default password to be used
for each user created by this form. --%>
<dsp:input bean="MultiProfileAddFormHandler.generatePassword" type="hidden"
value="true"/>
<dsp:input bean="MultiProfileAddFormHandler.defaultPassword" type="hidden"
value="test"/>

<h3>Update per-user contact information:</h3>

<%-- Using a ForEach droplet, display the input tags for each per-user property to
be set by this form --%>
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
<%-- Set the array parameter to the list of users to be added so that the
properties set will end up in the value Dictionary for the associated user. --%>
  <dsp:param bean="MultiProfileAddFormHandler.users" name="array"/>
  <dsp:oparam name="output">
      <UL>
      User: <dsp:valueof param="count"/>
      </UL>
        <table width=456 border=0>
  <tr>
    <%-- The following lines create the actual fields displayed on the form for
each profile being added. They are placed in a table here and repeated for the
number of users requested by this form. --%>
    <td valign=middle align=right>Login Name:</td>
    <td><dsp:input
bean="MultiProfileAddFormHandler.users[param:index].value.login" maxsize="30"
size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>First Name:</td>
    <td><dsp:input
bean="MultiProfileAddFormHandler.users[param:index].value.firstName" maxsize="30"
size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>Last Name:</td>
    <td><dsp:input
bean="MultiProfileAddFormHandler.users[param:index].value.lastName" maxsize="30"
size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>Email:</td>
    <td><dsp:input
bean="MultiProfileAddFormHandler.users[param:index].value.email" maxsize="30"
size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>Aggresive Index:</td>
    <td><dsp:input
bean="MultiProfileAddFormHandler.users[param:index].value.aggressiveIndex"
maxsize="30" size="30" type="text"/></td>
  </tr>
</table>
  </dsp:oparam>
  <dsp:oparam name="empty">
    array is empty!
  </dsp:oparam>
</dsp:droplet>

<%-- The next section of lines contain the input tags for the property values that
are shared by all the users being added by this form. Notice they are assigned to
the "value" Dictionary in the same way as in using the ProfileFormHandler. --%>
<h3>Update common properties:</h3>
<table width=456 border=0>
<tr>
<td valign=middle align=right>Locale:</td>
<td><dsp:input bean="MultiProfileAddFormHandler.value.locale" maxsize="30"
size="30" type="text"/></td>
</tr>
<tr>
<td valign=middle align=right>Member (true/false):</td>
<td><dsp:input bean="MultiProfileAddFormHandler.value.member" maxsize="30"
size="30" type="text"/></td>
</tr>
<tr>
<td valign=middle align=right>User Type (investor/broker/guest):</td>
<td><dsp:input bean="MultiProfileAddFormHandler.value.userType" maxsize="30"
size="30" type="text"/></td>
</tr>
</table>

<%-- Display two different submit options - create and cancel which invoke methods
in the Form Handler --%>
<dsp:input bean="MultiProfileAddFormHandler.create" type="submit" value="save"/>
<dsp:input bean="MultiProfileAddFormHandler.cancel" type="submit" value="cancel"/>
</dsp:form>
</BODY>
</HTML>
</dsp:page>
```

Update Multiple User Profiles

The following example shows how to update multiple user profiles.

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>

<%@ page import="atg.servlet.*"%>

<dsp:page>
<HTML>
<HEAD>
<TITLE>Update Contact Information Checklist</TITLE>
</HEAD>
```

```
<dsp:importbean bean="/atg/userprofiling/MultiProfileUpdateFormHandler"/>
<dsp:importbean bean="/atg/dynamo/droplet/RQLQueryForEach"/>

<BODY>
<%-- This page displays a list of users beginning with the letter 's', using the
RQLQueryForEach droplet - It allows you to check off the users you'd like to
update and offers a few property <dsp:input> tags for you to update the selected
user
information --%>

<%-- The next line sets the action page for this form to be the same as the
current page --%>
<dsp:form action="<%=ServletUtil.getDynamoRequest(request).getRequestURL()%>"
method="post">

<%-- The next two lines set the form redirection locations for success or failure.
--%>
<dsp:input bean="MultiProfileUpdateFormHandler.updateSuccessURL" type="hidden"
value="MultiProfileDelete.jsp"/>
<dsp:input bean="MultiProfileUpdateFormHandler.updateErrorURL" type="hidden"
value="myUpdateError.jsp"/>

<h3>Select which users to update:</h3>

<%-- For testing purposes, this page finds users with firstname beginning with 's'
--%>

<dsp:param name="beginChar" value="s"/>
<%-- The following droplet displays the list of users with a checkbox for each
one. When boxes are checked, the repositoryId for that user is placed in the
repositoryIds array property. --%>
<dsp:droplet name="/atg/dynamo/droplet/RQLQueryForEach">
        <dsp:param name="repository"
        value="/atg/userprofiling/ProfileAdapterRepository"/>
        <dsp:param name="itemDescriptor" value="user"/>
        <dsp:param bean="/atg/dynamo/transaction/TransactionManager"
        name="transactionManager"/>
        <dsp:param name="queryRQL" value="firstName STARTS WITH IGNORECASE
            :beginChar"/>
        <dsp:oparam name="outputStart">
                <table width=100% cellpadding=0 cellspacing=0 border=0>
        </dsp:oparam>
        <dsp:oparam name="output">
                <tr><td>
                <dsp:input bean="MultiProfileUpdateFormHandler.repositoryIds"
                paramvalue="element.repositoryId" type="checkbox"/>
                <dsp:valueof param="element.firstName"/>&nbsp;
               <dsp:valueof param="element.lastName"/>
                </td></tr>
        </dsp:oparam>

        <dsp:oparam name="outputEnd">
                </table>
        </dsp:oparam>

        <dsp:oparam name="error">
                *** Error occurred *** <p><p>
                <dsp:valueof param="rqlException"/>
        </dsp:oparam>
```

```
                <p>*** No results returned ***

</dsp:droplet>

<%-- This table displays the list of properties to be set for each of the checked
users --%>
<table border=0>
  <tr>
    <td valign=middle align=right>Aggressive Index:</td>
    <td><dsp:input bean="MultiProfileUpdateFormHandler.value.aggressiveIndex"
maxsize="30" size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>Goals: (short-term,retirement-focus)</td>
    <td><dsp:input bean="MultiProfileUpdateFormHandler.value.goals" maxsize="30"
size="30" type="text"/></td>
  </tr>
  <tr>
    <td valign=middle align=right>Strategy:(moderate,aggressive)</td>
    <td><dsp:input bean="MultiProfileUpdateFormHandler.value.strategy"
maxsize="30" size="30" type="text"/></td>
  </tr>
</table>

<dsp:input bean="MultiProfileUpdateFormHandler.update" type="submit"
value="update"/>
<dsp:input bean="MultiProfileUpdateFormHandler.cancel" type="submit"
value="cancel"/>
</dsp:form>
</BODY>
</HTML>
</dsp:page>
```

11 Displaying Repository Data in HTML Tables

Applications often need to display repository data in an HTML table. For example, you might want to display a table of user names and addresses, a table of authors and article titles, or a table of product information. `atg.service.util.TableInfo` is a class that you can use to create components that manage display of information in a table. A TableInfo component helps you create HTML tables whose rows correspond to JavaBeans, and whose columns display properties of each bean. You can also configure a TableInfo component to make tables sortable, so users can click on a column heading to sort the table on the column values.

A `TableInfo` component does not maintain or display the items rendered in the table. The list of items must be maintained in a separately managed component. Instead, `TableInfo` maintains information about table columns, such as column headings, the property to display in each column, and the sort criteria for each column. To render the table, you use the column information in the `TableInfo` component together with servlet beans that iterate over the list of items, such as ForEach and TableForEach.

This chapter includes the following sections:

TableInfo Basics

In a simple configuration of a TableInfo component, the `columns` property specifies the name and corresponding property of each HTML table column. For example, the following `TableInfo.properties` file configures a TableInfo component to display user profile information.

```
$class=atg.service.util.TableInfo
$scope=session
```

```
columns=\
   Last Name=lastName,\
   First Name=firstName,\
   City=homeAddress.city,\
   Email Address=email
```

A TableInfo component assumes the existence of a separately managed list of JavaBeans: each `columns` expression names a bean property. For example, the previous example of a TableInfo configuration assumes the existence of a separately managed list of user profile objects with the following properties: `lastName`, `firstName`, `homeAddress.city`, and `email`. The `TableInfo` component, configured as described, yields an HTML table that looks like this:

LastName	**FirstName**	**City**	**EmailAddress**
Appleby	Mark	San Diego	mappleby@anywhere.net
Smith	Paula	San Francisco	paulas@myemail.com
Jones	Stephanie	San Francisco	founder@jonesnet.com
Smith	Albert	Los Angeles	albert.smith@mycompany.com

In general, each HTML table requires one session-scoped instance of `TableInfo`.

In most cases, column data is sorted on the property values that are displayed in column cells. Some exceptions can occur—for example, each cell in a table column might contain an HTML anchor tag that links to a news article. In this case, you should sort the column on the article title rather than the table cell contents of each .

When a column's display property and sort property are different, you can list both on the right side of the column name or specifier, separating the two property names by a semi-colon (;). In the example of the table of news articles, if the display property for a column is named `anchorTag`, but you want to sort the column on the `title` property, you specify the following:

```
columns=\
     Title=anchorTag ; title,\
     Author=author.lastname,\
     …
```

Localizing Column Headings

If your application supports multiple locales, you can localize table column headings with the `TableInfo.columnHeadings` property.

`TableInfo.columnHeadings` is a dictionary whose keys are locale-specific variants of a column name and whose values are the column headings to use for the corresponding locales. The following example shows how to use the `columnHeadings` property in a TableInfo configuration. The TableInfo component is configured to display a two-column table, where column headings are localized for English and French:

```
$class=atg.service.util.TableInfo
$scope=session

# Define the basic table layout using symbolic names for each column.

columns=\
   name=book.displayName,\
   price=book.listPrice

# Now create localized column headings for each column.

columnHeadings=\
   name=Title,\
   name_fr=Titre,\
   price=List Price,\
   price_fr=Prix Courant
```

To support additional locales, simply add their column headings to the `columnHeadings` list.

Note: This example ignores the country and variant parts of the French locale. You can include country- and variant-specific column headings by using entries such as `name_fr_FR=Prix`.

A TableInfo component computes the headings for each column by checking whether `TableInfo.columnHeadings` is set. If it is not set, then the column headings used in the table are the column names, as defined in `TableInfo.columns`.

If `TableInfo.columnHeadings` is set, the TableInfo determines the current locale in the following order of precedence:

1. Uses the locale specified in `TableInfo.userLocale`, if it is set.

   Setting `TableInfo.userLocale` enables you to override the default or request locale, if desired. For example, you might want to copy the value of the user's preferred locale into `TableInfo` as follows:

   ```
   <dsp:setvalue bean="/app/TableInfo.userLocale"
   beanvalue="Profile.preferredLocale"/>
   ```

   Or, you might want to force the page to display the table for the French locale with:

   ```
   <dsp:setvalue bean="/app/TableInfo.userLocale" value="fr_FR"/>
   ```

2. Otherwise, uses `ServletUtil.getCurrentRequest` (class `atg.servlet.ServletUtil`) to identify the Dynamo servlet request being processed in the current thread. Then use the request's locale for the current locale.

3. If no current request exists or the request locale is not set, uses the module's default locale for the current locale.

When the current locale is determined, TableInfo examines the keys in the `TableInfo.columnHeadings` dictionary, looking for a locale-specific variant of the column name. It applies the same logic that the `java.util.ResourceBundle` class uses when looking for resource bundles. For example, if the column name is `price`, and the current locale is `fr_FR`, then TableInfo searches first for a key named `price_fr_FR`, next for a key named `price_fr`, and finally for a key named `price`. The value corresponding to the first matching key becomes the column's heading. If no matching key is found, then the column heading used in the table is the column name, as defined in `TableInfo.columns`.

By using a single TableInfo component that defines locale-specific column headings in `TableInfo.columnHeadings`, the ATG platform can automatically search for the best available match to the user's preferred language and locale. However, you can also localize table column headings by defining and configuring an instance of TableInfo for each desired locale. Your JSP can then refer to the appropriate instance depending on the language of the page or the user's locale. For example, an English-language page might include the following code to import a version of a given table with English column headings:

```
<dsp:importbean bean="/myapp/tables/en/ItemTable"/>
```

In turn, a German-language page might include the following code to import a version of the given table with German column headings:

```
<dsp:importbean bean="/myapp/tables/de/ItemTable"/>
```

Both pages can then refer to the TableInfo component as `bean="ItemTable"` and use its own locale-specific version of the component.

Managing Sort Criteria

A TableInfo component supports sorting table data on one or more columns, in ascending or descending order. To support this functionality, the TableInfo maintains information about sort columns and their respective sort directions. A TableInfo also makes sorting instructions available to a form, where it can be used by standard ATG servlet beans such as ForEach and TableForEach.

A TableInfo constructs an array of `Column` objects from two properties:

- The column name and property information specified in `TableInfo.columns`
- The column heading information specified in `TableInfo.columnHeading`

The TableInfo stores this array of `Column` objects in `TableInfo.tableColumns`. Each `Column` object maintains information about itself in the following properties:

Columnobjectproperty	**Description**
`heading`	Column display heading; read-only. **Note:** See Localizing Column Headings (page 122) for information about how the column heading is determined.
`name`	Column name; read-only.
`property`	The JavaBean property to display in the column; read-only.
`sortIndex`	The zero-based index of the column within the list of columns that are being sorted. 0 if the column is the primary sort column. –1 if the column is not sorted.

Columnobjectproperty	Description
`sortPosition`	The 1-based index of the column within the list of columns to sort. 1 if the column is the primary sort column. 0 if the column is not sorted.
`sortDirection`	Column sort direction, set to ascending, descending, or none.

As shown by the code examples in later sections, you use `TableInfo.tableColumns` to iterate over the array of `Column` objects in order to obtain each column's heading, name, and JavaBean property. You can also use JSP code to change the sort direction of a column or the sort order of columns in the table. When you do so, `TableInfo` automatically updates the sort properties for the affected `Column` objects. You can then render the table using only the primary sort column or all sort columns:

- To render the table with only the primary sort column, use the `TableInfo.primarySortString` property, which stores a string containing a single property associated with the table's primary sort column. A possible value might be `+name`, which sorts the items in the table on ascending values of `name`.
- To render the table using the complete set of sort columns, use the `TableInfo.sortString` property, which stores a string containing multiple properties associated with all of the table's sort columns. A possible value might be `+name, price`, which first sorts the items in the table on ascending values of `name` and then on descending values of `price`.

Note:`TableInfo` automatically updates `primarySortString` and `sortString` when you use JSP code to change a column's sort direction or the columns' sort order. You never explicitly set either of these `TableInfo` properties. Instead, you use them to obtain the current sorting instructions for the table.

If no explicit sorting is specified for table columns, you can use the `defaultSortString` property to specify a default sort order. If no explicit sort directions are set for a table, a call to `getSortString` returns `defaultSortString,` and a call to `getPrimarySortString` returns the first comma-separated token from `defaultSortString`.

For example, if `defaultSortString` is set to the string `+name`, then calling either `getSortString` or `getPrimarySortString` returns `+name`. If `defaultSortString` is set to the string `+name, price`, then calling `getSortString` returns `+name, price`, but calling `getPrimarySortString` returns only `+name`.

The value of `defaultSortString` is used only when the `sortString` property or `primarySortString` property otherwise returns an empty string. Setting `defaultSortString` does not modify the sort direction of any columns. Instead, it specifies the default sorting instructions to use if all of the columns are currently unsorted.

Simple Table Example

The following JSP code shows how to use a TableInfo component and nested ForEach servlet beans to render a simple table of user profile information. User profile information is stored in a parameter named `userProfiles`, which can be populated in several ways. For example, you might use a `TargetingArray` servlet bean to retrieve from the Profile Repository all user profiles that meet the targeting rules you specify—for example, all users who live in Boston and are registered members of your site. You can then set the value of `userProfiles` to the array of profiles that is the result of the targeting operation, and pass the `userProfiles` parameter into an embedded page that renders the profiles in a table using TableInfo:

```
<dsp:include page="build_table.jsp">
  <dsp:param name="userProfiles" param="element"/>
</dsp:include>
```

The following code example shows how to use a TableInfo component to render a simple table. Later sections show how to build more tables, where the user can change the columns on which the table is sorted.

```
<%-- Create table displaying profiles stored in param:userProfiles --%>
<%-- using table display information from a bean named TableInfo  --%>

<dsp:droplet name="ForEach">
  <dsp:param name="array" param="userProfiles"/>
  <dsp:param bean="TableInfo.sortString" name="sortProperties"/>
  <dsp:oparam name="empty">
     There are no items in your list.
  </dsp:oparam>

 <%-- Generate table start and column headings in outputStart --%>

   <dsp:oparam name="outputStart">
      <TABLE border=1 cellspacing=2 cellpadding=2>
      <TR>
      <dsp:droplet name="ForEach">
        <dsp:param bean="TableInfo.tableColumns" name="array"/>
        <dsp:param name="sortProperties" value=""/>
        <dsp:oparam name="output">
          <dsp:setvalue paramvalue="element.heading" param="columnHeading"/>
          <TD align="center">
             <dsp:valueof param="columnHeading"/>
          </TD>
        </dsp:oparam>
      </dsp:droplet>
      </TR>
   </dsp:oparam>

 <%-- Generate a row per item in output --%>

   <dsp:oparam name="output">
     <dsp:setvalue paramvalue="element" param="currentProfile"/>
     <TR>

 <%--
  Here you are going to iterate over all of the property names you
  want to display in this row, using the BeanProperty servlet bean to
  display each value.
 --%>

     <dsp:droplet name="ForEach">
       <dsp:param bean="TableInfo.tableColumns" name="array"/>
       <dsp:param name="sortProperties" value=""/>

       <dsp:oparam name="output">
         <TD>

         <dsp:droplet name="BeanProperty">
```

```
50
51          <dsp:param name="bean" param="currentProfile"/>
52           <dsp:param name="propertyName" param="element.property"/>
53
54           <dsp:oparam name="output">
55              <dsp:valueof param="propertyValue"/>
56           </dsp:oparam>
57         </dsp:droplet>
58
59         </TD>
60       </dsp:oparam>
61     </dsp:droplet>
62     </TR>
63   </dsp:oparam>
64
65 <%-- Close the table in outputEnd --%>
66
67   <dsp:oparam name="outputEnd"></TABLE>
68   </dsp:oparam>
69
70 </dsp:droplet>
```

Line 4

The outer ForEach servlet bean on line 4 iterates over an array of profiles in `userProfiles`, passed into the servlet bean in line 5, and renders its `outputoparam` once for each profile in the array.

Line 6

The current sorting instructions for the table are passed into the outer ForEach servlet bean using the `sortProperties` input parameter. In example, `sortProperties` is empty by default, so no columns in the table are sorted. Consequently, the profiles in `userProfiles` are rendered in the table in the order they are listed in the `userProfiles` array.

In many instances, this behavior is sufficient because array items are already sorted. For example, if a TargetingArray servlet bean is used to populate the `userProfiles` array, you can specify the sort order for the array set as the result of the targeting operation.

The use of `sortString` enables the table to be sorted on multiple columns. To sort a table on only a single column, render the table with `TableInfo.primarySortString`.

Lines 16-26

An inner ForEach servlet bean is embedded in the `outputStartoparam` of the outer ForEach, and it builds the column headings for the table. The array of `Column` objects, maintained in `TableInfo.tableColumns`, is passed into the bean in the `array` input parameter. During each iteration over this array, the `columnHeading` parameter is set to the value of the current column’s heading (lines 20-21), then rendered in a table cell in the heading table row (line 22-24).

Explicitly setting a `columnHeading` parameter in lines 20-21 is unnecessary; you can produce the same result with `<dsp:valueof param="element.heading"/>`. However, copying the value in this explicitly-named parameter makes the JSP code clearer, particularly in the more complex examples shown later.

Lines 42-57

A second inner ForEach servlet bean is used in the `outputoparam` of the outer ForEach servlet bean. It generates a table row for each item in `param:userProfiles`. Each row must display a single item’s values for each property associated with a table column.

Each row is built as follows:

- The array of `Column` objects (maintained in `TableInfo.tableColumns`) is passed into the ForEach servlet bean in its `array` input parameter (line 42).
- During each iteration through this array, the property expression for the current column is retrieved using the `BeanProperty` servlet bean nested in the `outputoparam`. First, the current profile is passed into `BeanProperty` in the `bean` input parameter. Next, the current property for the current `Column` object is passed into `BeanProperty` in the `propertyName` input parameter.
- `BeanProperty` sets its `propertyValue` output parameter equal to the value of the current column property for the current profile.
- The value is rendered in a table cell.

Each table cell in the current table row is constructed in this way as the application iterates over the `tableColumns` array and renders the output (a table cell) once for each `Column` object in the array. Likewise, each table row in the table is constructed as the application iterates over the `param:userProfiles` array and renders the output (that is, a table row) once for each profile in the array.

In lines 18 and 44, `sortProperties` is set to an empty string in both inner ForEach servlet beans, because they are nested inside the outer ForEach servlet bean; consequently, the `sortProperties` input parameter of the outer bean is visible to both inner beans. Because the sorting instructions should be applied only to the output rendered in the outer ForEach servlet bean, `sortProperties` must be overridden within the scope of each inner servlet bean.

User-Sorted Tables

A table might be sorted by a single column (the primary sort column) or multiple columns. If a table is sorted by multiple columns, then the column by which the items are first sorted is the primary sort column.

You can enable users to change the primary sort column of a table by adding clickable column headings that redisplay the page, set the clicked column as the primary sort column, and set the column's `sortDirection` to a direction type you specify.

When you specify a column's `sortDirection`, you can specify either a literal value (ascending, descending, or none) or a semantic value, such as toggle. The following table describes the sort direction types you can use to specify a column's sort direction.

Note: When you specify a semantic value, `TableInfo` examines the column's current sort direction and computes a new literal value based on the sort direction type you specify.

sortDirectionsetting	**Description**
`ascending`	Sorts the column by ascending values.
`descending`	Sorts the column by descending values.
`none`	The column is not sorted.
`toggle`	Toggles the column's sort direction between ascending and descending.

sortDirectionsetting	Description
`toggle_if_primary`	If the column is the primary sort column for the table, toggles the column's sort direction between ascending and descending. Otherwise, makes the column the primary sort column and sets its sort direction to ascending.
`cycle_up`	Cycles the column's sort direction from none to ascending to descending and back to none again.
`cycle_up_if_primary`	If the column is the primary sort column for the table, cycles the column's sort direction from none to ascending to descending and back to none again. Otherwise, makes the column the primary sort column and sets its sort direction to ascending.
`cycle_down`	Cycles the column's sort direction from none to descending to ascending and back to none again.
`cycle_down_if_primary`	If the column is the primary sort column for the table, cycles the column's sort direction from none to descending to ascending and back to none again. Otherwise, makes the column the primary sort column and sets its sort direction to descending.

The earlier example uses TableInfo to render a simple table. You can modify this code, so users can click on any column heading and sort the table by the property associated with that column, thereby setting the primary sort column. The following sections show how to implement these changes in two steps:

1. Modify the outputStart oparam (page 129).
2. Get the sortColumn parameter value (page 130).

Modify the outputStart oparam

Modify the `outputStartoparam` so each column heading links back to the current page and passes back to the page its column index as the value of a parameter named `sortColumn`.

```
<dsp:oparam name="outputStart">
   <TABLE border=1 cellspacing=2 cellpadding=2>
   <TR>
   <dsp:droplet name="ForEach">
     <dsp:param bean="TableInfo.tableColumns" name="array"/>
     <dsp:param name="sortProperties" value=""/>
     <dsp:oparam name="output">
       <dsp:setvalue paramvalue="element.heading" param="columnHeading"/>
       <TD align="center">
         <dsp:a href="table.jsp">
            <dsp:param name="sortColumn" param="index"/>
            <dsp:valueof param="columnHeading"/>
         </dsp:a>
       </TD>
     </dsp:oparam>
   </dsp:droplet>
   </TR>
</dsp:oparam>
```

When a user clicks on a column heading, the column's index is passed back to the page in the `sortColumn` parameter. The code you add in step 2 checks for a value for this parameter.

Get the sortColumn parameter value

Add code to the beginning of the page that receives the `sortColumn` parameter, checks the parameter for a value, and sets the primary sort column accordingly if a value exists.

The code should set the `sortDirection` for the column whose index is passed in to the page, to a direction type that makes the column the primary sort column (if it is not already). Direction types that set a column as the primary sort column are `toggle_if_primary`, `cycle_up_if_primary`, and `cycle_down_if_primary`. If you specify a direction type other than one of these, the sort direction of the clicked column changes accordingly, but the column does not become the primary column on which table items are sorted. (Refer to the table previously provided in this section for more information on direction types.)

```
<dsp:droplet name="IsNull">
<dsp:param name="value" param="sortColumn"/>
<dsp:oparam name="false">
<dsp:setvalue
bean="TableInfo.tableColumns[param:sortColumn].sortDirection"
value="toggle_if_primary"/>
</dsp:oparam>
<dsp:oparam name="true">
<dsp:setvalue bean="TableInfo.reset" value="${null}">
</oparam/>
</dsp:droplet>
```

When the page is called, the application checks for a value for `sortColumn`. One of two processes occurs, depending on whether `sortColumn` has a value:

sortColumnhasnovalue: The sorting instructions in `TableInfo` are reset. The `sortDirection` property for each column is set to `none`, and both `TableInfo.sortString` and `TableInfo.primarySortString` are cleared, which causes the table to be rendered unsorted. Consequently, the items in the table are then rendered in the order they are listed in the object that maintains them.

sortColumnhasavalue: The value is the index of the column by which to sort the items in the table, and the sort direction for the respective column is set to the specified direction type. In this example, the specified direction type is `toggle_if_primary`, which either toggles the column's sort direction if the column is already the primary sort column, or makes the column the primary sort column (if it is not already) and sets the sort direction to the default sort direction (normally ascending) for the `TableInfo` component. The table is then rendered according to the current sorting instructions.

For example, a table displaying the model, price, and color of a list of automobiles in that order. The user clicks on the column heading of the first column, and the page sets the value of `TableInfo.tableColumns[0].sortDirection` to `toggle_if_primary`. The `TableInfo` component automatically sets both `sortString` and `primarySortString` to `+model`, indicating that the table should be sorted on ascending values of model.

Note:`primarySortString` is always equal to the first term in `sortString`.

Later, the user clicks on the column heading of the second column, and the page sets the value of `TableInfo.tableColumns[1].sortDirection` to `cycle_down_if_primary`. The `TableInfo` component automatically prepends the second column's sort property to `sortString`, and sets it as the new value of `primarySortString`. Now, `sortString` is `price, +model`, and `primarySortString` is `price`.

Note that if the page sets the value of `TableInfo.tableColumns[1].sortDirection` to `descending`, the sort direction of the column changes *inplace*. That is, the column does not become the primary sort column. `sortString` is `+model, price`, and `primarySortString` remains `+model`.

By using `setvalue` and hidden input fields to change the `sortDirection` property of a column, you can manipulate both when the column is sorted against the other columns in the table and the sort direction of the column.

Adding Graphic Sort Indicators

To enhance the usability of a sortable table, you can provide visual cues that indicate which column is the current primary sort column for the table.

The following code example identifies and displays the column heading of the primary sort column followed by [+], [-], or no indicator, depending on the current sort direction for the column (ascending, descending, or none, respectively). To add this kind of graphic indicator, make the following modifications to the `outputStartoparam`:

1. As you render the column heading for the current column, retrieve the sort position and sort direction for the column and set `sortPosition` and `sortDirection`, respectively, equal to their values.
2. Using the information obtained in step 1, check if the `sortPosition` of the current column is 1. A `sortPosition` of 1 indicates the column is the primary sort column in the table. Display only the column heading if it is not the primary sort column.
3. If the current column is the primary sort column, use the Switch servlet bean to display the column heading followed by the graphic indicator appropriate for the column’s current `sortDirection`.

The following JSP code shows to add graphic sort indicators to the column headings:

```
<dsp:oparam name="outputStart">
  <TABLE border=1 cellspacing=2 cellpadding=2>
  <TR>
  <dsp:droplet name="ForEach">
    <dsp:param bean="TableInfo.tableColumns" name="array"/>
    <dsp:param name="sortProperties" value=""/>

    <dsp:oparam name="output">
      <dsp:setvalue paramvalue="element.heading" param="columnHeading"/>
      <dsp:setvalue paramvalue="element.sortPosition" param="sortPosition"/>
      <dsp:setvalue paramvalue="element.sortDirection" param="sortDirection"/>
      <TD align="center">
        <dsp:a href="table.jsp">
           <dsp:param name="sortColumn" param="index"/>

           <dsp:droplet name="Switch">
             <dsp:param name="value" param="sortPosition"/>

             <dsp:oparam name="1">
                <dsp:droplet name="Switch">
                   <dsp:param name="value" param="sortDirection"/>

                   <dsp:oparam name="ascending">
                      <dsp:valueof param="columnHeading"/>&nbsp[+]
```

```
                    </dsp:oparam>

                    <dsp:oparam name="descending">
                       <dsp:valueof param="columnHeading"/>&nbsp[-]
                    </dsp:oparam>

                    <dsp:oparam name="none">
                       <dsp:valueof param="columnHeading"/>
                    </dsp:oparam>
                 </dsp:droplet>
              </dsp:oparam>

               <dsp:oparam name="default">
                  <dsp:valueof param="columnHeading"/>
               </dsp:oparam>
            </dsp:droplet>
         </dsp:a>
       </TD>
     </dsp:oparam>
   </dsp:droplet>
   </TR>
</dsp:oparam>
```

TableInfo Example

The JSP code fragment provided in this section can be used to build a sortable table from any collection of objects. This code example includes all of the functionality described in each of the previous sections about TableInfo.

```
<%-- Include this fragment to generate a sortable table.           --%>
<%-- tableItems is the array of collection of items to display.    --%>
<%-- tableInfo is the TableInfo object that describes the columns. --%>
<%-- tablePage is the jsp that contains the table.          --%>

<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<dsp:page>
<HTML>
<BODY>

<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>
<dsp:importbean bean="/atg/dynamo/droplet/Format"/>
<dsp:importbean bean="/atg/dynamo/droplet/IsNull"/>
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>

<%--
  Handle updating sort directives if you were passed a sortColumn parameter
  and an optional sort direction in a sortDir parameter.
--%>

<dsp:droplet name="IsNull">
  <dsp:param name="value" param="sortColumn"/>
  <%-- If you don't have a sortColumn parameter, reset the sort info --%>

  <dsp:oparam name="true">
    <dsp:setvalue param="tableInfo.reset" value="${null}"/>
  </dsp:oparam>

  <%-- If you have a sortColumn parameter, it will be the index of a  --%>
  <%-- column in the TableInfo object.  Set its sort direction now. --%>

  <dsp:oparam name="false">

  <%-- Look to see if you got the optional sortDir parameter too. --%>
  <%-- If so, use it, else default to cycle_up_if_primary.       --%>

    <dsp:droplet name="IsNull">
      <dsp:param name="value" param="sortDir"/>

      <dsp:oparam name="true">
        <dsp:setvalue
        param="tableInfo.tableColumns[param:sortColumn].sortDirection"
        value="cycle_up_if_primary"/>
      </dsp:oparam>

      <dsp:oparam name="false">
        <dsp:setvalue
        param="tableInfo.tableColumns[param:sortColumn].sortDirection"
        paramvalue="sortDir"/>
      </dsp:oparam>
    </dsp:droplet>

  </dsp:oparam>
</dsp:droplet>

<%--
  Now you've dealt with the case where you got to this page by clicking on a
column heading to re-sort and redisplay the table, so you can go ahead and build
the table display using the updated sort parameters.
--%>

<dsp:droplet name="ForEach">
  <dsp:param param="tableItems" name="array"/>
  <dsp:param name="sortProperties" param="tableInfo.sortString"/>

  <dsp:oparam name="empty">
    There are no items in your list.
  </dsp:oparam>

  <%-- Generate column headings. Each heading is a link. Clicking      --%>
  <%-- on the link makes that column the primary sort column, cycling  --%>
  <%-- through sort directions if it was already the primary sort      --%>
  <%—column.                                                          --%>

  <dsp:oparam name="outputStart">
    <TABLE border=1 cellspacing=2 cellpadding=2>
    <TR>
    <dsp:droplet name="ForEach">
      <dsp:param name="array" param="tableInfo.tableColumns"/>
      <dsp:param name="sortProperties" value=""/>

      <dsp:oparam name="output">
```

```
   <%-- Extract useful properties from the current Column descriptor. --%>
      <dsp:setvalue paramvalue="element.heading" param="columnHeading"/>
      <dsp:setvalue paramvalue="element.sortPosition" param="sortPosition"/>
      <dsp:setvalue paramvalue="element.sortDirection" param="sortDirection"/>
      <TD align="center"><B>
         <dsp:getvalueof var="a92" param="tablePage"
         idtype="java.lang.String">
           <dsp:a href="${a92}">
             <dsp:param name="sortColumn" param="index"/>

  <%-- If the current column is the primary sort column, --%>
  <%-- you want to display + or - as a directional indicator to show --%>
  <%-- the sort direction for that column. --%>

             <dsp:droplet name="Switch">
               <dsp:param name="value" param="sortPosition"/>

               <%-- Primary sort column gets special treatment --%>
               <dsp:oparam name="1">
                 <dsp:droplet name="Switch">
                   <dsp:param name="value" param="sortDirection"/>
                   <dsp:oparam name="ascending">
                     <dsp:valueof param="columnHeading"/>&nbsp[+]
                   </dsp:oparam>
                   <dsp:oparam name="descending">
                     <dsp:valueof param="columnHeading"/>&nbsp[-]
                   </dsp:oparam>
                   <dsp:oparam name="null">
                     <dsp:valueof param="columnHeading"/>
                   </dsp:oparam>
                 </dsp:droplet>
               </dsp:oparam>

               <%-- Others just display the column name --%>
               <dsp:oparam name="default">
              <dsp:valueof param="columnHeading"/>
              </dsp:oparam>
             </dsp:droplet>
           </dsp:a>
         </dsp:getvalueof>
      </TD>
    </dsp:oparam>
  </dsp:droplet>
  </TR>
</dsp:oparam>

<%-- Generate a row per item --%>

<dsp:oparam name="output">
  <dsp:setvalue paramvalue="element" param="currentItem"/>
  <TR>
  <%-- Here you are going to iterate over all of the property names
    you want to display in this row, using the bean Property
    servlet bean to display each value.
   --%>

  <dsp:droplet name="ForEach">
    <dsp:param name="array" param="tableInfo.tableColumns"/>
    <dsp:param name="sortProperties" value=""/>
    <dsp:oparam name="output">
```

```
        <TD>
        <dsp:droplet name="BeanProperty">
          <dsp:param name="bean" param="currentItem"/>
          <dsp:param name="propertyName" param="element.property"/>
          <dsp:oparam name="output">
            <dsp:valueof param="propertyValue"/>
          </dsp:oparam>
        </dsp:droplet>
        </TD>
      </dsp:oparam>
    </dsp:droplet>

    </TR>
  </dsp:oparam>

  <%-- Close the table --%>

  <dsp:oparam name="outputEnd">
    </TABLE>
    <p>
    <dsp:getvalueof var="a197" param="tablePage" vartype="java.lang.String">
      <dsp:a href="${a197}">Reset sort properties</dsp:a>
    </dsp:getvalueof>
  </dsp:oparam>
</dsp:droplet>
</BODY>
</HTML>
</dsp:page>
```

Appendix A. DSP Tag Libraries

The DSP tag library lets you work with Nucleus components and other dynamic elements in your JSPs. DSP library tags support both runtime expressions, such as references to scripting variables, and the JSTL Expression Language (EL) elements, which also evaluated at runtime.

The table below lists alphabetically the tags that are implemented in the DSP tag libraries. This appendix combines these tag libraries into one discussion by describing all relevant attributes and properties for each tag.

This section is followed by a complete discussion of each tag, its attributes and, when applicable, its variables and properties.

- Attributes accept values used to set properties on a tag. For example, the `var` attribute names an EL variable that references the object of this tag. Other tags can use EL to reference the object's properties.
- Variables provide a way to set dynamic values with runtime expressions.
- Properties refer to properties of the object referenced by the EL variable. Other tags can use properties to access content in that object.

Finally, an example and corresponding explanation are provided for each tag.

DSP tag names and attributes that have equivalent names in HTML, JSP, or WML typically replicate the functionality of the corresponding tag while providing extra functionality. One exception applies: the `iclass` attribute is used in place of the `class` attribute to avoid using a standard method name in Java code. The discussions that follow omit explanations for non-required attributes that provide expected functionality, such as `onmouseover`and other custom event attributes. All such attributes are specified in the TLD with lowercase characters.

See the DSP tag libraries `tld` files for a listing of each tag and its attributes: `<ATG9dir>/DAS/taglib/dspjspTaglib/1.0/tld`.

Summary of DSP tags

DSPtag	Summary description
dsp:a (page 139)	Supports passing values to component properties and page parameters on click-through. Also handles URL rewriting.
dsp:beginTransaction (page 141)	Starts a transaction.
dsp:commitTransaction (page 142)	Completes a transaction.
dsp:contains (page 143)	Determines whether a Collection contains a specific single valued item.

DSPtag	Summary description
dsp:containsEJB (page 145)	Determines whether a Collection contains an EJB.
dsp:demarcateTransaction (page 146)	Manages a transaction by starting the transaction, checking for errors, rolling back the transaction when errors are found and committing it when they are not.
dsp:droplet (page 148)	Invokes an ATG Servlet Bean.
dsp:equalEJB (page 149)	Determines whether two EJBs have the same primary keys.
dsp:form (page 150)	Encloses a form that can send DSP form events.
dsp:frame (page 152)	Embeds a page by encoding the `framesrc` URL.
dsp:getvalueof (page 153)	Introduces a page parameter or component property value as an element in a JSP.
dsp:go (page 154)	Encloses a form that can send WML form events.
dsp:iframe (page 155)	Embeds a dynamic page, by encoding the `framesrc` URL.
dsp:img (page 156)	Inserts an image.
dsp:importbean (page 156)	Imports a Nucleus component into a page so it can be referred to without using its entire pathname. Also, creates a reference to a Nucleus component in an attribute visible to EL expressions.
dsp:include (page 158)	Embeds a page into another page.
dsp:input (page 159)	Passes values to a component property on submission.
dsp:link (page 165)	References a page, such as a stylesheet, by encoding the `linksrc` URLs.
dsp:oparam (page 166)	Specifies content to be rendered by an enclosing `dsp:droplet` tag.
dsp:option (page 167)	Specifies content to be rendered by an enclosing `dsp:select` tag.
dsp:orderBy (page 168)	Provides the sorting pattern to parent tag dsp:sort (page 181).
dsp:page (page 169)	Enables ATG page processing functionality.
dsp:param (page 170)	Stores a value in a parameter.
dsp:postfield (page 172)	Passes values to a component property on submission. (WML)
dsp:property (page 174)	Sets a component property from dsp:a (page 139) tag.
dsp:rollbackTransaction (page 175)	Causes any actions in the current transaction to be returned to their pretransaction state.

DSPtag	Summary description
dsp:select (page 176)	Passes values to a component property on submission.
dsp:setTransactionRollbackOnly (page 178)	Specifies that, when a transaction is prompted to end, it ends in a rollback action.
dsp:setvalue (page 179)	Sets the value of a component property or a page parameter to a specified value.
dsp:setxml (page 180)	Sets attribute display format to XML or HTML.
dsp:sort (page 181)	Organizes the contents of a Container or array based on a sorting pattern.
dsp:test (page 185)	Makes an object's descriptive information available so other tags can find out its size, data type, and so on.
dsp:textarea (page 187)	Passes values to a component property on submission.
dsp:tomap (page 188)	Introduces a page parameter, standard JavaBean or Dynamic Bean component, or constant value as an element in a JSP that other tags can render using EL.
dsp:transactionStatus (page 189)	Reads the current transaction's status.
dsp:valueof (page 192)	Retrieves and displays the value of a page parameter, component property, or constant value.

dsp:a

Defines a link to a target destination.

```
<dsp:a link-destination link-text
   [param-list]   [property-settings]
   [anchorid="id"]
   [requiresSessionConfirmation="{true|false}" ]
</dsp:a>
```

Attributes

link-destination

Specifies the link destination with one of the following attributes:

Attribute	Description
`href`	Set to path and file name. Resolves relative paths using the current page as a starting point. Resolves absolute paths using the Web server doc root as a starting point.
`page`	Set to path and file name. Resolves relative paths using the current page as a starting point. Resolves absolute paths using the Web application root as a starting point by prepending the request object's `contextroot` to the specified value.

param-list

One or more embedded dsp:param (page 170) tags that specify the parameters to pass to the link destination. For example:

```
<dsp:a href="homepage.jsp">Go to your home page
     <dsp:param name="city" beanvalue="Profile.homeAddress.city"/>
</dsp:a>
```

property-settings

Specifies settings for one or more bean properties. To set a single property, use the following syntax:

```
bean="property-spec" source-spec
```

In order to set multiple properties within the same `dsp:a` tag, embed multiple `dsp:property` tags as follows:

```
<dsp:property bean="property-spec" source-spec />
<dsp:property bean="property-spec" source-spec />
...
```

`In both cases, set property-specand source-specas follows:`

- *`property-spec`* specifies the property to update: its Nucleus path, component name, and property name. The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.
- *`source-spec`* specifies the source value in one of the following ways:
  - `beanvalue="`*`property-spec`*`"`

    Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

    `bean="Student_01.firstClass" beanvalue="FreshmanScience.name"`
  - `paramvalue="`*`param-name`*`"`

    Specifies the value from the page parameter *`param-name`*. For example:

    `bean="Student_01.name" paramvalue="name"`
  - `value="`*`value`*`"`

Specifies a static value. For example:

```
bean="Student_01.enrolled" value="true"
```

Note: The same dsp:a tag cannot use both methods to set properties.

anchorid

Assigns a page-unique identifier to the anchor. Property-setting anchors require unique IDs when a page specifies multiple anchors and does not consistently display all of them. By providing an anchor ID, you can reliably reference this anchor.

requiresSessionConfirmation

Set to true in order to prevent cross-site attacks. If set to true, activation of this `dsp:a` tag supplies the request parameter `_dynSessConf`, which contains a randomly generated session long number that is associated with the current session. On receiving this request, the request-handling pipeline validates `_dynSessConf` against the current session's confirmation number. If it detects a mismatch or missing number, it blocks further request processing.

Usage Notes

Like an HTML anchor tag, `dsp:a` defines a link with a target destination. `dsp:a` can also update a servlet bean property value and pass a page parameter to the destination page.

Note:`dsp:a` uses the `iclass` attribute in place of the cascading stylesheet class attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:a href="index.jsp" bean="/samples/Student_01.name"
paramvalue="userName">Click here to set the name</dsp:a>
```

In this example, the text `Click here to set the name` is a link. When clicked, the ATG platform sets the `name` property of the `Student_01` component to the value held by the `userName` page parameter and opens `index.jsp`.

dsp:beginTransaction

Starts a transaction and tracks whether the transaction is created successfully.

```
<dsp:beginTransaction var-spec>
   ...
</dsp:beginTransaction>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
var	Names an EL variable. When you use var, you can set its scope attribute to page, request, session, or application. The default scope is page. For more information, see EL Variable Scopes (page 8) in Chapter 2.
id	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has two properties:

- success: A Boolean property, specifies the status of the start transaction operation. A call to isSuccess obtains the property's setting.
- exception: Identifies the Throwable exception object produced when a transaction does not start properly. A call to getException returns the exception object.

Example

```
<dsp:beginTransaction var="beginXA"/>
  <c:choose>
     <c:when test="${beginXA.success}">
       Transaction started <br/>
     </c:when>
     <c:otherwise>
         Transaction failed due to this exception:
            <c:out value="${beginXA.exception}"/>
     </c:otherwise>
  </c:choose>
```

In this example, the tag causes a transaction to begin. If the call is successful, the user sees the message Transaction started. If the call fails, the user sees the message Transaction failed due to this exception and the exception string.

dsp:commitTransaction

Triggers execution of all tasks encapsulated by the current transaction.

```
<dsp:commitTransaction var-spec>
   ...
</dsp:commitTransaction>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has two properties:

- `success`: A Boolean property, specifies whether the commit operation is successful. A call to `isSuccess` obtains the property's setting.
- `exception`: Identifies the `Throwable` exception object produced when the commit operation fails. A call to `getException` returns the exception object.

Example

```
<dsp:commitTransaction var="CommitXA"/>
 <c:choose>
      <c:when test="${CommitXA.success}">
        The transaction committed successfully<br/>
      </c:when>
      <c:otherwise>
         Transaction failed for the following reason:<br/>
           <c:out value="${CommitXA.exception}"/>
      </c:otherwise>
   </c:choose>
```

The `dsp:commitTransaction` tag causes the transaction to commit. If the commit operation succeeds, the user sees the message `The transaction committed successfully`. If the transaction fails to commit, the user sees the message `Transaction failed for the following reason:` and the exception string.

dsp:contains

Checks whether a Collection contains the specified value.

```
<dsp:contains var-spec
   values="collection"
   type="search-value"
   [compareElement="{true|false}"]
   [comparator="comparator-obj"]
/>
```

Attributes

var-spec

An EL variable or scripting variable that captures the Boolean result of the operation, defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

values

Specifies the Collection to search. This attribute can specify items of the following data types: primitive array, Object array, Enumeration, Iterator, Collection, and Map.

type

Identifies the data type of the search value, one of the following:

```
boolean
byte
char
double
float
int
long
object
short
```

Set this attribute to the search value.

compareElement

If the `values` attribute is set to a Map, `compareElement` specifies how to evaluate the Map contents:

- `false` (default): Search all Map keys.
- `true`: Search all Map values.

comparator

Set to an instance of `java.util.Comparator` that you define. Use a comparator to compare specific portions of one element to another. If no comparator is specified, the entire first item is compared to a portion of the second.

Usage Notes

`dsp:contains` checks whether a given value is contained within the specified Collection . When you use this tag, you set the single value to an attribute named for that value's data type. You then specify the Collection that you want to search in the `values` attribute.

Alternatively, you can construct a complex operator that compares some portion of the two items. To do this, define a subclass of `java.util.Comparator` that identifies the characteristics to compare.

To find an EJB in a Collection of EJBs, use dsp:containsEJB (page 145).

Example

```
<dsp:tomap bean="Math101Students" var="students"/>
<dsp:tomap bean="Profile" var="profile"/>

<dsp:contains var="enrolled" values="${students}" object="${profile.getId}"/>
    <c:choose>
       <c:when test="${enrolled}">
           Welcome, <c:out value="${profile.firstName}"/>.  You're
           enrolled in Math 101!
       </c:when>
    </c:choose>
```

In this example, if the specified user profile ID matches one of the IDs in `students`, the user's first name is retrieved and the specified message displays.

dsp:containsEJB

Checks whether a Collections contains the specified EJB .

```
<dsp:containsEJB var-spec
   values="collection"
   ejb="search-ejb"
/>
```

Attributes

var-spec

An EL variable or scripting variable that captures the Boolean result of the operation, defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

values

Specifies the Collection to search for the specified EJB. This attribute can specify items of the following data types: array, Enumeration, Iterator, Collection, and Map. If `values` is set to Map, the Map's key is compared.

ejb

Identifies the EJB to find in the Collection.

Usage Notes

EJB comparison operations require their own tag because two EJB instances might appear identical but have different addresses, and so fail a comparison that should otherwise pass. `dsp:containsEJB` only compares object primary keys and ignores object addresses.

Example

```
<dsp:getvalueof bean="Student_01" var="student">

<dsp:containsEJB var="seniorReminder" values="${student.class}" ejb="senior"/>
   <c:choose>
       <c:when test="${seniorReminder}">
           Don't forget to order your cap and gown!
       </c:when>
   </c:choose>
</dsp:getvalueof>
```

In this example, the `dsp:containsEJB` tag determines whether `senior` is an EJB in `Student_01.class`. If so, the specified message displays.

dsp:demarcateTransaction

Encapsulates a transaction.

```
<dsp:demaracateTransaction var-spec>
   ...
</dsp:demaracateTransaction>
```

Attributes

var-spec

Defines an EL variable or scripting variable with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.

Attribute	Description
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has three properties:

- `success`: A Boolean property, specifies the status of transaction. A call to `isSuccess` obtains the property's setting:
  - `true`: The start and commit operations succeeded.
  - `false`: The start or commit operation failed.
- `exception`: Identifies the `Throwable` exception object produced when a transaction fails to start properly. A call to `getException` returns the exception object.
- `commitException`: Identifies the `Throwable` exception object produced when a transaction fails to commit. A call to `getCommitException` returns the exception object

Usage Notes

The `dsp:demarcateTransaction` tag manages a transaction by starting it, checking it for errors, committing the transaction if no errors exist, and rolling back the transaction if errors occur. This tag creates a variable whose properties—`success`, `exception`, and `commitException`—indicate the status of the transaction.

Note: An error might occur if dsp:`demarcateTransaction` starts execution when another transaction is in progress.

Example

The following example assumes the following conditions are true:

- `currentStudent` is a page parameter that is set while a servlet bean iterates through all students in a class.
- A mechanism exists to consecutively save each student's grade to the `currentGrade` page parameter.

```
<dsp:importbean bean="\atg\samples\Student_01" var="student"/>
<dsp:importbean bean="\atg\samples\Algebra" />

<dsp:demarcateTransaction var="demarcateXA">
  <dsp:setvalue bean="Algebra.class.student" value="${student.name}"/>
  <dsp:setvalue bean="Algebra.class.grade" value="${student.grade}"/>

  <c:if test="${!demarcateXA.success}">
    The grade could not be processed. Here's why:
    <c:choose>
      <c:when value="${!empty demarcateXA.exception}"/>
        <c:out value="${demarcateXA.exception}"/>

     <c:when value="${!empty demarcateXA.commitException}"/>
       <c:out value="${demarcateXA.commitException}"/>
    </c:choose>
  </c:if>
</dsp:demarcateTransaction>
```

In this example, the transaction encapsulates the tasks required to save the grades provided to students in a class. The transaction ensures that student names and grades are added to `Algebra.Student_01` at the same time. If the transaction fails, no name or grade is saved; instead, the appropriate message displays for the `exception` or `commitException` exceptions .

dsp:droplet

Invokes a servlet bean.

```
<dsp:droplet [var-spec] name="servlet-bean" >
   ...
</dsp:droplet>
```

Attributes

name

Sets the Nucleus path and servlet bean to invoke.

var-spec

Defines an EL variable or scripting variable with one of these attributes:

Attribute	Description
`var`	Names an EL-accessible Map variable, which holds a servlet bean's parameters and parameter values. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

Usage Notes

The `dsp:droplet` tag lets you invoke a servlet bean from a JSP page. It encapsulates programming logic in a server-side JavaBean and makes that logic accessible to the JSP page that calls it. Tag output is held by its parameters, which can be referenced by nested tags.

Example

```
<dsp:droplet var="fe" name="/atg/dynamo/droplet/ForEach">
  <dsp:param bean="/samples/Student_01.subjects" name="array"/>
  <dsp:oparam name="outputStart">
    <p>The student is registered for these courses:
  </dsp:oparam>
  <dsp:oparam name="output">
    <li><c:out value="${fe.element}"/>
  </dsp:oparam>
</dsp:droplet>
```

In this example, the `dsp:droplet` tag calls the `ForEach` servlet bean and creates a Map variable called `fe` that saves each parameter and parameter value used on this page. The `ForEach` servlet bean iterates over the `Student_01.subjects` array. Beneath the specified message text, the `c:out` tag displays each array element.

dsp:equalEJB

Checks whether two EJBs have the same primary keys.

```
<dsp:equalEJB var-spec ejb1="ejb-spec" ejb2="ejb-spec" />
```

Attributes

var-spec

An EL variable or scripting variable that captures the Boolean result, defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

ejb1/ejb2

Specify the two EJBs to compare.

Example

```
<dsp:equalEJB var="frisbeeAdvertisement" ejb1="${winter}"
 ejb2="${currentSeason}"/>
   <c:choose>
       <c:when test="${frisbeeAdvertisement}">
           Try out for Ultimate Frisbee in April!
       </c:when>
   </c:choose>
```

When the current season is winter, the two EJBs have the same primary keys so this code sample advertises try outs for the ultimate Frisbee team.

dsp:form

Sets up a form for user input.

```
<dsp:form
   method="{get|post}"
   [action="jsp-page"]
   [synchronized="component-spec"]
   [formid="id"]
   [requiresSessionConfirmation="{true|false}"]/>
```

Attributes

method

Specifies the action the ATG platform should perform with the data associated with the `dsp:input` tags:

- `get` retrieves the value in the component property indicated in the `dsp:inputbean` attribute and displays it in the input field.
- `post` performs the `get` operation and saves updated data in the input field to the same bean properties.

action

Designates the JSP to display on form submission. If no value is provided, the page holding the `dsp:form` tag is displayed upon form submission.

Note: If a form's contents are not on the same page as the `dsp:form` tag, the `dsp:form` tag must include the `action` attribute.

synchronized

Specifies the Nucleus path and name of a component that is blocked from accepting other form submissions until this form is submitted. If a form uses a form handler that is global or session scoped, new data is liable to overwrite its data before it is saved to the database. See Synchronizing Form Submissions (page 70) for more information.

formid

Assigns a unique identifier to the form. Forms require unique identifiers when a page specifies multiple forms and conditionally displays only one of them. By providing a form ID, the page compiler can distinguish one form from another.

Note: You can also use hidden input fields to differentiate various forms. This mechanism is especially useful when you generate multiple forms dynamically; in this case, you can test the value of each form's hidden input field to determine which form to render.

requiresSessionConfirmation

If set to true, prevents cross-site attacks. The HTTP request that is generated on form submission supplies the request parameter `_dynSessConf`, which contains a randomly generated session long number that is associated with the current session. On receiving this request, the request-handling pipeline validates `_dynSessConf` against the current session's confirmation number. If it detects a mismatch or missing number, it blocks further request processing.

Usage Notes

`dsp:form` lets you set up a form that accepts user inputs, which are saved as component properties. The methods associated with form operations process JSP tags into forms, validate user-entered data, and manage errors. For more information, see *Forms* (page 59).

Note: The `dsp:form` tag uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java-reserved word in Java code.

Example

```
<dsp:form action="FacilitySchedule.jsp" method="post"
synchronized="/atg/droplet/FacilityFormHandler">

Room you'd like to reserve: <dsp:select bean="Classroom.roomNumbers">
   <p><dsp:option value="10">10</dsp:option>
   <p><dsp:option value="12">12</dsp:option>
   <p><dsp:option value="14">14</dsp:option>
   <p><dsp:option value="16">16</dsp:option>
   <p><dsp:option value="20">20</dsp:option>
  </dsp:select>
 <p>Course Title: <dsp:input type="text"
  bean="FacilityFormHandler.course"/>
 <p>Instructor:
    <p><dsp:input type=radio bean="FacilityFormHandler.instructor"
     value="pear">Ms. Pear</dsp:input></p>
    <p><dsp:input type=radio bean="FacilityFormHandler.instructor"
     value="apricot"/>Mr. apricot</dsp:input>
    <p><dsp:input type=radio bean="FacilityFormHandler.instructor"
     value="cantelope"/>Ms. Cantelope</dsp:input>
    <p><dsp:input type=radio bean="FacilityFormHandler.instructor"
     value="pineapple">Mr. Pineapple</dsp:input>
 <dsp:input type="submit" value="Reserve Room"
  bean="FacilityFormHandler.create"/>
</dsp:form>
```

This example demonstrates a form for reserving a classroom. Using this form, a user can specify:

- desired room (drop-down list)
- course title (text box)
- teacher's name (group of radio buttons)

When a user clicks Reserve Room, the entered data is saved to the `FacilityFormHandler` and authorized, and when data is approved as valid, saved to the database.

Because this example uses the `post` method, the form is pre-populated with the data last-saved to `FacilityFormHandler`—for example, 16, Geometry 101, Ms. Pear. There are no specific failure or success instructions; after form submission, `FacilitySchedule.jsp` is displayed as specified by the form's `action` attribute.

dsp:frame

Generates an HTML frame.

```
<dsp:frame {page="page-spec" | src="page-spec" [otherContext="context"] }/>
```

Attributes

page

Sets the page's path and file name in two ways:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's `context root` to the specified value.

src

Sets the page's path and file name. The `src` attribute can access pages in another Web application if the current application's `web.xmlatg.dynamo.contextPaths` parameter is configured appropriately, or if the `otherContext` attribute specifies the correct context path. For more information, see Invoking Pages in Other Web Applications (page 25).

otherContext

identifies a context path that is not specified in the application's `web.xml`; valid with the `src` attribute.

Usage Notes

`dsp:frame` acts just like the HTML `frame` tag: you can use it to embed other pages or screen elements into a parent page. There is no corresponding `frameset` tag because you can use the standard HTML `frameset` tag. The DSP tag libraries tags let you access data and represent that data in your pages, but they do not handle page layout or presentation. The primary difference between the HTML frame tag and `dsp:frame` is that you pass page parameters and bean property values from a parent page to the child page.

Note: The `dsp:frame` tag uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:frame page="en/brokerhome.jsp"/>
```

In this example, `brokerhome.jsp` is inserted into the parent page.

dsp:getvalueof

Creates an EL variable that references the specified component property or page parameter.

```
<dsp:getvalueof
   source-value var-spec [data-type]
</getvalueof>
```

Attributes

source-value

Specifies the value sources as a JavaBean component (page 6), Page parameter (page 6), or Static value (page 6), as follows:

- `bean="`*`nucleus-path/component-name`*`"`
- `param="`*`param-name`*`"`
- `value="`*`static-value`*`"`

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

data-type

By default, the variable that is created by `dsp:getvalue` is of type `java.lang.Object`. You can set the variable to a different type through the `vartype` and `idtype` attributes, which qualify the `var` and `id` attributes, respectively. For example, if you set the EL variable to a page parameter that holds a string, set its `vartype` attribute to `java.lang.String`. This enables the returned value to execute string-specific methods without explicit typecasting.

Example

```
<dsp:getvalueof var="backgroundcolor" bean="Profile.preferredColor"
 vartype="java.lang.String">
   <body bgcolor="${backgroundcolor}" >
</dsp:getvalueof>
```

In this example, the tag sets the `backgroundcolor` attribute to the value held by the `preferredColor` property of the `Profile` component. The `preferredColor` value is kept as a String. The EL variable renders the `backgroundcolor` value so the current page background color is set to it.

dsp:go

Sets up a form in a WML page.

```
<dsp:go
   method="{get|post}"
   href="wml-page"
   [synchronized="component-spec"]   ...
/dsp:go>
```

Attributes

href

Identifies the WML page to display on form submission, if others are not supplied in `URLSuccess` and `URLFailure` properties. Often, this attribute points to the form page that supplies it.

method

Specifies the action the ATG platform should perform when sending data associated with the `dsp:postfield` tags to the server:

- `get` retrieves the value in the component property indicated in the `dsp:postfieldbean` attribute and displays it in the input field.
- `post` performs the `get` operation and saves updated data in the input field to the same bean properties.

synchronized

Specifies the Nucleus path and name of a component that is blocked from accepting other form submissions until this form is submitted. If a form uses a form handler that is global or session scoped, new data is liable to overwrite its data before it is saved to the database. See Synchronizing Form Submissions (page 70) for more information.

Usage Notes

`dsp:go` allows you set up a form in a WML page that accepts user inputs, which are saved as component properties. The methods associated with form operations process JSP tags into forms, validate user-entered data, and manage errors. This tag provides the functionality accomplished by `dsp:form` to the wireless context.

To learn more about how forms are designed for wireless pages, see *FormHandlinginWMLPages* section in the *WirelessApplicationsandDynamo* chapter in *ATG Programming Guide*.

Example

```
<dsp:go href='<%= request.getContextPath() +"login.jsp"%>' method="post">
  <dsp:postfield bean="ProfileFormHandler.value.login" value="$login" />
  <dsp:postfield bean="ProfileFormHandler.value.password"
   value="$password" />
  <dsp:postfield bean="ProfileFormHandler.login" value=" " />
  <dsp:postfield bean="ProfileFormHandler.loginSuccessURL"
   value="FormSuccess.jsp/>
</dsp:go>
```

This example describes a page that handles login information. The first line specifies the default page to display on form submission. The form page, called `login.jsp`, is located in the same context as the current page. To do this, the context path provided in the request object is prepended to the path preceding the page name.

The remaining tags handle login, validation, and success actions. The next two tags save login and password values held in WML variables to the `ProfileFormHandler` so when the login handler method is invoked, (specified in the next line of code) the ATG platform verifies the login/password pair against those already in existence. Successful login diverts users to the page provided by the `ProfileFormHandler loginSuccessURL` property, which is set to `FormSuccess.jsp`.

dsp:iframe

Embeds an iframe in the current JSP.

```
<dsp:iframe {page="page-spec" | src="page-spec" [otherContext="context"]}/>
```

Attributes

page

Sets the page's path and file name in two ways:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's `context root` to the specified value.

src

Sets the page's path and file name. The `src` attribute can access pages in another Web application if the current application's `web.xmlatg.dynamo.contextPaths` parameter is configured appropriately, or if the `otherContext` attribute specifies the correct context path. For more information, see Invoking Pages in Other Web Applications (page 25).

otherContext

identifies a context path that is not specified in the application's `web.xml`; valid with the `src` attribute.

Usage Notes

`dsp:iframe` lets you use an `iframe` in a page in the same way you use an `iframe` tag in an HTML page. Furthermore, you can set an iframe page to accept the page parameters from its parent page.

Note:`dsp:iframe` uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java-reserved word in Java code.

Example

```
<dsp:iframe src="GraduationAnnouncements.jsp"/>
```

The `GraduationAnnouncements.jsp` page is embedded in a parent page as an `iframe`.

dsp:img

Inserts an image into a JSP.

```
<dsp:img {page="page-spec" | src="page-spec" [otherContext="context"]}/>
```

Attributes

page

Sets the page's path and file name in two ways:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's `context root` to the specified value.

src

Sets the page's path and file name. The `src` attribute can access pages in another Web application if the current application's `web.xmlatg.dynamo.contextPaths` parameter is configured appropriately, or if the `otherContext` attribute specifies the correct context path. For more information, see Invoking Pages in Other Web Applications (page 25).

otherContext

identifies a context path that is not specified in the application's `web.xml`; valid with the `src` attribute.

Usage Notes

`dsp:img` lets you insert an image file into a JSP, like an HTML `img` tag. The ATG platform processes the image source URL by encoding it.

Note:`dsp:img` uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:img page="en/images/IdPhoto.gif">
```

In this example, the `IDPhoto.gif` image, located in `en/images`, is imported into the parent page.

dsp:importbean

Imports a servlet bean or JavaBean component into a JSP.

```
<dsp:importbean bean="Nucleus-path" [var="attr-name" [scope="scope-spec"] ]
```

`dsp:importbean` can import a servlet bean or a JavaBean component into a JSP. After a component is imported, references to it can omit its full Nucleus path. You can also use `dsp:importbean` to map the imported component to a scoped attribute that is EL-accessible. `dsp:importbean` tags are typically placed at the top of the JSP, in order to facilitate references to them.

Attributes

bean

Set to the fully-qualified Nucleus path and name of the servlet bean to import.

var

Names an EL variable that enables access to other page tags. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`.

If `var` is omitted, the shorthand name for the component is used.

scope

By default, the named variable is set to page scope, which makes it accessible to any EL-enabled resources on the same page. The scope attribute lets you define a larger scope for variable, by setting it to `request`, `session`, or `application`. For more information, see EL Variable Scopes (page 8) in Chapter 2.

Example

```
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>
<dsp:importbean bean="/atg/dynamo/servlet/RequestLocale"
var="requestlocale"/>
<dsp:importbean bean="/atg/dynamo/droplet/Redirect/>

<dsp:setvalue bean="${requestLocale.refresh}" value=" "/>
<dsp:droplet name="Switch">
  <dsp:param bean="${requestLocale.locale.language}" name="value"/>
  <dsp:oparam name="fr">
      <dsp:droplet name="Redirect">
        <dsp:param name="url" value="fr/index.jsp"/>
      </dsp:droplet>
  </dsp:oparam>
   <dsp:oparam name="de">
      <dsp:droplet name="Redirect">
        <dsp:param name="url" value="de/index.jsp"/>
      </dsp:droplet>
   </dsp:oparam>
  <dsp:oparam name="default">
      <dsp:droplet name="Redirect">
        <dsp:param name="url" value="en/index.jsp"/>
      </dsp:droplet>
 </dsp:oparam>
</dsp:droplet>
```

In this example, `Switch`, `RequestLocale`, and `Redirect` are imported to the current JSP. When these components are used elsewhere in the page, they use the component and property names only. The

RequestLocale component is imported to a var attribute so the dsp:setvalue and dsp:param tags can access RequestLocale with EL.

dsp:include

Embeds a page fragment in a JSP.

```
<dsp:include {page="page-spec" | src="page-spec" [otherContext="context"]}
   staticcharset="charset"
/>
```

Attributes

page

Sets the page's path and file name in two ways:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's `context root` to the specified value.

src

Sets the page's path and file name. The `src` attribute can specify a page in another Web application if one of the following is true:

- `src` is set as follows:

  `src="webAppName:/path"`

  where the application's WebAppRegistry maps *webAppName* to a context root. The *path*-specified page is searched within that context root.
- The current application's `web.xmlatg.dynamo.contextPaths` parameter is configured appropriately,
- The `otherContext` attribute specifies the correct context path.

For more information, see Invoking Pages in Other Web Applications (page 25).

otherContext

Identifies a context path that is not specified in the application's `web.xml`; valid with the `src` attribute.

staticcharset

Specifies the character set to use when bytes are converted to characters. The default setting character set is ISO-8859-1.

Usage Notes

`dsp:include` lets you embed a page fragment in a JSP just as you can with the JSP `include` tag. It is also possible to pass page parameters from the parent page to the included page using this tag.

For information on other methods for embedding documents, see Embedding Pages (page 23).

Example

```
<dsp:include otherContext="/myOtherWebApp"
page="/SophomoreRegistration.jsp"/>
```

The `SophomoreRegistration.jsp` page is embedded in the parent page.

For more information about using `dsp:include`, see Embedding Pages (page 23).

dsp:input

Creates a form control that accepts user input.

```
<dsp:input [type="input-control"] [name="input-name"]
   bean="property-spec" ["source-spec"]
   [checked="{true|false}"]
   [default="value"]
   [priority=integer-value]
/><dsp:input type="submit"
   [name="input-name"]
   [bean="property-spec" [submitvalue="value"] value="value"]/>

dsp:input type="image" {src|image}=path
   [name="input-name"]
   [bean="property-spec" submitvalue="value""]/>
```

Attributes

type

Defines the HTML input control—for example, as a checkbox, radio button, or text box, among others. If this attribute is omitted, the default type is `text`. To learn about input fields, see Setting Property Values in Forms (page 62).

You can also define a submit control by setting `type` to one of these values:

- `submit` specifies to display a submit button.
- `image` defines a submit control that uses the image specified by the `src` or `page` attribute.

name

Assigns a name to this input field, which enables access to it during form processing. If no name is provided, the ATG platform automatically supplies one. For all input types other than `radio` and `checkbox`, the assigned name must be unique.

Note: if two or more submit input tags are associated with the same property, each submit input tag must have a unique `name` attribute.

bean

Specifies the property that this input field updates on form submission: its Nucleus path, component name, and property name. The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

The `bean` attribute for a submit control can also specify a form handler operation such as cancel or update.

source-spec

Specifies to prepopulate the input field from one of the following sources:

- `beanvalue="`*`property-spec`*`"`

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  ```
  bean="Student_01.firstClass" beanvalue="FreshmanScience.name"
  ```

- `paramvalue="`*`param-name`*`"`

  Specifies the value from the page parameter *`param-name`*. For example:

  ```
  bean="Student_01.name" paramvalue="name"
  ```

- `value="`*`value`*`"`

  Specifies a static value. For example:

  ```
  bean="Student_01.enrolled" value="true"
  ```

If *`source-value`* is omitted, the input field contains the target property's current value.

checked

If set to true, displays a checkbox or radio button as selected.

default

Specifies a default value to save to the component property if the user neglects to supply a value and none is otherwise provided. Options include true.

priority

Specifies the priority of this input field during form processing, relative to other input fields. This attribute can be especially helpful when making changes to an item's repository ID and the properties it contains. If you first update the supplemental properties and then the repository ID, the new property values can be flushed when the repository ID change occurs. By default, `priority` is set to –10.

For more information on how the ATG platform can prioritize tag processing, see Order of Tag Processing (page 69)

value

Valid only if the `type` attribute is set to `submit`, this attribute sets two values:

- The value of the bean-specified property if the `submitvalue` attribute is omitted.

- The submit button's label.

submitvalue

Sets the target property on activation of the submit control. The value must be a constant. For example:

```
<dsp:input type="submit" bean="/TestData/Student_01.age" submitvalue="34"
value="Click here"/>
```

src

Specifies the path and file name of the image to use if *`submit-control`* is set to `image`. You can set `src` to a relative or absolute path, which is resolved as follows:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web server doc root as a starting point.

page

Specifies the path and file name of the image to use if *`submit-control`* is set to `image`. You can set `page` to a relative or absolute path, which is resolved as follows:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's `contextroot` to the specified value.

Usage Notes

`dsp:input` creates a form control that accepts user input, much like the HTML `input` tag. `dsp:input` can create two kinds of controls:

- A form field that contains user-entered data that is passed to a component.
- A submit button or image.

All `dsp:input` tags must be embedded between `<dsp:form>..</dsp:form>` tags, which are either in the same JSP or a parent JSP (see Embedding Pages in Forms (page 61)), so it is subject to the form handler's submit method.

`dsp:input` defines the input field—for example, as a text box, radio button group, drop-down list—and the value to save to the specified component property. Initially, the input field can display a value derived either from the target property, another source, or the specified default.

Note:`dsp:input` uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java reserved word in Java code.

Embedding custom attributes

A `dsp:input` tag can embed one or more custom attributes through the dsp:tagAttribute (page 185) tag, as follows:

```
<dsp:input ...>
   dsp:tagAttribute name="attr-name" value="value"/>
<dsp:input/>
```

You can use dsp:tagAttribute (page 185) tags in order to add attributes to the generated HTML beyond the fixed set of attributes supported by the DSP tag library.

Example

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<%@ page import="atg.servlet.*"%>
<dsp:page>

<dsp:importbean bean="/atg/TestData/StudentFormHandler"/>

<dsp:form action="<%=ServletUtil.getDynamoRequest(request).getRequestURI()%>"
method="POST">
   <dsp:input bean="StudentFormHandler.updateSuccessURL" type="hidden"
    value="index.jsp"/>
   <dsp:input type="hidden" bean="StudentFormHandler.updateRepositoryId"
    beanvalue="StudentFormHandler.repositoryId" />

   <table border=0 cellpadding=2>
      <tr>
        <td align=right>First Name </td>
        <td><dsp:input type="text" bean="StudentFormHandler.value.firstName"
         maxlength="30" size="30" required="true"/></td>
      </tr>

      <tr>
        <td align=right>Last Name </td>
        <td><dsp:input type="text" bean="StudentFormHandler.value.lastName"
         maxlength="30"size="30" required="true"/></td>
      </tr>

      <tr>
        <td align=right>Address </td>
        <td><dsp:input type="text"
         bean="StudentFormHandler.value.primaryResidence.address"
         maxlength="30" size="30" required="true"/></td>
      </tr>

      <tr>
        <td align=right>City </td>
        <td><dsp:input type="text"
         bean="StudentFormHandler.value.primaryResidence.city"
         maxlength="30" size="30" required="true"/></td>
      </tr>

      <tr valign=top>
        <td align=right>State/Province </td>
        <td><dsp:input type="text"
         bean="StudentFormHandler.value.primaryResidence.state"
         maxlength="30" size="30" required="true"/></td>
      </tr>

      <tr>
        <td align=right>ZIP/Postal Code </td>
        <td><dsp:input type="text"
         bean="StudentFormHandler.value.primaryResidence.postalCode"
         maxlength="10" size="10" required="true"/></td>
```

```
</tr>

<tr>
  <td align=right>Phone Number </td>
  <td><dsp:input type="text"
   bean="StudentFormHandler.value.primaryResidence.phoneNumber"
   maxlength="20" size="30" required="true"/></td>
</tr>

<tr>
  <td align=right>Birthday (MM/DD/YYYY)</td>
  <td><dsp:input bean="StudentFormHandler.value.dateOfBirth"
   date="M/dd/yyyy" maxlength="10" size="10" type="text"/></td>
</tr>

<tr>
  <td align=right>Gender </td>
  <td>
    <dsp:input type="radio" bean="StudentFormHandler.value.gender"
     value="male">Male</dsp:input>
    <dsp:input type="radio" bean="StudentFormHandler.value.gender"
     value="female">Female</dsp:input>
  </td>
</tr>

<tr>
  <td align=right>Graduation Date </td>
  <td>
    <dsp:select bean="StudentFormHandler.value.gradDate"/>
      <dsp:option value="6/2003">2003</dsp:option>
      <dsp:option value="6/2004">2004</dsp:option>
      <dsp:option value="6/2005">2005</dsp:option>
      <dsp:option value="6/2006" selected="true">2006</dsp:option>
  </td>
</tr>

<tr>
  <td align=right>Interests </td>
  <td>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="drama" checked="true">Drama</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="art" checked="true">Art</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="studentGovernement" checked="true" >Student
     Government</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="sports" checked="true">Sports</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="band" checked="true">Band</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="academicTeam" checked="true">Academic Team</dsp:input>
    <dsp:input type="checkbox" bean="StudentFormHandler.value.interests"
     value="singing" checked="true">Singing</dsp:input>
  </td>
</tr>

<tr>
  <td align=right>Comments</td>
  <td>
```

```
          <dsp:textarea bean="StudentFormHandler.value.comments"/>
        </td>
      </tr>

      <dsp:input type="submit" bean="StudentFormHandler.create" value="Register"/>
</dsp:form>
</dsp:page>
```

The form in this example might be part of a new student registration page. The page begins with the directive statements that import the DSP tag library and the servlet class. This is followed by an `import` statement that makes the `StudentFormHandler` available to the page like other imported items.

The form elements define the default result page as the active page by retrieving the page path and name dynamically from the request objects `RequestURI` property. The page uses a hidden component to set the `StudentFormHandler` success property to the `index.jsp`. Because a failure URL is not provided, the default (current page) is used. A second hidden bean ensures that the repository ID that represents the form remains the same by updating it with the current value.

The `dsp:input` tags that follow insert text boxes, radio buttons, checkboxes, and extended text fields, that are populated with data when current values exist (implemented by the `post action`). The first seven text boxes present the student's first name, last name, street address, city, state, postal code and phone number, and indicate that they must hold valid data in order for the form to process successfully. Each text box saves data to the `primaryResidence` array of the value Dictionary. The value in the `birthday` text box is converted so it appears in a format consistent with 1/15/1936.

The form includes a set of radio buttons for documenting the student's gender (neither are default selected) and a set for specifying is the student's graduation date. In both cases only one item in each group can be selected. Because most new students are freshmen, the last occurring date is the default. The `interests` checkbox group saves all selected items to the `interests` array property. All items are selected by default to encourage students to involve themselves in activities. The extended text box provides a place for free form comments about a student.

The final `dsp:input` tag inserts a Register button that, when clicked, invokes the submit handler method to process the form.

dsp:layerBundle

Loads a resource bundle whose settings are combined with existing resource bundle settings.

```
<dsp:layerBundle basename="bundle-name" [var-spec] />
```

Attributes

basename

Specifies the base name of the resource bundle *`bundle-name`*, where *`bundle-name`* excludes localization suffixes and filename extensions.

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
var	Names an EL variable. When you use var, you can set its scope attribute to page, request, session, or application. The default scope is page. For more information, see EL Variable Scopes (page 8) in Chapter 2.
id	Names a scripting variable that scriptlets and expressions can access at runtime.

Usage Notes

dsp:layerBundle loads an i18n localization context and stores it in a scoped variable or scripting variable. Unlike the JSTL tag fmt:setBundle, dsp:layerBundle combines the settings of the specified resource bundle with existing resource bundle settings. These settings remain in effect only for the duration of the specified scope.

dsp:link

References files such as stylesheets and formatting pages.

```
<dsp:link [rel="file-type"]
  type="mime-type"
  {href="file-path" | page="file-path"}
  [title="title"] />
```

Attributes

rel

Describes the item that is referenced; for example:

```
rel="stylesheet"
```

type

Specifies the MIME type that represents the referenced page. The MIME type must be a recognized MIME type, supported by the MIMETyper and MIMETypeDispatcher components.

href

Sets the page's path and file name in two ways:

- Resolves relative paths using the current page as a starting point.
- Resolves absolute paths using the Web application root as a starting point by prepending the request object's context root to the specified value.

page

Path and file name. Resolves relative paths using the current page as a starting point. Resolves absolute paths using the Web application root as a starting point by prepending the request object's context root to the specified value.

title

Contains the title as it appears on the referenced page.

Usage Notes

`dsp:link` lets you reference files such as stylesheets and formatting pages and makes them available to the parent page in much the same way as the HTML `link` tag.

Note:`dsp:link` uses the `iclass` attribute in place of the cascading stylesheet `class` attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:link rel="stylesheet"
  type="text/css"
  href="Style.css"
  title="Jefferson High School StyleSheet"/>
```

This example creates a link from the current page to a stylesheet called `style.css` that is located in the same directory. The linked page uses the standard MIMETYPE for stylesheets (`text/css`) and is titled `Jefferson High School Stylesheet`.

dsp:oparam

Supplies a parameter to the current servlet bean.

```
<dsp:oparam name="param-name">
   ...
</dsp:oparam>
```

Attributes

name

Identifies the parameter to set for the current servlet bean.

value

The value to assign this parameter.

Usage Notes

`dsp:oparam` (open parameter) takes the value supplied to it in a JSP and passes it to the current `dsp:droplet` tag. Each servlet bean maintains a set of open parameters which the servlet bean can set, service, and deliver as output to a JSP. For information about open parameters that are available for specific servlet beans, see Appendix B, *ATG Servlet Beans* (page 195).

See the *HowJSPsHandleServletBeans* section in the *CreatingandUsingATGServletBeans* chapter of the *ATG Programming Guide*.

Example

```
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>

<dsp:valueof param="person.name"/>:&nbsp;

<dsp:droplet name="Switch">
   <dsp:param name="value" param="person.hasCar"/>
   <dsp:oparam name="false">
      No vehicle
   </dsp:oparam>
   <dsp:oparam name="true">
      Vehicle with capacity of <dsp:valueof param="person.carCapacity"/>
   </dsp:oparam>
</dsp:droplet>
```

The `Switch` servlet bean evaluates the input parameter `value` and tests the Boolean result against the open parameters `true` and `false`. The servlet bean processes the matching open parameter.

dsp:option

Used `with`dsp:select (page 176) to display an option in a drop-down list.

```
<dsp:option value-spec label   selected="{true|false}"</dsp:option>
```

Attributes

value-spec

Specifies this option's value in one of the following ways:

- `beanvalue="`*`property-spec`*`"`

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  `beanvalue="FreshmanScience.name"`

- `paramvalue="`*`param-name`*`"`

  Specifies the value from the page parameter *`param-name`*. For example:

  `paramvalue="name"`

- `value="`*`value`*`"`

  Specifies a static value. For example:

  `value="Bartleby Scrivener"`

The value specification can include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

label

This option’s displayed text.

selected

Set to true or false in order to override the value obtained from the target property specified by `dsp:select`:

- true: The option displays as selected.
- false: The option displays as unselected.

Note: You can specify to select multiple options if the parent `dsp:select` tag sets its `multiple` attribute to true.

Usage Notes

`dsp:option` is used in the context of `dsp:select` to display a drop-down list option. This tag is only valid when enclosed in a `dsp:select` tag.

Note:`dsp:option` uses the `iclass` attribute in place of the cascading style sheet `class` attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:select bean="Student_01.summerHobbies" multiple="true">
  <dsp:option value="hiking">hiking</dsp:option>
  <dsp:option value="biking">biking</dsp:option>
  <dsp:option value="swimming">swimming</dsp:option>
</dsp:select>
```

This drop-down list provides a list of hobbies that include hiking, biking, and swimming. The `summerHobbies` property is a Collection, so it can hold as many options as the user selects. No options use the selected attribute, so none display as selected unless the `summerHobbies` property is already set to one or more of those values.

dsp:orderBy

Defines the sort order for the enclosing `dsp:sort` tag.

```
<dsp:orderBy property="sort-property" reverse="{true|false}"/>
```

Attributes

property

The property on which to sort. Two constraints apply:

- The property cannot be a Dynamic Bean.
- The property must belong to the object specified by the `values` attribute of the parent `dsp:sort`.

reverse

After the item is sorted, determines whether to use the initial order (false) or reverse it (true). If you omit this attribute, the default is false.

Usage Notes

`dsp:orderBy` specifies the properties used to sort items in the `dsp:sort`-specified object. Multiple `dsp:orderBy` tags within the same `dsp:sort` tag specify multiple sort levels. For example, given a Collection of user profiles, you might sort first on the ages, and within each age, sort on last names, then first names.

Example

```
<dsp:importbeantomap bean="AllStudents" var="students"/>
<dsp:sort var="sorter" values="${students}">
  <dsp:orderBy property="age" reverse="true"/>
  <dsp:orderBy property="lastName"/>

     <c:forEach var="forEach" begin="0" items="${sorter.sortedArray}">
        <li>Name: <c:out value="${students.lastName}"/>
     </c:forEach>
</dsp:sort>
```

In this example, the students are ordered first in reverse by age, and then as a secondary sort, they are ordered by last name. The eldest students are returned at the top of the list and those who have the same age are organized alphabetically by last name.

dsp:page

```
<dsp:page
   [xml="{true|false}"]
   [useXmlParamDelimiter="{true|false}"]
>
   ...
</dsp:page>
```

Attributes

xml

Specifies the page output as HTML (false) or XML (true). If you omit this attribute, the page output is HTML, unless a true setting is inherited from a parent page. To designate different output types within the same page, use dsp:setxml (page 180).

useXmlParamDelimiter

Specifies the delimiter used by `DynamoHTTPServletRequest.addQueryParam` to separate query parameters:

- true: Use the XML delimiter `&amp;`

- false: Use HTML delimiter `&`

A value provided by a `dsp:page` or `dsp:setxml` tag to a parent page is automatically inherited by an embedded page, unless the embedded page itself declares a delimiter. If no value is detected, the ATG platform uses the delimiter associated with the page's MIME type.

Usage Notes

`dsp:page` encloses a JSP: the first tag follows the page directive and the last tag ends the page. `dsp:page` invokes the JSP handler, which calls the servlet pipeline and generates `HTTPServletRequest`. The servlet pipeline manages generic page-related tasks, such as retrieving the servlet session components, instructing the page to render its contents, and clearing cached information.

Example

```
<%@ taglib uri=http://www.atg.com/taglibs/daf/dspjspTaglib1_0 prefix="dsp" %>
<%@ taglib uri='http://java.sun.com/jsp/jstl/core' prefix='c' %>

<dsp:page>

<dsp:droplet name="/atg/dynamo/droplet/Switch">
  <dsp:param bean="/atg/dynamo/servlet/RequestLocale.locale.language"
name="value"/>
  <dsp:oparam name="fr"><%response.sendRedirect("fr");%></dsp:oparam>
  <dsp:oparam name="de"><%response.sendRedirect("de");%></dsp:oparam>
  <dsp:oparam name="ja"><%response.sendRedirect("ja");%></dsp:oparam>
  <dsp:oparam name="en"><%response.sendRedirect("en");%></dsp:oparam>
  <dsp:oparam name="default"><%response.sendRedirect("en/default.jsp");%>
  </dsp:oparam>
</dsp:droplet>

</dsp:page>
```

This page points to a page in the user's preferred language. The language preference is obtained from the `RequestLocale.locale.language` property. The `dsp:page` tags surround the body of the JSP; only the page directive that defines the tag library precedes the `dsp:page` tags.

dsp:param

Identifies a servlet bean input parameter; or defines a page parameter.

```
<dsp:param name="sbparam-name" sbparam-value /><dsp:param name="pgparam-name" pgparam-
value />
```

Attributes

name (servlet bean)

Identifies an input parameter that is defined for the current servlet bean. For information on input parameters for specific servlet beans, see Appendix B, *ATG Servlet Beans* (page 195).

name (page parameter)

Defines a page parameter that is accessible to the current JSP and embedded child pages.

sbparam-value

Specifies the input parameter's value in one of the following ways:

- `bean="`*`property-spec`*`"`

  Sets the parameter to the specified property, where *`property-spec`* includes the Nucleus path, component name, and property name. For example:

  ```
  <dsp:param name= "repository"
  bean="/atg/dynamo/droplet/PossibleValues.repository/>
  ```

- `param="`*`param-name`*`"`

  Sets the parameter to the value of the page parameter *`param-name`*. For example:

  ```
  <dsp:param name="propertyName" param="element.repositoryId"/>
  ```

- `value="`*`value`*`"`

  Sets the parameter to a static value. For example:

  ```
  <dsp:param name="sortProperties" value="date"/>
  ```

The parameter value specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

pgparam-value

Specifies the page parameter's value in one of the following ways:

- `beanvalue="`*`property-spec`*`"`

  Sets the parameter to a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  ```
  beanvalue="FreshmanScience.name"
  ```

- `paramvalue="`*`param-name`*`"`

  Sets the parameter from the page parameter *`param-name`*. For example:

  ```
  paramvalue="name"
  ```

- `value=`*`value`*

  Sets the parameter to a static value. For example:

  ```
  value="Bartleby Scrivener
  ```

Usage Notes

`dsp:param` can define two types of parameters:

- Servlet bean input parameter

For more information, see “Page Parameters (page 20)“ in Chapter 2, *Creating JavaServer Pages* (page 3).

- Page parameter
  For more information, see Appendix B, *ATG Servlet Beans* (page 195).

dsp:postfield

```
<dsp:postfield [name="input-name"]
   bean="property-spec" ["source-spec"]
   [checked="{true|false}"]
   [default="value"]
   [priority=integer-value]
   [submitvalue="value"]/>
```

Usage Notes

`dsp:postfield` creates an object that accepts user input much like the WML tag `postfield`. You can use `dsp:postfield` to pass data to a component property or page parameter. Sometimes the input field displays with a value, which can be the current value in the property specified for update or another value provided as default.

You can also use `dsp:postfield` to process a form by making a call to a handler method. When you use this tag, make sure it is enclosed in a `dsp:go` tag. `dsp:postfield` must be used in the context of a `dsp:go` tag so it is executed by a submit handler method.

name

Assigns a name to this input field, which enables access to it during form processing. If no name is provided, the ATG platform automatically supplies one.

bean

Specifies the property that this input field updates on form submission: its Nucleus path, component name, and property name. The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2. For example:

```
<dsp:postfield bean="/atg/userprofiling/ProfileFormHandler.name" required="true"/>
```

The `bean` attribute for a submit control can also specify a form handler operation such as cancel or update. For example:

```
<dsp:postfield type="submit" bean=/atg/userprofiling/ProfileFormHandler.cancel"/>
```

source-spec

Specifies to prepopulate the input field from one of the following sources:

- `beanvalue="`*`property-spec`*`"`

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

```
bean="Student_01.firstClass" beanvalue="FreshmanScience.name"
```

- `paramvalue="`*`param-name`*`"`

  Specifies the value from the page parameter *`param-name`*. For example:

  ```
  bean="Student_01.name" paramvalue="name"
  ```

- `value="`*`value`*`"`

  Specifies a static value. For example:

  ```
  bean="Student_01.enrolled" value="true"
  ```

If *`source-value`* is omitted, the input field contains the target property's current value.

priority

Specifies the priority of this input field during form processing, relative to other input fields. This attribute can be especially helpful when making changes to an item's repository ID and the properties it contains. If you first update the supplemental properties and then the repository ID, the new property values can be flushed when the repository ID change occurs. By default, `priority` is set to –10.

For more information on how the ATG platform can prioritize tag processing, see Order of Tag Processing (page 69)

submitvalue

Sets the bean-specified property on form submission. The value must be a constant. For example:

```
<dsp:postfield bean="/TestData/Student_01.age" submitvalue="34"
value="Click here"/>
```

Example

```
<p>Login:<input type="text" name="login" title="login"/></p>
<p>Password:<input type="password" name="password" title="password"/></p>

<do type="accept" label="<i18n:message key="login"/>">
   <dsp:go href='<%= request.getContextPath() +"/wml/login.jsp"%>'
   method="post">
     <dsp:postfield bean="ProfileFormHandler.value.login" value="$login"
     />
     <dsp:postfield bean="ProfileFormHandler.value.password"
      value="$password" />
     <dsp:postfield bean="ProfileFormHandler.login" value="Log in" />
     <dsp:postfield bean="ProfileFormHandler.loginSuccessURL" value="/Form
      Success.jsp" />
   </dsp:go>
</do>
```

This example shows an excerpt from a login form. Notice that login and password entered by the user in the input fields are saved to WML parameters `$login` and `$password` respectively. This makes the login and password available to other tags on the page, so the `dsp:postfield` tag can save them to the `ProfileFormHandler` properties. By setting the user inputs to the property values via WML variables, you are able to workaround the `dsp:postfield` constraint that prevents you from saving the user input to a component property directly.

The `dsp:postfield` tag calls the login handler method so when a submit control is clicked, the ATG platform validates the login/password pair in the `ProfileFormHandler`. After the ATG platform accepts the login/password pair, the user is directed to the page identified in `loginSuccessURL`, which is set to `FormSuccess.jsp`.

dsp:property

Sets a component property from dsp:a (page 139) tag.

```
<dsp:property bean="property-spec" source-spec
   [name="input-name"]/>
```

Attributes

bean

Specifies the property to update on activation of the enclosing dsp:a (page 139) anchor tag: its Nucleus path, component name, and property name. The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

source-spec

Specifies the source value in one of the following ways:

- `beanvalue="`*`property-spec`*`"`

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  ```
  bean="Student_01.firstClass" beanvalue="FreshmanScience.name"
  ```

- `paramvalue="`*`param-name`*`"`

  Specifies the value from the page parameter *`param-name`*. For example:

  ```
  bean="Student_01.name" paramvalue="name"
  ```

- `value="`*`value`*`"`

  Specifies a static value. For example:

  ```
  bean="Student_01.enrolled" value="true"
  ```

name

Assigns a name to the target property, which is used to construct the corresponding query parameter. The names of all `dsp:property` tags within a given dsp:a (page 139) tag must be unique, and cannot conflict with existing query parameters for the page.

Usage Notes

You can embed multiple `dsp:property` tags within a dsp:a (page 139) tag, in order to update multiple properties with a single dsp:a (page 139) invocation.

This tag cannot be used together with the dsp:a (page 139)'s bean attribute.

Internet Explorer constraints

Internet Explorer has a maximum URL length of 2083. The query parameter name that is generated for each property uses its complete Nucleus path and name, and is repeated twice. You can easily exceed this URL maximum length with multiple properties. To shorten the URL, use the `name` attribute to assign a short name to each property. For example:

```
<dsp:a href="test.jsp">my page
<dsp:property bean="/atg/dynamo/test/MyForm.strProp" value="fpp" name="a" />
<dsp:property bean="/atg/dynamo/test/MyForm.intProp" value="3" name="b"/>
</dsp:a>
```

dsp:rollbackTransaction

Rolls back the current transaction.

```
<dsp:rollbackTransaction var-spec>
   ...
</dsp:rollbackTransaction>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has two properties:

- `success`: A Boolean property, specifies the status of the rollback transaction operation. A call to `isSuccess` obtains the property's setting.

- `exception`: Identifies the `Throwable` exception object produced when a transaction does not rollback properly. A call to `getException` returns the exception object.

Usage Notes

`dsp:rollbackTransaction` causes the tasks associated with the current transaction to halt processing and return to their pre-transaction state. This tag tracks whether the rollback action is successful and when it is not, provides a `Throwable` exception object. This tag creates an EL variable that can be referenced by later tags, and provides access to the referenced object's `success` and `exception` properties.

Example

```
<dsp:rollbackTransaction var="rollbackXA"/>
  <c:choose>
     <c:when test="${rollbackXA.success}">
         Your band uniform order was canceled.
     </c:when>
     <c:otherwise>
        Your band uniform order could not be canceled. Here's why:
           <c:out value="${rollbackXA.exception}"/>
     </c:otherwise
  </c:choose>
```

In this example, if a particular transaction is successfully rolled back, the user sees the message `Your band uniform order was canceled`. If the transaction is not successfully rolled back, the user sees the second message string `Your band uniform order was canceled. Here's why:` and the exception.

dsp:select

Defines a selection control—either a drop-down list or selection box..

```
<dsp:select bean="property-spec" [name=input-name]
   [nodefault="{true|false}"]
   [priority="integer-value"]   [multiple="{true|false}"]
>
   dsp:option tags

</dsp:select>
```

Attributes

bean

Specifies the property to update from the user's selection: its Nucleus path, component name, and property name. The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

name

Assigns a name to this drop-down list, which enables access to it during form processing. If no name is provided, the ATG platform automatically supplies one.

The name attribute provides a name to a drop-down list that is used during form processing. It is not necessary to include a name in dsp:select tags; the ATG platform automatically supplies one if none is specified.

nodefault

Unless you specify otherwise, the control displays the bean's current value as the initial selection.. To override this behavior, set the dsp:select tag's nodefault attribute together with the dsp:option tag's selected attribute.

When the bean property in the dsp:select tag holds a value that matches one or more options provided by the subordinate dsp:option tags, those values display as default selections. You can block this behavior by setting the nodefault attribute to true as a runtime expression, indicating that default values are not displayed.

priority

Specifies the priority of this control during form processing relative to other input controls. This attribute can be especially helpful when making changes to an item's repository ID and the properties it contains. If you first update the supplemental properties and then the repository ID, the new property values can be flushed when the repository ID change occurs. By default, priority is set to –10.

For more information on how the ATG platform can prioritize tag processing, see Order of Tag Processing (page 69)

multiple

If set to true, enables selection of multiple options. The default behavior enables selection of only one option. Set this attribute to true only if the target property is an array,

Usage Notes

dsp:select lets you define drop-down lists or select boxes in JSPs much like the HTML tag select. List options are defined by multiple dsp:option tags.

This tag must be enclosed in a dsp:form, which can be provided in the same page or a parent page. See Embedding Pages in Forms (page 61).

Note:dsp:select uses the iclass attribute in place of the cascading stylesheet class attribute to avoid using a Java reserved word in Java code.

Embedding custom attributes

A dsp:select tag can embed one or more custom attributes through the dsp:tagAttribute (page 185) tag, as follows:

```
<dsp:select ...>
   dsp:tagAttribute name="attr-name" value="value"/>
<dsp:select/>
```

You can use dsp:tagAttribute (page 185) tags in order to add attributes to the generated HTML beyond the fixed set of attributes supported by the DSP tag library.

Example

```
<dsp:select bean="Student_01.Summerhobbies" multiple="true"
nodefault="true" priority="10">
```

```
<dsp:option value="hiking">hiking</dsp:option>
<dsp:option value="biking">biking</dsp:option>
<dsp:option value="swimming">swimming</dsp:option>
</dsp:select>
```

This example creates a select box of summer hobbies from which a user can select options: hiking, biking, or swimming. The user's selection, which is saved to the `summerHobbies` property of the `Student_01` component, can include multiple options (hiking and biking, for example) so the `summerHobbies` property must be an array. If the `summerHobbies` property already holds the values biking and swimming, for example, those values are not selected as defaults in the form because the `nodefault` attribute blocks that functionality. By indicating a high priority number, you ensure that this tag set is processed before others in the form.

dsp:setTransactionRollbackOnly

Requires roll back of the current transaction.

```
<dsp:setTransactionRollbackOnlyvar-spec>
   ...
</dsp:setTransactionRollbackOnly>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has two properties:

- `success`: A Boolean property, specifies the status of the `setTransactionRollbackOnly` operation. A call to `isSuccess` obtains the property's setting.
- `exception`: Identifies the `Throwable` exception object produced when a transaction does not rollback properly. A call to `getException` returns the exception object.

Usage Notes

`dsp:setTransactionRollbackOnly` specifies that when the current transaction ends, it must fail and roll back. This tag does not cause a transaction to roll back now, but rather instructs the transaction to end in a rollback action when it is prompted to end.

The tag's ability to set the current transaction to `setTransactionRollbackOnly` is saved to the named EL variable. You can see tag's success or failure through the `success` property and exceptions through the `exception` property.

Example

```
<dsp:beginTransaction var="beginAdvancedAlgebra"/>
<dsp:tomap bean="/atg/samples/Student_01" var="student"/>

<c:choose>
   <c:when test="${!student.passedBeginningAlgebra}"/>
      You can't take advanced because you did not pass Beginning Algebra.
         <dsp:setTransactionRollbackOnly var="rollbackOnlyXA"/>
            <c:if test="${rollbackOnlyXA.exception = !empty}">
               The system is having trouble processing this information
               for the following reason:
               <c:out value="${rollbackOnlyXA.exception}"/>
            </c:if>
  </c:when>
  <c:otherwise>
      You may enroll in Advanced Algebra.
  </c:otherwise>
</c:choose>
<dsp:commitTransaction var="commitAdvancedAlgebra"/>
```

In this example, a transaction is used to manage the enrollment process for Advanced Algebra. After the transaction is created, the student's record is checked for successful completion of the beginning level Algebra class. The beginning level class is a prerequisite for enrolling in the advanced class, so the transactions are set to roll back. If an error occurs and `dsp:setTransactionRollbackOnly` does not set the transaction to end in a future rollback action, the exception is displayed. Otherwise, the `dsp:commitTransaction` tag tries to end the transaction.

dsp:setvalue

Sets a bean property or page parameter.

```
<dsp:setvalue target-spec [source-spec] />
```

Attributes

target-spec

Specifies the bean property or page parameter to set with one of the following attributes:

Attribute	**Set to…**
`bean`	Nucleus path, component name, and property name
`param`	Page parameter

The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

source-spec

Specifies the value source as a JavaBean component (page 6), Page parameter (page 6), or Static value (page 6), as follows:

- `beanvalue="`*`property-spec`*`"`

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  ```
  param="name" beanvalue="Student_01.name"
  ```

- `param="`*`param-name`*`"`

  Specifies the value from the page parameter *`param-name`*. For example:

  ```
  bean="Student_01.enrollmentDate" paramvalue="today"
  ```

- `value="`*`static-value`*`"`

  Specifies a static value. For example:

  ```
  bean="Student_01.juniorHighSchool" value="Roosevelt"
  ```

  ```
  bean="Student_01.juniorHighSchool" value="true"
  ```

Usage Notes

`dsp:setvalue` lets you set a bean property or page parameter with a value copied from another bean property, page parameter, or constant. If no value is specified, the variable is set to null.

Example

```
<dsp:setvalue bean="Student_01.name" paramvalue="currentName"/>
<dsp:setvalue param="graduationDate" value="June 12, 2002"
date="M/dd/yyyy/">
```

This example assumes that the `currentName` page parameter has been previously set to a value. That value is copied to the `name` property of the `Student_01` component by the first `dsp:setvalue` tag. The second tag sets the constant `June 12, 2002` to page parameter `graduationDate` and formats that date so it is saved as `6/12/2002`.

dsp:setxml

```
<dsp:setxml value="{true|false}" [useXmlParamDelimiter="{true|false}"] />
```

Attributes

value

Determines whether to format the remaining page in XML-style tags (true) or HTML-style tags (false).

useXmlParamDelimiter

Specifies the delimiter used by `DynamoHTTPServletRequest.addQueryParam` to separate query parameters that exist in the page after this tag:

- true: XML delimiter `&amp;`
- false: HTML delimiter `&`

If no delimiter value is specified by a `dsp:setxml` or `dsp:page` tag in this page or one of its parents, the ATG platform uses the delimiter associated with the page's MIME type.

Usage Notes

`dsp:setxml` lets you specify whether to generate XML or HTML from tag attributes on a given page. By default, tags use the XML formatting:

```
<sometag selected="selected">
```

If generated as HTML, the attribute value is omitted and assumes true unless otherwise specified:

```
<sometag selected>
```

HTML tags do not require closing tags; XML tags require one of the following formats:

- `<sometag></sometag>`
- `<sometag />`

Based on tag placement, you might designate parts of a page to use HTML formatting and other parts to use XML. You can also set the output format for the entire page with the `xml` attribute of dsp:page (page 169).

Example

```
<dsp:tomap bean="BrowserAttributes" var="browser"/>
<c:if value="${browser.Mosiac}">
<dsp:setxml value="false"/>
</c:if>
```

This example checks to see if the browser that made the request is a Mosaic browser. Because Mosaic is an old browser, it might have trouble handling XML-styled attributes so when a Mosaic browser makes a request, the `dsp:setxml` tag sets the attribute style to HTML.

dsp:sort

Sorts the contents of a Collection or an array.

```
<dsp:sort var-spec values="sort-item"
   [comparator="comparator-obj"]
   [reverse="{true|false}"]

>
   ...
</dsp:sort>
```

Attributes

var-spec

An EL variable or scripting variable that stores the sorted output, defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2. By default, the values that are sorted into the *`var`*-specified object have the same data type as the source values. For example, sorting an array of strings produces another array of Strings. The EL variable has a number of properties that enable you to access the sorted output as a different data type. For more information, see Usage Notes below.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

values

Identifies the item to sort. This attribute can be set to items of the following data types:

- array of primitives
- array of objects
- Enumeration
- Iterator
- Collection
- Map

This attribute cannot be set to a Dynamic Bean or any items with Dynamic Bean properties to be used for sorting.

comparator

Set to an instance of `java.util.Comparator` that you define. Use a comparator to define how to sort elements in the first item in the `values` attribute.

reverse

After the item is sorted, determines whether to use the initial order (false) or reverse it (true). If you omit this attribute, the default is false.

Usage Notes

`dsp:sort` sorts the contents of a Collection or an array in the specified order. You can sort items of the following data types:

- Array of objects
- Array of primitives
- Collection
- Iterator
- Enumeration
- Map

The page processor sorts the contents of the specified item as follows, in descending order of precedence:

1. If the comparator attribute is set to a `java.util.Comparator` object, `dsp:sort` uses the sort instructions defined in the `Comparator` object.
2. `dsp:sort` uses the nested `dsp:orderBy` tags.
3. `dsp:sort` interprets the items in their natural order, when all items are of type `java.lang.Comparable`.

By default, the values that are sorted into the *`var`*-specified object have the same data type as the source values. For example, sorting an array of strings produces another array of Strings.

The EL variable has a number of properties that provide access to the sorted output as a different data type, shown in the table below. For example, the `sortedMap` property lets you render a Collection as a Map. The resultant Map holds the Collection items as keys.

Note: Rendering an item as a different data type slows site performance.

Sort variable properties

Sort property	Description
`sortedArray`	Renders the sorted item as an array.
`sortedBooleanArray`	Renders the sorted item as an array of Boolean objects.
`sortedByteArray`	Renders the sorted item as an array of Byte objects.
`sortedCharArray`	Renders the sorted item as an array of Char objects.
`sortedCollection`	Renders the sorted item as a Collection.
`sortedDoubleArray`	Renders the sorted item as an array of Double objects.
`sortedEnumeration`	Renders the sorted item as an Enumeration.
`sortedFloatArray`	Renders the sorted item as an array of Float objects.
`sortedIntArray`	Renders the sorted item as an array of Int objects.
`sortedIterator`	Renders the sorted item as an Iterator.
`sortedLongArray`	Renders the sorted item as an Array of Long objects.
`sortedMap`	Renders the sorted item as a Map.

Sort property	Description
`sortedShortArray`	Renders the sorted item as an array of Short objects.

The following table describes what happens when you convert items from one data type to another:

Originaldatatype	Accessedasthisdatatype	Example
Array of primitive values	Collection Iterator Enumeration Map array of objects	array of Strings > Collection: Collection of String objects
Collection array	Map	Enumeration of Longs > Map: Map with key entries that are Long objects
Map	Collection Iterator Enumeration Map array of objects	Map > Collection: Collection composed of Map key values
Collection Iterator Enumeration Map array of objects	Array of primitives	Iterator > Array of primitives: Null value
Array of primitives	Array of primitives of a different data type	array of ints > array of shorts: Array of short objects that are truncated versions of the original int values

Example

```
<dsp:importbean bean="/atg/samples/AdvancedAlgebra" var="advAlgebra"/>
<dsp:sort var="sorter" values="${advAlgebra.students}">
<dsp:orderBy property="lastName"/>
<c:forEach var="student" begin="0" items="${sorter.sortedMapArray}">
<dsp:tomap value="${student}" var="studentMap"/>
<li>Name: <c:out value="${studentMap.lastName}"/>,
<c:out value="${studentNap.firstName}"/>
</c:forEach>
</dsp:sort>
```

This example organizes the student roster for Advanced Algebra. The `AdvancedAlgebra` component has a `Students` property that is a Map of student last names and first names. In this example, the students are organized alphabetically by last name. Then, each student's first name and last name are displayed.

dsp:tagAttribute

Sets a custom attribute within a dsp:input (page 159) or dsp:select (page 176) tag.

```
<dsp:tagAttribute name="attr-name" value="value"/>
```

Attributes

name

The attribute name.

value

The value associated with the named attribute.

Usage Notes

`dsp:tagAttribute` can be embedded within dsp:input (page 159) and dsp:select (page 176) tags; it lets you add attributes to the generated HTML beyond the fixed set of attributes supported by the DSP tag library.

dsp:test

Sets a variable to reference a Collection, array, or Map in order to test its properties.

```
<dsp:test var-spec value=value-spec />
```

Attributes

var-spec

An EL variable or scripting variable that is set to the object to test, defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2. The EL variable has a number of properties that you can query—for example, the referenced object's size or number of items. For information on available properties, see Usage Notes below.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

value

Sets the specified variable to a Collection, array, or Map.

Usage Notes

`dsp:test` takes an object input and produces an object named by the specified variable. Other tags can query the object to find out information about the original input object, such as its size (empty, null, or number of items).

The following properties and runtime methods are available:

Property/Method	**Description**
`nullValue` `isNull`	Returns true if the tested object has a value of `0`.
`array` `isArray`	Returns true if the tested object is an array.
`collection` `isCollection`	Returns true if the tested object is a Collection.
`arrayOrCollection` `isArrayOrCollection`	Returns true if the tested object is an array or Collection.
`size` `isSize`	Tests the size of the object, returns one of the following: - Array, Collection, Map, or Enumeration objects: the object size. - String objects: the String length. - All other objects: `1`
`emptyValue` `isEmpty`	Tests whether the object has a value, returns one of the following: - Array, Collection, Iterator, Map, or Enumeration objects: true if the object has zero or no objects. - String objects: true if the String is empty or the value is `null`.
`valueClass`	Identifies the class of the tested object, returns `null` if the `value` attribute is set to `null`.
`hashcode` `isHashCode`	Renders the tested object's hash code. returns `null` if no hash code exists or the hash code is 0.

Example

```
<dsp:tomap bean="Articles.current" var="currentArticles"/>
<dsp:test var="objectSize" value="${currentArticles}"/>
Total article count for this week should be 10. We have
<c:out value="${objectSize.size}"/> articles.
```

In this example, the current property of the `Articles` component is passed through the `dsp:test` tag. The object referenced by the EL variable `objectSize` holds information about `Articles.current` and so a call to its `size` property returns the size of the `current` array.

dsp:textarea

```
<dsp:textarea bean=" property-spec"
   [name="input-name"]   [default="value"]
   [priority=integer-value]/>
```

- *`property-spec`*

  Specifies a property value, where *`property-spec`* includes a Nucleus path, component name, and property name. For example:

  ```
  param="name" beanvalue="Student_01.name"
  ```

Attributes

bean

Specifies the Nucleus path, component name, and name of the property to update from the user-entered data. If this property has data, it displays in the multi-line text box as the default value unless the default attribute specifies another value.

The property specification can also include a tag converter, such as date or null. For more information, see Tag Converters (page 14) in Chapter 2.

name

Assigns a name to this text box, which enables access to it during form processing. If no name is provided, the ATG platform automatically supplies one. For all input types other than `radio` and `checkbox`, the assigned name must be unique.

default

Specifies a default value to display in the text box. The `default` attribute can be set to a bean property, page parameter, or constant value.

You can omit the `default` attribute and instead embed default text (dynamic or static) between the start and end `dsp:textarea` tags. If you use both methods, the text in the `default` attribute has precedence.

priority

Specifies the priority of this text box field during form processing, relative to other input fields. This attribute can be especially helpful when making changes to an item’s repository ID and the properties it contains. If you first update the supplemental properties and then the repository ID, the new property values can be flushed when the repository ID change occurs. By default, `priority` is set to –10.

For more information on how the ATG platform can prioritize tag processing, see Order of Tag Processing (page 69)

Usage Notes

`dsp:textarea` lets you create an extended text box that for multi-line input. If you use start and end tag, they should be closely spaced together; any text between the two tags (including white space and line returns) is rendered as the text box's default value.

This tag must be enclosed in a `dsp:form` tag.

Note: The `dsp:textarea` tag uses the `iclass` attribute instead of the cascading stylesheet `class` attribute to avoid using a Java reserved word in Java code.

Example

```
<dsp:textarea bean="Student_01.disciplinaryAction" default="None"/>
```

This tag inserts a multi-line text box on a form page. The text box displays the default value `None` despite the data in the `disciplinaryAction` property. The default value or any changes made to it are saved to the `disciplinaryAction` property of the `Student_01` component.

dsp:tomap

Saves a dynamic value to a variable.

```
<dsp:tomap var-spec source-spec recursive="{true|false}"/>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

source-spec

Specifies the variable to RepositoryItem bean, Page parameter (page 6), or Static value (page 6), as follows:

- `bean="`*`property-spec`*`"`

  Specifies a RepositoryItem property value, where *`property-spec`* includes a Nucleus path, component name, and (optionally) property name. For example:

`bean="Student_01.name"`

- `param="`*`param-name`*`"`

  Specifies a page parameter.

- `value="`*`static-value`*`"`

  Specifies a static value.

recursive

If set to true, all underlying Dynamic Beans are wrapped as Maps and can be accessed through the EL variable. This can help simplify code that accesses multi-dimensional data. For example, if the RepositoryItem `Profile` has a property `fundList` which is itself a RepositoryItem, you can provide direct access to the `fundList` property as follows:

```
<dsp:tomap bean="atg/userprofiling/Profile" var="profile" recursive="true"/>
I own these mutual funds: <c:out value="${profile.fundList}"/>
```

If desired, you can access the underlying Dynamic Bean rather than its Map wrapper through the DynamicBeanMap property `_realObject`. Thus, given the previous example, you might access the Dynamic Bean `fundList` as follows:

```
${profile.fundList._realObject}
```

Usage Notes

`dsp:tomap` provides access to Dynamic Bean components, standard JavaBean components, page parameters, and values by other tags that use EL or scripting variables. When you pass a parameter, component, or other value to a `dsp:tomap` tag, the object that is referenced by the EL or scripting variable treats the input as a Map. For example, when you pass in a component, the component appears as a Map in which the properties are keys and the property values are values.

You must use `dsp:tomap` in order to access a repository item through an EL expression.

Example

```
<dsp:tomap var="currentProfile" bean="Profile" recursive="true"/>
Hello <c:out value="${currentProfile.firstName}"/>
Do you still live in <c:out value="${currentProfile.address.city}"/>
```

In this example, the `Profile` component is saved to the Map specified by `currentProfile`, so other tags can use EL to render this component. Because the `recursive` attribute is set to `true`, the same EL variable provides access to underlying components such as the Dynamic Bean `address` and its properties.

dsp:transactionStatus

```
<dsp:beginTransaction var-spec>
   ...
```

```
</dsp:beginTransaction>
```

Attributes

var-spec

An EL variable or scripting variable that is defined with one of these attributes:

Attribute	Description
`var`	Names an EL variable. When you use `var`, you can set its `scope` attribute to `page`, `request`, `session`, or `application`. The default scope is `page`. For more information, see EL Variable Scopes (page 8) in Chapter 2.
`id`	Names a scripting variable that scriptlets and expressions can access at runtime.

The variable has one of the following properties:

- `success`: A Boolean property, specifies whether the tag retrieved the transaction's status. A call to `isSuccess` obtains the property's setting.
- `exception`: Identifies the `Throwable` exception object produced when the transaction status is not accessed. A call to `getException` returns the exception object.
- One of the following Boolean status properties:

  ```
  active
  committed
  committing
  markedRollback
  noTransaction
  prepared
  preparing
  rolledBack
  rollingBack
  unknown
  ```

See Usage Notes for more information on these status codes.

Usage Notes

`dsp:transactionStatus` retrieves the status of the active transaction and saves that status the specified variable's statusString property. Other tags can query the variable for transaction status information. If the tag is unable to access status information, the `success` property is set to false and the `exception` property holds a `Throwable` exception.

The variable can be tested for one of the following Boolean properties:

active

Indicates whether the transaction is in its early stages of operation and has not received any instructions about how to end.

committed

Indicates whether tasks associated with the transaction executed, any changes made to a database(s) as a result were saved, and the transaction ended.

committing

Indicates whether tasks associated with the database are in the process of committing. It is most likely that the transaction involves multiple databases, of which some have committed data and others do not.

markedRollback

Indicates whether the transaction has been instructed that, when it is prompted to end, it must revert the database(s) to its pre-transaction state (rollback).

noTransaction

Indicates whether any transaction is associated with current request thread.

prepared

Indicates whether each database involved in the transaction has verified that it can commit the transaction without any errors.

preparing

Indicates whether each database involved in the transaction is investigating whether it can commit the tasks associated with the transaction.

rolledback

Indicates whether the tasks associated with the transaction did not complete and so no changes were made by the transaction. The transaction ended.

rollingback

Indicates whether that the transaction is in the process of undoing any tasks that it performed, so no changes are saved.

unknown

Indicates whether the transaction manager can recognize the status of any other status properties.

Example

```
<dsp:transactionStatus var="statusXA"/>
  <c:choose>
    <c:when test="${statusXA.committed}">
      Congratulations! You will graduate this June!
    </c:when>

    <c:when test="${statusXA.rolledBack}">
      You will not graduate this year. Be sure to enroll in classes for
      next semester.
    </c:when>

    <c:otherwise>
```

```
        It takes 10 days to gather your records and process them. Check
        again in a few days.
      </c:otherwise>
    </c:choose>
```

In this example, the status of the transaction determines the message a user sees. The transaction status is set in the EL variable `statusXA` that is defined by `dsp:transactionStatus`. When the status is `rolledback` users see one message, when it is `committed` they see another. All other transaction statuses provide the same in process notification to their recipients.

dsp:valueof

```
<dsp:valueof value-source>
  [default-value]
</dsp:valueof>
```

Usage Notes

`dsp:valueof` renders a value in a bean property or page parameter. If desired, you can specify a default value between the open and close `dsp:valueof` tags, which displays only if the specified source is empty.

Note: If you do not intend to use a default, make sure no text, white space, or carriage return separates the open and close tags.

Attributes

value-source

Specifies the source of the value to display as a JavaBean component (page 6), Page parameter (page 6), or Static value (page 6), as follows:

- `bean="`*`property-spec`*`"`

  Displays the contents of the specified property, where *`property-spec`* includes the Nucleus path, component name, and property name.

- `param="`*`param-name`*`"`

  Displays the contents of the specified parameter *`param-name`*.

- `value="`*`static-value`*`"`

  Displays the specified static value

The value source specification can include a tag converter, such as date or null, so you can display the value in a specific format. For more information, see Tag Converters (page 14) in Chapter 2.

Example

```
<dsp:valueof bean="Student_01.age" converter="number" format="##"/>
<dsp:valueof param="currentName">Happy User</dsp:valueof>
```

In this example, the `age` property in the `Student_01` component is retrieved and converted into a format that renders a number as this: 35. The second tag gets the value of the `currentName` page parameter, but if no value exists, it displays `Happy User` instead.

Appendix B. ATG Servlet Beans

This appendix provides detailed reference entries for the servlet beans that are included with ATG Adaptive Scenario Engine. It begins with a list of servlet beans grouped by functional area, and continues with the reference entries in alphabetical order.

Note that additional servlet beans are included with other ATG solutions. Your application can also use custom servlet beans written by programmers at your site.

ATG Adaptive Scenario Engine provides several types of servlet beans:

- Standard Servlet Beans (page 195) can be used in any ATG application.
- Database and Repository Access Servlet Beans (page 198) can be used in ATG applications that store data in a database or a repository.
- XML Servlet Beans (page 200) can be used with ATG applications that include XML documents.
- Transaction Servlet Beans (page 201) mark the bounds of a transaction within a JSP.
- Personalization Servlet Beans (page 201) supply content to users based on information in their profiles.
- Business process tracking servlet beans

Standard Servlet Beans

This section provides a summary of standard servlet beans.

Class Name	`atg.droplet.`**Cache (page 212)**
Component	`/atg/dynamo/droplet/Cache`
Function	Caches content that changes infrequently

Class Name	`atg.droplet.`**Compare (page 219)**
Component	`/atg/dynamo/droplet/Compare`
Function	Displays one of a set of possible outputs, depending on the relative value of its two input parameters

Class Name	`atg.droplet.`CurrencyConversionFormatter (page 224)
Component	`/atg/dynamo/droplet/CurrencyConversionFormatter`
Function	Displays a numeric value as a currency amount, and converts a value from one currency to another, formatting it based on the locale

Class Name	`atg.droplet.`CurrencyFormatter (page 225)
Component	`/atg/dynamo/droplet/CurrencyFormatter`
Function	Displays a numeric value as a currency amount, formatting it based on the locale

Class Name	`atg.droplet.`ErrorMessageForEach (page 227)
Component	`/atg/dynamo/droplet/ErrorMessageForEach` `/atg/userprofiling/ProfileErrorMessageForEach` `/atg/demo/QuincyFunds/FormHandlers/RepositoryErrorMessageForEach`
Function	Displays error messages that occur during a form submission

Class Name	`atg.droplet.`For (page 231)
Component	`/atg/dynamo/droplet/For`
Function	Displays a single output the number of times specified

Class Name	`atg.droplet.`ForEach (page 232)
Component	`/atg/dynamo/droplet/ForEach`
Function	Displays each element of an array

Class Name	`atg.droplet.`Format (page 235)
Component	`/atg/dynamo/droplet/Format`
Function	Displays one or more text values, formatting them based on locale

Class Name	`atg.droplet.`**IsEmpty (page 243)**
Component	`/atg/dynamo/droplet/IsEmpty`
Function	Displays one of two possible outputs, depending on whether its input parameter is empty

Class Name	`atg.droplet.`**IsNull (page 244)**
Component	`/atg/dynamo/droplet/IsNull`
Function	Displays one of two possible outputs, depending on whether its input parameter is null

Class Name	`atg.droplet.`**ProtocolChange (page 269)**
Component	`/atg/dynamo/droplet/ProtocolChange`
Function	Enables switching between HTTP and HTTPS protocols

Class Name	`atg.droplet.`**Range (page 270)**
Component	`/atg/dynamo/droplet/Range`
Function	Displays a subset of the elements of an array

Class Name	`atg.droplet.`**Redirect (page 274)**
Component	`/atg/dynamo/droplet/Redirect`
Function	Redirects the user to the specified page

Class Name	`atg.droplet.`**Switch (page 300)**
Component	`/atg/dynamo/droplet/Switch`
Function	Displays one of a set of possible outputs, depending on the value of its input parameter

Class Name	`atg.droplet.`**TableForEach (page 302)**
Component	`/atg/dynamo/droplet/TableForEach`
Function	Displays each element of an array, arranging the output in a two-dimensional format

Class Name	`atg.droplet.`TableRange (page 305)
Component	`/atg/dynamo/droplet/TableRange`
Function	Displays a subset of the elements of an array, arranging the output in a two-dimensional format

Database and Repository Access Servlet Beans

This section provides a summary of servlet beans that enable access to a database or repository.

Class Name	`atg.repository.seo.`CanonicalItemLink (page 215)
Component	Not provided with ATG Adaptive Scenario Engine
Function	Takes a repository item as input and generates the canonical URL for the page associated with that item.

Class Name	`atg.droplet.`ContentDroplet (page 220)
Component	Not provided
Function	

Class Name	`atg.droplet.`ContentFolderView (page 221)
Component	Not provided
Function	

Class Name	`atg.repository.seo.`ItemLink (page 245)
Component	Not provided with ATG Adaptive Scenario Engine
Function	Takes a repository item as input and generates either a static or dynamic URL, depending on whether the page it is on is being viewed by a human visitor or a Web spider.

Class Name	`atg.repository.servlet.`ItemLookupDroplet (page 247)
Component	`/atg/dynamo/droplet/ItemLookupDroplet`

Class Name	`atg.repository.servlet.`ItemLookupDroplet (page 247)
Function	Looks up an item in one or more repositories, based on the item’s ID, and renders the item on the page

Class Name	`atg.repository.servlet.`NamedQueryForEach (page 251)
Component	Not provided with ATG Adaptive Scenario Engine
Function	Constructs an RQL query and renders its `output` parameter once for each element returned by the query

Class Name	`atg.repository.servlet.`NavHistoryCollector (page 253)
Component	Not provided with ATG Adaptive Scenario Engine
Function	Tracks each page that a user visits and makes it easy for that user to backtrack and return to pages he or she has already visited

Class Name	`atg.service.pipeline.servlet.`PipelineChainInvocation (page 258)
Component	`/atg/dynamo/droplet/PipelineChainInvocation`
Function	Initiates a pipeline thread

Class Name	`atg.repository.servlet.`PossibleValues (page 259)
Component	`/atg/dynamo/droplet/PossibleValues`
Function	Returns a list of repository items of the specified item type

Class Name	`atg.rview.`RelationalViewDroplet (page 275)
Component	`/atg/dynamo/service/jdbc/RelationalViewDroplet`
Function	Specifies a RelationalView and subview, executes a query, and passes the results of that query to another servlet bean (such as `ForEach`) for display

Class Name	`atg.repository.servlet.`RQLQueryForEach (page 285)
Component	`/atg/dynamo/droplet/RQLQueryForEach`

Class Name	`atg.repository.servlet.`RQLQueryForEach (page 285)
Function	Constructs an RQL query and renders its `output` parameter once for each element returned by the query

Class Name	`atg.repository.servlet.`RQLQueryRange (page 288)
Component	`/atg/dynamo/droplet/RQLQueryRange`
Function	Constructs an RQL query of an SQL database and renders its `output` parameter for a selected subset of the elements returned by the query

Class Name	`atg.droplet.sql.`SQLQueryForEach (page 293)
Component	`/atg/dynamo/droplet/SQLQueryForEach`
Function	Constructs a query of an SQL database and renders its output parameter once for each row returned by the database query

Class Name	`atg.droplet.sql.`SQLQueryRange (page 296)
Component	`/atg/dynamo/droplet/SQLQueryRange`
Function	Constructs a query of an SQL database and renders its `output` parameter once for each of a specified range of the rows returned by the database query

XML Servlet Beans

This section provides a summary of servlet beans for use with XML documents.

Class Name	`atg.droplet.xml.`NodeForEach (page 254)
Component	`/atg/dynamo/droplet/xml/NodeForEach`
Function	Given a DOM node, selects all nodes that match a specified pattern and iterates over each selected node

Class Name	`atg.droplet.xml.`NodeMatch (page 256)
Component	`/atg/dynamo/droplet/xml/NodeMatch`

Class Name	`atg.droplet.xml.`NodeMatch (page 256)
Function	Given a DOM node, selects the next node that matches a specified pattern

Class Name	`atg.droplet.xml.DOM`
Component	`/atg/dynamo/droplet/xml/XMLToDOM`
Function	Parses an XML document and transforms it into a DOM document

Class Name	`atg.droplet.xml.`XMLTransform (page 334)
Component	`/atg/dynamo/droplet/xml/XMLTransform`
Function	Given an XML document and an XSLT or JSP template, transforms and outputs the XML document

Transaction Servlet Beans

This section provides a summary of servlet beans for transaction demarcation.

Class Name	`atg.dtm.`EndTransactionDroplet (page 227)
Component	`/atg/dynamo/transaction/droplet/EndTransaction`
Function	Commits or rolls back the current transaction

Class Name	`atg.dtm.`TransactionDroplet (page 323)
Component	`/atg/dynamo/transaction/droplet/Transaction`
Function	Marks the bounds of a transaction within a JSP

Personalization Servlet Beans

This section provides a summary of servlet beans for use with user profiles.

Class Name	`atg.markers.userprofiling.droplet.`AddMarkerToProfile (page 207)
Component	`/atg/markers/userprofiling/droplet/AddMarkerToProfileDroplet`
Function	Add a profile marker to a profile

Class Name	`atg.markers.userprofiling.droplet.`ProfileHasLastMarker (page 262)
Component	`/atg/markers/userprofiling/droplet/ProfileHasLastMarkerDroplet`
Function	Locates the last profile marker added to a profile

Class Name	`atg.markers.userprofiling.droplet.`ProfileHasLastMarkerWithKey (page 265)
Component	`/atg/markers/userprofiling/droplet/ProfileHasLastMarkerWithKeyDroplet`
Function	Locates the last profile marker with a particular key that was added to a profile

Class Name	`atg.markers.userprofiling.droplet.`ProfileHasMarker (page 267)
Component	`/atg/markers/userprofiling/droplet/ProfileHasMarkerDroplet`
Function	Determines whether a profile has a profile marker

Class Name	`atg.markers.userprofiling.droplet.`RemoveAllMarkersFromProfile (page 278)
Component	`/atg/markers/userprofiling/droplet/RemoveAllMarkersFromProfileDroplet`
Function	Removes all profile markers from a profile

Class Name	`atg.markers.userprofiling.droplet.`RemoveMarkersFromProfile (page 281)
Component	`/atg/markers/userprofiling/droplet/RemoveMarkersFromProfileDroplet`
Function	Removes a profile marker from a profile

Class Name	`atg.service.collections.filter.droplet.`CollectionFilter (page 217)
Component	`/atg/collections/filter/droplet/StartEndDateFilterDroplet`
Function	Filters objects in a collection

Class Name	`atg.userprofiling.`GetDirectoryPrincipal (page 237)
Component	`/atg/userprofiling/GetDirectoryPrincipal`
Function	Returns the `DirectoryPrincipal` for a specified type and ID

Class Name	`atg.userprofiling.`HasEffectivePrincipal (page 241)
Component	`/atg/userprofiling/HasEffectivePrincipal`
Function	Fires a content event if a user has the appropriate Principal (identity)

Class Name	`atg.userprofiling.`HasFunction (page 240)
Component	`/atg/userdirectory/droplet/HasFunction`
Function	Tests whether a given user has the specified role.

Class Name	`atg.userprofiling.`PageEventTriggerDroplet (page 257)
Component	`/atg/userprofiling/SendPageEvent`
Function	Sends page viewed events for the current page being viewed

Class Name	`atg.targeting.`RuleBasedRepositoryItemGroupFilter (page 292)
Component	`/atg/targeting/RuleBasedRepositoryItemGroupFilter`
Function	Renders a collection of `RepositoryItems` that belong to the specified `RuleBasedRepositoryItemGroup`

Class Name	`atg.targeting.`RepositoryLookup (page 283)
Component	`/atg/targeting/RepositoryLookup`

Class Name	`atg.targeting.`RepositoryLookup (page 283)
Function	Looks up an item in a specific repository, based on the item’s ID, and renders the item on the page

Class Name	`atg.targeting.`TargetingArray (page 309)
Component	`/atg/targeting/TargetingArray`
Function	Performs a targeting operation and passes the results to another servlet bean for display

Class Name	`atg.targeting.`TargetingFirst (page 311)
Component	`/atg/targeting/TargetingFirst`
Function	Performs a targeting operation and displays the first *n* items returned by the targeter, where *n* is a number you specify

Class Name	`atg.targeting.`TargetingForEach (page 313)
Component	`/atg/targeting/TargetingForEach`
Function	Performs a targeting operation and displays all items returned by the targeter

Class Name	`atg.targeting.`TargetingRandom (page 316)
Component	`/atg/targeting/TargetingRandom`
Function	Performs a targeting operation and randomly selects and displays *n* items returned by the targeter, where *n* is a number you specify

Class Name	`atg.targeting.`TargetingRange (page 318)
Component	`/atg/targeting/TargetingRange`
Function	Performs a targeting operation and displays a subset of the items returned by the targeter, specified as a range

Class Name	`atg.userdirectory.droplet.`TargetPrincipalsDroplet (page 321)
Component	`/atg/userdirectory/droplet/TargetPrincipals`

Class Name	`atg.userdirectory.droplet.`TargetPrincipalsDroplet (page 321)
Function	Locates all organizations where a user has the specified role.

Class Name	`atg.userdirectory.droplet.`UserListDroplet (page 324)
Component	`/atg/userdirectory/droplet/ViewPrincipals`
Function	Searches for all users assigned to an organization

Class Name	`atg.userdirectory.droplet.`ViewPrincipalsDroplet (page 326)
Component	`atg/userdirectory/droplet/UserList`
Function	Obtains a user's roles or organizations

Class Name	`atg.workflow.servlet.`WorkflowInstanceQueryDroplet (page 327)
Component	None provided
Function	Returns information about a specified set of workflow instances

Class Name	`atg.workflow.servlet.`WorkflowTaskQueryDroplet (page 330)
Component	None provided
Function	Returns information about a specified set of workflow tasks

Business Process Tracking Servlet Beans

This section provides a summary of servlet beans that work with business process tracking.

Class Name	`atg.markers.bp.droplet.`AddBusinessProcessStage (page 206)
Component	`/atg/markers/bp/droplet/AddBusinessProcessStageDroplet`
Function	Adds a marker when a business object reaches a new business process stage

Class Name	`atg.markers.bp.droplet.`HasBusinessProcessStage (page 238)
Component	`/atg/markers/bp/droplet/HasBusinessProcessStageDroplet`
Function	Tests whether a business object has reached a specified business process stage

Class Name	`atg.markers.bp.droplet.`MostRecentBusinessProcessStage (page 249)
Component	`/atg/markers/bp/droplet/MostRecentBusinessProcessStageDroplet`
Function	Tests whether the business process stage most recently reached by a business object matches the specified stage

Class Name	`atg.markers.bp.droplet.`RemoveBusinessProcessStage (page 280)
Component	`/atg/markers/bp/droplet/RemoveBusinessProcessStageDroplet`
Function	Removes a specified business process stage

AddBusinessProcessStage

Adds a marker when a business object reaches a new business process stage.

Class Name	`atg.markers.bp.droplet.AddBusinessProcessStage`
Component	`/atg/markers/bp/droplet/AddBusinessProcessStageDroplet`

Usage Notes

AddBusinessProcessStage marks a new stage being reached in a business process, based on a business process name and business process stage.

Required Input Parameters

businessProcessStage

The stage within the business process.

Optional Input Parameters

businessProcessName

The name of the business process. If omitted, the default value is obtained from the servlet bean's `defaultBusinessProcessName` property. Setting the `defaultBusinessProcessName` property lets you create instances of the servlet bean that are specific to a single business process.

Output Parameters

errorMsg

The failure error message.

Open Parameters

output

Rendered on success.

error

Rendered on error.

Example

```
<dsp:droplet name="AddBusinessProcessStage">
  <dsp:param name="businessProcessName" value="ShoppingProcess"/>
  <dsp:param name="businessProcessStage" value="ShippingPriceViewed"/>
</dsp:droplet>
```

AddMarkerToProfile

Add a profile marker to a profile.

Class Name	**`atg.markers.userprofiling.droplet.AddMarkerToProfile`**
Component	`/atg/markers/userprofiling/droplet/AddMarkerToProfileDroplet`

Required Input Parameters

key

The value to save to the marker's `key` property. The profile marker `key` property holds a string that represents a similarity among a grouping of profile markers. For example, `key` can represent a type of profile marker or the circumstances under which the marker is assigned.

Optional Input Parameters

itemId

The ID of the profile item the marker is assigned to. If omitted, the value indicated in the `item` input parameter is used.

item

The profile item that the marker is assigned to. If omitted, the active profile is used.

value

The value that is saved to the marker's `value` property. The profile marker `value` property holds a string that is related to the `key` property.

data

The value that is saved to the marker's `data` property. The profile marker `data` property holds a string that is related to the `key` and `value` properties.

extendedProperties

A map that specifies any property values for marker properties other than key, value, and data that is saved to the new marker. The marker property is saved to the maps `key` and its property value is set to the map's `value`.

duplicationMode

The duplication policy used by the Profile Marker Manager. Options include `ALLOW_DUPLICATES`, `REPLACE_DUPLICATES`, and `NO_DUPLICATES`. If a profile has a marker and a Profile Marker Manager attempts to add an identical marker to it, a mode of `REPLACE_DUPLACES` causes the existing marker to be replaced by the new one, while a mode of `NO_DUPLICATES` keeps the existing marker and discards the new one. If this parameter is omitted, the servlet bean uses the default mode provided in its `defaultDuplicationMode` property.

For more information on duplication modes, see the *ConfiguringtheProfileMarkerManager* section of the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager specified in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile that stores the markers created by this servlet bean. If omitted, the servlet bean uses the default specified in its `defaultMarkerPropertyName` property.

markerItemType

The type of `RepositoryItem` used by the marker. If omitted, the servlet bean uses the default specified in its `defaultMarkerItemType` property.

markedItemType

The type of `RepositoryItem` that receives a marker. If omitted, the servlet bean uses the default specified in its `defaultMarkedItemType` property.

Output Parameters

marker

Contains the profile marker created by the servlet bean.

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

output

Rendered when the marker is added to the profile.

error

Rendered when a marker should be created and attached to a profile, but one or both actions are not completed successfully.

Usage Notes

AddMarkerToProfile communicates with the Profile Marker Manager to create a profile marker and attach it to the appropriate profile, based on the marker and profile information you specify.

For more information about attaching profile markers to profiles, see the *MarkingaUserProfile* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

The following example shows how to add a profile marker to the active user profile. After the marker is added, the user sees a message encouraging the use of travel site A. Because the message is displayed only when the marker is added and the duplication mode prevents the same marker from being added twice, users sees the encouragement message only once.

```
<dsp:droplet
 name="/atg/markers/userprofiling/droplet/AddMarkerToProfileDroplet">
   <dsp:param name="key" value="partner"/>
   <dsp:param name="value" value="travelSiteA"/>
   <dsp:param name="duplicationMode" value="NO_DUPLICATES"/>

   <dsp:oparam name="output">
      We love travel site A! Check out our joint discounts.
   </dsp:oparam>

</dsp:doplet>
```

BeanProperty

Sets any property value by dynamically specifying the property and value to update.

Class Name	`atg.droplet.BeanProperty`
Component	`/atg/dynamo/droplet/BeanProperty`

Required Input Parameters

bean

The target bean.

propertyName

The target property in `bean`. The value of this parameter is usually a page parameter that is already set to the desired property.

Optional Input Parameters

propertyValue

The value to set on the property specified by `propertyName`, either static text or a dynamic page parameter.

Output Parameters

propertyValue

The current value of the specified bean property.

Open Parameters

output

Lets you use the value in `propertyValue` for another operation, such as displaying it through the user interface or passing it to another bean.

Usage Notes

BeanProperty provides the ability to get or set a property value without knowing in advance which property you are dealing with. Although this servlet bean makes both set and get methods available, it is typically used to get current property values.

Use this bean to display a series of property values that a user defines. Because you do not know which properties the user might, your code must parse through the user choices (using a ForEach (page 232) droplet, for example) and display the value of each property. Use BeanProperty to collect user-defined properties and process them through the ForEach (page 232) bean as an `element` page parameter.

To use `BeanProperty` to get a property value, you might need to define these parameters:

- `bean`
- `propertyName`
- `propertyValue` (output parameter)

- `output`

To use `BeanProperty` to set a property value, you define the following parameters:

- `bean`
- `propertyName`
- `propertyValue` (input parameter)

Examples

Getting property values

Consider a situation where you want to allow users to compare the properties of two products. The users need to select which products and which properties they want to view. Assume a user specified one product and its properties, which were saved to the `myProductBean` and `compareProperties` page parameters respectively. The following example shows how to code the ATG platform to render one product's properties on a page:

```
<dsp:droplet name="/atg/dynamo/droplet/BeanProperty">
   <dsp:param name="bean" param="myProductBean"/>
   <dsp:param name="propertyName" value="compareProperties"/>
   <dsp:oparam name="output">
     These are the product characteristics you wanted to see:
     <p><dsp:valueof param="propertyValue">No characteristics have been
     specified</dsp:valuof>
   </dsp:oparam>
</dsp:droplet>
```

In this example, the ATG platform determines the selected product using `myProductBean` and properties using `compareProperties` and displays the properties values after the text `Here are the product characteristics you wanted to compare`.

In order to display the properties values in a specified order, add a `ForEach` bean. The following code alphabetizes the properties values and displays the first five.

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param name="array" param="compareProperties"/>
  <dsp:param name="count" value="5"/>
  <dsp:param name="sortProperties" value="+"/>

  <dsp:oparam name="outputStart">
    Here are the properties you asked about:<br/>
  </dsp:oparam>

  <dsp:oparam name="output">
    <dsp:droplet name="/atg/dynamo/droplet/BeanProperty">
      <dsp:param name="bean" param="myProductBean"/>
      <dsp:param name="propertyName" param="element"/>
      <dsp:oparam name="output">
        <dsp:valueof param="propertyName"/>: <dsp:valueof
        param="propertyValue">not set</dsp:valueof><br/>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
  <dsp:oparam name="empty">
    You did not select any properties to display.
  </dsp:oparam>
</dsp:droplet>
```

Setting properties

A Web site that sells music wants to keep track of the genres that interest users. When a user browses a music page, that page's musical genre is temporarily saved to the `currentGenre` parameter; you also want to store that genre name and browsing status in a user's Profile component property. To do this, you create a Map Profile property `genresBrowsed` that has a genre set to true if it was browsed. `BeanProperty` updates `Profile.genresBrowsed` Map as follows:

- Copies the genre in `currentGenre` to the `Profile.genresBrowsed` property.
- Sets that genre's browsed status to true.

```
<dsp:droplet name="/atg/dynamo/BeanProperty">
    <dsp:param bean="Profile.genresBrowsed" name="bean"/>
    <dsp:param name="propertyName" param="genre"/>
    <dsp:param name="propertyValue" value="true"/>
</dsp:droplet>
```

Cache

Caches content that changes infrequently.

Class Name	**`atg.droplet.Cache`**
Component	`/atg/dynamo/droplet/Cache`

Required Input Parameters

key

Lets you have more than one view of content based on a value that uniquely defines the view of the content. For example, if content is displayed one way for members and another for non-members, you can pass in the value of the member trait as the `key` parameter.

Optional Input Parameters

hasNoURLs

Determines how cached URLs are rendered for future requests. By setting `hasNoURLs` to false, you specify that subsequent requests for the cached content causes URLs to be rewritten on the fly, assuming URL Rewriting is enabled. A setting of false for `hasNoURLs` causes URLs to be saved and rendered exactly as they are currently (without session or request IDs) regardless of whether URL rewriting is enabled.

cacheCheckSeconds

The interval after content is cached until the cached is regenerated. If omitted, the interval is set from the `defaultCacheCheckSeconds` property in the `Cache` servlet bean's properties file.

Open Parameters

output

The code enclosed by the output open parameter is cached.

Usage Notes

Cache can help reduce repetitive time-consuming tasks by keeping content in temporary memory. When you use Cache, you specify the content to cache and how frequently to clear the cache. Cached URLs do not retain session or request IDs.

Which content to cache

Caching data resolves many tasks into one. Consider a Switch (page 300) servlet bean that returns one set of `RepositoryItems` to females and another set to males. Each time that code is executed two time-consuming tasks occur: the Switch (page 300) servlet bean is processed and the outcome `repositoryItem` is retrieved. Embedding the Switch (page 300) servlet bean in Cache causes the following to occur in future executions: DAF queries only the `gender` property of the Profile component (which is stored locally) and provides the appropriate content (also stored locally).

The following example is an ideal candidate for use with the Cache servlet bean because it is involves expensive operations—page computations and querying the database.

In determining whether the Cache servlet bean is appropriate for a given situation, consider the following:

- When retrieving data from the data base, is the retrieved data rendered for many users? Cache can limit the number of times the database is queried. Any code in which the database is not queried should not be cached.

  That said, caching might not be appropriate for all data retrieved from the database, especially when the data is accessed through a personalization servlet bean , such as retrieving images for all items purchased by a particular user. It is likely that these items are different for most users so the cached data is not reused.

- When processing JSP code, is the output useful for many users? Actions that are personalized to users, such as displaying a user name or a URL that includes a session ID, are an inefficient use of resources because they require processing to incorporate the dynamic elements, processing that occurs each time the cached code is rendered. Code that invokes personalized results is not a suitable candidate for the `Cache` servlet bean.

- Does using Cache conserve more resources than it expends? Caching a string is wasteful because it takes more time to cache it than to render it many times.

In summary, use Cache to hold content that is expensive to compute, so the data to cache takes longer to process on its own than it takes to render Cache and resolve its key parameter for that data. A common example is code that renders content from the database for a large subset of your user community. Although you might want `Cache` to involve some personalization (determining that subset), if you also want to cache programming code, make sure the output is saved by Cache. Avoid Cache in these circumstances:

1. When the content to cache is static.
2. When it takes more time to cache the content than to render the content.
3. When the cached content is not applicable for many users.

It is a good idea to measure your page performance with and without Cache as the final determination of its efficiency for a given circumstance.

Clearing the cache

You can determine how often data is flushed for a given Cache instance on a JSP or for all instances of Cache. To remove cached content associated with a particular instance of Cache, set the `cacheCheckSession` input parameter in the Cache instance to the frequency by which associated data should be expired. If you omit this parameter, the `Cache.defaultCacheCheckSeconds` property is used (default value is `60` seconds) .

The `Cache.purgeCacheSeconds` property determines how often content cached by any Cache servlet bean is flushed. The default is `21600` seconds (6 hours). Cache purging also occurs when a JSP is removed or recompiled.

Example

The following example demonstrates a simple implementation of Cache that displays gender-specific articles to users. The fictitious `GenderSpecificArticles` servlet bean determines the current user's gender and displays one set of articles to men and a different set to women.

The following JSP code renders gender-specific content:

```
<dsp:droplet name="GenderSpecificArticles">
</dsp:droplet>
```

Content for women looks like this:

```
<a href="womensarticle1.html">women's article 1</a>
<a href="womensarticle2.html">women's article 2</a>
```

Content for men looks like this:

```
<a href="mensarticle1.html">men's article 1</a>
<a href="mensarticle2.html">men's article 2</a>
```

The following example caches the preceding code:

```
<dsp:droplet name="/atg/dynamo/droplet/Cache">
  <dsp:param bean="Profile.gender" name="key"/>
  <dsp:oparam name="output">
    <dsp:droplet name="GenderSpecificArticles">
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

The Cache servlet bean defines `male` and `female` as cache keys. The `male` key is set to the following string:

```
"<a href="mensarticle1.html">men's article 1</a>
<a href="mensarticle2.html">men's article 2</a>"
```

The `female` key is set to the following string:

```
"<a href="womensarticle1.html">women's article 1</a>
<a href="womensarticle2.html">women's article 2</a>"
```

The first time the JSP holding the Cache servlet bean is rendered, the `GenderSpecificArticles` servlet bean executes, but future requests for this page simply look up the result of `GenderSpecificArticles` in the cache and display the appropriate string.

CanonicalItemLink

Takes a repository item as input and generates the canonical URL for the page associated with that item.

Class Name	**`atg.repository.seo.CanonicalItemLink`**
Component	Not provided with ATG Adaptive Scenario Engine

Required Input Parameters

Specify the repository item with one of the following input parameters:

- `item`
- `id`

item

The target repository item.

id

The repository ID of the target repository item. If you specify this input parameter, also specify two additional parameters:

- `itemDescriptorName`
- `repository` or `repositoryName`

itemDescriptorName

The repository item's item descriptor.

repository

The repository that contains the item.

repositoryName

The name of the repository that contains the item.

Output Parameters

url

The canonical URL generated by the servlet bean.

errorMessage

The error message produced if a problem occurs generating the URL.

Open Parameters

output

Rendered if the URL is generated successfully.

error

Rendered if a problem occurs when generating the URL.

Usage Notes

CanonicalItemLink takes a repository item as input and generates the canonical URL for the page associated with that item.

You can specify the repository item in one of two ways:

- Use the `item` input parameter to pass in the actual repository item. In this case, the item is typically the output of another servlet bean, such as `RepositoryLookup` or `ItemLookupDroplet`.
- Use the `id` and `itemDescriptorName` parameters, and either the `repository` or `repositoryName` parameter, to provide the information needed to uniquely identify the repository item.

For more information about CanonicalItemLink, see the discussion of Search Engine Optimization in the *ATG Programming Guide*.

Example

The following example illustrates using a `CanonicalItemLink` servlet bean on a product detail page to render a `link` tag specifying the page's canonical URL.

```
<dsp:droplet name="/atg/repository/seo/CanonicalItemLink">
  <dsp:param name="id" param="productId"/>
  <dsp:param name="itemDescriptorName" value="product"/>
  <dsp:param name="repositoryName"
     value="/atg/commerce/catalog/ProductCatalog"/>
  <dsp:oparam name="output">
    <dsp:getvalueof var="pageUrl" param="url" vartype="java.lang.String"/>
    <link rel="canonical" href="${pageUrl}"/>
 </dsp:oparam>
</dsp:droplet>
```

CollectionFilter

Filters objects in a collection.

Class Name	**`atg.service.collections.filter.droplet.CollectionFilter`**
Component(s)	`/atg/collections/filter/droplet/StartEndDateFilterDroplet`

Required Input Parameters

collection

Identifies the collection of objects that require filtering.

Optional Input Parameters

collectionIdentifierKey

Specifies a string that represents the collection to filter. Each unique collection should have a unique string. This parameter is required in order to cache filtered content.

filter

Refers to the component responsible for performing the filter operation. The default value provided to `StartEndDateFilterDroplet` for this parameter is `atg/registry/CollectionFilters/StartEndDateFilter`.

profile

Points to a `ProfileRepositoryItem`. Use this parameter when the filtering condition is based on profile information. If no value is provided to this parameter, the `Profile` associated with the active session is used. None of the implementations of `CollectionFilter` provided with the ATG platform use this parameter.

Output Parameters

filteredCollection

Holds a collection of items that satisfy the filter criteria.

errorMsg

Holds error messages generated during the servlet bean execution.

Open Parameters

output

Rendered when the filter component completes processing.

empty

Rendered if the resultant collection is empty.

error

Rendered if an error occurs.

Usage Notes

CollectionFilter uses collection filtering components to reduce objects in a collection. The resulting collection is accessed by an output parameter. The `StartEndDateFilterDroplet` instance passes the collection to the `StartEndDateFilter` so it can determine which items in the collection are active for the current date.

Two properties, `consultCache` and `updateCache`, govern whether CollectionFilter checks the cache for content and saves the resultant content to the cache respectively. These properties are set to true by default. There are other settings you need to configure to enable caching for `StartEndDateFilter` on the collection filtering component itself.

The CollectionFilter servlet bean class `filter` property can be set to a collection filter component, which serves as the default value for the `filter` input parameter.

See the *FilteringCollections* chapter of the *ATG Personalization Programming Guide* for more information on filtering collections.

Example

In this example, all articles that are started and not ended for the current day are displayed.

```
<dsp:tomap bean="/atg/dynamo/service/CurrentDate" var="date"/>

<dsp:droplet name="/atg/collections/filter/droplet/StartEndDateDroplet">
   <dsp:param name="collection" beanvalue="Articles"/>
   <dsp:param name="collectionIdentifierKey"
   value="featuredArticles${date.dateAsDate}"/>

      <dsp:oparam name="output">
      Featured Articles:
         <p><dsp:droplet name="/atg/dynamo/droplet/ForEach">
               <dsp:param name="array" param="filteredCollection"/>

               <dsp:oparam name="output">
                   <dsp:valueof param="param"/>
               </dsp:oparam>
            </dsp:droplet>
      </dsp:oparam>

      <dsp:oparam name="empty">
            There are no articles today
      </dsp:oparam>
   </dsp:oparam>
```

```
</dsp:droplet>
```

Compare

Displays one of a set of possible outputs, depending on the relative value of its two input parameters.

Class Name	**`atg.droplet.Compare`**
Component	`/atg/dynamo/droplet/Compare`

Required Input Parameters

obj1 and obj2

The objects to compare.

Open Parameters

greaterthan

The value to render if `obj1` is greater than `obj2`.

lessthan

The value to render if `obj1` is less than `obj2`.

equal

The value to render if `obj1` is equal to `obj2`.

noncomparable

The value to render if `obj1` and `obj2` cannot be compared.

default

The value to render if no open parameter corresponds to the comparison result. For example, `obj1` is greater than `obj2` and there is no `greaterthan` open parameter; or the `obj1` and `obj2` cannot be compared and there is no `noncomparable` parameter.

Usage Notes

Compare takes two objects as input parameters and conditionally renders one of its open parameters, based on the relative values of the input parameters. For all non-number properties, the comparison is accomplished by casting the two objects to `java. lang.Comparable` and calling `Comparable.compareTo()`. A comparison must involve properties that share the same data type, unless those properties are instances of `java.lang.Number`.

Example

The following example uses Compare to compare the value of the `securityStatus` property of the user's profile to the value of the `securityStatusLogin` property of the `PropertyManager` component, to determine whether the user has logged in.

```
<dsp:droplet name="Compare">
  <dsp:param name="obj1" bean="Profile.securityStatus"/>
  <dsp:param name="obj2" bean="PropertyManager.securityStatusLogin"/>
  <dsp:oparam name="lessthan">
     <%-- user has not logged in, so display the login form --%>
     <dsp:include page="login_form.jsp"></dsp:include>
  </dsp:oparam>
  <dsp:oparam name="default">
     <%-- user has logged in, so proceed to the protected content --%>
     <dsp:include page="protected_content.jsp"></dsp:include>
  </dsp:oparam>
</dsp:droplet>
```

ContentDroplet

Outputs the data of an SQL content repository item.

Class Name	**`atg.droplet.ContentDroplet`**
Component	Not provided

Required Input Parameters

repository

The target repository.

item

The target content repository item.

Optional Input Parameters

bytes

Sets a limit to the amount of content that is output, used to ensure that a large file does not create a runaway request. Byte limit is not exact, so output is liable to be unreadable by the browser.

Output Parameters

mimeType

Set to the file's MIME type.

Open Parameters

output

Executes before the item content is rendered.

Usage Notes

ContentDroplet can be used together with ContentFolderView to obtain the contents of all items in one or more content repository folders.

Note: You cannot use this servlet bean to render dynamic content. For example, if a content repository item contains JSP or HTML, only the source can be rendered.

You must create the properties file for ContentDroplet in `<atg9dir>/home/localconfig/atg/dynamo/droplet` and set it as follows:

```
$class=atg.droplet.ContentDroplet
mimeTyper=/atg/dynamo/servlet/pipeline/MimeTyper
```

Example

See ContentFolderView (page 221)

ContentFolderView

Provides access to the contents of a folder in an SQL content repository:

Class Name	**`atg.droplet.ContentFolderView`**
Component	Not provided

Required Input Parameters

repository

The repository whose contents you wish to retrieve.

Optional Input Parameters

folder

Sets the folder to view within the specified repository. If this parameter is omitted, the servlet bean starts execution at the repository's root folder.

getContent

If set to true, sets the `contentItems` parameter to an array of content items within the current folder. The default setting is `false`.

Output Parameters

contentItems

An array of content items in the current repository folder; set only if the input parameter `getcontent` is set to `true`.

subFolders

An array of the subfolder paths beneath the current folder. Paths start from the folder specified by the input parameter `folder`; otherwise, paths start from the repository's root folder.

Open Parameters

output

Renders output for the current repository folder.

Usage Notes

ContentFolderView provides access to the items and subfolders of an SQL content repository. You can use this servlet bean to iterate over a hierarchy of repository folders, starting from the folder specified by the input parameter `folder`. If this parameter is omitted, execution begins at the repository's root folder.

You can also use this servlet bean with ContentDroplet (page 220) to obtain the data of repository content items.

You must create the properties file for ContentFolderView in `<atg9dir>/home/localconfig/atg/dynamo/droplet` and set it as follows:

```
$class=atg.droplet.ContentFolderView
```

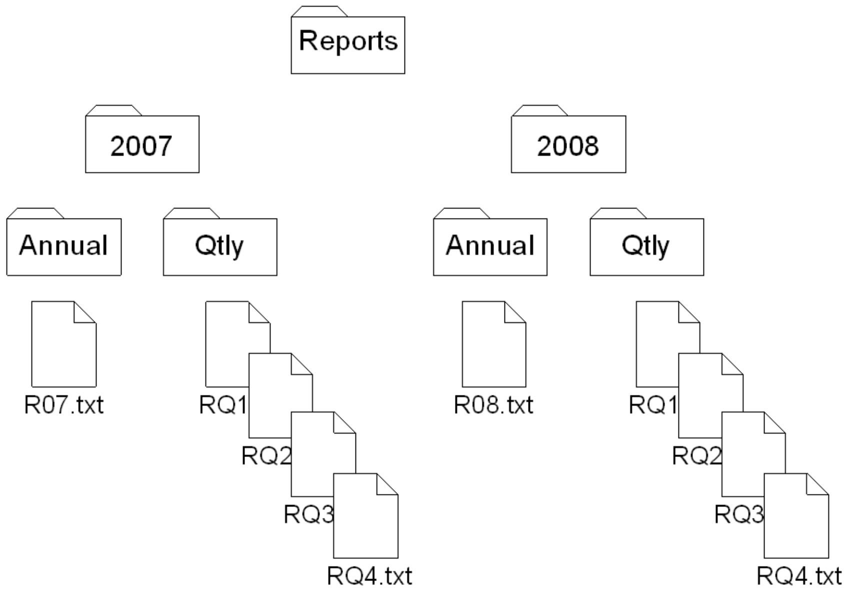
Example

The following JSP fragment can be included in a JSP that supplies page parameters that are used to set the ContentFolderView input parameters `repository` and `folder`.

```
<%@ taglib prefix="dsp" uri="http://www.atg.com/taglibs/daf/dspjspELTaglib1_0" %>
<% /* page takes two parameters, repositoryName and startFolder
      If startFolder is null, the servlet bean starts execution at the
      repository's root folder */ %>

<dsp:droplet name="/atg/dynamo/droplet/ContentFolderView">
  <dsp:param name="repository" param="repositoryName "/>
  <dsp:param name="folder" param="startFolder"/>
  <dsp:param name="getContent" value="true"/>
  <dsp:oparam name="output">
    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
      <dsp:param name="array" param="contentItems"/>
      <dsp:oparam name="output">
        <dsp:valueof param="element.path"/><br>
        <dsp:droplet name="/atg/dynamo/droplet/ContentDroplet">
          <dsp:param name="repository" param="repositoryName"/>
          <dsp:param name="item" param="element"/>
        </dsp:droplet><br>
      </dsp:oparam>
    </dsp:droplet>
    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
      <dsp:param name="array" param="subFolders"/>
      <dsp:oparam name="output">
        <dsp:valueof param="element.path"/><br>
        <dsp:include page="folder.jsp">
          <dsp:param name="testFolder" param="element"/>
        </dsp:include>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

Given the following content repository folder hierarchy:



Execution of the JSP extract yields the following output:

```
/Reports
/Reports/2007
/Reports/2007/Annual
/Reports/2007/Annual/R07.txt
  ##text from R07.txt
/Reports/2007/Qtly
/Reports/2007/Qtly/RQ1.txt
  ##text from RQ1.txt
/Reports/2007/Qtly/RQ2.txt
  ##text from RQ2.txt
/Reports/2007/Qtly/RQ3.txt
  ##text from RQ3.txt
/Reports/2007/Qtly/RQ4.txt
  ##text from RQ4.txt
/Reports/2008
/Reports/2008/Annual
```

```
...
```

CurrencyConversionFormatter

Displays a numeric value as a currency amount, and converts a value from one currency to another, formatting it based on the locale .

Class Name	**`atg.droplet.CurrencyConversionFormatter`**
Component	`/atg/dynamo/droplet/CurrencyConversionFormatter`

Required Input Parameters

currency

The number to convert and format.

targetLocale

The currency's conversion locale. This conversion uses `exchangeRates` property in the `CurrencyConversionTagConverter` and the locale.

Optional Input Parameters

locale

The currency's source locale. For example, if `sourceLocale` is `en_US` then currency is expressed in US dollars. This value can be either a `java.util.Locale` object or a String that represents a locale. In order to use Euro currency, the variant of the locale must be EURO. If this parameter is not provided, the default locale is used.

euroSymbol

Used if the target locale is using Euro currency. If provided, this parameter is used as the Euro symbol. This is useful because the commonly-used character set ISO Latin-1 (ISO 8859-1) does not include the Euro character.

Output Parameters

formattedCurrency

The formatted currency.

Open Parameters

output

The `oparam` that is always rendered.

Usage Notes

CurrencyConversionFormatter can be used to convert and format a numeric amount. The amount can be converted from one currency to another.

Example

```
<dsp:droplet name="/atg/dynamo/droplet/CurrencyConversionFormatter">
  <dsp:param param="price.listPrice" name="currency"/>
  <dsp:param value="en_US" name="locale"/>
  <dsp:param value="de_DE_EURO" name="targetLocale"/>
  <dsp:param value="&euro;" name="euroSymbol"/>
  <dsp:oparam name="output">
    <dsp:valueof valueishtml="true" param="formattedCurrency">no
         price</dsp:valueof>
  </dsp:oparam>
</dsp:droplet>
```

CurrencyFormatter

Displays a numeric value as a currency amount, formatting it based on the locale

Class Name	**`atg.droplet.CurrencyFormatter`**
Component	`/atg/dynamo/droplet/CurrencyFormatter`

Required Input Parameters

currency

The numeric value to format. This value can be expressed as either a `java.lang.Number` or a String.

Optional Input Parameters

locale

The locale that determines the format of the currency amount. This value can be either a `java.util.Locale` object or a String that represents a locale (such as `en_US`). If omitted, the ATG platform uses the default locale supplied in the request object.

euroSymbol

Lets you format the currency amount with a euro symbol even if your encoding does not support it; the character set ISO 8859-1 (Latin-1), for example, does not include the euro character. For the `value` attribute, specify the HTML code for the ASCII euro symbol as shown here:

```
<dsp:param name="euroSymbol" value="&euro;"/>
```

You must use the `valueishtml` attribute with a `<dsp:valueof>` tag in the `formattedCurrency` parameter so the ATG platform displays the HTML euro symbol. Without using this attribute, the ATG platform displays the value literally rather than process it as HTML code.

```
<dsp:oparam name="output">
<dsp:valueof param="formattedCurrency" valueishtml="true">no
price</dsp:valueof>
</dsp:oparam>
```

Output Parameters

formattedCurrency

The formatted currency value.

Open Parameters

output

The output to render.

Usage Notes

CurrencyFormatter takes a numeric value and displays that value as a currency amount, formatting it based on the locale. The formatting includes the currency symbol, the placement of the symbol, and the delimiters used. For example, if the value passed in is 20000, and the locale is `en_US`, the servlet bean formats the value as $20,000.00; if the locale is `de_DE`, the servlet bean formats the value as 20.000,00 DM.

Example

In this example, CurrencyFormatter renders the value 1059 in the appropriate format. The specified value is saved to the `priceToDisplay` parameter, which is processed through CurrencyFormatter. CurrencyFormatter applies the locale provided by `OriginatingRequest` component to the `priceToDisplay` value and saves it to the `formattedCurrency` parameter, which is displayed in the JSP. If the locale in `OriginatingRequest` is set to `en_US`, the rendered value is `$1059.00`.

```
<dsp:setvalue param="priceToDisplay" value="1059"/>
<dsp:droplet name="/atg/dynamo/droplet/CurrencyFormatter">
  <dsp:param name="currency" param="priceToDisplay"/>
  <dsp:param name="locale" bean="/OriginatingRequest.requestLocale.locale"/>
  <dsp:oparam name="output">
    <p>Current price:  <dsp:valueof param="formattedCurrency"/>
  </dsp:oparam>
</dsp:droplet>
```

The second example shows how to use the `euroSymbol` parameter with the `valueishtml` attribute of the `<dsp:valueof>` tag to display an amount with the euro symbol. This code displays the following value:

```
3,99 €
```

```
<dsp:droplet name="/atg/dynamo/droplet/CurrencyFormatter">
  <dsp:param name="currency" value="3.99"/>
  <dsp:param name="locale" value="de_DE_EURO"/>
  <dsp:param name="euroSymbol" value="&euro;"/>
  <dsp:oparam name="output">
```

```
    <dsp:valueof param="formattedCurrency" valueishtml="true">no
    price</dsp:valueof>
  </dsp:oparam>
</dsp:droplet>
```

EndTransactionDroplet

Commits or rolls back the current transaction.

Class Name	**`atg.dtm.EndTransactionDroplet`**
Component	`/atg/dynamo/transaction/droplet/EndTransaction`

Required Input Parameters

op

Specifies how to end the transaction with the setting `commit` or `rollback`.

Open Parameters

errorOutput

Rendered if an error occurs during the commit or rollback. Within the open parameter, the error is communicated through the following parameters:

- `errorMessage`: a text message indicating the error
- `errorStackTrace`: the full stack trace of the error

successOutput

Rendered if the commit or rollback operation completes successfully.

Usage Notes

EndTransactionDroplet can be used in a page to manually commit or roll back the current transaction. Any errors that occur during the commit or rollback process are reported to an open parameter, thereby allowing the application to report transaction failures to the user. Any errors that occur are also logged.

ErrorMessageForEach

Displays error messages that occur during a form submission.

Class Name	`atg.droplet.ErrorMessageForEach`

Component	`/atg/dynamo/droplet/ErrorMessageForEach`
	`/atg/userprofiling/ProfileErrorMessageForEach`
	
	`/atg/demo/QuincyFunds/FormHandlers/RepositoryErrorMessageForEach`

Required Input Parameters

None

Optional Input Parameters

exceptions

Holds a vector of `DropletExceptions`. If omitted, `ErrorMessageForEach` uses the list of all exceptions that occurred in this request.

messageTable

Holds a text string that is a mapping of exceptions to error messages. If omitted, `ErrorMessageForEach` determines the message to use as described previously.

propertyNameTable

Holds a text string that is a mapping of property names to text strings. If omitted, `ErrorMessageForEach` determines the text string to use as described previously.

Output Parameters

message

An error message that maps to the exception's `errorCode` property. This parameter is set once for each exception in the input vector.

propertyName

A text string that maps to the exception's `propertyName` property. This parameter is set once for each exception in the input vector.

Open Parameters

output

Rendered once for each element in the vector of exceptions.

outputStart

If the vector of exceptions is not empty, rendered once before the `output` parameter is rendered.

outputEnd

If the vector of exceptions is not empty, rendered once after the `output` parameter is rendered for each exception.

empty

Rendered if the vector of exceptions contains no elements.

Usage Notes

ErrorMessageForEach takes a vector of form exceptions and, for each exception, displays an appropriate error message. The exceptions are of class `atg.droplet.DropletException`, or a subclass of this class.

The vector of exceptions can be passed automatically by the request that produces the exceptions, or specified explicitly using the exception's input parameter. For example, any form handler of class `atg.droplet.GenericFormHandler` (or a subclass of this class) has a `formExceptions` property, which is a vector of the exceptions that occurred during form processing. To pass these exceptions to ErrorMessageForEach , you can use a tag like this:

```
<dsp:param name="exceptions" bean="MyFormHandler.formExceptions"/>
```

For each exception, ErrorMessageForEach displays the message associated with that exception's `errorCode` property. For example, if the value of an exception's `errorCode` property is `invalidPassword`, ErrorMessageForEach displays the message associated with `invalidPassword`. The messages are stored in tables of key/value pairs, where the keys contain error codes and the corresponding values hold user-friendly messages. For example, the entry for `invalidPassword` might look like this:

```
invalidPassword=Your password is incorrect.
```

Messages can be specified in several ways. ErrorMessageForEach searches for a key that matches `errorCode` in the following areas, listed in order of precedence:

1. The servlet bean's `messageTable` Input Parameters

2. The servlet bean's `messageTable` property

3. The resource bundle specified by servlet bean's `resourceName` property

If ErrorMessageForEach fails to find the key , it displays the message produced by the exception itself. The vector of exceptions is preserved across redirects, so you can redirect the user to a separate page that displays the errors.

If you specify messages using the `messageTable` input parameter or the `messageTable` property, use a comma to separate entries. In order to embed a comma in the message itself, enter two consecutive commas. In the following example, two messages are passed in using the `messageTable` input parameter:

```
<dsp:param name="messageTable"
value="invalidPassword=Your password is incorrect., invalidLogin=Your
user name is incorrect. For assistance,, click Help."/>
```

By default, the `messageTable` property is null, so the messages are taken from the resource specified by the `resourceName` property. The default resource bundle is `atg.droplet.ErrorMessageResources`, and the messages are stored in the `ErrorMessageResources.properties` file. This file contains messages for error codes commonly produced by the ATG platform.

Some exceptions passed to the servlet bean can be of class `DropletFormException`, which is a subclass of the `DropletException` class. In addition to an `errorCode` property, a `DropletFormException` also has a `propertyName` property that stores the name of the property in the form handler that triggered the exception. This `propertyName` value can be mapped to a text string, which is passed to the error message through a parameter. For example, if the user leaves a required text field empty, the error message might be:

```
missingRequiredValue=Must supply a value for the param:propertyName field.
```

ErrorMessageForEach replaces `param:propertyName` with the text associated with the exception's `propertyName` property. For example, if the value of the `propertyName` property is `login`, ErrorMessageForEach displays the text associated with `login`. As with the error messages themselves, these texts are stored in tables of key/value pairs, with the keys being the exceptions' `propertyName` properties and the values being the texts that are mapped to those keys. For example, a table of these texts might look like this:

```
login=user name,
password=PIN code,
address=home address
```

ErrorMessageForEach searches for a key that matches the `propertyName` in the following areas, listed in order of precedence:

1. The servlet bean's `propertyNameTable` Input Parameters

2. The servlet bean's `propertyNameTable` property

3. The resource bundle specified by servlet bean's `resourceName` property

If ErrorMessageForEach fails to find the key, it displays the value of `propertyName` itself.
By default, the `propertyNameTable` property is null, and no mappings are defined in the `ErrorMessageResources.properties` file. Unless you define the mappings yourself, the `propertyName` value is displayed.

You can use any of the mechanisms described above to extend or modify the messages that ErrorMessageForEach displays. For localization purposes, you can define your own resource bundles, and use these resource bundles to specify the messages and `propertyName` parameter values. You can create resource bundles in multiple languages, and have ErrorMessageForEach display different messages depending on the user's locale. For more information about resource bundles, see the *InternationalizingaDynamoWebSite* chapter of the *ATG Programming Guide*.

While you can use resource bundles to define the message text and the propertyName values, you cannot use them to supply other arguments that are replaced by actual values because ErrorMessageForEach cannot retrieve these arguments from the DropletFormException. For example, you might want to display the following error message when a new user enters a login name that is already in use:

```
Login name {MGarcia} already in use; please choose another login name
```

In this situation, you can use the resource bundle to supply the static message text, but ErrorMessageForEach cannot replace the login name argument with an actual value. One alternative is to use ForEach (page 232) rather than ErrorMessageForEach and display the default message from the DropletException. In an internationalized Web site, the form handler defines localized versions of all messages and displays the appropriate version according to the locale of the current request.

Example

The following example displays a list of exceptions that can occur in a form submission. The Switch servlet bean at the start determines whether there were any form errors. The exceptions parameter of the ErrorMessageForEach points to the `formExceptions` property of the Survey component. The value of the `messageTable` parameter provides two error messages that can be displayed for different errors.

```
<dsp:droplet name="/atg/dynamo/droplet/Switch">
  <dsp:param bean="Test.formError" name="value"/>
  <dsp:oparam name="true">
```

```
   <h2>The following Errors were found in your survey</h2>
    <dsp:droplet name="/atg/dynamo/droplet/ErrorMessageForEach">
       <dsp:param name="exceptions" bean="Survey.formExceptions"/>
       <dsp:param name="messageTable" value="missingRequiredField=You did
       not answer all the survey questions,
       oneWordCheckFailed=You did not provide a single word to describe
       your interests"/>
       <dsp:oparam name="output">
          <b>
          <dsp:valueof param="message"/>
          </b>
          <p>
      </dsp:oparam>
    </dsp:droplet>
     <P>
     <P>
  </dsp:oparam>
</dsp:droplet>
```

For

Displays a single output the number of times specified.

Class Name	**`atg.droplet.For`**
Component	`/atg/dynamo/droplet/For`

Required Input Parameters

howMany

The number of times to render the output parameter.

Output Parameters

index

The zero-based index of the current array element, incremented each time the `output` parameter is rendered.

count

The one-based index of the current array element, incremented each time the `output` parameter is rendered.

Open Parameters

output

Rendered the number of times specified by the `howMany` parameter.

Usage Notes

The servlet bean For loops the number of times specified by the input parameter , Given an integer parameter `howMany`, For renders its `output` parameter that many times. The `howMany` parameter must be a String representation of an int. Each iteration sets the `index` parameter to the current loop count, starting at 0, and sets the `count` parameter to index plus one, starting at 1.

Example

In the following example, the user is presented with textboxes, the number of which is user-determined. On the first page (code not shown) the user specifies how the number of text boxes to be shown. This value is stored in the form's `numChoices` property. On the second page (code excerpt included below), the For servlet bean displays the user-specified number of text boxes by setting its `howMany` input parameter from the `numChoices` property. The servlet bean uses the `count` parameter to supply a consecutive number to each text box. When a user enters values into the text boxes, those values are saved to the form's `choice` property.

```
<dsp:droplet name="/atg/dynamo/droplet/For">
  <dsp:param name="howMany" bean="SomeForm.numchoices"/>
  <dsp:oparam name="output">
      Text box # <dsp:valueof param="count"/>:
      <dsp:input bean="SomeForm.choice[param:index]" type="text"/>
    <br/>
  </dsp:oparam>
</dsp:droplet>
```

ForEach

Displays each element of an array.

Class Name	**`atg.droplet.ForEach`**
Component	`/atg/dynamo/droplet/ForEach`

Required Input Parameters

None

Optional Input Parameters

array

The list of items to output: a Collection (Vector, List, or Set), Enumeration, Iterator, Map, Dictionary, or array. If omit this parameter or supply an empty parameter, the open parameter `empty` is rendered.

sortProperties

Holds a string that specifies the order in which array items are rendered. The syntax of this parameter depends on the array item type: JavaBean, Dynamic Bean, Date, Number, or String.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. To specify ascending sort order, prepend the property name with a plus + sign; to specify descending order, prepend with a minus - sign. The following example sorts a JavaBean array alphabetically by title , then in descending order of `size`, use this input parameter:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If an array consists of Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the current array `element`, incremented each time the `output` parameter is rendered.

count

The one-based index of the current array `element`, incremented each time the `output` parameter is rendered.

key

If the `array` parameter is a Map or Dictionary, set to the value of the Map or Dictionary key.

element

Set to the current array element each time the `index` increments and the `output` parameter is rendered.

size

Set to the size of the array, if applicable. If the array is an Enumeration or Iterator, `size` is set to -1.

Open Parameters

output

Rendered once for each array `element`.

outputStart

If the array contains elements, rendered before any elements are output. For example, this parameter can be used to render the table heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render text following a table.

empty

Rendered if the array is empty.

Usage Notes

`ForEach` renders a listing of elements specified by the array parameter in the order you specify. The `array` parameter can be a Collection (Vector, List, or Set), Enumeration, Iterator, Map, Dictionary, or array.

Example

The following example uses ForEach to present a list of people. The servlet bean renders the `output` parameter once for each entry in the `people` array. It defines a parameter called `element` (representing a person) on each iteration. Then, the servlet bean passes the `element` parameter to a page, `displayPerson.jsp`, which produces the HTML formatting. The `displayPerson.jsp` page itself uses the Switch (page 300) servlet bean to render different output for each person on the list.

The following example uses ForEach to display a list of the students enrolled in a class. The servlet bean renders the `output` parameter once for each student in the `enrolledStudents` array. As ForEach loops through the array of `enrolledStudents`, each student is bound to the parameter named `currentStudent` (which is set to the element parameter). The remaining code shows how you can pass the `currentStudent` parameter to another JSP and how you can display the property values of `currentStudent` on the page.

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param name="array" bean="ClassroomService.enrolledStudents" />

  <%-- As the ForEach loops thru the array of students, each of the
       elements is bound to a parameter named "CurrentStudent": --%>
  <dsp:setvalue param="CurrentStudent" paramvalue="element"/>

  <dsp:oparam name="empty">
    There are no students in this class.<br/>
  </dsp:oparam>

  <%-- Display a header beforing looping thru students in the array: --%>
  <dsp:oparam name="outputStart">
    Here is the list of students in this class: <br/>
  </dsp:oparam>

  <%-- display this output for each of the student array elements: --%>
  <dsp:oparam name="output">

    Student # <dsp:valueof param="count"/> :
       <dsp:valueof param="CurrentStudent.fullName"/> at address:

      <%-- Display student's address information – which is fetched from
           the student's "address" object property: --%>
      <dsp:valueof param="CurrentStudent.address.city"/>
      <dsp:valueof param="CurrentStudent.address.State"/><br/>

    <%-- This is how you pass the "CurrentStudent" to another page
         fragment which displays more student information: --%>
    has the following grades:
    <dsp:include page="displayStudentGrades.jsp">
      <dsp:param name="studentInputParam" param="CurrentStudent"/>
    </dsp:include>

  </dsp:oparam> <%-- output param --%>

  <%-- Display this after looping thru all students in the array: --%>
  <dsp:oparam name="outputEnd">
    Total number of students: <dsp:valueof param="size"/> <br/>
    End of Student list.
  </dsp:oparam>

</dsp:droplet>
```

Format

Displays one or more text values, formatting them based on locale.

Class Name	**`atg.droplet.Format`**
Component	`/atg/dynamo/droplet/Format`

Required Input Parameters

The Format servlet bean typically requires the following input parameters:

- `format` specifies the text to display.
- One input parameter for each format expression specified in the `format` value, where the input parameter name maps to the expression's first argument.

The ATG platform uses the `format` parameter to construct the `java.text.MessageFormat` object. The value of this parameter is a string that can embed one or more format expressions that use the following syntax:

`{arg[,format-type,[format-type]...]}`

where *`arg`* is a variable that can be formatted, and *`format-type`* optionally specifies any format accepted by the `java.text.MessageFormat` class.

For example:

```
<dsp:param name="format"
     value="At {when,time} on {when,date}, there was {what} on planet
```

```
{where,number,integer}."/>
```

If *arg* is a variable—in the previous example, when, what, and where—the servlet bean requires an input parameter of the same name. Given the previous format parameter example, the servlet bean requires three input parameters:

```
<dsp:param name="when" bean="MyComponent.date"/>
<dsp:param name="what" bean="MyComponent.what"/>
<dsp:param name="where" bean="MyComponent.where"/>
```

Optional Input Parameters

locale

A dynamic page parameter or static text. The value must correspond to a supported locale format defined in java.util.Locale. If omitted, the ATG platform uses the default locale of the request object.

Output Parameters

message

Renders the servlet bean output, or resultant string that is calculated by processing the supplied input parameters.

Open Parameters

output

Uses a <dsp:valueof> tag to display the final MessageFormatElement with the desired formatting, which is represented by the message page parameter. For example:

```
<dsp:oparam name="output">
  <dsp:valueof param="message"/>
</dsp:oparam>
```

Usage Notes

Format makes the functionality of the java.text.MessageFormat class available to JSPs. With it, you can:

- Embed the value of one or more page parameters in a string.
- Format a numeric value as a date, time, currency, or percent format.

This servlet bean lets you format parameters—typically strings—into any format accepted by the java.text.MessageFormat class.

Example

In the following example, the Format servlet bean concatenates two strings. This examples assumes the existence of a MyComponent component with properties firstName and lastName.

```
<dsp:droplet name="/atg/dynamo/droplet/Format">
   <dsp:param name="format" value="Name: {last},{first}"/>
```

```
  <dsp:param bean="/MyComponent.firstName" name="first"/>
  <dsp:param bean="/MyComponent.lastName" name="last"/>
  <dsp:oparam name="output">
    Name: <dsp:valueof param="message"/>
  </dsp:oparam>
</dsp:droplet>
```

This code creates two page parameters `first` and `last`, and sets the values of each to the corresponding `MyComponent` property. Format constructs an object and sets each argument to a value in an array, inserting the actual value for each page parameter. Format passes the object equipped with the array to the `Messageformat` object for formatting. Because this example does not require formatting, the `MessageFormat` object compiles the final message and saves it to a page parameter called `message`. The final message might appear as follows:

```
Name: Dover, Anita
```

GetDirectoryPrincipal

Returns the `DirectoryPrincipal` for a specified type and ID.

Class Name	**`atg.userprofiling.GetDirectoryPrincipal`**
Component	`/atg/dynamo/droplet/GetDirectoryPrincipal`

Required Input Parameters

type

Type of principal, set to one of the following:

- `user`
- `organization`
- `role`
- `relativerole`
- `profilegroup`

id

The identity to look up. The value of this parameter depends on the value specified for the `type` parameter:

- `user`: the login name of the user
- `organization`: the name of the organization
- `role`: the path name of the role

- `relativerole`: the organization name and functional role name separated by a backslash (/) Example: `Accounting/VicePresident.`

Optional Input Parameters

directory

The `UserDirectory` to use when looking up identities. If omitted, the default `UserDirectory` specified by the `userDirectory` property is used.

Output Parameters

principal

Set to the `DirectoryPrincipal` object that corresponds to the given `type` and `id`.

persona

If the `userDirectoryUserAuthority` property is set, set to the `Persona` corresponding to the `DirectoryPrincipal` that the `principal` parameter is set to.

Open Parameters

output

Rendered if the `DirectoryPrincipal` is found.

empty

Rendered if the `DirectoryPrincipal` with the given `type` and `id` cannot be found.

Usage Notes

GetDirectoryPrincipal displays the `atg.userdirectory.DirectoryPrincipal` that corresponds to the specified input `type` and `id` parameters. `GetDirectoryPrincipal` can also display the `atg.security.Persona` corresponding to the directory principal it finds.

Example

The following example finds the `DirectoryPrincipal` for the `Approver` role:

```
<dsp:droplet name="/atg/dynamo/droplet/GetDirectoryPrincipal">
  <dsp:param name="type" value="role"/>
  <dsp:param name="id" value="Approver"/>
  <dsp:oparam name="output">
    Found directory principal <dsp:valueof param="principal.name"/>.
  </dsp:oparam>
</dsp:droplet>
```

HasBusinessProcessStage

Tests whether a business object has reached a specified business process stage.

Class Name	**`atg.markers.bp.droplet.HasBusinessProcessStage`**
Component	`/atg/markers/bp/droplet/HasBusinessProcessStageDroplet`

Required Input Parameters

businessProcessStage

The stage within the business process to check. Rather than specify markers for a particular stage, you can check for markers from a given process by setting this parameter to the `ANY_VALUE` property as follows:

```
<dsp:param name="businessProcessStage"
bean="HasBusinessProcessStageDroplet.ANY_VALUE"/>
```

Optional Input Parameters

businessProcessName

The name of the business process; defaults to the servlet bean's `defaultBusinessProcessName` property. Setting the `defaultBusinessProcessName` property lets you create instances of the servlet bean that are specific to a single business process.

Output Parameters

errorMsg

The failure error message.

Open Parameters

true

Rendered if the specified stage reached marker is found.

false

Rendered if the specified stage reached marker is not found.

error

Rendered on error.

Usage Notes

HasBusinessProcessStage checks whether the item has reached a stage in a business process.

Example

```
<dsp:droplet name="HasBusinessProcessStage">
  <dsp:param name="businessProcessName" value="ShoppingProcess"/>
  <dsp:param name="businessProcessStage" value="ShippingPriceViewed"/>
  <dsp:oparam name="true">
...
  </dsp:oparam>
  <dsp:oparam name="false">
```

```
...
  </dsp:oparam>
</dsp:droplet>
```

HasFunction

Tests whether a given user has the specified role.

Class Name	`atg.userdirectory.droplet.HasFunction`
Component	`/atg/userdirectory/droplet/HasFunction`

Required Input Parameters

function

The function property of the relative role held by the user.

userId

The ID of the user whose functional role to check. For example:

```
<dsp:param name="userid" beanvalue="/atg/userprofiling/Profile.id"/>
```

Optional Input Parameters

organizationId

An organization name. If set, the servlet bean returns true only if the user is assigned the function in this organization.

Open Parameters

true

This parameter and the tags nested within it are rendered when an item matches the conditions defined by the input parameters.

false

This parameter and the tags nested within it are rendered when no item matches the conditions defined by the input parameters.

error

Rendered if there is an error when the query executes.

Usage Notes

HasFunction determines whether a given user has a certain functional role and renders certain content based on the result. You can limit the query further by specifying an organization, meaning that a result of true is returned only if the user has the specified role in a particular organization.

Be sure to set the `userDirectory` property to the relevant User Directory component.

Example

In this example, HasFunction determines if the active user is an `admin` for the `org1001` organization, and when he/she is, displays a link to a page for creating user accounts. Otherwise, a link to the profile page displays.

```
<dsp:droplet name="/atg/userdirectory/droplet/HasFunction">
   <dsp:param name="function" value="admin"/>
   <dsp:param name="userId" beanvalue="/atg/userprofiling/Profile.id"/>
   <dsp:param name="organizationId"  value="org1001"/>

   <dsp:oparam name="true">
      <dsp:a href="UserAccountForms.jsp">Set up new user accounts</dsp:a>
   </dsp:oparam>

   <dsp:oparam name="false">
      <dsp:a href="UserAccountInfo.jsp">Edit your profile</dsp:a>
   </dsp:oparam>
</dsp:droplet>
```

HasEffectivePrincipal

Fires a content event if a user has the appropriate Principal (identity).

Class Name	**`atg.userprofiling.HasEffectivePrincipal`**
Component	`/atg/dynamo/droplet/HasEffectivePrincipal`

Required Input Parameters

type

Set to one of the following four values:

- `user`
- `organization`
- `role`
- `relativerole`

- `profilegroup`

Optional Input Parameters

id

The identity to look up. The value you specify depends on the value of the `type` parameter:

- `user`: the login name of the user—for example, `MGarcia`
- `organization`: the path and organization name. For example:

  ```
  AnyCorps
  /AnyCorps
  /AnyCorps/someOrganization
  ```

- `role`: the path and a global role name. For example:

  ```
  admin
  /admin
  /admin/networkAdmin
  ```

- `relativerole`: the organization name and functional role name separated by a backslash (/). For example:

  ```
  Accounting/VicePresident
  ```

You can find a path for an organization or a global role by looking in the ACC People and Organizations task area. For example, you can find all global roles in the People and Organizations task area, under the Roles option. By expanding the Global Roles tree option, you can navigate to each role by traversing its path.

Notice that `id` values can have a leading slash, but one is not required.

Open Parameters

output

Rendered if the identity check is successful.

default

Rendered if the identity check fails.

unknown

Rendered if the user has no known identity.

Usage Notes

HasEffectivePrincipal checks whether a user has a specified identity and renders content based on the result of its query. For example, you can check if the user has a specific principal (identity), if the user is a member of a specified organization, or if the user has a specified role, and you can set this servlet bean to render that information.

Example

HasEffectivePrincipal determines whether the current user is assigned the role of Administrator.

```
<dsp:droplet name="/atg/dynamo/droplet/HasEffectivePrincipal">
```

```
  <dsp:param name="type" value="role"/>
  <dsp:param name="id" value="Administrator"/>
  <dsp:oparam name="output"> You are an administrator<p> </dsp:oparam>
  <dsp:oparam name="default"> You are not an administrator<p> </dsp:oparam>
  <dsp:oparam name="unknown"> You are not logged in<p> </dsp:oparam>
</dsp:droplet>
```

IsEmpty

Displays one of two possible outputs, depending on whether its input parameter is empty.

Class Name	**`atg.droplet.IsEmpty`**
Component	`/atg/dynamo/droplet/IsEmpty`

Required Input Parameters

value

The value to test. The `value` parameter is tested to determine if it is empty, and the result of this test determines the name of the open parameter to render. For example, if the `value` parameter is empty, then `IsEmpty` renders the value of its `true` open parameter.

Open Parameters

true

The value to render if the `value` parameter is empty.

false

The value to render if the `value` parameter is not empty.

Usage Notes

IsEmpty conditionally renders one of its open parameters based on the value of its `value` input parameter. If `value` is null or if the object is empty, then the output parameter true is rendered. Otherwise, the output parameter `false` is rendered.

The meaning of empty depends on the data type of the value parameter:

Data type	**Considered empty if...**
Collection	`Collection.isEmpty` returns true
object array	`Object[].length` == 0

Data type	Considered empty if...
Map	`Map.isEmpty` returns true
Dictionary	`Map.isEmpty` returns true
String	`String.equals("")` returns true

Example

The following example displays the a user's hobbies, using ForEach (page 232) to render them. If a user identifies no hobbies, a message displays:

```
<dsp:droplet name="IsEmpty">
   <dsp:param name="value" bean="MyProfile.hobbies"/>
   <dsp:oparam name="false">
      Your hobbies are:
        <dsp:droplet name="ForEach">
           <dsp:param name="array" bean="MyProfile.hobbies"/>
           <dsp:oparam name="output">
              <dsp:valueof param="element"/>
           </dsp:oparam>
        </dsp:droplet>
   </dsp:oparam>
   <dsp:oparam name="true">
      All work and no play makes Jack a dull boy.
   </dsp:oparam>
</dsp:droplet>
```

IsNull

Displays one of two possible outputs, depending on whether its input parameter is null.

Class Name	**`atg.droplet.IsNull`**
Component	`/atg/dynamo/droplet/IsNull`

Required Input Parameters

value

The value to test. The `value` parameter is tested to determine if it is null, and the result of this test determines the name of the open parameter to render. For example, if the `value` parameter is null, then `IsNull` renders the value of its `true` open parameter.

Open Parameters

true

The value to render if the `value` parameter is null.

false

The value to render if the `value` parameter is not null.

Usage Notes

IsNull conditionally renders one of its open parameters based on the value of its `value` input parameter. If `value` is null, then the output parameter `true` is rendered. Otherwise, the output parameter `false` is rendered.

Example

In this example, the ATG platform checks to see if `MyProfile.email` has a value, and if not, the ATG platform provides an input field for adding an email address and a button for saving it to the database.

```
<dsp:droplet name="IsNull">
  <dsp:param bean="MyProfile.email" name="value"/>
  <dsp:oparam name="true">
    <dsp:form action="address_book.jsp" method="POST">
      My email address:
      <dsp:input type="text" bean="MyProfileFormHandler.email"/>
      <dsp:input type="submit" bean="MyProfileFormHandler.update value="Update"/>
    </dsp:form>
  </dsp:oparam>
</dsp:droplet>
```

ItemLink

Takes a repository item as input and generates either a static or dynamic URL, depending on whether the page it is on is being viewed by a human visitor or a Web spider.

Class Name	**`atg.repository.seo.ItemLink`**
Component	Not provided with ATG Adaptive Scenario Engine

Required Input Parameters

Specify the repository item with one of the following input parameters:

- `item`
- `id`

item

The target repository item.

id

The repository ID of the target repository item. If you specify this input parameter, also specify two additional parameters:

- `itemDescriptorName`
- `repository` or `repositoryName`

itemDescriptorName

The repository item's item descriptor.

repository

The repository that contains the item.

repositoryName

The name of the repository that contains the item.

Output Parameters

url

The static or dynamic URL generated by the servlet bean.

errorMessage

The error message produced if a problem occurs generating the URL.

Open Parameters

output

Rendered if the URL is generated successfully.

empty

Rendered if no template is defined for the browser type.

error

Rendered if a problem occurs when generating the URL.

Usage Notes

ItemLink takes a repository item as input and generates either a static or dynamic URL, depending on whether the page it is on is being accessed by a human visitor or a Web spider. ItemLink uses the repository item and information from the request's HTTP header to determine the type and format of the URL to render.

You can specify the repository item in one of two ways:

- Use the `item` input parameter to pass in the actual repository item. In this case, the item is typically the output of another servlet bean, such as `RepositoryLookup` or `ItemLookupDroplet`.
- Use the `id` and `itemDescriptorName` parameters, and either the `repository` or `repositoryName` parameter, to provide the information needed to uniquely identify the repository item.

Note: If you embed the ItemLink servlet bean in the Cache (page 212) servlet bean, be sure to create separate cache keys for human visitors and Web spiders (which can be differentiated based on the UserAgent value of the request). Otherwise the page might end up containing the wrong type of URL for the visitor.

For more information about ItemLink, see the discussion of Search Engine Optimization in the *ATG Programming Guide*.

Example

The following example uses an `ItemLink` servlet bean to generate URLs on a commerce site.

```
<dsp:droplet name="/atg/commerce/catalog/CategoryLookup">
  <dsp:param bean="/OriginatingRequest.requestLocale.locale"
    name="repositoryKey"/>
  <dsp:param name="id" param="id"/>
  <dsp:oparam name="output">
    <dsp:droplet name="/atg/repository/seo/CatalogItemLink">
      <dsp:param name="item" param="element"/>
      <dsp:param name="navAction" value="jump"/>
      <dsp:param name="navCount"
        bean="/atg/commerce/catalog/CatalogNavHistory.navCount"/>
      <dsp:oparam name="output">
        <dsp:getvalueof var="finalUrl" vartype="String" param="url">
          <dsp:a href="${finalUrl}">
            <dsp:valueof param="element.displayName"/>
          </dsp:a>
        </dsp:getvalueof>
      </dsp:oparam>
      <dsp:oparam name="error">
          Failed to create URL link to category ID: <dsp:valueof param="id"/>
        <br/><dsp:valueof param="errorMessage"/>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

ItemLookupDroplet

Looks up an item in one or more repositories based on the item's ID, and renders the item on the page.

Class Name	**`atg.repository.servlet.ItemLookupDroplet`**
Component	`/atg/dynamo/droplet/ItemLookupDroplet`

Required Input Parameters

id

The ID of the item to look up.

repositoryKey

A key that maps to a secondary set of repositories.

Optional Input Parameters

repository

The repository to search.

Note: Use of this parameter is not recommended. Instead, you should define different instances of the `ItemLookupDroplet` for each set of repositories.

itemDescriptor

The name of the item descriptor to use to load the item.

Note: Use of this parameter is not recommended. Instead, you should specify the item descriptor in the `itemDescriptor` property of the servlet bean.

Output Parameters

element

Set to the `RepositoryItem` corresponding to the ID supplied.

error

Any exception that might occur while looking up the item.

Open Parameters

The following list describes the output and open parameters of the `ItemLookupDroplet`.

output

Rendered if the item is found in the repository.

empty

Rendered in all other cases, such as item not found, site visitor did not specify a required parameter.

Usage Notes

ItemLookupDroplet displays items in a repository. If your site uses more than one repository, you can create multiple instances of this servlet bean and configure each one differently. The repository and item descriptor type can be set through properties. If the `useParams` property is true, then the repository and item descriptor are resolved through input parameters. You can configure this servlet bean to define a mapping from a key to an alternate set of repositories.

For example, a ItemLookupDroplet servlet bean named `ProductLookup` might have the following properties:

```
$class=atg.repository.servlet.ItemLookupDroplet

 repository=/atg/commerce/catalog/ProductCatalog
 itemDescriptor=product

 alternateRepositories=\
      fr_FR=/atg/commerce/catalog/FrenchProductCatalog
      ja_JP=/atg/commerce/catalog/JapaneseProductCatalog
      de_DE=/atg/commerce/catalog/GermanProductCatalog
```

The servlet bean can then be invoked with the following parameters:

```
<dsp:droplet name="/atg/commerce/catalog/ProductLookup">
    <dsp:param name="id" param="productId"/>
    <dsp:param bean="/OriginatingRequest.requestLocale.localeString"
    name="repositoryKey"/>
    <dsp:setvalue param="product" paramvalue="element"
    <dsp:oparam name="output">
      <dsp:getvalueof var="a11" param="product.template.url"
      idtype="java.lang.String">
      <dsp:a href="${a11}">
         <dsp:param name="prod_id" param="product.repositoryId"/>
         <dsp:valueof param="product.displayName"/>
      </dsp:a>
      </dsp:getvalueof>
   </dsp:oparam>
</dsp:droplet>
```

If the mapping for the provided key is found, that repository is used. Otherwise, the system falls back to the default repository and searches for the item.

If the item cannot be found in the repository searched (such as the French product catalog), then the servlet again falls back to the default repository and tries to find the item with the same ID. This is only useful if the items have the exact same ID in each repository.

For example, you might view the site in French and try to look at product 1234. If the ID is defined in the French product catalog, you see the French version of that product. However, if 1234 is not defined, then you see the default English version of product 1234.

This behavior can be modified with use of the `useDefaultRepository` and `getDefaultItem` properties. If `useDefaultRepository` is false and an alternate repository cannot be found, then no repository is searched and empty is used. The same is true if an alternative repository is selected, but the item cannot be found and if `getDefaultItem` is false.

MostRecentBusinessProcessStage

Tests whether the business process stage most recently reached by a business object matches the specified stage.

Class Name	`atg.markers.bp.droplet.MostRecentBusinessProcessStage`
Component	`/atg/markers/bp/droplet/MostRecentBusinessProcessStageDroplet`

Required Input Parameters

businessProcessStage

The stage within the business process.

Optional Input Parameters

businessProcessName

The name of the business process. Defaults to the servlet bean's `defaultBusinessProcessName` property. Setting the `defaultBusinessProcessName` property lets you create instances of the servlet bean that are specific to a single business process.

Output Parameters

errorMsg

The error message describing a failure.

marker

The matching stage reached marker, if found.

Open Parameters

true

Rendered if the stage most recently reached matches the specified stage found.

false

Rendered if stage most recently reached does not match the specified stage found.

error

Rendered on error.

Usage Notes

MostRecentBusinessProcessStage checks whether the stage most recently reached matches the specified stage.

Example

```
<dsp:droplet name="MostRecentBusinessProcessStage">
  <dsp:param name="businessProcessName" value="ShoppingProcess"/>
  <dsp:param name="businessProcessStage" value="ShippingPriceViewed"/>
  <dsp:oparam name="true">
...
```

```
  </dsp:oparam>
  <dsp:oparam name="false">
...
  </dsp:oparam>
</dsp:droplet>
```

NamedQueryForEach

Constructs an RQL query and renders its `output` parameter once for each element returned by the query.

Class Name	**`atg.repository.servlet.NamedQueryForEach`**
Component	`/atg/dynamo/droplet/NamedQueryForEach`

Required Input Parameters

queryName

The name of the query to execute.

repository

The Nucleus path of the repository to query.

itemDescriptor

The name of the item type to query.

Optional Input Parameters

input Params

A comma-delimited list of values for each parameter that is required by the query. To supply the value of a request parameter, use the syntax `:`*`param-name`*.

transactionManager

The transaction manager to use. For example:

```
<dsp:param name="transactionManager"
bean="/atg/dynamo/transaction/TransactionManager"/>
```

sortProperties

Holds a string that specifies the order to render array items. For more information on using this parameter, see ForEach (page 232).

Output Parameters

index

The zero-based index of the returned row.

count

The one-based number of the returned row.

element

A dynamic bean that has properties for accessing the values returned in the result set. To return a particular property value for each item in the result set, use the convention `element.name`, where name is any property name supported by the item descriptor.

size

Set to the number of returned rows.

key

The current key if the array is a Dictionary.

repositoryException

If a `RepositoryException` is thrown, set to the exception.

Open Parameters

The following open parameters control the formatting for the returned results:

output

Rendered once for each returned row.

outputStart

Rendered before any output tags if the array of returned rows is not empty.

outputEnd

Rendered after all output tags if the array of returned rows is not empty.

empty

Rendered if the array contains no rows.

error

Rendered if there is an error when the query executes.

Usage Notes

NamedQueryForEach executes a named RQL query and renders its open parameter `output` once for each element returned by the query. The behavior of this servlet bean is identical to RQLQueryForEach (page 285);

it differs only in its use of the required input parameter `queryName`, which is used together with the input parameters `repository` and `itemDescriptor` to specify a named query.

In the following code fragment, `queryName` refers to a named query that is already set up in the specified repository. The `bikePromotion` value supplied to input parameter `inputParams` matches a parameter in that query, and is set to the value of request parameter `startDate`:

```
<dsp:droplet name="/atg/dynamo/droplet/NamedQueryForEach">
   <dsp:param name="startDate" bean="CurrentDate.dateAsTime"/>
   <dsp:param name="repository"
      value="/atg/userprofiling/ProfileAdapterRepository"/>
   <dsp:param name="itemDescriptor" value="user"/>
   <dsp:param name="queryName" value="getPromotionsByNameQuery"/>
   <dsp:param name="inputParams" value="bikePromotion, :startDate"/>
   <dsp:param name="transactionManager"
      bean="/atg/dynamo/transaction/TransactionManager"/>
...
```

NavHistoryCollector

Tracks each page that a user visits and makes it easy for that user to backtrack and return to pages he or she has already visited.

Class Name	**`atg.repository.servlet.NavHistoryCollector`**
Component	Not provided with ATG Adaptive Scenario Engine

Required Input Parameters

Supply either the `item` or `itemName` parameter:

item

The item to add to the `historyList`.

itemName

The name of the current page that is an anchor text in a link back to the current page.

Optional Input Parameters

navAction

Set to the desired action: `push`, `pop`, or `jump`. If unset, the default action is `push`.

navCount

Detects when a user clicks on the Back button in order to reset the navigation path.

Usage Notes

NavHistoryCollector can track each page that a user visits and makes it easy for that user to backtrack and return to pages he or she has already visited. NavHistoryCollector keeps track of a user's path from the top of the site to the current location in a stack of information that is manipulated differently depending on how the user navigates through the site. For more information about different ways of catalog navigation, see *CatalogNavigation* in the *CatalogNavigationandSearching* chapter of the *ATGCommerceAdministrationandDevelopmentGuide*.

Example

The Pioneer Cycling Reference Application uses the component `/atg/commerce/catalog/CatalogNavHistoryCollector` to collect the locations visited and to add them to the array of visited locations. In Pioneer Cycling, the visited locations are the repository items that represent the products and categories of the product catalog. This snippet, taken from `breadcrumbs.jsp`, invokes the `CatalogNavHistoryCollector`:

```
<dsp:droplet name="/atg/dynamo/droplet/Switch">
  <dsp:param name="value" param="no_new_crumb"/>
  <dsp:oparam name="true">
  </dsp:oparam>
  <dsp:oparam name="default">
     <dsp:droplet name="CatalogNavHistoryCollector">
        <dsp:param name="navAction" param="navAction"/>
        <dsp:param name="item" param="element"/>
     </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

Although both techniques used in this code sample are specific to the Pioneer Cycling implementation, they can be applied to any site. First, notice that the required parameter `navCount` is not passed to CatalogNavHistoryCollector. The `navCount` parameter is set in the page that invokes this JSP snippet. Because JSP files invoked as servlets from other JSP files are in a sub-scope of their callers, they have access to the same parameters as the caller. Second, the `no_new_crumb` parameter decides whether or not to invoke the snippet. This is just a switch on a parameter passed to the page to determine whether to add the current location to the `NavHistory` or not. However, it shows how Pioneer Cycling addresses navigation for pages that do not represent catalog items. For example, the search page, the shopping cart, and the user profile page are not added to the `NavHistory` like regular catalog pages. For more information on navigation in the Pioneer Cycling demo, see *AddingCatalogNavigation* in the *DisplayingandAccessingtheProductCatalog* chapter of the ATG Consumer Commerce Reference Application Guide.

NodeForEach

Given a DOM node, selects all nodes that match a specified pattern and iterates over each selected node.

Class Name	**`atg.droplet.xml.NodeForEach`**
Component	`/atg/dynamo/droplet/xml/NodeForEach`

Required Input Parameters

node

The DOM node to pass to this servlet bean.

Optional Input Parameters

select

Sets the pattern that is used to select the nodes to iterate over. The pattern language conforms to the pattern definition provided by the XPath specification at http://www.w3.org/TR/xpath. If no pattern is provided, then `NodeForEach` selects all the children of this node.

Output Parameters

index

Set to the zero-based index of the current `element` of the set of nodes each time the `output` parameter is rendered.

count

Set to the one-based index of the current `element` of the set of nodes each time the `output` parameter is rendered. The value of `count` for the first iteration is `1`.

element

Set to the current element of the set of nodes each time the `index` increments and the `output` parameter is rendered.

Open Parameters

output

Rendered once for each `element` in the set of nodes.

outputStart

If any nodes are selected, rendered before any output elements. For example, this parameter can be used to render the table heading.

outputEnd

If any nodes are selected, rendered after all output elements. For example, this parameter can be used to render text following a table.

empty

Rendered if no nodes are selected.

Usage Notes

NodeForEach selects a set of Data Object Model nodes using a pattern and renders its output parameters for each of the nodes. The NodeForEach servlet bean is based on the ForEach (page 232) servlet bean and inherits its output and open parameter definitions from ForEach (page 232).

Example

See Processing XML in a JSP (page 47).

NodeMatch

Given a DOM node, selects the next node that matches a specified pattern.

Class Name	**`atg.droplet.xml.NodeMatch`**
Component	`/atg/dynamo/droplet/xml/NodeMatch`

Required Input Parameters

node

The DOM node to pass to this servlet bean

match

The pattern that is used to select the next node. This pattern can be any XPath expression, as defined in the XPath specification. See http://www.w3.org/TR/xpath.

Examples of patterns:

`comment()`	Select a comment child of the current node
`order[@id='1111']`	Select the widget-order node with the id attribute 1111
`order`	Select a widget-order node.
`order[not(position()=1)]`	Select any widget-order node that is a subchild that is not the first

Output Parameters

matched

The node that is matched.

Open Parameters

output

Rendered when a node is selected. The result is bound to the matched output parameter.

failure

Rendered when there is a failure during the XML query.

empty

Rendered when no node is selected.

unset

Rendered when the `node` parameter is not set.

Usage Notes

NodeMatch selects the next DOM node that matches a pattern.

Example

See Processing XML in a JSP (page 47).

PageEventTriggerDroplet

Sends page viewed events for the current page being viewed.

Class Name	**`atg.userprofiling.PageEventTriggerDroplet`**
Component	`/atg/userprofiling/SendPageEvent`

Required Input Parameters

pageviewed

Set to the path of the `PageViewedEvent`. If this value is not set, when a `PageViewedEvent` is generated, the URL of the request is used for the path value. This allows someone to generate a page viewed event for a page logically named `store home` even if the real URL is `/store/home/`. The logical name might make more sense to a business manager using the Control Center Scenario Editor.

Usage Notes

PageEventTriggerDroplet fires page viewed events using a parameter or the request URI. This servlet bean has no output or open parameters.

Example

You can use the PageEventTriggerDroplet in a JSP through the `SendPageEvents` component, in two ways:

```
<dsp:droplet name="/atg/userprofiling/SendPageEvent"></dsp:droplet>
```

or:

```
<dsp:droplet name="/atg/userprofiling/SendPageEvent">
<dsp:param name="pageviewed" value="store home"/>
```

```
</dsp:droplet>
```

PipelineChainInvocation

Initiates a pipeline thread.

Class Name	**`atg.service.pipeline.servlet.PipelineChainInvocation`**
Component	`/atg/dynamo/droplet/PipelineChainInvocation`

Required Input Parameters

pipelineManager

Refers to the Pipeline Manager that facilitates the processor chain. If you provide no value for this parameter, the ATG platform uses the default Pipeline Manager provided in the `PipelineChainInvocationdefaultPipelineManager` property.

Optional Input Parameters

chainId

Refers to the pipeline chain to execute. If you provide no value, the ATG platform uses the default chain supplied by the `defaultChainId` property of the `PipelineChainInvocation` servlet bean.

paramObject

An object that is passed as an argument in the `runProcess` method. Leaving this parameter blank invokes the default object, which is a HashMap that is constructed using the `extraParametersMap` property. The `extraParametersMap` represents a mapping of new HashMap's keys to the request parameters that are bound to the new HashMap's values.

Open Parameters

exception

The exception objects thrown during pipeline execution. You might want to render this parameter in conjunction with the `successWithErrors` or `failure` parameters.

failure

Rendered when serious errors are encountered during pipeline execution.

pipelineResult

Refers to the object that acts as an error log by saving any errors encountered by processors in the chain.

success

Rendered when a pipeline executes without any errors.

successWithErrors

Rendered when a pipeline thread executes to completion, but acquires errors in the `pipelineResult` object during the process.

Usage Notes

PipelineChainInvocation initiates a pipeline thread from a JSP. This servlet bean sends request arguments to a Pipeline Manager; when the pipeline process is complete, it receives a `pipelineResult` object that that contains a list of error messages.

For more information on Pipelines, see *ProcessorChainsandthePipelineManager* in the *ATG Commerce Programming Guide*.

PossibleValues

Returns a list of repository items of the specified item type.

Class Name	**`atg.repository.servlet.PossibleValues`**
Component	`/atg/dynamo/droplet/PossibleValues`

Required Input Parameters

itemDescriptorName

The item descriptor within the repository.

propertyName

The name of the repository item's property, required only for enumerated properties. For properties which are themselves item types, you can set `itemDescriptorName` and `propertyName` of the linked property, or set `itemDescriptorName` to the linked-to property.

repository

The name of the repository. If omitted, the default is obtained from the servlet bean's properties file.

repositoryItem

Required only if parameters `itemDescriptorName` or `repository` are unspecified, used to obtain the item descriptor and its repository. Use this parameter if a repository item's underlying type and source are unknown.

Optional Input Parameters

maxRepositoryItems

Sets the maximum number of repository items returned by this servlet bean. If omitted, the default is obtained from the servlet bean's `maxRepositoryItems` property (initially set to `500`). To specify no limit, set this parameter to `-1`.

returnValueObjects

If set to true, sets the output parameter `values` to an array of PossibleValue objects.

PossibleValue objects have the following properties:

- **label:** Returns the value's display string. If no display value is found, returns the `toString` value.
- **settableValue:** The property value to set on the object, one of the following:
  - For a repositoryItem, returns the repository ID.
  - For an enumeration, returns either the string or integer value, depending on whether the underlying property has useCodeForValue set.
- **underlyingObject:** The underlying object, one of the following:
  - `repositoryItem` for a repositoryItem property
  - `EnumPropertyDescriptor.EnumerationOption` for an enumeration value

sortProperties

Holds a string that specifies the order to render array items. The syntax of this parameter depends on the array item type: JavaBean, Dynamic Bean, Date, Number, or String.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. To specify ascending sort order, prepend the property name with a plus + sign; to specify descending order, prepend with a minus `-` sign.

The following example sorts a JavaBean array alphabetically by title , then in descending order of `size`, use this input parameter:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If the array contains Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless it is overridden by the nested servlet bean's own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

useCodeForValue

A Boolean parameter, specifies whether to return the string or integer code value for the enumerated property identified by the `propertyName` parameter. Each enumerated property has a string value and integer code value specified for it in the item descriptor that defines the property itself. When `useCodeForValue` is set to true for the property in its item descriptor and in the PossibleValues servlet bean, the integer code value is provided to the JSP. Any other combination of values causes the string value to return.

For information on `useCodeForValue` in the repository item descriptor, see the *EnumeratedProperties* section of the *SQLRepositoryItemProperties* chapter of the *ATG Repository Guide*.

Output Parameters

values

Contains the array of possible values for the named `itemDescriptorName` and `propertyName`; or an array of PossibleValue objects if input parameter `returnValueObjects` is set to true.

Open Parameters

output

Rendered once with the result of the repository query. In the case of enumerated property data types, the result is an array of `java.lang.String` objects. In the case of properties which are themselves item types, the result is an array of repository items.

Usage Notes

PossibleValues uses the specified (or `repositoryItem`-implied) repository and item descriptor to produce an array of `RepositoryItems`. If you specify a property name through the `propertyName` parameter, PossibleValues returns an array of property values, each one an enumerated list of strings. Alternatively, you can generate an array of PossibleValue objects by setting the `returnValueObjects` parameter to true.

Example

The following example uses the servlet beans PossibleValues and ForEach (page 232) to create a form with input fields for setting an audio component's type and manufacture. A fragment of a repository definition XML file shows the different property types to be retrieved:

```
<item-descriptor name="component">
  ...
  <property name="type" data-type="enumerated" ... >
    <attribute name="useCodeForValue" value="false"/>
    <option value="Receiver" code="0"/>
    <option value="Amplifier" code="1"/>
    <option value="Tuner" code="2"/>
    <option value="CD Player" code="3"/>
    <option value="DVD Player" code="4"/>
    <option value="Cassette Tape Player" code="5"/>
  </property>

  <property name="manufacturer" item-type="manufacturer" ... >

</item-descriptor>

<item-descriptor name="manufacturer">
  ...
  <property name="id" column-name="manufacturer_id"/>
  <property name="displayName" data-type="string"
    column-name="manufacturer_name"/>
  <property name="description" data-type="string" column-name="description"/>
  <property name="longDescription" data-type="big string"
    column-name="long_description"/>
```

```
</item-descriptor>
```

The JSP form is defined as follows:

```
<dsp:form action="Audio.jsp" method="POST">

  <%-- Generate the Component Type select tag from an enumerated type --%>
  <dsp:select bean="AudioComponent.type">
    <dsp:droplet name="PossibleValues">
      <dsp:param name="itemDescriptorName" value="component"/>
      <dsp:param name="propertyName" value="type"/>
      <dsp:oparam name="output">
        <dsp:droplet name="ForEach">
          <dsp:param name="array" param="values"/>
          <dsp:oparam name="output">
            <dsp:option param="element"/>
            <dsp:valueof param="element"/>
          </dsp:oparam>
        </dsp:droplet>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:select>

  <%-- Generate the Component Manufacturer select tag from an item type --%>
  <dsp:select bean="AudioComponent.manufacturer">
    <dsp:droplet name="PossibleValues">
      <dsp:param name="itemDescriptorName" value="component"/>
      <dsp:param name="propertyName" value="manufacturer"/>
      <dsp:param name="sortProperties" value="+displayName"/>
      <dsp:oparam name="output">
        <dsp:droplet name="ForEach">
          <dsp:param name="array" param="values"/>
          <dsp:oparam name="output">
            <dsp:option param="id"/>
            <dsp:valueof param="element.displayName"/>
          </dsp:oparam>
        </dsp:droplet>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:select>

</dsp:form>
```

ProfileHasLastMarker

Locates the last profile marker added to a profile.

Class Name	**`atg.markers.userprofiling.droplet.ProfileHasLastMarker`**
Component	`/atg/markers/userprofiling/droplet/ProfileHasLastMarkerDroplet`

Required Input Parameters

key

The value in the marker's `key` property. The last profile marker must have the value in its `key` property that you specify here.

Set this parameter to ANY_VALUE to indicate that the marker's `key` value is irrelevant for your purposes. For example:

```
<dsp:param name="key" bean="ProfileHasLastMarkerDroplet.ANY_VALUE"/>
```

Optional Input Parameters

itemId

The ID of the profile whose last marker you want to access. If omitted, the value of the input parameter `item` is used.

item

The profile item whose last marker you want to access. If omitted, the active profile is used.

value

The value in the marker's `value` property. The last profile marker must have the value in its `value` property that you specify here. You can set this parameter to `NULL` or omit it in order to return the marker only if its `value` property is null.

Set this parameter to ANY_VALUE in order to indicate that the marker's `value` value is irrelevant for your purposes. For example:

```
<dsp:param name="value" bean="ProfileHasLastMarkerDroplet.ANY_VALUE"/>
```

data

The value in the marker's `data` property. The last profile marker must have the value in its `data` property that you specify here. You can set this parameter to `NULL` or omit it in order to return the marker only if its `data` property is null.

Set this parameter to ANY_VALUE to indicate that the marker's `data` value is irrelevant for your purposes. For example:

```
<dsp:param name="data" bean="ProfileHasLastMarkerDroplet.ANY_VALUE"/>
```

extendedProperties

A map that specifies any additional marker properties (set to the map's `key`) and property values (set to the map's `value`) that must exist on the last profile marker in order for to retrieve it.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager indicated in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile to check for markers. If omitted, the servlet bean uses the default value specified in its `defaultMarkerPropertyName` property.

markedItemType

The type of `RepositoryItem` with markers to work with. If omitted, the servlet bean uses the item's `defaultMarkedItemType` property.

Output Parameters

marker

Contains the marker located by the servlet bean.

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

error

Rendered when an error occurs during servlet bean execution.

true

Rendered when the last profile marker added to the profile has the specified property values.

false

Rendered when the last profile marker added to the profile does not have the specified property values.

Usage Notes

ProfileHasLastMarker uses the Profile Marker Manager to determine whether the last profile marker added to a particular profile has the parameters you specify. For example, you can find out if the last marker includes specific values for its `key`, `value`, `data` or other properties. If the last marker has the indicated parameters, the `true` open parameter is rendered and marker is accessible through the `marker` output parameter.

For more information on working with marked profiles, see the *UsingMarkedProfiles* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

The following example shows how to locate the last profile marker on the current user profile. If the profile's last profile marker has a `key` of `partner`, the servlet bean displays the partner's name, which is stored in the marker `value` property, followed by `is one of our favorite affiliates. Learn why!`.

```
<dsp:droplet
 name="/atg/markers/userprofiling/droplet/ProfileHasLastMarkerDroplet">
   <dsp:param name="key" value="partner"/>
   <dsp:param name="value" bean="ProfileHasLastMarkerDroplet.ANY_VALUE"/>
   <dsp:param name="data" bean="ProfileHasLastMarkerDroplet.ANY_VALUE"/>

   <dsp:oparam name="true">
      <dsp:param name="marker">
         <dsp:valueof paramvalue="marker.value">
      </dsp:param>
      is one of our favorite affiliates. Learn why!
   </dsp:oparam>
```

```
</dsp:droplet>
```

ProfileHasLastMarkerWithKey

Locates the last profile marker with a particular key that was added to a profile.

Class Name	**`atg.markers.userprofiling.droplet.ProfileHasLastMarkerWithKey`**
Component	`/atg/markers/userprofiling/droplet/ProfileHasLastMarkerWithKey Droplet`

Required Input Parameters

key

The value in the marker's `key` property. Set this parameter to ANY_VALUE to indicate that the marker's `key` value is irrelevant for your purposes. For example:

```
<dsp:param name="key"
bean="ProfileHasLastMarkerWithKeyDroplet.ANY_VALUE"/>
```

Optional Input Parameters

itemId

The ID of the profile with a marker to access. If omitted, the value of the input parameter `item` is used.

item

The profile item that has a marker you want to access. If omitted, the active profile is used.

value

The value in the marker's `value` property. You can set this parameter to `NULL` or omit it in order to return the marker only if its `value` property is null.

Set this parameter to ANY_VALUE to indicate that the marker's `value` value is irrelevant for your purposes. For example:

```
<dsp:param name="value"
bean="ProfileHasLastMarkerWithKeyDroplet.ANY_VALUE"/>
```

data

The value in the marker's `data` property. You can set this parameter to `NULL` or omit it in order to return marker only if its `data` property is null.

Set this parameter to ANY_VALUE, to indicate that the marker's `data` value is irrelevant for your purposes. For example:

```
<dsp:param name="data"
bean="ProfileHasLastMarkerWithKeyDroplet.ANY_VALUE"/>
```

extendedProperties

A map that specifies any additional marker properties (set to the map's `key`) and property values (set to the map's `value`) that must exist on the profile marker that is retrieved.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager indicated in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile to check for markers. If omitted, the servlet bean uses the default value specified in its `defaultMarkerPropertyName` property.

markedItemType

The type of `RepositoryItem` that has markers you want to work with. If omitted, the servlet bean uses the default value specified in its `defaultMarkedItemType` property.

Output Parameters

marker

Contains the marker located by the servlet bean.

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

error

Rendered when an error occurs during servlet bean execution.

true

Rendered when the last marker added with a certain `key` matches the specified criteria .

false

Rendered when the last marker added with a certain `key` does not match the specified criteria.

Usage Notes

ProfileHasLastMarkerWithKey determines whether the last profile marker added to the profile with a particular key has the additional parameters you specify. These additional parameters can be specific values for the `value`, `data`, or other marker properties you specify. If the last marker with a particular `key` matches the other parameters you specify, the `true` open parameter is rendered and the marker is made available to the page through the `marker` output parameter.

For more information on working with marked profiles, see the *UsingMarkedProfiles* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

The following example shows how to determine if the last profile marker added to the current profile with a `key` of partner has a `value` of travel site A. Users who have such a marker see a message informing them about airfare discounts.

```
<dsp:droplet
 name="/atg/markers/userprofiling/droplet/ProfileHasLastMarkerWithKeyDroplet">
   <dsp:param name="key" value="partner"/>
   <dsp:param name="value" value="travelSiteA"/>
   <dsp:param name="data" bean="ProfileHasMarkerWithKeyDroplet.ANY_VALUE"/>

   <dsp:oparam name="true">
      When you book your hotel room with us, you'll receive a discount on airfare
      if you book your flight with travel site A!
   </dsp:oparam>

</dsp:droplet>
```

ProfileHasMarker

Determines whether a profile has a profile marker.

Class Name	**`atg.markers.userprofiling.droplet.ProfileHasMarker`**
Component	`/atg/markers/userprofiling/droplet/ProfileHasMarkerDroplet`

Required Input Parameters

key

The value in the marker's `key` property. Set this parameter to ANY_VALUE to indicate that the marker's `key` value is irrelevant for your purposes. For example:

```
<dsp:param name="key" bean="ProfileHasMarkerDroplet.ANY_VALUE"/>
```

Optional Input Parameters

itemId

The ID of a profile to check for markers. If omitted, the value indicated in the `item` input parameter is used.

item

The profile item to check for markers. If omitted, the active profile is used.

value

The value in the marker's `value` property. You can set this parameter to `NULL` or omit it if the marker's `value` property must be null.

Set this parameter to ANY_VALUE to indicate that the marker's `value` value is irrelevant for your purposes. For example:

```
<dsp:param name="value" bean="ProfileHasMarkerDroplet.ANY_VALUE"/>
```

data

The value in the marker's `data` property. You can set this parameter to `NULL` or omit it if the marker's `data` property must be null.

Set this parameter to ANY_VALUE to indicate that the marker's `data` value is irrelevant for your purposes. For example:

```
<dsp:param name="data" bean="ProfileHasMarkerDroplet.ANY_VALUE"/>
```

extendedProperties

A map that specifies any additional marker properties (set to the map's `key`) and property values (set to the map's `value`) that must exist on the profile marker.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager indicated in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile to check for markers. If omitted, the servlet bean uses the default value specified in its `defaultMarkerPropertyName` property.

markedItemType

The type of `RepositoryItem` that has markers to work with. If omitted, the servlet bean uses the default value specified in its `defaultMarkedItemType` property.

Output Parameters

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

error

Rendered when an error occurs during servlet bean execution.

true

Rendered when the profile has a profile marker that matches the criteria you specify.

false

Rendered when the profile does not have a marker that matches the criteria you specify.

Usage Notes

ProfileHasMarker class uses the Profile Marker Manager to determine whether a user profile has a profile marker with the specified `key`, `value`, and `data` property values. In order to check whether a profile has any profile markers, set all three parameters to `ANY_VALUE`.

For more information on working with marked profiles, see the *UsingMarkedProfiles* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

In this example, the servlet bean checks the current user profile for `partner` profile markers. When none exist, an advertisement displays.

```
<dsp:droplet name="/atg/markers/userprofiling/droplet/ProfileHasMarkerDroplet">
   <dsp:param name="key" bean="partner"/>
   <dsp:param name="value" bean="ProfileHasMarkerDroplet.ANY_VALUE"/>
   <dsp:param name="data" bean="ProfileHasMarkerDroplet.ANY_VALUE"/>

<dsp:oparam name="false">
      Purchase your airline tickets with Travel Site A! If you need to rent a car,
check out the deals offered by Travel Site B!
   </dsp:oparam>

</dsp:droplet>
```

ProtocolChange

Enables switching between HTTP and HTTPS protocols.

Class Name	**`atg.droplet.ProtocolChange`**
Component	`/atg/dynamo/droplet/ProtocolChange`

Required Input Parameters

inUrl

A full or relative local URL that uses the HTTP or HTTPS protocol.

Output Parameters

secureUrl

If the `enable` property is set to true, set to a full local URL that uses the HTTPS protocol. If the `enable` property is false, set to the value of `inUrl`.

nonSecureUrl

If the `enable` property is set to true, set to a full local URL that uses the HTTP protocol. If the enable property is false, this parameter is set to the value of `inUrl`.

Open Parameters

output

Rendered once.

Usage Notes

ProtocolChange takes a full or relative local URL and renders a full URL that uses either the secure HTTPS protocol or the standard protocol, depending on which output parameter you specify. You can use this servlet bean to switch between protocols. For example, on a commerce site, you might want to switch from HTTP to HTTPS before the customer enters personal information such as a credit card number.

In order to change the protocol, the servlet bean's `enable` property must be set to true. By default, this property is set to false. When this property is false, the servlet bean sets the `secureUrl` and `nonSecureUrl` output parameters to the exact value of `inUrl`; it does not change the protocol or change a relative URL to a full URL. This property enables you to develop your application for a secure server even if your development environment's server is not secure. To do this, leave the `enable` property set to false in your development environment, and set it to true in the production environment.

Example

```
<dsp:droplet name="/atg/dynamo/droplet/ProtocolChange">
  <dsp:param name="inUrl" value="../checkout/creditcard.jsp"/>
  <dsp:oparam name="output">
    <dsp:getvalueof id="a6" param="secureUrl" idtype="java.lang.String">
      <dsp:a href="${a6}">Enter credit card information</dsp:a>
    </dsp:getvalueof>
  </dsp:oparam>
</dsp:droplet>
```

Range

Displays a subset of array elements.

Class Name	**`atg.droplet.Range`**
Component	`/atg/dynamo/droplet/Range`

Required Input Parameters

array

The list of items to output: a Collection (Vector, List, or Set), Iterator, Enumeration, Map, Dictionary, or array.

howMany

The number of array elements to display. If `howMany` is greater than the number of array elements, `Range` renders the number of elements available.

Optional Input Parameters

start

The initial array element, where a setting of 1 (the default) specifies the array's first element. If `start` is greater than the number of elements in the array, the `empty` parameter (if specified) is rendered.

sortProperties

A string that specifies the order in which array items are rendered. The value assigned to this parameter depends on the item type: JavaBeans, Dynamic Beans, Dates, Numbers, or Strings.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. To specify ascending sort order, prepend the property name with a plus + sign; to specify descending order, prepend with a minus - sign.

The following input parameter sorts a JavaBean array alphabetically by title , then in descending order of `size`:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If the array contains Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to `1`, the value of `index` for the first iteration is `0`.

count

The one-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to 1, the value of `count` for the first iteration is 1.

key

If the `array` parameter is a Map or Dictionary, set to the Map or Dictionary key.

element

The current array element each time the `index` increments and the `output` parameter is rendered.

size

The total number of items in the source array.

end

When the result set is divided into subsets, causes the last element in a subset to display its numbered value. This parameter uses a one-based count.

hasPrev

Set to true before any output parameters are rendered, indicates whether the array includes any items that precede the current array set.

prevStart

Set before any output parameters are rendered and only if `hasPrev` is true, indicates the value of `start` that should be used to display the previous array set. Use this parameter to create a link or form submission that displays the previous elements of the array.

prevEnd

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the (one-based) count of the last element in the previous array set.

prevHowMany

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the number of elements in the previous array set.

hasNext

Set to true before any output parameters are rendered, indicates whether the array includes any items that follow the current array set.

nextStart

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the value of `start` that should be used to display the next array set.

nextEnd

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the (one-based) count of the last element in the next array set.

nextHowMany

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the number of elements in the next array set.

Open Parameters

output

Rendered once for each `element` in the subset of the array defined by the `start` and `howMany` parameters.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

empty

Rendered if the array or the specified subset of the array contains no elements.

Usage Notes

Range is similar to the ForEach (page 232) servlet bean, except it can render a subset of the output array rather than the entire array. Range renders its `output` parameter for each element in its `array` parameter, beginning with the array element that corresponds to the `start` parameter and continuing until it has rendered a number of elements equal to the `howMany` parameter. The `array` parameter can be a Collection (Vector, List, or Set), Iterator, Enumeration, Map, Dictionary, or array.

Example

The following example displays the values of the `initialServices` property of ATG's `Initial` component. The values are displayed two at a time. This example uses a Switch (page 300) servlet bean to create navigational links after each pair of values. Links are provided to the sets of values that precede and follow the current pair, if any.

```
<dsp:importbean bean="/atg/dynamo/droplet/Range"/>
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>

<dsp:droplet name="Range">
  <dsp:param bean="/Initial.initialServices" name="array"/>
  <dsp:param name="howMany" value="2"/>
  <dsp:oparam name="outputStart"><h3>Initial Services:</h3><ul></dsp:oparam>
  <dsp:oparam name="outputEnd">
    </ul>
    <dsp:droplet name="Switch">
      <dsp:param name="value" param="hasPrev"/>
      <dsp:oparam name="true">
        <dsp:getvalueof var="a27" bean="/OriginatingRequest.pathInfo"
        idtype="java.lang.String">
          <dsp:a href="${a27}">
            <dsp:param name="start" param="prevStart"/>
            Previous <dsp:valueof param="prevHowMany"/>
          </dsp:a>
        </dsp:getvalueof>
      </dsp:oparam>
    </dsp:droplet>
    &nbsp;
    <dsp:droplet name="Switch">
      <dsp:param name="value" param="hasNext"/>
      <dsp:oparam name="true">
        <dsp:getvalueof var="a46" bean="/OriginatingRequest.pathInfo"
        idtype="java.lang.String">
          <dsp:a href="${a46}">
            <dsp:param name="start" param="nextStart"/>
            Next <dsp:valueof param="nextHowMany"/>
          </dsp:a>
        </dsp:getvalueof>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element.absoluteName">&nbsp;</dsp:valueof>
  </dsp:oparam>
</dsp:droplet>
```

Redirect

Redirects the user to the specified page.

Class Name	**`atg.droplet.Redirect`**
Component	`/atg/dynamo/droplet/Redirect`

Required Input Parameters

url

The full or relative URL of the page where users are redirected.

Usage Notes

Redirect takes a full or relative URL and redirects the user to the specified page. When Redirect is invoked, the target page displays and an `IOException` is thrown, thereby discarding the request.

Example

```
<dsp:droplet name="/atg/dynamo/droplet/Redirect">
  <dsp:param name="url" value="http://www.mycorp.com"/>
```

```
</dsp:droplet>
```

RelationalViewDroplet

Specifies a RelationalView and subview, executes a query, and passes the results of that query to another servlet bean such as ForEach (page 232) for display.

Class Name	**`atg.rview.RelationalViewDroplet`**
Component	`/atg/dynamo/service/jdbc/RelationalViewDroplet`

Required Input Parameters

Set one of the following input parameters:

- `rviewName`
- `rview`

rviewName

The name of the RelationalView to display.

rview

Instead of specifying the name of a RelationalView in `rviewName`, use this parameter to pass the RelationalView to use. The value of this parameter usually comes from the property of some object, or from some other parameter. The RelationalView can be a top-level view, or a subview.

This is very handy for printing out the elements of a relationship. A relationship is represented by a property that is itself a RelationalView. In our example, for each Person you might also want to print the person's Interests. Inside the ForEach (page 232) servlet bean, you have another call to a RelationalView that accesses the `interests` property of the row:

```
<table border>
  <tr><th>id</th><th>name</th><th>age</th></tr><tr>interests<>

  <dsp:droplet name="ForEach">
    <dsp:param name="array" param="result"/>
    <dsp:oparam name="output">
      <tr>
        <td><dsp:valueof param="element.id"/></td>
        <td><dsp:valueof param="element.name"/></td>
        <td><dsp:valueof param="element.age"/></td>

        <td>
          <dsp:droplet name="RelationalViewDroplet">
            <dsp:param name="rview" param="element.interests"/>
            <dsp:oparam name="output">
```

```
              <dsp:droplet name="ForEach">
                <dsp:param name="array" param="result"/>
                <dsp:oparam name="output">
                  <dsp:valueof param="element.interest"/>
                </dsp:oparam>
              </dsp:droplet>
            </dsp:oparam>
          </dsp:droplet>
        </td>

      </tr>
    </dsp:oparam>
  </dsp:droplet>

</table>
```

Optional Input Parameters

subviewName

The name of the subview to display. If you supply this parameter, you must also set `rviewName`. Subview parameters are set in one or more `subviewParam` parameters. For example:

```
<dsp:droplet bean="RelationalViewDroplet">
<dsp:param name="rviewName" value="PersonRview"/>
<dsp:param name="subviewName" value="byId"/>
<dsp:param name="subviewParam0" param="personId"/>
```

Type restrictions on subviews apply. For example, the `byId` expects a parameter of type `int`.

subviewParam

The parameters to supply to the subview specified by the input parameter `subviewName`, in the following format:

```
subviewParam0
subviewParam1
...
```

operation

Specifies which form of the `select` call to execute, and determines what form the `result` parameter takes, with one of the following settings:

- `select` (default): Calls `select()`, and the `result` parameter contains an array of the resulting rows.
- `selectFirst`: Calls `selectFirst()`, and the `result` parameter contains the single row (not an array of rows). If no row is returned, then the `output` parameter is not rendered.
- `selectCount`: Calls `selectCount()`, and the `result` parameter contains an Integer of the number of rows in the database.
- `selectExists`: Calls `selectExists`, and the `result` parameter contains a Boolean indicating if there are any rows in the subview.

firstRow

Used if the `operation` parameter is set to `select`, or is unset; specifies how many rows to skip before starting the array results. If the parameter’s value is a String, it is converted to an integer.

rowCount

Used only if the operation is `select` (the default); specifies the maximum number of rows to place into the array of results.

functionName

The name of the query function to invoke, instead of calling one of the operations on a RelationalView. Function parameters are supplied by one or more `functionParam` input parameters (below). As with the subviews, the values of these parameters must be of types that are valid for the function. See subviewName and subviewParam, above. Setting the `functionName` and `functionParam` parameters supersedes any settings for parameters `subview`, `operation`, `firstRow`, and `rowCount`.

functionParam

The parameters to supply to the query function specified by input parameter `functionName`, in the following format:

```
functionParam0
functionParam1
...
```

resultName

Normally, the result of the RelationalView operation is placed into a parameter called `result`. You might want to change the name of this parameter. If so, set `resultName` to the name of the parameter in which to place the results.

Output Parameters

result

The result of the RelationalView operation. If `resultName` is set, then its value is used instead.

errorMessage

If an error occurs during the RelationalView operation, set to the text of the corresponding error message.

Open Parameters

output

Rendered after RelationalViewDroplet executes and places the results in the `result` parameter or the parameter specified by `resultName`.

errorOutput

Rendered instead of the `output` parameter if an error occurs while the RelationalViewDroplet is performing its operation. The output parameter `errorMessage` contains the error message.

Usage Notes

An HTML application often lists the results of a database query. In Relational Views terms, this means finding the proper RelationalView or subview, calling `select` on that RelationalView, and printing the resulting array.

RelationalViewDroplet allows a `.jsp` page to specify a RelationalView and subview, execute a query, then pass the results of that query to another servlet bean such as ForEach (page 232) for display. All this can be done without any Java code.

Example

The following example shows a `.jsp` page that obtains all rows from the `PersonRview` RelationalView, then uses ForEach (page 232) to display each row in a table:

```
<dsp:importbean bean="/atg/dynamo/service/jdbc/RelationalViewDroplet"/>
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>

<html>
<head></head>
<body>

<dsp:droplet name="RelationalViewDroplet">
  <dsp:param name="rviewName" value="PersonRview"/>
  <dsp:oparam name="output">
    <table border>
      <tr><th>id</th><th>name</th><th>age</th></tr>

      <dsp:droplet name="ForEach">
        <dsp:param name="array" param="result"/>
        <dsp:oparam name="output">
          <tr>
            <td><dsp:valueof param="element.id"/></td>
            <td><dsp:valueof param="element.name"/></td>
            <td><dsp:valueof param="element.age"/></td>
          </tr>
        </dsp:oparam>
      </dsp:droplet>

    </table>
  </dsp:oparam>
</dsp:droplet>

</body>
</html>
```

In this example, two parameters are passed to RelationalViewDroplet: `rviewName` and `output`, where `rviewName` is set to the name of the RelationalView. The servlet bean calls `select` on that RelationalView, puts the array of rows into a parameter called `result`, then displays the `output` parameter. The `output` parameter displays a table and uses ForEach (page 232) to iterate over each element of the `result` array, displaying one table row for each array element.

RemoveAllMarkersFromProfile

Removes all profile markers from a profile.

Class Name	**`atg.markers.userprofiling.droplet.RemoveAllMarkersFromProfile`**
Component	`/atg/markers/userprofiling/droplet/RemoveAllMarkersFromProfile Droplet`

Required Input Parameters

None

Optional Input Parameters

itemId

The profile ID that has profile markers to be removed. If omitted, the value indicated in the `item` input parameter is used.

item

The profile item that that has profile markers to be removed. If omitted, the active profile is used.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager indicated in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile whose markers are to be removed. If omitted, the servlet bean uses the default value specified in its `defaultMarkerPropertyName` property.

Output Parameters

markerCount

Contains the number of profile markers removed from this servlet bean's execution.

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

output

Rendered when all profile markers are removed from the profile.

error

Rendered when an error occurred during servlet bean execution.

Usage Notes

RemoveAllMarkersFromProfile works with the Profile Marker Manager to remove all profile markers from a particular user profile.

For more information on removing profile markers, see the *RemovingProfileMarkers* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

The following example removes all profile markers from the current user's profile. When the markers are removed, the user sees a message that states the number of markers that were removed.

```
<dsp:droplet
 name="/atg/markers/userprofiling/droplet/RemoveAllMarkersFromProfileDroplet">

   <dsp:param name="output">
      There were <dsp:param name="markerCount"/> markers removed from your
      profile.
   </dsp:param>

</dsp:droplet>
```

RemoveBusinessProcessStage

Removes a specified business process stage.

Class Name	**`atg.markers.bp.droplet.RemoveBusinessProcessStage`**
Component(s)	`/atg/markers/bp/droplet/RemoveBusinessProcessStageDroplet`

Required Input Parameters

businessProcessStage

The stage within the business process. Rather than specify markers for a particular stage, you can remove all markers from a given process by setting this parameter to the `ANY_VALUE` property as follows:

```
<dsp:param name="businessProcessStage"
bean="RemoveBusinessProcessStageDroplet.ANY_VALUE"/>
```

Optional Input Parameters

businessProcessName

The name of the business process. Defaults to the servlet bean's `defaultBusinessProcessName` property. Setting the `defaultBusinessProcessName` property lets you create instances of the servlet bean that are specific to a single business process.

Output Parameters

errorMsg

The error message describing a failure.

markerCount

The number of stage reached markers removed.

Open Parameters

output

Rendered on successful completion.

error

Rendered on error.

Usage Notes

RemoveBusinessProcessStage removes existing business process stage markers that match the stage specified.

Example

The following example removes a `ShippingPriceViewed` stage:

```
<dsp:droplet name="RemoveBusinessProcessStageDroplet">
  <dsp:param name="businessProcessName" value="ShoppingProcess"/>
  <dsp:param name="businessProcessStage" value="ShippingPriceViewed"/>
</dsp:droplet>
```

The following example removes all shopping process stage markers that are found:

```
<dsp:droplet name="RemoveBusinessProcessStageDroplet">
  <dsp:param name="businessProcessName" value="ShoppingProcess"/>
  <dsp:param name="businessProcessStage"
   beanvalue="RemoveBusinessProcessStageDroplet.ANY_VALUE"/>
</dsp:droplet>
```

RemoveMarkersFromProfile

Removes a profile marker from a profile.

Class Name	**`atg.markers.userprofiling.droplet.RemoveMarkersFromProfile`**
Component	`/atg/markers/userprofiling/droplet/RemoveMarkersFromProfile Droplet`

Required Input Parameters

key

The value in the marker's `key` property. Set this parameter to ANY_VALUE to indicate that the marker's `key` value is irrelevant for your purposes. For example:

```
<dsp:param name="key" bean="RemoveMarkersFromProfileDroplet.ANY_VALUE"/>
```

Optional Input Parameters

itemId

The ID for the profile that has markers to be removed. If omitted, the value indicated in the `item` input parameter is used.

item

The profile item that that has profile markers to be removed. If omitted, the active profile is used.

value

The value in the markers' `value` property. Set this parameter to `NULL` or omit it in order to remove the markers only if their `value` property is null.

Set this parameter to `ANY_VALUE` to indicate that the markers' `value` value are irrelevant for your purposes. For example:

```
<dsp:param name="value"
bean="RemoveMarkersFromProfileDroplet.ANY_VALUE"/>
```

data

The value in the markers' `data` property. Set this parameter to `NULL` or omit it to remove the markers only if their `data` property is null.

Set this parameter to ANY_VALUE to indicate that the markers' `data` value is irrelevant for your purposes. For example:

```
<dsp:param name="data"
bean="RemoveMarkersFromProfileDroplet.ANY_VALUE"/>
```

extendedProperties

A map that specifies any additional marker properties (set to the map's `key`) and property values (set to the map's `value`) that must exist on the profile marker in order for it to be removed.

markerManager

The Profile Marker Manager component to use. If omitted, the Profile Marker Manager indicated in the servlet bean's `repositoryMarkerManager` property is used.

markerPropertyName

The property on the profile whose markers are to be removed. If omitted, the servlet bean uses the default value specified in its `defaultMarkerPropertyName` property.

markedItemType

The type of `RepositoryItem` with markers to be removed. If omitted, the servlet bean uses the default value specified in its `defaultMarkedItemType` property.

Output Parameters

markerCount

Contains the number of profile markers removed from the profile during this servlet bean's execution.

errorMsg

Contains any error messages generated during the servlet bean's execution.

Open Parameters

output

Rendered when the profile markers are removed from the profile.

error

Rendered when an error occurs during marker removal.

Usage Notes

RemoveMarkersFromProfile works with the Profile Marker Manager to remove the markers from a particular profile that have the `key`, `value`, `data`, and other marker property values that you specify.

For more information on removing profile markers, see the *RemovingProfileMarkers* section in the *UsingProfileMarkers* chapter of the *ATG Personalization Programming Guide*.

Example

The following example shows how to remove all markers with a key of `partner` and a value of `travelSiteA` from the active user's profile.

```
<dsp:droplet
 name="/atg/markers/userprofiling/droplet/RemoveMarkersFromProfileDroplet">

   <dsp:param name="key" value="partner"/>
   <dsp:param name="value" value="travelSiteA"/>
   <dsp:param name="data" bean="RemoveMarkersFromProfileDroplet.ANY_VALUE"/>

</dsp:droplet>
```

RepositoryLookup

Looks up an item in a specific repository, based on the item's ID, and renders the item on the page.

Class Name	**`atg.targeting.RepositoryLookup`**
Component	`/atg/targeting/RepositoryLookup`

Required Input Parameters

id

The repository ID of the repository item to look up.

repository

The name of the repository that holds the item to look up.

url

The JNDI URL of the repository item. Use this parameter instead of the `id` and `repository` parameters.

Optional Input Parameters

itemDescriptor

The name of the item descriptor used to load the item.

fireViewItemEvent

Specifies whether to trigger a JMS view item event when a page is accessed. If set to true or omitted, an event fires. To prevent the ATG platform from firing a view item event, set this parameter to false.

fireContentEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires, and when the accessed page is an item in a Content repository, a content viewed event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, use the `fireViewItemEvent` parameter.

fireContentTypeEvent

Specifies whether to trigger an event when a page is accessed. If this parameter is set to true or omitted, a JMS view event fires, and when the accessed page is an item in a Content repository, a content type event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, use the `fireViewItemEvent` parameter.

fireContentEventItemDescriptor

Holds an item descriptor name. When the servlet bean retrieves an item, it fires a content viewed event that contains the item's type. Use this parameter to replace the item's type in the content viewed event with the item's item descriptor name.

Output Parameters

element

Set to the repository item specified by the input parameters.

Open Parameters

output

Specifies the HTML formatting when the `element` parameter is rendered.

empty

Rendered if the targeting operation returns no matching items.

Usage Notes

RepositoryLookup looks up a single repository item based on the item's ID, and renders the item on the page. To obtain a repository item's ID in the appropriate form, use its `repositoryId` property.

Example

The Quincy Funds demo application uses RepositoryLookup in its `sendprospectus.jsp` page. This page is passed the ID number of a repository item as a page parameter named `ElementId`. This repository item holds information about a mutual fund. RepositoryLookup uses the `ElementId` parameter as its `id` input parameter, and renders the name of the requested mutual fund:

```
<p>You have requested the application and prospectus for the
  <dsp:droplet name="/atg/targeting/RepositoryLookup">
    <dsp:param bean="/atg/demo/QuincyFunds/repositories/Funds/Funds"
    name="repository"/>
    <dsp:param name="id" param="ElementId"/>
    <dsp:oparam name="output">
      <b><nobr><dsp:valueof param="element.fundName"/></b>.</nobr>
    </dsp:oparam>
  </dsp:droplet>
```

Identifying a repository item by its URL

If you query a repository with ATG Search, the search returns a Result object that contains the URL to a repository item. You can use that URL to display the item. For example:

```
URL: <c:out value="${result.url}"/>

<dspel:droplet name="/atg/targeting/RepositoryLookup">
   <dsp:param name="url" param="${result.url}"/>
   <dsp:oparam name="output">
     <dsp:valueof param="element.displayName"/>
   </dsp:oparam>
</dspel:droplet>
```

These URLs are recognized only if the repository is registered. To register a repository, add it to the list of repositories in the `initialRepositories` property of the `/atg/registry/ContentRepositories` component.

For more information, see the *ATG Commerce Search Guide*.

RQLQueryForEach

Constructs an RQL query and renders its `output` parameter once for each element returned by the query.

Class Name	**`atg.repository.servlet.RQLQueryForEach`**
Component	`/atg/dynamo/droplet/RQLQueryForEach`

Required Input Parameters

repository

The repository to query.

itemDescriptor

The name of the item type to query.

queryRQL

The RQL query to execute.

Optional Input Parameters

transactionManager

The Transaction Manager to use. For example:

```
<dsp:param name="transactionManager"
bean="/atg/dynamo/transaction/TransactionManager"/>
```

sortProperties

Holds a string that specifies the order to render array items. The syntax of this parameter depends on the array item type: JavaBean, Dynamic Bean, Date, Number, or String.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. To specify ascending sort order, prepend the property name with a plus + sign; to specify descending order, prepend with a minus `-` sign.

The following input parameter sorts a JavaBean array alphabetically by title , then in descending order of `size`:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If the array contains Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order..

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the returned row.

count

The one-based number of the returned row.

element

A dynamic bean that has properties for accessing the values returned in the result set. To return a particular property value for each item in the result set, use the convention `element.name`, where name is any property name supported by the item descriptor.

repositoryException

If a `RepositoryException` is thrown, set to the exception.

Open Parameters

The following open parameters control the formatting for the returned results:

output

Rendered once for each array element .

outputStart

Rendered before any output tags if the array is not empty.

outputEnd

Rendered after all output tags if the array is not empty.

empty

Rendered if the array contains no elements.

error

Rendered if there is an error when the query executes.

Usage Notes

RQLQueryForEach executes a RQL query and renders its `output` open parameter once for each element returned by the query. The query can be a simple query or can include parameters. The syntax for specifying a parameter is different from the syntax normally used in RQL. For example, you might want to issue this RQL query:

```
age > ?0
```

RQLQueryForEach can specify the query as follows:

```
<dsp:param name="queryRQL" value="age > :whatAge"/>
```

The value for the `whatAge` argument is supplied through a parameter. For example, the link to the page containing the servlet bean might be:

```
<dsp:a href="http://www.example.com/over35.jsp">Click here if you are
over 35<dsp:param name="whatAge" value="35"/>
</dsp:a>
```

For more information about RQL, see the *RepositoryQueries* chapter of the *ATG Repository Guide*.

Example

The following example uses RQLQueryForEach to display a list of all users in the Personalization profile repository whose profiles indicate they are eligible to receive email.

```
<p>The following customers are eligible to receive email:

<dsp:droplet name="/atg/dynamo/droplet/RQLQueryForEach">
  <dsp:param name="queryRQL" value="receiveEmail=true"/>
  <dsp:param name="repository"
  value="/atg/userprofiling/ProfileAdapterRepository"/>
  <dsp:param name="itemDescriptor" value="user"/>
  <dsp:oparam name="output">
    <p><dsp:valueof param="element.lastName"/>
  </dsp:oparam>
</dsp:droplet>
```

RQLQueryRange

Constructs an RQL query of an SQL database and renders its `output` parameter for a selected subset of the elements returned by the query.

Class Name	**`atg.repository.servlet.RQLQueryRange`**
Component	`/atg/dynamo/droplet/RQLQueryRange`

Required Input Parameters

repository

The repository to query.

itemDescriptor

The name of the item type to query.

queryRQL

The RQL query to execute.

Optional Input Parameters

transactionManager

The Transaction Manager to use. For example:

```
<dsp:param name="transactionManager"
bean="/atg/dynamo/transaction/TransactionManager"/>
```

calculateSize

Specifies whether to calculate the number of items in the array returned by this query. This parameter must be set to true in order to use the output parameter `size`.

howMany

The number of array elements to display. If `howMany` is greater than the number of array elements, RQLQueryRange renders the number of elements available.

start

The initial array element, where a setting of 1 (the default) specifies the array's first element. If `start` is greater than the number of array elements, the `empty` parameter (if specified) is rendered.

sortProperties

A string that specifies how to sort the list of items in the output array. Sorting can be performed on properties of JavaBeans, Dynamic Beans, or on Dates, Numbers, or Strings.

To sort JavaBeans, specify the value of `sortProperties` as a comma-separated list of property names. The first name specifies the primary sort, the second specifies the secondary sort, and so on. If the first character of each keyword is a `+`, this sort is performed in ascending order. If it has a `,` it is performed in descending order.

The following example sorts an output array of JavaBeans first alphabetically by `title` property and in descending order of the `size` property:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

To sort Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

When the items to sort are stored in a Map or Dictionary, use the following syntax:

`{+|-}_`*`name`*

where *name* is the key or Dictionary name.

For example:

```
<dsp:param name="sortProperties" value="_id"/>
```

If this example involves a Map property, `id` is a key of the Map indicated in the `array` attribute. All IDs associated with the `id` key are returned in descending order.

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the returned row.

count

The one-based number of the returned row.

element

A dynamic bean that has properties for accessing the values returned in the result set. To return a particular property value for each item in the result set, use the convention `element.name`, where name is any property name supported by the item descriptor.

size

Set to the number of array items returned by the query. This output parameter is set only if the input parameter `calculateSize` is set to true; otherwise, it is empty.

end

When the result set is divided into subsets, set to the one-based value of the last element in a subset.

hasPrev

Set to true before any output parameters are rendered, indicates whether the array includes any items that precede the current array set.

prevStart

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the value of `start` to use in order to display the previous array set. You can use this parameter to create a link or form submission that displays the previous elements of the array.

prevEnd

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the (one-based) count of the last element in the previous array set.

prevHowMany

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the number of elements in the previous array set.

hasNext

Set to true before any output parameters are rendered, indicates whether the array includes any items that follow the current array set.

nextStart

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the value of start that should be used to display the next array set.

nextEnd

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the (one-based) count of the last element in the next array set.

nextHowMany

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the number of elements in the next array set.

repositoryException

If a `RepositoryException` is thrown, set to the exception.

Open Parameters

The following open parameters control the formatting for the returned results:

output

Rendered once for each array element .

outputStart

Rendered before any output tags if the array is not empty.

outputEnd

Rendered after all output tags if the array is not empty.

empty

Rendered if the array contains no elements.

error

Rendered if there is an error when the query executes.

Usage Notes

RQLQueryRange executes an RQL query and renders its `output` open parameter for a selected subset of the elements returned by the query. The query can be a simple query or can include parameters. The syntax for specifying a parameter is different from the syntax normally used in RQL. For example, you might want to issue this RQL query:

```
age > ?0
```

RQLQueryRange can specify the query as follows:

```
<dsp:param name="queryRQL" value="age > :whatAge"/>
```

The value for the `whatAge` argument is supplied through a parameter. For example, the link to the page containing the servlet bean might be:

```
<dsp:a href="http://www.example.com/over35.jsp">Click here if you are
over 35<dsp:param name="whatAge" value="35"/>
</dsp:a>
```

For more information about RQL, see the *RepositoryQueries* chapter of the *ATG Repository Guide*.

RuleBasedRepositoryItemGroupFilter

Renders a collection of repository items that belong to the specified `RuleBasedRepositoryItemGroup`.

Class Name	**`atg.targeting.RuleBasedRepositoryItemGroupFilter`**
Component	`/atg/targeting/RuleBasedRepositoryItemGroupFilter`

Required Input Parameters

inputItems

A collection of repository items to filter.

repositoryItemGroup

A rule-based group of repository items.

Output Parameters

filteredItems

A collection of repository items which are a subset of the `inputItems`.

Open Parameters

output

The list of filtered repository items.

Usage Notes

RuleBasedRepositoryItemGroupFilter takes a collection (either an array or a List) of repository items. The servlet bean then renders a collection of repository items of the same type as the input collection but containing only the items that belong to a specific `RuleBasedRepositoryItemGroup`.

To use RuleBasedRepositoryItemGroupFilter, you must create a set of rules to filter the repository items and a form handler that enables users to choose the items they want to filter. For more information on creating these pieces, see the Pioneer Cycling `PartsFilterFormHandler.java` file and the `filtering.jsp` file in the ATG platform distribution.

For more information on how the Pioneer Cycling Reference Application uses the `RuleBasedRepositoryItemGroup` servlet bean, see the *SearchingandFilteringtheCatalog* section of the *DisplayingandAccessingtheProductCatalog* chapter in the ATG Consumer Commerce Reference Application Guide.

Example

The following example displays an array of items that are filtered based on a given set of rules:

```
<dsp:importbean bean="/FilterRulesCreator"/>
<dsp:importbean bean="/Filterer"/>
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>
```

```
<dsp:droplet name="Filterer">
  <dsp:param name="inputItems" param="anArrayOfRepositoryItems"/>
  <dsp:param bean="/FilterRulesCreator.repositoryItemGroup"
  name="repositoryItemGroup"/>
  <dsp:oparam name="output">
    <dsp:droplet name="ForEach">
      <dsp:param name="array" param="filteredItems"/>
      <%-- other code to display repository item properties --%>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

SQLQueryForEach

Constructs a query of an SQL database and renders its output parameter once for each row returned by the database query.

Class Name	**`atg.droplet.sql.SQLQueryForEach`**
Component	`/atg/dynamo/droplet/SQLQueryForEach`

Required Input Parameters

You must specify one of the following sets of input parameters:

- queryBean
- `querySQL` input parameter with either `connectionURL` or `dataSource` and `transactionManager`

queryBean

A component of class `atg.service.util.SQLQuery` that encapsulates the query and data source. For example:

```
<dsp:param name="queryBean" bean="/mySite/MySQLQuery"/>
```

querySQL

The SQL statement used to query the database. For example:

```
<dsp:param name="querySQL" value="select * from person
where age=:myAge(INTEGER)"/>
```

When you specify an SQL parameter that should not be treated as a string or VARCHAR, specify the parameter's SQL data type in parentheses, following the parameter name, as in the previous example.

If you specify the `querySQL` parameter, you must also supply either the `connectionURL` parameter or the `dataSource` parameter.

connectionURL

Identifies the database to query. For example:

```
<dsp:param name="connectionURL" value="jdbc:atgpool:ConnectionPool"/>
```

dataSource

Identifies the Java Transaction DataSource to query. For example:

```
<dsp:param name="dataSource"
bean="/atg/dynamo/service/jdbc/JTDataSource"/>
```

If you specify the `dataSource` parameter, you must also supply the `transactionManager` parameter.

transactionManager

Identifies the Transaction Manager for the DataSource. For example:

```
<dsp:param name="transactionManager"
bean="/atg/dynamo/transaction/TransactionManager"/>
```

Optional Input Parameters

sortProperties

A string that specifies how to sort the list of items in the output array. Sorting can be performed on properties of JavaBeans, Dynamic Beans, or on Dates, Numbers, or Strings.

To sort JavaBeans, specify the value of `sortProperties` as a comma-separated list of property names. The first name specifies the primary sort, the second specifies the secondary sort, and so on. If the first character of each keyword is a +, this sort is performed in ascending order. If it has a , it is performed in descending order.

The following example specifies to sort an output array of JavaBeans alphabetically by `title` property and in descending order of the `size` property:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

To sort Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order. The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

When the items to sort are stored in a Map or Dictionary, use the following syntax:

`{+|-}_`*`name`*

where *name* is the key or Dictionary name.

For example:

```
<dsp:param name="sortProperties" value="_id"/>
```

If this example involves a Map property, `id` is a key of the Map indicated in the `array` attribute. All IDs associated with the `id` key are returned in descending order.

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the returned row.

count

The one-based number of the returned row.

element

A dynamic bean that has properties for accessing the values returned in the result set. You can access the values either by name or by column index. The name refers to either the column name or the column alias if one is used in the query. To access values by name, use `element.name`. To access values by column index, use `element.column[i]` where `i` is the zero-based index of the returned column.

Open Parameters

The following open parameters control the formatting for the returned results:

outputStart

Rendered before any output tags if the array is not empty.

outputEnd

Rendered after all output tags if the array is not empty.

output

Rendered once for each array element .

empty

Rendered if the array contains no elements.

error

Rendered if there is an error when the query executes. Errors are accessed by this parameter as `SQLException` objects.

Usage Notes

SQLQueryForEach executes an SQL query and renders its `output` open parameter once for each element returned by the query. You can specify a query in several ways:

- Use the `queryBean` parameter to specify an SQLQuery bean, which encapsulates the query and the data source.
- Specify the query directly with the `querySQL` input parameter, and identify the data source either by specifying the `connectionURL` parameter or by specifying the `dataSource` and `transactionManager` parameters.

You might prefer to use the servlet bean RQLQueryForEach (page 285), as it provides enhanced performance and scalability by using ATG's caching capabilities.

Example

The following example displays the number of votes each mountain received. This is done by counting the number of rows in the MOUNTAINVOTE table where the `mountain` column is the same as the `mountain.name` parameter.

```
<dsp:droplet name="/atg/dynamo/droplet/SQLQueryForEach">
  <dsp:param name="dataSource" bean="/atg/dynamo/service/jdbc/JTDataSource"/>
  <dsp:param name="transactionManager"
   bean="/atg/dynamo/transaction/TransactionManager"/>
  <dsp:param name="querySQL"
   value="select count(*) from MOUNTAINVOTE where mountain=:mountain.name"/>

  <dsp:oparam name="output">
    <!-- number="#" prevents us from seeing the decimal of count since
         some DB's return floating point from the query -->
    <dsp:valueof param="element.column[0]" number="#"></dsp:valueof>
  </dsp:oparam>
</dsp:droplet>
```

SQLQueryRange

Constructs a query of an SQL database and renders its `output` parameter once for each of a specified range of the rows returned by the database query.

Class Name	**`atg.droplet.sql.SQLQueryRange`**
Component	`/atg/dynamo/droplet/SQLQueryRange`

Required Input Parameters

You must specify one of the following sets of input parameters:

- queryBean
- `querySQL` input parameter with either `connectionURL` or `dataSource` and `transactionManager`

queryBean

Component of class `atg.service.util.SQLQuery` that encapsulates the query and data source. For example:

```
<dsp:param name="queryBean" beanvalue="/mySite/MySQLQuery"/>
```

querySQL

The SQL statement used to query the database. For example:

```
<dsp:param name="querySQL" value="select * from person
where age=:myAge(INTEGER)"/>
```

When you specify an SQL parameter that should not be treated as a string or VARCHAR, specify the parameter's SQL data type in parentheses following the parameter name, as in the above example.

If you specify the `querySQL` parameter, you must also supply either the `connectionURL` parameter or the `dataSource` parameter.

connectionURL

Identifies the database to perform the query against. For example:

```
<param name="connectionURL" value="jdbc:atgpool:ConnectionPool">
```

dataSource

Identifies the Java Transaction DataSource to perform the query against. For example:

```
<dsp:param name="dataSource"
bean="/atg/dynamo/service/jdbc/JTDataSource"/>
```

If you specify the `dataSource` parameter, you must also supply the `transactionManager` parameter.

transactionManager

Identifies the Transaction Manager for the DataSource. For example:

```
<dsp:param name="transactionManager"
bean="/atg/dynamo/transaction/TransactionManager"/>
```

Optional Input Parameters

howMany

The number of array elements to display. If `howMany` is greater than the number of array elements, SQLQueryRange renders the number of elements available.

start

The initial array element, where a setting of 1 (the default) specifies the array's first element. If `start` is greater than the number of elements in the array, the `empty` parameter (if specified) is rendered.

sortProperties

A string that specifies how to sort the list of items in the output array. Sorting can be performed on properties of JavaBeans, Dynamic Beans, or on Dates, Numbers, or Strings.

To sort JavaBeans, specify the value of `sortProperties` as a comma-separated list of property names. The first name specifies the primary sort, the second specifies the secondary sort, and so on. If the first character of each keyword is a +, this sort is performed in ascending order. If it has a , it is performed in descending order.

The following example sorts an output array of JavaBeans first alphabetically by `title` property and second in descending order of the `size` property:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

To sort Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

When the items to sort are stored in a Map or Dictionary, use the following syntax:

`{+|-}`*`_name`*

where *`name`* is the key or Dictionary name.

If this example involved a Map property, `id` is a key of the Map indicated in the `array` attribute. All IDs associated with the `id` key are returned in descending order.

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

The zero-based index of the returned row.

count

The one-based number of the returned row.

element

A dynamic bean that has properties for accessing the values returned in the result set. You can access the values either by name or by column index. The name refers to either the column name or the column alias if one is used in the query. To access values by name, use `element.name`. To access values by column index, use `element.column[i]` where `i` is the zero-based index of the returned column.

hasPrev

Set to true before any output parameters is rendered. It indicates whether there are any array items before the current array set.

prevStart

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the value of *start* that should be used to display the previous array set. You can use this parameter to create a link or form submission that displays the previous elements of the array.

prevEnd

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the (one-based) count of the last element in the previous array set.

prevHowMany

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the number of elements in the previous array set.

hasNext

Set to true before any output parameters are rendered, indicates whether there are any array items after the current array set.

nextStart

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the value of `start` that should be used to display the next array set.

nextEnd

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the (one-based) count of the last element in the next array set.

nextHowMany

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the number of elements in the next array set.

Open Parameters

outputStart

Rendered before any output tags if the array is not empty.

outputEnd

Rendered after all output tags if the array is not empty.

output

Rendered once for each array element .

empty

Rendered if the array contains no elements.

error

Rendered if there is an error when the query executes. Errors are accessed by this parameter as `SQLException` objects.

Usage Notes

SQLQueryRange executes an SQL query and renders its `output` open parameter for a selected subset of the elements returned by the query. You can specify a query in two ways:

- Use the `queryBean` parameter to specify an SQL`Query` bean, which encapsulates the query and the data source.
- Specify the query directly with the `querySQL` input parameter, and identify the data source either by specifying the `connectionURL` parameter or by specifying the `dataSource` and `transactionManager` parameters.

Example

SQLQueryRange queries a database that includes entries for people listed in a table named SKIER. It renders the skiers in the table five at a time, as specified by the `howMany` parameter.

The following example uses Switch (page 300) servlet beans, together with the `hasPrev` and `hasNext` parameters, to render links to pages that display entries from the SKIER table that are before or after the five entries specified by the range. So, if the `startIndex` parameter is 4, this example displays skiers 4 – 9 and `Previous 3` and `Next 5` links (assuming the SKIER table has at least 14 rows).

```
<dsp:droplet name="SQLQueryRange">
  <dsp:param name="dataSource" bean="/atg/dynamo/service/jdbc/JTDataSource"/>
  <dsp:param name="transactionManager"
    bean="/atg/dynamo/transaction/TransactionManager"/>
  <dsp:param name="querySQL" value="select * from SKIER order by name"/>
  <dsp:param name="start" value="startIndex 1"/>
  <dsp:param name="howMany" value="5"/>
  <!--
    SQLQueryRange renders this "output" parameter once for each row
    in the SKIER table, 5 skiers at a time.  The startIndex parameter is
    passed in as an HTML query parameter using the "prevStart" and
    "nextStart" parameters set by SQLQueryRange.
  -->
  <dsp:oparam name="outputStart">
    <dsp:droplet name="Switch">
      <dsp:param name="value" param="hasPrev"/>
      <dsp:oparam name="true">
        <tr><td colspan=5>
        <dsp:a href="listPeople.jsp">
          <dsp:param name="startIndex" param="prevStart"/>
            Previous <dsp:valueof param="prevHowMany"></dsp:valueof>
        </dsp:a>
        </td></tr>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>

  <dsp:oparam name="output">
    <dsp:include src="displayPerson.jsp">
      <dsp:param name="person" param="element"/>
    </dsp:include>
  </dsp:oparam>

  <dsp:oparam name="outputEnd">
    <dsp:droplet name="Switch">
      <dsp:param name="value" param="hasNext"/>
      <dsp:oparam name="true">
        <tr><td colspan=5>
        <dsp:a href="listPeople.jsp">
          <dsp:param name="startIndex" param="nextStart"/>
           Next <dsp:valueof param="nextHowMany"></dsp:valueof>
        </dsp:a>
        </td></tr>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

Switch

Displays one of several possible outputs, depending on input parameter value.

Class Name	`atg.droplet.Switch`
Component	`/atg/dynamo/droplet/Switch`

Required Input Parameters

value

The test value used to determine which output parameter to execute. The Switch `value` is turned into a string and used as the name of the parameter to render. For example, if the `value` parameter is a Boolean that is set to true, the Switch servlet bean executes the `true` output parameter.

Open Parameters

You can define an open parameter for each possible value of the `value` input parameter. For example, if the Switch value is a Boolean, you can define open parameters `true` and `false` as follows:

```
<dsp:oparam name="false">
    ...
</dsp:oparam>

<dsp:oparam name="true">
     ...
</dsp:oparam>
```

Note: Open parameter names cannot embed dot (.) or backslash (/) characters in their names or values.

unset

The value to render if the `value` parameter is empty.

default

Rendered if the `value` parameter is undefined or its value (converted to a String) does not match any output parameters.

Usage Notes

Switch conditionally renders one of its open parameters based on the value of its `value` input parameter. This value is turned into a string and used as the name of the parameter to render for this case. You can use Switch to compare two dynamically defined values by setting the name of one open parameter to one value and the Switch servlet bean's `value` parameter to the other.

Example

In this example, the ATG platform imports the Switch servlet bean with `dsp:importbean`. For each person, this example outputs a row in a table that lists the person's name, skill level, and whether the person has a car. Depending on the value of the `person.hasCar` parameter, Switch displays the capacity of the person's car. A second use of Switch outputs `1 person` if the car capacity is one, and `n people` if the car capacity is a different value.

```
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>
```

```
<tr>
  <td valign=top><dsp:valueof param="person.name"/></td>
  <td valign=top><dsp:valueof param="person.skillLevel"/></td>
  <td valign=top>
    <dsp:droplet name="Switch">
      <dsp:param name="value" param="person.hasCar"/>
      <dsp:oparam name="false">
        none
      </dsp:oparam>
      <dsp:oparam name="true">
        can carry <dsp:valueof param="person.carCapacity"/>
        <dsp:droplet name="Switch">
          <dsp:param name="value" param="carCapacity"/>
          <dsp:oparam name="1"> person</dsp:oparam>
          <dsp:oparam name="default"> people</dsp:oparam>
        </dsp:droplet>
      </dsp:oparam>
    </dsp:droplet>
  </td>
</tr>
```

TableForEach

Displays each element of an array, arranging the output in a two-dimensional format.

Class Name	**`atg.droplet.TableForEach`**
Component	`/atg/dynamo/droplet/TableForEach`

Required Input Parameters

array

The list of items to output: a Collection (Vector, List, or Set), Iterator, Enumeration, Map, Dictionary, or array.

numColumns

The number of columns used to display the array.

Optional Input Parameters

sortProperties

A string that specifies the order to render array items. The syntax of this parameter depends on the array item type: JavaBean, Dynamic Bean, Date, Number, or String.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. Prepend the property name with a plus + or minus - sign in order to specify ascending or descending sort order.

For example, the following input parameter specifies to sort an array of JavaBeans alphabetically by title , then in descending order of `size`:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If an array consists of Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean's `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

Set to the zero-based index of the current array element each time the `output` parameter is rendered.

count

Set to the one-based index of the current array element each time the `output` parameter is rendered. The value of `count` for the first iteration is 1.

rowIndex

Set to the current row index each time an output parameter is rendered.

columnIndex

Set to the current column index each time an output parameter is rendered.

key

If the `array` parameter is a Map or Dictionary, set to the Map or Dictionary key.

element

Set to the current array element each time the `output` parameter is rendered. If the array size is not an even multiple of the number of columns, `element` is set to null for the remaining items in the last row.

Open Parameters

output

Rendered once for each array element .

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render the table heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render text following a table.

outputRowStart

If the array is not empty, rendered once for each row in the output at the beginning of the row. For example, this parameter can be used to render the row heading of a table.

outputRowEnd

If the array is not empty, rendered once for each row in the output at the end of the row. For example, this parameter can be used to render text following a row in a table.

empty

Rendered if the array contains no elements.

Usage Notes

TableForEach is an extension of the servlet beanForEach (page 232). TableForEach renders its `output` parameter in a two-dimensional format, such as a table. The `array` parameter can be a Collection (Vector, List, or Set), Iterator, Enumeration, Map, Dictionary, or array. The `numColumns` parameter specifies the number of columns across which to display the array. The elements of the array are arranged across the columns.

The `output` parameter is rendered for each cell in the table. If the array size is not a multiple of the number of columns, `output` is rendered with a null element parameter for the remaining columns in the last row. A Switch (page 300) servlet bean can be used to conditionally fill in the missing items in the row.

Example

The following example displays the values of the `initialServices` property of the ATG platform's `Initial` component. The values are displayed in a two-column table. The `outputStart`, `outputEnd`, `outputRowStart`, and `outputRowEnd` open parameters define the table formatting.

```
<dsp:importbean bean="/atg/dynamo/droplet/TableForEach"/>

<dsp:droplet name="TableForEach">
  <dsp:param bean="/Initial.initialServices" name="array"/>
  <dsp:param name="numColumns" value="2"/>
  <dsp:oparam name="outputStart"><table border=1></dsp:oparam>
  <dsp:oparam name="outputEnd"></table></dsp:oparam>
  <dsp:oparam name="outputRowStart"><tr></dsp:oparam>
  <dsp:oparam name="outputRowEnd"></tr></dsp:oparam>
  <dsp:oparam name="output">
```

```
    <td>
      <dsp:valueof param="element.absoluteName">&nbsp;</dsp:valueof>
    </td>
  </dsp:oparam>
</dsp:droplet>
```

TableRange

Displays a subset of the elements of an array, arranging the output in a two-dimensional format.

Class Name	**`atg.droplet.TableRange`**
Component	`/atg/dynamo/droplet/TableRange`

Required Input Parameters

array

Defines the list of items to output. This parameter can be a Collection (Vector, List, or Set), Iterator, Enumeration, Map, Dictionary, or array.

howMany

The number of array elements to display. If `howMany` is greater than the number of array elements, TableRange renders the number of elements available.

numColumns

The number of columns used to display the array. If you specify more columns than elements (`numColumns` is greater than `howMany`), the additional columns display empty. In the reverse situation, (`numColumns` is fewer than `howMany`), the excess elements display in a second row.

Optional Input Parameters

start

The initial array element, where a setting of 1 (the default) specifies the array's first element. If `start` is greater than the number of elements in the array, the `empty` parameter (if specified) is rendered.

sortProperties

Holds a string that specifies the order to render array items. The syntax of this parameter depends on the array item type: JavaBean, Dynamic Bean, Date, Number, or String.

To sort on the properties of a JavaBean, specify the value of `sortProperties` as a comma-separated list of property names. You can sort on an unlimited number of properties, where the first property name specifies the primary sort, the second property name specifies the secondary sort, and so on. To specify ascending sort order, prepend the property name with a plus + sign; to specify descending order, prepend with a minus - sign.

For example, the following input parameter specifies to sort an array of JavaBeans alphabetically by title , then in descending order of size:

```
<dsp:param name="sortProperties" value="+title,size"/>
```

If the array contains Dates, Numbers, or Strings, prepend the `sortProperties` value with a plus + or minus – sign to specify ascending or descending sort order.

The following example sorts an output array of Strings in alphabetical order:

```
<dsp:param name="sortProperties" value="+"/>
```

In order to sort Map elements by key, set the value as follows:

```
{+|-}_key
```

For example:

```
<dsp:param name="sortProperties" value="_key"/>
```

A nested servlet bean inherits the parent servlet bean’s `sortProperties` setting, unless the nested servlet bean has its own `sortProperties` setting. For example, the following setting negates any parent `sortProperties` setting:

```
<dsp:param name="sortProperties" value=""/>
```

Output Parameters

index

Set to the zero-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to 1, the value of `index` for the first iteration is 0.

count

Set to the one-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to 1, the value of `count` for the first iteration is 1.

key

If the `array` parameter is a Map or Dictionary, set to the Map or Dictionary key.

rowIndex

Set to the current row index each time an output parameter is rendered.

columnIndex

Set to the current column index each time an output parameter is rendered.

element

Set to the current array element each time the `index` increments and the `output` parameter is rendered.

hasPrev

Set to true before any output parameters are rendered, indicates whether the array includes any items that precede the current array set.

prevStart

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the value of start that should be used to display the previous array set. You can use this parameter to create a link or form submission that displays the previous elements of the array.

prevEnd

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the (one-based) count of the last element in the previous array set.

prevHowMany

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the number of elements in the previous array set.

hasNext

Set to true before any output parameters are rendered, indicates whether the array includes any items that follow the current array set.

nextStart

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the value of start that should be used to display the next array set.

nextEnd

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the (one-based) count of the last element in the next array set.

nextHowMany

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the number of elements in the next array set.

Open Parameters

output

Rendered once for each `element` in the subset of the array defined by the `start` and `howMany` parameters.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

outputRowStart

If the array is not empty, rendered once for each row in the output, at the beginning of the row. For example, this parameter can be used to render the row heading of a table.

outputRowEnd

If the array is not empty, rendered once for each row in the output, at the end of the row. For example, this parameter can be used to render text following a row in a table.

empty

Rendered if the array or the specified subset of the array contains no `elements`.

Usage Notes

TableRange combines the functions of the Range (page 270) and TableForEach (page 302) servlet beans. Like TableForEach (page 302), TableRange renders its `output` parameter in a two-dimensional format, such as a table. Like Range (page 270), TableRange renders a subset of the output array. The `array` parameter can be a Vector, Enumeration, Dictionary, or array.

TableRange renders its `output` parameter for each element in its `array` parameter, beginning with the array element that corresponds to the `start` parameter and continuing until it has rendered a number of elements equal to the `howMany` parameter. When the `howMany` and `numColumns` parameters are equal, the table displays one element in each table column.

Example

The following example displays the values of the `initialServices` property of ATG's `Initial` component. The values are displayed in a two-column table, 2 at a time. This example uses a Switch (page 300) servlet bean to create navigational links after each 2 values. If there are values in the array that precede the ones currently displayed, there is a link to the previous values. If there are values in the array that follow the ones currently displayed, there is a link to the next set of values.

```
<dsp:importbean bean="/atg/dynamo/droplet/TableRange"/>
<dsp:importbean bean="/atg/dynamo/droplet/Switch"/>

<dsp:droplet name="TableRange">
  <dsp:param bean="/Initial.initialServices" name="array"/>
  <dsp:param name="numColumns" value="2"/>
  <dsp:param name="howMany" value="2"/>
  <dsp:oparam name="outputStart">
  <table border=1></dsp:oparam>
  <dsp:oparam name="outputEnd">
    <tr><td colspan=2>
      <dsp:droplet name="Switch">
        <dsp:param name="value" param="hasPrev"/>
        <dsp:oparam name="true">
          <dsp:getvalueof var="a27" bean="/OriginatingRequest.pathInfo"
          idtype="java.lang.String">
            <dsp:a href="${a27}">
              <dsp:param name="start" param="prevStart"/>
              Previous <dsp:valueof param="prevHowMany"/>
            </dsp:a>
          </dsp:getvalueof>
        </dsp:oparam>
      </dsp:droplet>
      &nbsp;
      <dsp:droplet name="Switch">
        <dsp:param name="value" param="hasNext"/>
        <dsp:oparam name="true">
          <dsp:getvalueof var="a46" bean="/OriginatingRequest.pathInfo"
          idtype="java.lang.String">
            <dsp:a href="${a46}">
              <dsp:param name="start" param="nextStart"/>
              Next <dsp:valueof param="nextHowMany"/>
            </dsp:a>
          </dsp:getvalueof>
       </dsp:oparam>
      </dsp:droplet>
    </table>
  </dsp:oparam>
  <dsp:oparam name="outputRowStart"><tr></dsp:oparam>
  <dsp:oparam name="outputRowEnd"></tr></dsp:oparam>
  <dsp:oparam name="output">
    <td>
      <dsp:valueof param="element.absoluteName">&nbsp;</dsp:valueof>
    </td>
  </dsp:oparam>
</dsp:droplet>
```

TargetingArray

Performs a targeting operation and passes the results to another servlet bean for display.

Class Name	**`atg.targeting.TargetingArray`**
Component	`/atg/targeting/TargetingArray`

Required Input Parameters

targeter

The targeter service to performs the targeting operation; must be an instance of a class that implements the `Targeter` interface, such as `atg.targeting.DynamicContentTargeter`.

Optional Input Parameters

filter

A filter service that filters the items returned by the targeter before they are output; must be an instance of a class that implements the `ItemFilter` interface, such as `atg.targeting.conflict.TopicHistoryConflictFilter`.

sourceMap

Represents a mapping between names of source objects associated with a targeting operation and their values; must be an instance of `atg.targeting.TargetingSourceMap`. If this parameter is omitted, the source Map specified by the servlet bean's `defaultSourceMap` property is used. The default value is `/atg/targeting/TargetingSourceMap`.

sortProperties

The display order of result set elements. See Sorting Results (page 40) in the *Serving Targeted Content with ATG Servlet Beans* (page 39) chapter on information about specifying this parameter, and the relationship between targeter sorting and servlet bean sorting.

Output Parameters

elements

Set to the results of the targeting operation, an array of repository items.

Open Parameters

output

The parameter to render. Nest a formatting servlet bean such as the ForEach (page 232) servlet bean in this parameter in order to display the output of the targeting operation.

empty

Rendered if the targeting operation returns no matching items.

Usage Notes

TargetingArray performs a targeting operation with the help of its `targeter` and `sourceMap` parameters, and sets the output `elements` parameter to the resulting array of target objects. TargetingArray is the most general form of targeting servlet bean. It returns all content items that satisfy the targeter's rules, but does not format the output. Use this servlet bean with another servlet bean such as ForEach (page 232) to specify formatting for each of the content items returned by the targeting operation. TargetingArray's `output` parameter contains the inner formatting servlet bean.

Example

The following example displays all ski resorts returned from the targeting result set. It uses ForEach (page 232) to display the output. For each resort, the JSP containing this servlet bean displays the name (in a hypertext link) and an image. This example is identical in output to the TargetingForEach (page 313) example; you are more likely to use the TargetingArray servlet bean with your own customized servlet bean instead of a basic servlet bean such as ForEach (page 232).

```
<%-- outer ATG Servlet Bean obtains the targeted content --%>
<dsp:droplet name="/atg/targeting/TargetingArray">
  <dsp:param name="targeter"
  bean="/atg/registry/RepositoryTargeters/TargetedContent/SkiResortTargeter"/>
  <dsp:oparam name="output">
    <%-- inner ATG Servlet Bean displays the results --%>
    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
      <dsp:param name="array" param="elements"/>
      <dsp:param name="sortProperties" value="+displayName"/>
      <dsp:oparam name="output">
        <dsp:getvalueof var="URL" param="element.URL"
        idtype="java.lang.String"/>
          <dsp:a href="${URL}">
            <dsp:valueof param="element.displayName"/>
          </dsp:a>
        <dsp:getvalueof var="image" param="element.image"
        idtype="java.lang.String"/>
```

```
          <img src="${image}"/>
        <p>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

TargetingFirst

Performs a targeting operation and displays the first specified number of items returned by the targeter.

Class Name	**`atg.targeting.TargetingFirst`**
Component	`/atg/targeting/TargetingFirst`

Required Input Parameters

targeter

The targeter service that performs the targeting operation; must be an instance of a class that implements the `Targeter` interface, such as `atg.targeting.DynamicContentTargeter`.

Optional Input Parameters

filter

A filter service that filters the items returned by the targeter before they are output; must be an instance of a class that implements the `ItemFilter` interface, such as `atg.targeting.conflict.TopicHistoryConflictFilter`.

sourceMap

Represents a mapping between names of source objects associated with a targeting operation and their values; must be an instance of `atg.targeting.TargetingSourceMap`. If this parameter is omitted, the source Map specified by the servlet bean's `defaultSourceMap` property is used. (By default, the value of this property is `/atg/targeting/TargetingSourceMap`.)

howMany

The number of items to display. If `howMany` is greater than the number of items returned by the targeting operation, TargetingFirst renders the number of items available. If you omit this parameter, only the first item is displayed.

sortProperties

The display order of result set elements. See Sorting Results (page 40) in the *Serving Targeted Content with ATG Servlet Beans* (page 39) chapter for information about how to specify this parameter, and for information about the relationship between targeter sorting and servlet bean sorting.

fireViewItemEvent

Specifies whether to trigger a JMS view item event when a page is accessed. The default is true. To prevent the ATG platform from firing a view item event, set this parameter to false.

fireContentEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content viewed event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Use the `fireViewItemEvent` parameter instead of the `fireContentEvent` parameter.

fireContentTypeEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content type event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Use the `fireViewItemEvent` parameter instead of this parameter.

Output Parameters

index

Set to the zero-based index of the current target item each time the `output` parameter is rendered. The value for the first loop iteration is 0.

count

Set to the `index` plus one. The value for the first loop iteration is 1.

element

Each time the `output` parameter is rendered, set to the next item taken from the array returned by the targeting operation.

empty

Rendered if the targeting operation returns no matching items.

Open Parameters

output

Rendered once for each `element` in the subset of the array of targeting results, as specified by the `howMany` parameter.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

empty

Rendered if the results array contains no elements.

Usage Notes

TargetingFirst takes the results of the targeting operation and displays the first *n* items returned, where *n* is the number of items specified by the `howMany` parameter. The targeter component used for the targeting operation is set by the `targeter` and `sourceMap` input parameters. On each iteration, the output parameter `element` is set to the next item in the resulting array of target objects. If the targeting rules contain sorting directives, TargetingFirst can return the best `howMany` matches among the resulting target objects.

Example

The following example displays the first 10 ski resorts in the targeting result set, because the value of its `howMany` parameter is set to 10. For each resort, the JSP containing this targeting servlet bean displays the name (in a hypertext link) and an image. The `sortProperties` parameter specifies that the resorts should be listed alphabetically by their `displayName` property.

```
<%-- displays the first 10 ski resorts in the targeting result set --%>

<dsp:droplet name="/atg/targeting/TargetingFirst">
  <dsp:param
  "bean:/atg/registry/repositorytargeters/targetedcontent/skiresorttargeter"
  name="targeter" value="\">
  <dsp:param name="howMany" value="10">
  <dsp:param name="sortProperties" value="+displayName">
  <dsp:oparam name="output">
     <dsp:getvalueof var="a11" param="element.URL" vartype="java.lang.String">
        <dsp:a href="${a11}">
           <dsp:valueof param="element.displayName"/>
        </dsp:a>
     </dsp:getvalueof>
     <dsp:getvalueof var="img18" param="element.image"
     idtype="java.lang.String">
        <dsp:img src="${img18}">
     </dsp:getvalueof>
    <p>
  </dsp:oparam>
</dsp:droplet>
```

TargetingForEach

Performs a targeting operation and displays all items returned by the targeter.

Class Name	**`atg.targeting.TargetingForEach`**
Component	`/atg/targeting/TargetingForEach`

Required Input Parameters

targeter

The targeter service that performs the targeting operation; must be an instance of a class that implements the `Targeter` interface, such as `atg.targeting.DynamicContentTargeter`.

Optional Input Parameters

filter

A filter service that filters the items returned by the targeter before they are output; must be an instance of a class that implements the `ItemFilter` interface, such as `atg.targeting.conflict.TopicHistoryConflictFilter`.

sourceMap

Represents a mapping between names of source objects associated with a targeting operation and their values; must be an instance of `atg.targeting.TargetingSourceMap`. If this parameter is omitted, the source Map specified by the servlet bean's `defaultSourceMap` property is used. (By default, the value of this property is `/atg/targeting/TargetingSourceMap`.)

sortProperties

The order to display result set elements . See Sorting Results (page 40) in the *Serving Targeted Content with ATG Servlet Beans* (page 39) chapter for information about how to specify this parameter, and for information about the relationship between targeter sorting and servlet bean sorting. Because `TargetingForEach` displays all targeting results, the sort order, if present, overrides the targeter's sort order unless you set the `maxNumber` property to limit the number of results returned.

maxNumber

If the `maxNumber` property is set, the targeter only returns at most `maxNumber` items in the targeting result set. Use this property to prevent loading potentially large result sets into memory.

fireViewItemEvent

Specifies whether to trigger a JMS view item event when a page is accessed. The default is true. To prevent the ATG platform from firing a view item event, set this parameter to false.

fireContentEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content viewed event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Use the `fireViewItemEvent` parameter instead of this parameter.

fireContentTypeEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content type event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Use the `fireViewItemEvent` parameter instead of this parameter.

Output Parameters

index

Set to the `index` of the current array element returned by the targeter service each time the `index` increments and the `output` parameter is rendered.

count

Set to the `index` plus one. The value for the first loop iteration is 1.

element

Set to the current array element each time the `index` increments and the `output` parameter is rendered.

Open Parameters

output

Rendered once for each `element` in the array of targeting results.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

empty

Rendered if the results array contains no `elements`.

Usage Notes

TargetingForEach is a specialized version of the ForEach (page 232) servlet bean; it performs a targeting operation using the targeter component set by its `targeter` and `sourceMap` parameters. TargetingForEach displays every item returned by the targeting operation in the manner specified by its `output` parameter.

Example

The following example displays all ski resorts returned in the targeting result set. For each resort, the JSP containing this servlet bean displays the name (in a hypertext link) and an image.

```
<%-- displays all the ski resorts in the result set --%>
<dsp:droplet name="/atg/targeting/TargetingForEach">
  <dsp:param
  bean="/atg/registry/repositorytargeters/targetedcontent/skiresorttargeter"
  name="targeter"/>
  <dsp:oparam name="output">
    <dsp:getvalueof var="a7" param="element.URL" vartype="java.lang.String">
      <dsp:a href="${a7}">
        <dsp:valueof param="element.displayName"/>
      </dsp:a>
    </dsp:getvalueof>
    <dsp:getvalueof id="img14" param="element.image"
    idtype="java.lang.String">
      <dsp:img src="${img14}"/>
    </dsp:getvalueof>
    <p>
  </dsp:oparam>
</dsp:droplet>
```

TargetingRandom

Performs a targeting operation and randomly selects and displays *n* items returned by the targeter, where *n* is a number you specify.

Class Name	**`atg.targeting.TargetingRandom`**
Component	`/atg/targeting/TargetingRandom`

Required Input Parameters

targeter

The targeter service that performs the targeting operation; an instance of a class that implements the `Targeter` interface, such as `atg.targeting.DynamicContentTargeter`.

Optional Input Parameters

filter

A filter service that filters the items returned by the targeter before they are output; an instance of a class that implements the `ItemFilter` interface, such as `atg.targeting.conflict.TopicHistoryConflictFilter`.

sourceMap

A mapping between names of source objects associated with a targeting operation and their values; must be an instance of `atg.targeting.TargetingSourceMap`. If omitted, the source Map specified by the servlet bean's `defaultSourceMap` property is used. The default value of this property is `/atg/targeting/TargetingSourceMap`.

howMany

The number of target items to display. If `howMany` is greater than the number of items returned by the targeting operation, TargetingRandom renders the number of items available. If you omit this parameter, only one item is displayed.

fireViewItemEvent

Specifies whether to trigger a JMS view item event when a page is accessed. The default is true. To prevent the ATG platform from firing a view item event, set this parameter to false.

fireContentEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content viewed event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, you should use the `fireViewItemEvent` parameter.

fireContentTypeEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content type event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, use the `fireViewItemEvent` parameter.

Output Parameters

index

Set to the current index each time the `output` parameter is rendered. The value for the first loop iteration is 0.

count

Set to the `index` plus one. The value for the first loop iteration is 1.

element

Each time the `output` parameter is rendered, set to an item randomly picked from the array returned by the targeting operation.

Open Parameters

output

Rendered once for each `element` randomly selected from the array of targeting results.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

empty

Rendered if the results array contains no `elements`.

Usage Notes

TargetingRandom takes the results of the targeting operation and displays a random selection of the items returned. The number of items displayed is set by the `howMany` parameter (the default is 1). The targeter component used for the targeting operation is set by the `targeter` and `sourceMap` input parameters. On each iteration, the `element` parameter is set to an item randomly selected from the resulting array of target objects.

Example

The following example displays 10 ski resorts randomly selected from the targeting result set. For each resort, the JSP containing this servlet bean displays the name (in a hypertext link) and an image.

```
<%-- displays 10 ski resorts randomly selected from the result set --%>

<dsp:droplet name="/atg/targeting/TargetingRandom">
  <dsp:param
  bean="/atg/registry/repositorytargeters/targetedcontent/skiresorttargeter"
  name="targeter"/>
  <dsp:param name="howMany" value="10"/>
  <dsp:oparam name="output">
    <dsp:getvalueof var="a9" param="element.URL" vartype="java.lang.String">
      <dsp:a href="${a9}">
        <dsp:valueof param="element.displayName"/>
      </dsp:a>
    </dsp:getvalueof>
    <dsp:getvalueof var="img16" param="element.image"
    idtype="java.lang.String">
      <dsp:img src="${img16}"/>
    </dsp:getvalueof>
    <p>
  </dsp:oparam>
</dsp:droplet>
```

TargetingRange

Performs a targeting operation and displays a subset of the items returned by the targeter, specified as a range.

Class Name	**`atg.targeting.TargetingRange`**
Component	`/atg/targeting/TargetingRange`

Required Input Parameters

targeter

The targeter service that performs the targeting operation; must be an instance of a class that implements the `Targeter` interface, such as `atg.targeting.DynamicContentTargeter`.

Optional Input Parameters

filter

A filter service that filters the items returned by the targeter before they are output; must be an instance of a class that implements the `ItemFilter` interface, such as `atg.targeting.conflict.TopicHistoryConflictFilter`.

sourceMap

Represents a mapping between names of source objects associated with a targeting operation and their values; must be an instance of `atg.targeting.TargetingSourceMap`. If this parameter is omitted, the source Map specified by the servlet bean's `defaultSourceMap` property is used. (By default, the value of this property is `/atg/targeting/TargetingSourceMap`.)

howMany

The number of array elements to display. If `howMany` is greater than the number of array elements, TargetingRange renders the number of elements available.

start

The initial array element, where a setting of 1 (the default) specifies the array's first element. If `start` is greater than the number of elements in the array, the `empty` parameter (if specified) is rendered.

sortProperties

The order to display result set elements . See Sorting Results (page 40) in the *Serving Targeted Content with ATG Servlet Beans* (page 39) chapter for information about how to specify this parameter, and for information about the relationship between targeter sorting and servlet bean sorting.

fireViewItemEvent

Specifies whether to trigger a JMS view item event when a page is accessed. The default is true. To prevent the ATG platform from firing a view item event, set this parameter to false.

fireContentEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content viewed event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, use the `fireViewItemEvent` parameter.

fireContentTypeEvent

Specifies whether to trigger an event when a page is accessed. If set to true or omitted, a JMS view event fires; if the accessed page is a Content repository item, a content type event also fires. To prevent the ATG platform from firing these two events, set this parameter to false.

Note: Instead of this parameter, use the `fireViewItemEvent` parameter.

Output Parameters

index

Set to the zero-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to 1, the value of `index` for the first iteration is 0.

count

Set to the one-based index of the current array element each time the `output` parameter is rendered. For example, if `start` is set to 1, the value of `count` for the first iteration is 1.

element

Set to the current array element each time the `index` increments and the `output` parameter is rendered.

hasPrev

Set to true before any output parameters are rendered, indicates whether there are any array items before the current array set.

prevStart

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the value of start that should be used to display the previous array set.

prevEnd

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the (one-based) count of the last element in the previous array set.

prevHowMany

Set before any output parameters are rendered, and only if `hasPrev` is true, indicates the number of elements in the previous array set.

hasNext

Set to true before any output parameters are rendered, indicates whether there are any array items after the current array set.

nextStart

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the value of start that should be used to display the next array set.

nextEnd

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the (one-based) count of the last element in the next array set.

nextHowMany

Set before any output parameters are rendered, and only if `hasNext` is true, indicates the number of elements in the next array set.

Open Parameters

output

Rendered once for each `element` in the subset of the results array defined by the `start` and `howMany` parameters.

outputStart

If the array is not empty, rendered before any output elements. For example, this parameter can be used to render a heading.

outputEnd

If the array is not empty, rendered after all output elements. For example, this parameter can be used to render a footer.

empty

Rendered if the array or the specified subset of the array contains no `elements`.

Usage Notes

TargetingRange is a specialized version of the `Range` servlet bean. TargetingRange takes the results of the targeting operation and displays a selection of the items returned, beginning with the item whose `count` is the `start` parameter. The number of items displayed is set by the `howMany` parameter. The targeter component used for the targeting operation is set by the `targeter` and `sourceMap` input parameters.

TargetingRange renders its `output` parameter for each element in the resulting collection of target objects, starting at the `count` (inclusive) specified by the `start` input parameter, and ending when it has satisfied the `howMany` input parameter. For example, if `start = 1` and `howMany= 10`, the first 10 elements of the result set are displayed; if `start = 11`, the next 10 elements are displayed

Example

The following example displays 10 ski resorts, selected in the range from items 11 through 20 in the targeting result set. If there are fewer than 20 items, the example displays items 11 through last. For each resort, the JSP containing this servlet bean displays the name (in a hypertext link) and an image.

```
<%-- displays ski resorts 11-20 (1-indexed) of the result set--%>
<dsp:droplet name="/atg/targeting/TargetingRange">
  <dsp:param
bean="/atg/registry/repositorytargeters/targetedcontent/skiresorttargeter"
name="targeter"/>
  <dsp:param name="start" value="11"/>
  <dsp:param name="howMany" value="10"/>
  <dsp:oparam name="output">
    <dsp:getvalueof var="a11" param="element.URL"
    idtype="java.lang.String">
      <dsp:a href="${a11}">
        <dsp:valueof param="element.displayName"/>
      </dsp:a>
    </dsp:getvalueof>
    <dsp:getvalueof var="img18" param="element.image"
    Idtype="java.lang.String">
      <dsp:img src="${img18}"/>
    </dsp:getvalueof>
    <p>
  </dsp:oparam>
</dsp:droplet>
```

TargetPrincipalsDroplet

Locates all organizations where a user has the specified role.

Class Name	`atg.userdirectory.droplet.TargetPrincipalsDroplet`
Component	`/atg/userdirectory/droplet/TargetPrincipals`

Required Input Parameters

userId

The ID of the user to be queried.

roleName

Supplies a relative role that the user is assigned.

Output Parameters

principals

Holds the organizations returned from the query in a `java.util.Collection` object.

Open Parameters

empty

Rendered when no items are returned from the query.

error

Rendered when an error occurs and the `TargetPrincipals` servlet bean is unable to perform the query.

output

Rendered when organizations are returned from the query.

Usage Notes

TargetPrincipals locates all organizations where a specific user has a relative role. Based on the search results, additional content is rendered by the open parameters you specify.

Be sure to set the `userDirectory` property to the relevant User Directory component.

Example

In this example, TargetPrincipals searches the `UserDirectory` for all organizations where the active user holds the role of `admin`. If no organizations are returned or an error occurs, text displays reporting this circumstance. Otherwise, a collection of organizations displays.

```
<dsp:droplet name="/atg/userdirectory/droplet/TargetPrincipals">
   <dsp:param name="userId" beanvalue="/atg/userprofiling/Profile.id"/>
   <dsp:param name="roleName" value="admin"/>

   <dsp:oparam name="empty">
      The user does not have that role in any organization.
   </dsp:oparam>
   <dsp:oparam name="error">
      Cannot perform query. Try again later.
   </dsp:oparam>

   <dsp:oparam name="output">
      <dsp:droplet name="/atg/dynamo/droplet/ForEach">
         <dsp:param name="array" param="principals"/>

         <dsp:oparam name="output">
            <dsp:valueof param="element.name"/>
         </dsp:oparam>

   </dsp:droplet>
</dsp:droplet>
```

TransactionDroplet

Marks the bounds of a transaction within a JSP.

Class Name	**`atg.dtm.TransactionDroplet`**
Component	`/atg/dynamo/transaction/droplet/Transaction`

Required Input Parameters

None

Optional Input Parameters

transAttribute

Specifies how to handle the current transaction and whether to create a transaction. Its value must be one of the following:

- `requiresNew` (default): The current transaction, if any, is suspended then resumed at the end of the droplet. A transaction is created before calling the `output` open parameter, then committed at the end of the servlet bean.
- `notSupported`: The current transaction, if any, is suspended, then resumed at the end of the servlet bean. The `output` open parameter is executed without any transaction context.
- `supports`: The current transaction, if any, is used. Otherwise, no transaction is used.
- `required`: The current transaction, if any, is used. If there is no current transaction, then one is created before calling the `output` open parameter, then committed at the end of the servlet bean.
- `mandatory`: If no transaction is in place, the `output` open parameter is not executed and the `errorOutput` is executed instead with an error message. If a transaction is in place, this setting behaves the same as `supports`.

- `never`: If a transaction is in place, the `output` open parameter is not executed and the `errorOutput` is executed instead with an error message. If no transaction is in place, this setting behaves the same as `supports`.

Open Parameters

output

Executed in the transaction context defined by the `transAttribute` parameter; if an earlier transaction error occurs, the servlet bean does not execute this parameter.

errorOutput

Executed if a transaction error occurs before or after the `output` open parameter. Within the open parameter, the error is communicated through the following parameters:

- `errorMessage`: a text message indicating the error
- `errorStackTrace`: the full stack trace of the error

successOutput

Executed after the `output` parameter if the commit or rollback operation completes successfully.

Usage Notes

TransactionDroplet can be used to enclose an area of a page within its own transaction context behavior. Several transactional behaviors are available—the same set that are available for Enterprise JavaBeans.

The open parameter `output` is rendered within the context of the specified transactional behavior. If a transaction error occurs before the servlet bean can execute the `output` parameter, then `output` is not rendered.

If any transaction error occurs, the `errorOutput` open parameter is rendered; otherwise the `successOutput` open parameter is rendered after execution of the `output` open parameter.

Example

The following example shows execution of a demarcated portion of a page in its own transaction, as specified by the `requiresNew` directive.

```
<dsp:droplet name="/atg/dynamo/transaction/droplet/Transaction">
  <dsp:param name="transAttribute" value="requiresNew"/>
  <dsp:oparam name="output">

  ... portion of page executed in demarcated area ...

  </dsp:oparam>
</dsp:droplet>
```

UserListDroplet

Searches for all users assigned to an organization.

Class Name	**`atg.userdirectory.droplet.UserListDroplet`**
Component	`atg/userdirectory/droplet/UserList`

Required Input Parameters

organizationId

The organization that contains the users to locate.

Optional Input Parameters

excludedId

Holds a user ID string that should be removed from the result set.

Output Parameters

users

Contains users of the specified organization in a `java.util.Collection`.

Open Parameters

empty

Rendered when no items are returned from the query.

error

Rendered when an invalid organization ID or no Organizational ID is provided.

output

Rendered when items are returned from the query.

Usage Notes

UserListDroplet returns all users assigned to a particular organization. The input parameter `excludedId` lets you exclude a user from the search. Based on the search results, additional content is rendered by the specified open parameters.

Be sure to set the `userDirectory` property to the relevant User Directory component.

Example

The following example shows how UserListDroplet locates all users assigned to the `org212` organization, skipping user 80314. Descriptive text is provided when no items are returned or an error occurs. Users that are found for the organization are displayed in a list.

```
<dsp:droplet name="/atg/userdirectory/droplet/UserList">
   <dsp:param name="organizationId" value="org212"/>
   <dsp:param name="excludedId" value="80314"/>
   <dsp:oparam name="empty">
      That organization doesn't have any users assigned to it.
   </dsp:oparam>

   <dsp:oparam name="error">
      Error: try your search again. Make sure you are using a valid organizational
      ID.
   </dsp:oparam>

   <dsp:oparam name="output">
      <dsp:droplet name="/atg/dynamo/droplet/ForEach">
         <dsp:param name="array" param="users"/>

         <dsp:oparam name="output">
            The following users are part of the organization:
            <dsp:valueof param="element.lastName"/>,
            <dsp:valueof param="element.firstName"/>
         </dsp:oparam>
      </dsp:droplet>

</dsp:droplet>
```

ViewPrincipalsDroplet

Obtains a user's roles or organizations.

Class Name	**`atg.userdirectory.droplet.ViewPrincipalsDroplet`**
Component	`/atg/userdirectory/droplet/ViewPrincipals`

Required Input Parameters

userId

The user whose principals are returned.

Optional Input Parameters

principalType

The type of principals to return. Options include `organization` and `role`. When this parameter is omitted, the default, `organization`, is used.

Output Parameters

principals

A `java.util.Collection` object that holds the organizations returned from the query.

Open Parameters

empty

Rendered when no items are returned from the query.

error

Rendered when an invalid user ID or no user ID is provided.

output

Rendered when items are returned from the query.

Usage Notes

ViewPrincipalsDroplet lets you locate a user's roles or organizations. Based on the search results, additional content is rendered by the open parameters you specify.

Be sure to set the `userDirectory` property to the relevant User Directory component.

Example

In this example, ViewPrincipals locates all organizations of the current user and displays them.

```
<dsp:droplet name="/atg/userdirectory/droplet/ViewPrincipals">
   <dsp:param name="userId" bean="Profile.id"/>
   <dsp:param name="principalType" value="organization"/>

   <dsp:oparam name="output">
      <dsp:droplet name="/atg/dynamo/droplet/ForEach">
         <dsp:param name="array" param="principals"/>

         <dsp:oparam name="output">
            You are part of the following organizations:
            <dsp:valueof param="element.name"/>
         </dsp:oparam>

      </dsp:droplet>
   </dsp:oparam>
</dsp:droplet>
```

WorkflowInstanceQueryDroplet

Returns information about a specified set of workflow instances.

Class Name	`atg.workflow.servlet.WorkflowInstanceQueryDroplet`
Component	None provided; see Usage Notes.

Required Input Parameters

None

Optional Input Parameters

subjectId

Repository ID of the workflow subject whose instances should be returned. If omitted, instances for all workflow subjects are returned.

processName

Name of the workflow process whose instances should be returned. If omitted, instances for all workflow processes are returned.

segmentName

Name of the workflow process segment whose instances should be returned. This parameter takes effect only if the `processName` parameter is set. If omitted, instances for all segments of the specified workflow process are returned.

taskElementId

Process element ID of the workflow task where the returned instances must be waiting—that is , in order for the query to return an instance, the specified task must be active for that instance. This parameter takes effect only if both the `processName` and `segmentName` parameters are set. If omitted and `taskElementIds`, `taskName`, and `taskNames` are also omitted, all instances for the specified workflow segment are returned.

taskElementIds

Process element IDs of the workflow tasks where the returned instances must be waiting—that is, in order for the query to return an instance, at least one of the specified tasks must be active for that instance. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId` is not set. If omitted and `taskName` and `taskNames` are also omitted, all instances for the specified workflow segment are returned.

taskName

Name of the workflow task where the returned instances must be waiting—that is , in order for the query to return an instance, the specified task must be active for that instance. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId` and `taskElementIds` are not set. If omitted and `taskNames` is also omitted, all instances for the specified workflow segment are returned.

taskNames

Names of the workflow tasks where the returned instances must be waiting—that is , in order for the query to return an instance, at least one of the specified tasks must be active for that instance. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId`, `taskElementIds`, and `taskName` are not set. If omitted, all instances for the specified workflow segment are returned.

Output Parameters

instances

Set to the results of the instance query, a `Collection` of `ProcessInstanceInfo` objects.

errorMessage

Set to the error message if an error occurs in the course of executing the query.

Open Parameters

output

Rendered after the instance query is complete and the results are placed into the `instances` parameter.

empty

Rendered if no instances are returned from the query.

error

Rendered if an error occurs while executing the query. The `errorMessage` parameter is set to the corresponding error message.

Usage Notes

WorkflowInstanceQueryDroplet performs a workflow instance query and returns the resulting `Collection` of `atg.process.ProcessInstanceInfo` objects. WorkflowInstanceQueryDroplet is typically used in conjunction with another servlet bean, such as ForEach (page 232) or Range (page 270), which can iterate through the `Collection` to display the `ProcessInstanceInfo` objects. In addition, the information contained in each `ProcessInstanceInfo` (that is, the `subjectId`, `processName`, and `segmentName` properties) can be passed as input parameters to a WorkflowTaskQueryDroplet (page 330), in order to obtain the tasks (active or otherwise) corresponding to the workflow instance.

For some types of workflows, the number of returned workflow instances can be very large. It is a good idea to constrain the query as much as possible—for example, to a particular task element.

The Scenarios module does not include a Nucleus component of this class, because each component is typically configured to work with a specific type of workflow. When you create a workflow type, you can create a WorkflowInstanceQueryDroplet component and configure it by setting the following properties in the component's properties file:

- `processManager`: Used to find the workflow instances
- `workflowManager`: Used to access workflow information

Example

The following example shows how to use a WorkflowInstanceQueryDroplet component to display all outstanding workflow instances:

```
<dsp:droplet name="WorkflowInstanceQuery">
  <dsp:oparam name="empty">
    No outstanding workflow instances.
  </dsp:oparam>
  <dsp:oparam name="output">
    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
      <dsp:param name="array" param="instances"/>
      <dsp:oparam name="output">
        Workflow subject <dsp:valueof param="element.subjectId"/><br/>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

WorkflowTaskQueryDroplet

Returns information about a specified set of workflow tasks.

Class Name	**`atg.workflow.servlet.WorkflowTaskQueryDroplet`**
Component	None provided; see Usage Notes.

Required Input Parameters

None

Optional Input Parameters

activeOnly

If true, the query returns only active tasks; otherwise, it returns all tasks, including inactive and completed tasks. Default is true.

accessibleOnly

If true, the query returns only tasks that are accessible to a particular principal. The default is true. If the `principal` parameter is set, accessibility is checked against the specified directory principal; otherwise, accessibility is checked against the current user.

principal

The `atg.userdirectory.DirectoryPrincipal` (which can represent a user, role, group, or organization) whose access rights determine the tasks' accessibility. If omitted, accessibility is checked against the current user. This parameter takes effect only if the `accessibleOnly` parameter is set to true.

accessRight

Determines the tasks' accessibility, set to one of the following values:

- `write`: represents the ability to change various attributes of a task, such as its priority, owner, and access control list
- `execute`: represents the ability to execute, claim, and release a task

This parameter takes effect only if the `accessibleOnly` parameter is set to true.

For example, if `accessRight` is set to `execute`, only those tasks which can be executed, claimed, and released by the current user or principal are returned.

ownership

Specifies how tasks should be filtered by ownership, set to one of the following values:

- `any`: Accept all tasks regardless of ownership (default).
- `self`: Accept only tasks owned by the current user or principal.
- `unowned`: Accept only tasks that are not owned.
- `selfOrUnowned`: Accept only tasks that are either not owned or owned by the current user or principal.

This parameter takes effect only if the `accessibleOnly` parameter is set to true.

subjectId

Repository ID of the workflow subject whose tasks should be returned. If omitted, tasks for all workflow subjects are returned. The `subjectId` parameter must be set if the `activeOnly` parameter is set to false; in other words, inactive and completed tasks can be returned relative to a particular workflow subject only.

processName

Name of the workflow process whose tasks should be returned. If omitted, tasks for all workflow processes are returned.

segmentName

Name of the workflow process segment whose tasks should be returned. This parameter takes effect only if the `processName` parameter is set. If omitted, tasks for all segments of the specified workflow process are returned.

taskElementId

Process element ID of the workflow task which should be returned. This parameter takes effect only if both the `processName` and `segmentName` parameters are set. If omitted and `taskElementIds`, `taskName`, and `taskNames` are also omitted, all tasks for the specified workflow segment are returned.

taskElementIds

Process element IDs of the workflow tasks which should be returned. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId` is not set. If omitted and `taskName` and `taskNames` are also omitted, all tasks for the specified workflow segment are returned.

taskName

Name of the workflow task which should be returned. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId` and `taskElementIds` are not set. If omitted and `taskNames` is also omitted, all tasks for the specified workflow segment are returned.

taskNames

Names of the workflow tasks which should be returned. This parameter takes effect only if both the `processName` and `segmentName` parameters are set, and if `taskElementId`, `taskElementIds`, and `taskName` are not set. If omitted, all tasks for the specified workflow segment are returned.

sorter

The `Comparator` used to sort the tasks returned by the query. If omitted, the tasks are returned sorted first by the workflow process and segment names and subject IDs, then by their order of appearance in the workflow definition.

Output Parameters

tasks

Set to the results of the task query, a `Collection` of `TaskInfo` objects.

errorMessage

Set to the error message if an error occurs in the course of executing the query.

Open Parameters

output

Rendered after the task query has been completed, and the results are placed into the `tasks` parameter.

empty

Rendered if no tasks are returned from the query.

error

Rendered if an error occurs while executing the query. The `errorMessage` parameter is set to the corresponding error message.

Usage Notes

WorkflowTaskQueryDroplet performs a workflow task query and returns the resulting `Collection` of `atg.workflow.TaskInfo` objects. WorkflowTaskQueryDroplet is typically used in conjunction with another servlet bean, such as `ForEach` or `Range`, which can iterate through the `Collection` to display the `TaskInfo` objects.

The Scenarios module does not include a Nucleus component of this class, because each component is typically configured to work with a specific type of workflow. When you create a workflow type, you can create a WorkflowTaskQueryDroplet and configure it by setting the following properties in the component's properties file:

- `workflowManager`: `atg.workflow.WorkflowManager` used to find the tasks.
- `workflowViewPath`: Nucleus path of the session-scoped `atg.workflow.WorkflowView` component used to find the tasks accessible to the current user.
- `userDirectoryUserAuthority`: `atg.userdirectory.UserDirectoryUserAuthority` used to resolve directory principals.

Example

The following example shows how to use a WorkflowTaskQueryDroplet component to display all active tasks that are owned by the current user, and which he or she can execute, claim, and release:

```
<dsp:droplet name="WorkflowTaskQuery">
  <dsp:param name="accessRight" value="execute"/>
  <dsp:param name="ownership" value="self"/>
  <dsp:oparam name="empty">
    No tasks to execute.
  </dsp:oparam>
  <dsp:oparam name="output">
    <dsp:droplet name="/atg/dynamo/droplet/ForEach">
      <dsp:param name="array" param="tasks"/>
      <dsp:oparam name="output">
        Workflow subject <dsp:valueof param="element.subjectId"/>:
        task <dsp:valueof param="element.taskDescriptor.name"/><br/>
      </dsp:oparam>
    </dsp:droplet>
  </dsp:oparam>
</dsp:droplet>
```

XMLToDOM

Parses an XML document and transforms it into a DOM document.

Class Name	**`atg.droplet.xml.XMLToDOM`**
Component	`/atg/dynamo/droplet/xml/XMLToDOM`

Required Input Parameters

None

Optional Input Parameters

input

The XML document to parse. This can be either the absolute or relative URL for an XML document. If omitted, the open parameter `unset` executes.

validate

Determines whether the parser should validate this document against the DTD specified in the `input` parameter. Options include:

- true: Read the DTD, validate the document, and apply all information from the DTD.
- false (default): Read the DTD, do not validate the document, but substitute default attributes, and apply other information from the DTD at the parser's discretion (Apache Xerces supports this mode).
- `nodtd`: Do not read the DTD, validate the document, or apply any defaults or other information. Use this mode when you do not want the parser to try and resolve the DTD location, perhaps because the remote URL location is temporarily unreachable. The resulting document might be incomplete, might have incorrect attribute values, and does not have substitution of external entities. (Apache Xerces supports this mode, but it might not be available for every parser).

If the XML document lacks a DTD, you must omit this parameter.

Output Parameters

document

Set to a DOM document if the XML document is successfully retrieved and parsed.

errors

Set to an enumeration of Exceptions if failures occurred when parsing or retrieving the XML document.

Open Parameters

unset

Rendered if the `input` parameter is not set.

output

Rendered if the XML document is retrieved and parsed.

failure

Rendered when the XML document cannot be parsed or retrieved.

Usage Notes

XMLToDOM parses an XML document that is specified by the `input` parameter. The result of the parse is bound to the `document` parameter, which can then be manipulated inside the `output` open parameter.

XMLToDOM does not have any inherent way to output its results. You typically nest within its `output` parameter a servlet bean or code that can handle the resulting Data Object Model (DOM) component.

Example

See Processing XML in a JSP (page 47).

XMLTransform

Given an XML document and an XSLT or JSP template, transforms and outputs the XML document.

Class Name	**`atg.droplet.xml.XMLTransform`**
Component	`/atg/dynamo/droplet/xml/XMLTransform`

Required Input Parameters

None

Optional Input Parameters

input

The XML document to transform, either the URL for an XML document, DOM document object, or SAX `InputSource` or a text `InputStream`. If omitted, the open parameter `unset` executes.

validate

Determines whether the parser should validate this document against the DTD specified in the `input` parameter. Options include:

- true: Read the DTD, validate the document, and apply all information from the DTD.
- false (default): Read the DTD, do not validate the document, but substitute default attributes, and apply other information from the DTD at the parser's discretion (Apache Xerces supports this mode).
- `nodtd`: Do not read the DTD, validate the document, or apply any defaults or other information. Use this mode when you do not want the parser to try and resolve the DTD location, perhaps because the remote URL location is temporarily unreachable. The resulting document might be incomplete, might have incorrect attribute values, and does not have substitution of external entities. (Apache Xerces supports this mode, but it might not be available for every parser).

If the XML document lacks a DTD, you must omit this parameter.

template

The template to use to transform the XML document. This can be either an XSLT template or a JSP. Both absolute paths and relative paths are accepted.

passParams

When the template is an XSL stylesheet, sets a flag to control the passing of parameters from the request and servlet bean environment, to top-level `<xsl:param>` elements in the XSL stylesheet. Set to one of the following values:

- `none`: no parameters are passed (default)
- `query`: URL query parameters from a `GET` request
- `post`: form parameters from a `POST` request
- `local`: only parameters in this servlet bean scope
- `all`: parameters from all servlet bean and request scopes

If more than one parameter exists for a given name, only the first is passed. The order of parameter scopes is from local (within the XMLTransform servlet bean), up through other enclosing scopes, and eventually to the request query or post parameters.

documentParameterName

The name of the parameter to which the input DOM Document is bound when using a JSP template. The default value is `inputDocument`.

Output Parameters

documentOuputName

Set to the DOM document that results from the transformation. The default is `document` .

errors

Set to an enumeration of Exceptions if failures occurred when transforming the XML document.

Open Parameters

unset

Rendered if the `input` parameter is omitted.

output

Rendered when the XML document is transformed. If the `output` open parameter is specified, the document is not automatically output in the JSP.

failure

Rendered when the XML document cannot be transformed.

Usage Notes

XMLTransform lets you transform XML documents with a template. The template can be either an XSLT template or a JSP. The document to transform is specified by the `input` parameter. The template to apply is determined in the following order of precedence:

1. Template input parameter of the XMLTransform servlet bean
2. Mapping specified in the `XMLTemplateMap` Component
3. Default template specified in the `XMLTemplateMap` Component
4. XSL stylesheet directive embedded in the XML source document

Example

See Applying a Template to an XML Document (page 50)

Appendix C. SimpleSQLFormHandler

You can interact directly with an SQL database with a SimpleSQLFormHandler, which is an instance of the class `atg.droplet.sql.SimpleSQLFormHandler`. A subclass of `atg.droplet.GenericFormHandler`, this class supports SQL database table queries, inserts, updates, and deletions. The form handler requires that each row be uniquely identified by a set of key columns; consequently, the form handler can act on only one row at a time.

The SimpleSQLFormHandler lets you interact with a SQL database directly, by specifying the table rows to query or update. This form handler relies only minimally on the repository layer, it requires you to know exactly which items are required.

When you create a SimpleSQLFormHandler, you set the following properties:

- The URL of a JDBC driver
- The name of a table to edit
- Identifiers for the rows and columns to edit

You can embed this component in JSP forms. The form fields are used to set the form handler's `value` property. The `value` property is a Dictionary whose subproperties store values that identify the row that is currently accessed by the form, indexed by column name. The `value` subproperties can be keys used to look up an item or new values for update and insert operations. After lookup operation, these subproperties are set to the returned row.

SimpleSQLFormHandler Properties

The following properties in a SQL form handler component control mapping between the SQL table and the form:

Property	Function
`columns`	The names of columns to look up, update, and insert. If this property is not set, all columns in the table are used.
`connectionURL`	JDBC URL of the database connection to use. Typically, this is the URL of a connection pool in the form: `jdbc:atgpool:`*`pool-name`*

Property	Function
`keyColumns`	Names of columns to use to find the row on which to perform lookup, update, and delete operations.
`metaDataCatalogName`	String representing a catalog name. If the active database user does not own the tables accessed by the SQL repository, this property is referenced once during initialization of the logger in a call to determine the column types.
`metaDataSchemaPattern`	String representing a schema name pattern. If the active database user does not own the tables accessed by the SQL Repository, this property is referenced once during initialization of the repository in a call to determine the column types. Set this property to the username of the database owner in the case required by your database for object identifiers.
state	The current state of the SimpleSQLFormHandler component, expressed by one of the following integer/constants: 1: STATE_NOTSET The bean does not represent a valid item in the table. Any attempt to get properties of the value returns only the properties explicitly set. 2: STATE_INVALID The key properties are set, but no record was found for a lookup, update, or delete. 3: STATE_VALID Values for the key properties are set and a query has successfully returned one or more items. 4: STATE_CONFIG_ERROR A database operation failed due to a configuration error: a lookup, update, or delete operation failed because one of the specified key properties is not set; or an update operation failed because no key properties are defined or a value for a specified column property is missing. 5: STATE_DB_ERROR A database error occurred.
`tableName`	Database table used for this form handler.
`tablePrefix`	String that can be prepended to the `tableName` value. If the active database user does not own the table where log entries are saved, this property constructs a qualified table name. This property is not used during the initial metadata query, but if present is prepended to the table name when inserts or updates are made.
`valid`	Indicates whether or not the last operation succeeded.
`value`	Dictionary that stores the values of the current row. These values are split into two groups: those in the `keyColumns` list, and those in the `columns` list. `keyColumns` properties are used to look up the row for lookup, update, and delete operations. `columns` properties specify the columns that are the targets of lookup, update and insert operations.

Submit Handler Methods

The `SimpleSQLFormHandler` has the following submit handler methods:

Method	Function
`handleLookup`	Performs a query that sets the row from key column values.
`handleUpdate`	Uses key property values to update one or more rows.
`handleDelete`	Uses key properties to remove one or more rows.
`handleInsert`	Uses the current `value` properties to insert one or more new rows.
`handleReset`	Removes the current subproperties of the `value` property, clears any exceptions, and sets the `state` of the form handler to STATE_NOTSET.

SimpleSQLFormHandler Navigation Properties

After a form operation—lookup, update, delete, or insert—is complete, the `action` attribute of the dsp:form (page 150) tag specifies the page to display. You might want to specify several different pages, where the user's destination depends on the nature of the form operation and whether or not it succeeds.

A SimpleSQLFormHandler has a set of properties you can use to control navigation after a form operation. These properties specify the URLs where the user is redirected on certain error and success conditions. Each submit handler method except `handleReset` has corresponding success and failure URL properties:

Handlermethod	Success/failureURLproperties
`handleLookup`	`lookupSuccessURL` `lookupErrorURL`
`handleUpdate`	`updateSuccessURL` `updateErrorURL`
`handleInsert`	`insertSuccessURL` `insertErrorURL`
`handleDelete`	`deleteSuccessURL` `deleteErrorURL`

The `dbErrorURL` property specifies the URL to use if a database error occurs when submitting the form.

The value of each property is a URL relative to the page specified by the form's `action` attribute or a local URL defined absolutely from the root. The default value of each property is null, so you must set these properties explicitly. You can specify the values of these URL properties in the form handler component, or with `hidden` input tags in the JSP. If these property values are not set, the `action`-specified page is displayed on form submission.

The following example sets the value of `lookupErrorURL`, redirecting the user to `lookupError.jsp`. If the lookup operation succeeds, and the value of `lookupSuccessURL` is not set, the user is redirected to the `action`-specified page `index.jsp`:

```
<dsp:form action="index.jsp" method="post">
<dsp:input
   bean="MyFormHandler.lookupErrorURL" type="hidden" value="lookupError.jsp"/>
...
</dsp:form>
```

SQL Form Handler Example

The following example defines properties for the `SimpleSQLFormHandler` component `SkierHandler`, which tracks information about skiers and is configured as follows:

- The `tableName` and `keyColumns` properties let you look up a particular person in the database.
- The navigation property `DBErrorURL` handles errors.

```
$class=atg.droplet.sql.SimpleSQLFormHandler
$scope=session

connectionURL^=TableManager.connectionURL
keyColumns=NAME
tableName=SKIER
DBErrorURL=sqlError.jsp
```

You can use the `SkierHandler` component to look up or change the properties of skiers who are registered with an application. For example, skiers can change the value of their `preferredActivity` property with this portion of the `editPerson.jsp` page:

```
<tr>
  <td align=right><b>Your preferred activity:</b></td>
  <td><dsp:select bean="SkierHandler.value.preferredActivity">
      <dsp:option value="Skiing">Skiing</dsp:option>
      <dsp:option value="Snowboarding">Snowboarding</dsp:option>
      <dsp:option value="X-Country">X-Country</dsp:option>
      </dsp:select>
  </td>
</tr>
```

When a user submits this form, the `preferredActivity` property of the `value` property of the `SkierHandler` is set to the selected option, and is inserted in the appropriate row of the `SKIER` database table.

Appendix D. Managing Nucleus Components

This appendix shows how to manage Nucleus components in the ATG Control Center. The following topics are covered:

- Viewing Components in Nucleus (page 341)
- Creating Nucleus Components (page 344)
- Configuring Nucleus Components (page 345)
- Starting and Stopping Nucleus Components (page 349)
- Rebuilding the Component Index (page 350)
- Managing Site Pages (page 350)

Viewing Components in Nucleus

To see the components currently registered in Nucleus, click **PagesandComponents** in the main ATG Control Center navigation bar. When the Components window opens, two options — **ComponentsByModule** and **ComponentsByPath** — appear in the upper left corner of the navigation bar, allowing you to switch between two component views.

Module View

Click **ComponentsByModule** to see the components within a particular category and module. A *category* describes a component's particular function, such as caching or logging. ATG Control Center uses the following icons to represent the different types of components within each category:

Icon	ComponentType
J	ATG Servlet Bean
⊠	Form Handler

Icon	ComponentType
	Database Connection Pool
	Profile
	Profile Group
	Repository
	SQL Query
	Sensor
	Targeter
	Browser Type
	Data Listener
	Log Listener
	Pipeline Servlet
	Generic component

A *module* is a higher level grouping of components based on general functionality. For example, all components of the Dynamo Application Framework (DAF) are packaged together in the Dynamo module. The standard module Local contains custom components that you create in the ATG Control Center, or by writing `.properties` files by hand. If your ATG software includes solutions in addition to the ATG Adaptive Scenario Engine, the Components window displays these modules too.

In Components By Module view, the Components window displays three panels:

- Modules
- Categories
- Components

Filtering components list

To see all Nucleus components, select **[allmodules]** and **[allcategories]**. You can also filter the list of components by selecting a specific module and category. For example, if you select the Dynamo module and Caching category, the Components list contains Dynamo's two standard caching components: `FileCache` and `LRUByteCache`. When you select a component from this list, the information panel at the bottom of the Components window displays the component's full path name, class, scope and description. For example:

```
/atg/dynamo/servlet/pipeline/FileCache
Class: atg.service.filecache.FileCache
Scope: global
Description: A cache of file date by file name
```

To get more detailed information about a component, opening it in the Component Editor: double-click on the component or choose File | Open Component. For more information about the Component Editor and configuring Nucleus components, see Configuring Nucleus Components (page 345).

Path View

Click **ComponentsByPath** to see the hierarchy of folders and Nucleus components within the Nucleus framework. The hierarchy has an expandable tree structure, just like an ordinary file system. However, the folders shown here do not necessarily map directly to the directories on the server machine.

In the previous section, you looked at a component called `FileCache` in the Caching category of the Dynamo module. If this component was still selected in the Components By Module view when you switched to the Components By Path view, it will be selected in your path view now. If it's not, you can get to it by opening the folders in its path name: `/atg/dynamo/servlet/pipeline/FileCache`.

As you saw in the Components By Module view, the information panel at the bottom of the window displays a path name, class, scope and description whenever you select a component in the Components By Path view. You can get more detailed information about any component by opening it the Component Editor. Double-click on the component you want to open or select **OpenComponent** from the File menu. To learn more about how to use the Component Editor and how to configure Nucleus components, see the Configuring Nucleus Components (page 345) section of this chapter.

The icons you saw in the Module View (page 341) section are used here as well. One difference you may notice, though, is that some components have a red dot next to them like this:

This dot means that the component has been started and is currently running on the live Dynamo module. To learn more, see the Starting and Stopping Nucleus Components (page 349) section.

The Components By Path view provides additional options for managing components and folders. Using the menu commands in Components By Path view, you can copy, cut, paste, rename, duplicate, refresh, and delete components and folders.

Managing Component Folders in Path View

To create a folder in ATG's component hierarchy:

1. Click **NewFolder** on the toolbar or choose File | New Folder.
2. In the New Component Folder dialog, specify where to place the new folder. If you selected a folder in the Component Browser, that folder is highlighted in the dialog box.
3. In the **NewFolderName** field, type the new folder's name.
4. Click **OK**. The ATG Control Center adds the new folder to the location you specified and returns to the Component Browser.

   Note: If the new folder is not immediately visible in the Component Browser, choose View | Refresh.

Deleting Components, Documents, and Folders

To delete a component, document, or folder:

1. Select the item to delete from the Component Browser or the Document Browser. **Note:** You cannot delete components that are configured as part of the Dynamo Base configuration layer, which are read-only.
2. Click **Delete** or choose Edit | Delete. In the confirmation dialog, click **Yes**.

Module and Path View Synchronization

The Components By Module view and Components By Path view are synchronized. If you switch from the Components By Module view to the Components By Path view while you have a component selected, ATG Control Center takes you directly to the component's path location within the Nucleus directory structure.

Searching for a Component

You can search for a component by its name or its Java class or interface:

1. On the Component Browser toolbar, click **FindComponent**.
2. In the Find Component dialog box, choose **Searchbycomponentname** and type `CurrentDate` in the **SearchFor** field. If you want the search to be case-sensitive, mark the checkbox **Matchcase**.

   Note: You can search for partial names by using the asterisk (*****) or question mark (**?**) wildcard symbols. For example, a search for `*FormHandler` will return several components, including `ProfileFormHandler` and `EmailFormHandler`.
3. You can narrow down a search by specifying a directory in the **LookIn** field. To search the entire component hierarchy, leave this field blank. To search all folders, mark the checkbox **Includesubfolders**.
4. Click **Find**. Components that match the search criteria appear at the bottom of the dialog. Double-clicking on a component takes you directly to its path location in the Components window.

Creating Nucleus Components

ATG Control Center includes templates to help you create Nucleus components quickly and easily. There are the standard templates you'll see when you select **[allmodules]**:

Standardtemplate	**Purpose**
Empty Targeter	Create an iterator component that lets you specify the order in which content is rendered to a subset of users.
Generic Component	Create components from existing Nucleus classes or other Java classes.
HTML File Repository	Define an HTML repository by specifying the files it will contain and the attributes that describe them.

Standardtemplate	Purpose
Slot	Set up a slot by letting you determine the repository items it manages and how it manages them.
SQL Form Handler	Create a component for inserting, updating, and deleting objects in a specified SQL table.
SQL Query	Create a component that performs queries against a SQL database.
XML File Repository	Define an XML repository by specifying the files it contains and the attributes that describe them.

Note: If your ATG software includes solutions in addition to the ATG Adaptive Scenario Engine, you will see several additional templates.

Configuring Nucleus Components

After you create a component or open an existing one, the ATG Control Center opens a Component Editor window. The editor window is divided into several tabs that let you examine and manage various aspects of the component:

- Properties
- Methods
- Events
- Basics
- Configuration

Note: If your ATG software includes solutions in addition to ATG Adaptive Scenario Engine, the Component Editor may include additional tabs for certain components.

The component's name and icon, class, configuration layer, pathname, module, and category appear at the top of the editor window. The menu bar and the toolbar in the upper right corner lets you change the state of the component, save any changes you make to it, refresh the editor window, open the Component Browser and get online Help. The information panel at the bottom of the editor gives you descriptive information about the component's properties and methods.

The following sections show how to use the Component Editor to configure Nucleus components:

- Editing Property Values (page 346)
- Invoking Methods (page 347)
- Changing Registered Event Listeners (page 347)
- Changing a Component's Scope and Description (page 348)
- Viewing Configuration Layers and Properties Files (page 348)

Editing Property Values

The Properties tab in the Component Editor displays all of the properties defined for the open component. If the component is "live" (indicated by a red dot), the Properties tab shows two columns of property values: Configured Value and Live Value. (Otherwise, it displays the Configured Value column only.) The configured value is the value specified by the component's properties file; the live value is the current value, which may be different from the configured value. If you want to view read-only properties, select the **Includeread-onlyproperties** checkbox. Read-only properties appear grayed-out to indicate that they are unavailable for editing.

Note: Not all component properties appear by default in the Component Editor. Certain "expert level" properties are visible only if you choose Tools > Preferences from the ACC window and select the **Showexpert-levelinformation** checkbox in the Edit Preferences dialog box.

To edit component properties:

1. Click in the property value cell you want to edit. Editing options depend on the type of property you select:

   - String values provide a text field for editing. You can type values directly into this field or you can click **...** to open a pop-up editing window.
   - Int, long, float and double values provide a number field for editing.
   - Boolean values provide a drop-down list with two options: true.
   - Enumerated values provide a drop-down list of options.
   - Array, hash table, and component values have a **...** button that opens a corresponding pop-up editing window.
   - All property types have an @ button that lets you set the property value to another component or component property.

2. When you finish, click **Save** on the editor toolbar. If the component is live, a dialog box appears, asking whether to save the configuration changes to the component's live state.

   Note: If you changed a property's configured value, the change is used to configure the live component only when you restart the ATG platform. If you edit the live value of a property, the change takes place immediately, but it is not retained if you stop the component. If another component refers to the live component, references to the component are not updated when you stop or restart the component; you must restart the ATG platform to register the changes. Also, stopping or restarting a cross-referenced component can leave the ATG platform in an unstable state.

Setting Property Values to Other Components

You can set property values for the component you are editing by linking them to other components or component properties. This lets you set a property value in one component, and have its value immediately reflected in the linked properties of other components.

To link to another component or component property:

1. In the Properties tab of the Component Editor, click the "@" button that appears in the property value cell you are editing. The Select Link Target dialog box opens, displaying the available components by module or by path. When you click on a component, the Component Properties panel on the right displays all of the properties for that component.

2. Select the component or property you want to link to.

- To link the property of your active component to a component, click on the name of the component in the Components panel.
- To link the property of your active component to a property of a component, click on the name of the property in the Component Properties panel.

3. Click **Link**. When you return to the Component Editor, the new property link appears in the appropriate value cell.
4. Click the **Save** button on the editor toolbar.

Unlinking Component Properties

To unlink component properties:

1. In the Properties tab of the Component Editor, click the "@" button that appears next to the property you want to unlink.
2. When the Select a Component or Property dialog box opens, click the **UnlinkProperty** button. The ATG Control Center removes the link and returns you to the Component Editor.
3. Click **Save** in the editor toolbar.

Invoking Methods

The Methods tab in the Component Editor lists the component's Java methods that do not take arguments. The information panel at the bottom of the Methods tab displays the return type of the method you select.

The Methods tab is available only if the component is currently running. If the component is not running, select **Component>StartComponent** in the Component Editor.

You cannot add, remove, or edit methods in the Methods tab, but you can invoke them by clicking the Invoke button to the left of the method name. For instance, you may want to call a method that resets a counter or gathers statistics. The method result, if applicable, appears in a separate dialog box.

Note: Do not call methods from this tab unless there is a specific task you want to accomplish. In particular, calling `doStartService` or `doStopService` can cause components to become unstable.

Changing Registered Event Listeners

The Events tab in the Component Editor shows you the types of events generated by the open component and the event listeners registered to receive those events. You cannot add, remove, or edit events in the Events tab, but you can edit the list of registered event listeners. (Note that the `Student_01` component that you've been working with does not generate any events.)

To edit the list of event listeners:

1. Select an event listener from the Registered Event Listeners list and click the "..." button that appears to the right. A dialog box opens, displaying a list of the components that listen for this type of event.
2. Click on the component you want to change, then click on the "@" button that appears to the right. (**Note**: You can also add or remove components from the list using the **InsertBefore**, **InsertAfter**, and **Remove** buttons.)

3. When the Select a Component dialog box opens, select a component of the suggested type and click **OK** to return to the previous dialog box.

4. Click **OK**.

5. In the Component Editor, click the **Save** button on the editor toolbar.

Changing a Component's Scope and Description

The Basics tab in the Component Editor lets you edit the scope and description of the open component.

To change a component's scope or description:

1. Select the new scope (global, session, or request) from the drop-down list.

2. Type a new description to set the component's $description property. This description appears in the Component Browser information panel when you select the component.

3. Click the **Save** button in the editor toolbar.

Viewing Configuration Layers and Properties Files

The ATG platform establishes separate configuration layers so you can make changes to a component's properties without modifying Dynamo's base configuration. In a default ATG installation, there are two configuration layers, Dynamo Base and Local, which represent the configuration directories in the ATG platform's default CONFIGPATH (`/config/dynamo.jar:localconfig`). By default, when you open a component in ATG Control Center, you open the Local configuration layer. Any changes you make to the component will be preserved in the `localconfig` directory, even if you install a new version of the ATG platform. (**Note:** If necessary, you can open components in a different layer or change the default layer.)

The Configuration tab in the Component Editor shows you the hierarchy of configuration layers and `.properties` files that configure the open component. Each configuration layer is shown by name with its path. You cannot add, remove, or edit configuration layers from the Configuration tab, but you can double-click on `.properties` files to view them in a separate display-only file viewer. For example, if you open `/atg/dynamo/Configuration`, the ATG platform's main Configuration component, you'll see that there are at least two `Configuration.properties` files controlling the Dynamo Application Framework: a Dynamo Base configuration file in `<ATG9dir>/DAS/config/config.jar` and a Local configuration file in the `<ATG9dir>/home/localconfig` directory. If you change a Configuration component property, such as `httpPort` (the port number of the ATG platform's internal HTTP server), your change will be stored in the `localconfig` directory. The next time you start the ATG platform, Nucleus will take the value of the `httpPort` property from `localconfig`, the last directory in your configuration path.

Important: The ATG Control Center shows you the configuration layers used by the modules you are running. Additional layers may exist within your ATG installation depending on the complexity of your system, such as the directories included in your CONFIGPATH, the number of ATG solutions you have installed and whether you're using the internal Serverina server or an external HTTP server.

Opening a Component in a Different Configuration Layer

By default, you open and edit components in ATG's Local configuration layer. You can open a component in any layer, but you cannot edit the component's properties if the layer is locked. Locked configuration layers, such as Dynamo Base, are marked with a padlock icon (🔒).

To open a component in a different configuration layer:

1. Open the Components window and select the component you want to edit.
2. Right-click on the component and select Open Component in Layer from the pop-up menu. The Select a Configuration Layer dialog box opens, listing the name and path of each configuration layer. Check marks identify the layers currently in use.
3. Select the layer you want to open and click OK. The component opens in a separate Component Editor window.

Changing the Default Configuration Layer

By default, you open and edit components in Dynamo's Local configuration layer. You can set another configuration layer to open by default as long as it is not a locked layer. After changing the default configuration layer, you can still select a different configuration layer when you open a component. Any components you create, duplicate, or paste will be placed in the default configuration layer.

Important: When you use the ATG Control Center to change the default configuration layer, the new default affects only the client machine on which the change is applied and it remains in effect until you shut down that machine. If you want to make a persistent change that applies to the ATG platform and all client machines, you must manually edit the `<ATG9dir>/home/localconfig/CONFIG.properties` file and set the `defaultForUpdates` property to false. See the *ATG Installation and Configuration Guide* for more information.

To change the default configuration layer:

1. In the Components window, select **Tools>SetUpdateLayer**.
2. When the Set a Default Configuration Layer dialog box opens, select the configuration layer you want to open by default.
3. Click OK.

Starting and Stopping Nucleus Components

"Live" components - those that are currently running - are identified with a red dot icon in the Component Editor and in the path view of the Component Browser.

You can start and stop a component from the Component Editor by:

- Clicking the **Start**/**Stop** button on the toolbar or
- Selecting Start/Stop Component from the Component menu.

You can start and stop a component from the Components window by:

- Selecting Start Component or Stop Component from the File menu.
- Right-clicking on the component and selecting Start Component or Stop Component from the pop-up menu.

Important: Stopping or restarting components referenced by other components may leave the ATG platform in an unstable state.

Rebuilding the Component Index

ATG Control Center creates and maintains indexes of components. Any components you create, either through the ATG Control Center or by creating `.properties` files by hand, appear in the Local module of the Component Browser once you rebuild the component index or restart the ATG platform. By rebuilding a component index, you free up the ACC to display components at a quicker rate. To rebuild the component index while the ATG platform is running, select **Tools>RebuildComponentIndex** in the Components task area.

For sites with large numbers of components, indexing can take substantial time and CPU resources. Once your site is deployed and relatively stable, you may want to limit or eliminate component indexing.

You can selectively exclude portions of the hierarchy from indexing by adding pathname prefixes to the `excludeDirectories` property of the `/atg/devtools/ComponentIndex` component. Including "/" in this list inhibits all indexing, but still leaves the ATG Control Center able to connect.

The component index is maintained incrementally once built, and is rebuilt completely once a day at 1 AM by default. An index is rebuilt at startup only if it does not exist at all. If you'd like to change the frequency of the index building, modify the `updateSchedule` property of the `atg/devtools/IndexBuilder` component. For information on the format used by `updateSchedule`, see the *Scheduler* section in the *CoreDynamoServices* chapter of the *ATG Programming Guide*.

Managing Site Pages

You can see all JSPs in ATG products through the Pages and Components task area of the ATG Control Center. Open the J2EE Pages document browser to view a listing of all J2EE projects and the applications they contain:

Icon	ItemType	Description
	J2EE project	ATG platform module that holds one or more J2EE applications.
	J2EE application	ATG application that's part of a J2EE project. To use a particular J2EE application, you start up the J2EE project that contains it.

After you select an application, you can see its folders and documents. Each document type has its own icon:

Icon	DocumentType	Fileextensions
	JSP document	`.jsp` and `.jspf`
	HTML document	`.html` or `.htm`
	XML document	`.xml`

Icon	DocumentType	Fileextensions
📄	Plain text file	`.txt`
🖼	Image file	`.gif`, `.jpg`, or `.jpeg`
❓	File of any other type	other

When you select a folder or document, you can see its path relative to the Web application root directory in the information panel at the bottom of the screen.

```
/test.jsp
```

Using the toolbar and menus at the top of the screen, you can take care of common file management tasks like copying, pasting, deleting, etc. You can open documents in the Document Editor, and preview them in your Web browser. Double-click on the document you want to edit or click the **OpenDocument** button. See Appendix E, *ATG Document Editor* (page 355) for more information.

Creating Document Folders

To create a folder in the document root directory:

1. Click the **NewFolder** button on the toolbar.
2. When the Specify New Folder Name dialog box opens, specify where you want to place the new folder. (If you selected a folder in the document browser, that folder will already be highlighted in the dialog box.)
3. Type the name of the new folder and click **OK**.

Deleting Folders

To delete a folder and its contents:

1. Select the folder you want to delete and click the **Delete** button in the toolbar.
2. When the confirmation dialog box opens, click **Yes**.

Searching for Documents

If you can't find a particular document, you can search for it by page name. You can also search for documents that reference a particular Nucleus component.

To search for a document:

1. Click the **FindDocument** button in the toolbar.
2. When the Find Document dialog box opens, select the search method you want to use. You can search by page name (the default).
3. Specify the document you want to find in the Search For field. If you want your search to be case-sensitive, select the **Matchcase** checkbox.

Note: You can search for partial names by using the asterisk (`*`) or question mark (`?`) wildcard symbols. For example, a search for `new*` would retrieve `news.jsp` and `newfeatures.xml`. If you don't include the file's extension, be sure to use a wildcard (`index.*`, for example).

4. If you want to find documents that reference a particular component, select the **Thatreferencesthiscomponent** checkbox and click the "**...**" button to select the component.

5. Type the location you want to search in the Look In field, or click **Browse** to select a directory from the document hierarchy. If you want to search all folders within this directory, make sure the **Includesubfolders** checkbox is selected.

6. Click **Find**. The search results appear at the bottom of the Find Document dialog box.

   Double-click a document returned from your search to open it in the Document Editor.

Creating Documents

To create a document in the ATG Document Editor:

1. Select a folder for the new document and click **NewDocument** in the toolbar.

2. When the Select Document Template dialog box opens, select the module and template to use. To see all available templates, select **allmodules**. Click **OK**.

3. Choose the appropriate template:

   - **ChangePasswordForm(JSP)**: Creates a JSP version of the Change Password form template.
   - **Login(JSP)**: Creates a JSP version of the Login template.
   - **Logout(JSP)**: Creates a JSP version of the Logout template.
   - **Page(JSP)**: Creates a simple JSP with a few basic HTML and DSP tag library tags.
   - **Page** (**JWML)**: Creates a basic page with some JWML tags.

   Note: ATG applications might include additional JSP document templates.

4. When the New JavaServer Page dialog box opens, enter the new document's title and click **Finish**. The title is used as the HTML title and also appears as an `<H1>` heading in the new document.

5. In the Input New Document Name dialog, enter the document's file name and extension and click **OK**. The document name must be different from the folder name in which the file resides.

   A separate Document Editor window opens, displaying the new document's path name, structure, and full text. Appendix E, *ATG Document Editor* (page 355) shows how to edit a document with the ATG Document Editor.

Rendering New JSPs

The first time a JSP is requested, it might take longer to display than you expect. Each time a page is requested, the servlet-version of the page is translated into HTML and rendered. New pages are not yet converted into servlets, so they must first be translated into raw Java code and then compiled into servlets before undergoing the final translation into HTML. You can minimize the delay by precompiling all pages at startup; see your application installation guide for instructions.

You can precompile individual pages at server startup by specifying them in your Web application deployment descriptor. For example, you might specify the JSP `MyPage.jsp` as follows:

```
<servlet>
  <servlet-name>MyPage.jsp</servlet-name>

  <jsp-file>/path/to/jsp/MyPage.jsp</jsp-file>

  <load-on-startup>1</load-on-startup>
</servlet>
```

where:

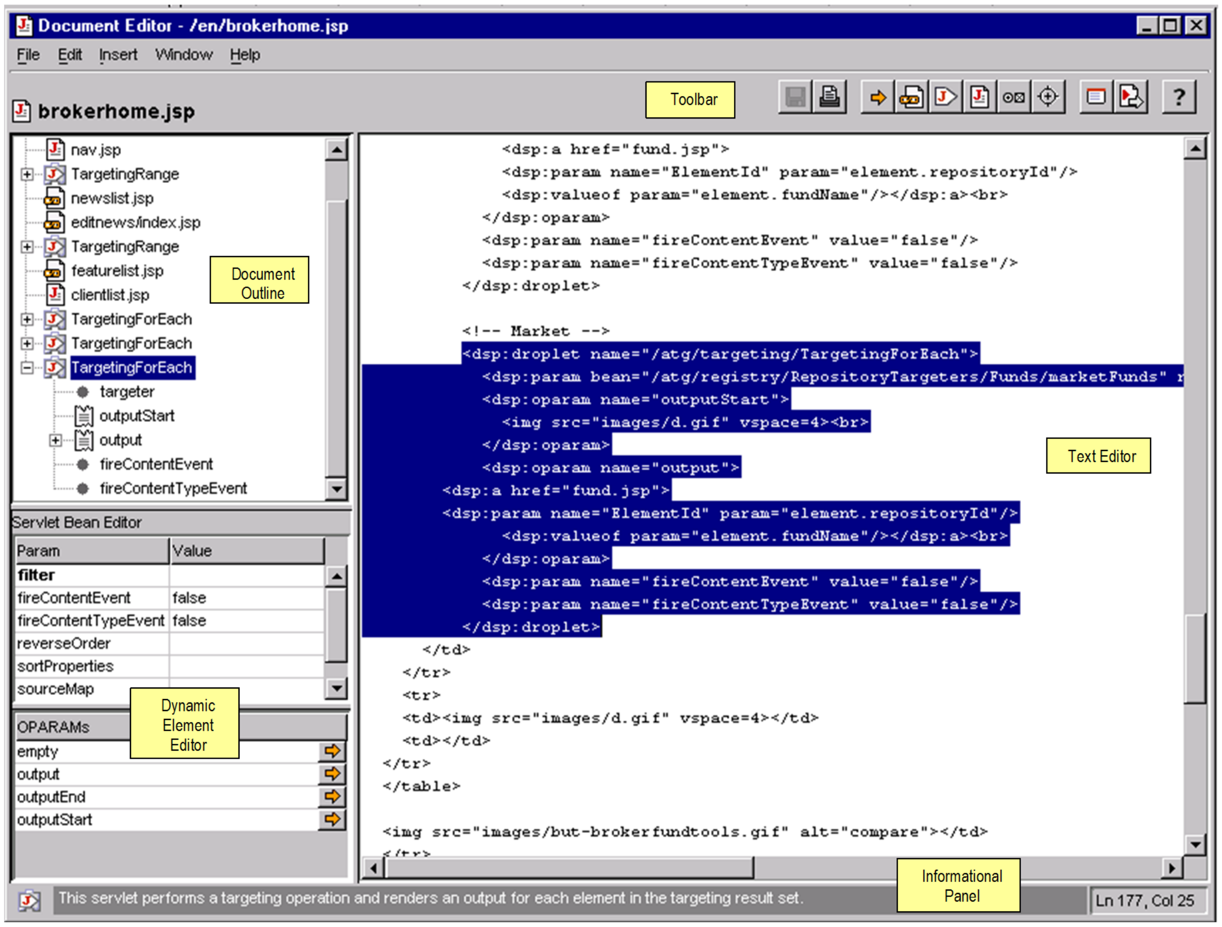
- `<servletname>` identifies the servlet to compile.
- `<jspfile>` identifies the path to the servlet.
- `<loadonstartup>` identifies the order in which to compile this servlet.

Appendix E. ATG Document Editor

This appendix shows how to use ATG's proprietary Document Editor to edit JSPs. The following topics are covered::

Document Editor Window

ATG Control Center opens a new Document Editor window whenever you open an existing document or create one. It's divided into three synchronized panels, each of which gives you a different view of the open document:



```
nav.jsp
TargetingRange
newslist.jsp
editnews/index.jsp
TargetingRange
featurelist.jsp
clientlist.jsp
TargetingForEach
TargetingForEach
TargetingForEach
    targeter
    outputStart
    output
    fireContentEvent
    fireContentTypeEvent
```

Servlet Bean Editor

Param	Value
filter	
fireContentEvent	false
fireContentTypeEvent	false
reverseOrder	
sortProperties	
sourceMap	

OPARAMs

- empty
- output
- outputEnd
- outputStart

```
            <dsp:a href="fund.jsp">
            <dsp:param name="ElementId" param="element.repositoryId"/>
            <dsp:valueof param="element.fundName"/></dsp:a><br>
          </dsp:oparam>
          <dsp:param name="fireContentEvent" value="false"/>
          <dsp:param name="fireContentTypeEvent" value="false"/>
        </dsp:droplet>

        <!-- Market -->
        <dsp:droplet name="/atg/targeting/TargetingForEach">
          <dsp:param bean="/atg/registry/RepositoryTargeters/Funds/marketFunds" r
          <dsp:oparam name="outputStart">
            <img src="images/d.gif" vspace=4><br>
          </dsp:oparam>
          <dsp:oparam name="output">
      <dsp:a href="fund.jsp">
      <dsp:param name="ElementId" param="element.repositoryId"/>
            <dsp:valueof param="element.fundName"/></dsp:a><br>
          </dsp:oparam>
          <dsp:param name="fireContentEvent" value="false"/>
          <dsp:param name="fireContentTypeEvent" value="false"/>
        </dsp:droplet>
      </td>
    </tr>
    <tr>
    <td><img src="images/d.gif" vspace=4></td>
    <td></td>
  </tr>
  </table>

  <img src="images/but-brokerfundtools.gif" alt="compare"></td>
```

This servlet performs a targeting operation and renders an output for each element in the targeting result set.

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- The Document Outline (page 357) panel at top left, shows the full hierarchy of dynamic elements in the document, including all ATG Servlet Beans, anchors, etc. This lets you quickly find and edit dynamic elements.
- The Text Editor (page 357) panel on the right displays the complete code in the document.
- The Dynamic Element Editor (page 357) panel in the lower left enables you to set the variables in dynamic elements.

The Document Outline, the Text Editor, and the Dynamic Element Editor are synchronized. When you click on one of the elements in the Document Outline, the Text Editor highlights the code that expresses that element, and the Dynamic Element Editor displays the appropriate editor. Similarly, if you move the insertion point to a dynamic element in the Text Editor, the corresponding element is highlighted in the Document Outline.

The full path of the active document appears at the top of the Document Editor window along with the File, Edit, Insert, Window, and Help menus and toolbar. You can use the toolbar to quickly insert dynamic elements in your JSP at the location of the insertion point in the Text Editor. When you click one of these toolbar buttons, the Document Editor launches a wizard that prompts you for the information needed to complete the dynamic element. The **Preview** button opens the page in your Web browser. Other buttons let you save the document, print it, or view the help system.

Document Outline

When you open a document in the Document Editor, the Document Outline shows a fully opened hierarchy of all the dynamic elements in the document. Dynamic elements that appear in this view include all ATG Servlet Beans, forms, inputs, and anchors. Other elements, including basic HTML elements, are also displayed. The elements of your document are displayed in the Document Outline with an icon and a text identifier, as follows:

Icon	Element	Text
📄	Open a JSP or JSPF	pathname of page
📄	XML page	pathname of page
📄	anchor	URL of destination
📄	ATG Servlet Bean	name of component
📄	imported component (see Viewing Components in Nucleus (page 341) for a list of the component types and icons used)	name of component
⊗☒	form	FORM
➡	`<dsp:valueof>`	name of parameter, bean, or bean property
📄	Java code segment	JAVA
⚠	error	(error)

Text Editor

The Text Editor displays the text of the active document. You can use the panel as a text editor to define your documents or other elements of your Web application. When you move the insertion point to a dynamic element in the Text Editor, the corresponding Dynamic Element Editor opens in the lower left panel.

Dynamic Element Editor

The Dynamic Element Editor displays the parameters and values that pertain to any dynamic elements that are highlighted in the Text Editor. The specific editor that appears here depends on the selection in the Text Editor. The Document Editor uses four different types of Dynamic Element Editors:

- Available Page Values Editor (page 358)
- ATG Servlet Bean Editor (page 358)
- Anchor Editor (page 358)

- Insert Document Editor (page 358)

Available Page Values Editor

This element editor appears when the insertion point is inside an `<dsp:oparam>` tag or anywhere in the Text Editor **except** within a dynamic element tag. This editor has two tabs: Page Params and Imported Beans:

PageParams
The Page Params tab lists all parameters that have been declared in the active JSP. Select a parameter and click the **Insert** button to insert that parameter into the page, using the `<dsp:valueof param=...>` tag.

ImportedBeans
The Imported Beans tab lists all JavaBeans that have been imported into the page. You can expand each bean to show its properties. Use the **Insert** button to insert the value of a property into the page and the **Import** button to import additional beans into the page.

ATG Servlet Bean Editor

The ATG Servlet Bean Editor appears when the cursor is anywhere inside or between `<dsp:droplet></dsp:droplet>` tags, except when it is between `<dsp:oparam></dsp:oparam>` tags.

The servlet bean editor displays each input parameter and open parameter (OPARAM) defined by the servlet bean. The input parameters are listed in a table that shows these parameters and their values. The value for any input parameter that is not defined in the page is shown as empty. You can enter a value for one of these parameters, and the parameter and its value will be automatically inserted in the page. You can also change the value for a parameter that is defined on the page, and the new value will replace the old value. You can insert an OPARAM by clicking on the arrow to the right of the parameter's name.

Anchor Editor

This element editor appears when the insertion point is anywhere inside or between `<dsp:a href=...></dsp:a>` tags. The Anchor Editor has two parts: Anchor Destination and Open Document button.

AnchorDestination
This field displays the URL to the anchor link destination. To select a file as the destination document:

1. Click **...** to open the Select an Anchor URL dialog. This dialog box displays the directory structure of your document tree.
2. From the top pane, select the document root that holds the destination file. The active document root is currently selected.

   Note: All document roots available to your ATG instance display in this tree menu, including those that are part of applications which are not currently running.
3. From the bottom pane, select the file that will be the link destination and then click **OK**.

OpenDocumentbutton
This button is active if the destination is a file within the active application. Click this button to open another Document Editor window for the destination document.

Insert Document Editor

This element editor appears when the insertion point is anywhere inside or between `<dsp:include></dsp:include>` tags. The Insert Document Editor has three parts: Inserted Document, Open Document button, and Passed Parameters.

InsertedDocument
This field displays the URL (relative pathname or absolute URL) of the file being inserted at this point. To select a file as the document to be inserted:

1. Click **...** to open the Select a Document to Insert dialog box. This dialog box displays the directory structure of your Web application document tree.
2. Select the local file to be the destination of the anchor link and click **OK**.

   Note: The wizard assumes the file to embed is local. For destinations that are not local to the current page or Web application, skip the wizard and instead replace the `page` attribute with the `src` attribute and enter the entire path and file name. When an application references files in another Web application, make sure `web.xml` contains the context path to the secondary application. See Absolute URLs (page 25) for instructions.

OpenDocumentbutton
Click this button to open another Document Editor window for the inserted document.

PassedParameters
Displays a list of parameters and values that are passed to the inserted document.

Creating a JSP

To create a JSP.

1. In the Pages and Components task area, find or create the folder to store the new JSP.
2. Highlight the destination folder and click **NewDocument**.
3. In the Select Document Template dialog, choose **Page(JSP)**.
4. In the New JavaServer Page dialog, enter the document's title and click **Finish**.
5. In the Input New Document Name dialog, enter the file name and click **OK.**

   Note: The names of the document and its folder should be different.

A Document Editor window opens and displays the new document.

Anatomy of a JSP

A new JSP looks like this:

```
<%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>

<dsp:page>

<html>
<head>
  <title>A Simple Test Page</title>
```

```
</head>

<body bgcolor="#ffffff">
  <h1>A Simple Test Page</h1>

</body>
</html>

</dsp:page>
```

The Document Editor initially supplies these markup tags:

- Title, background color, and heading tags.
- A standard JSP page directive that specifies the DSP tag library and the prefix `dsp` for the tags in that library:

  ```
  <%@ taglib uri="http://www.atg.com/taglibs/daf/dspjspTaglib1_0" prefix="dsp" %>
  ```

- `dsp:page` tags that enclose the body of the JSP. These tags facilitate ATG page processing and must be included in each page as they are in this example.

Other Items to import

To comply with the JSP specification, you must import any class you reference in a JSP to make it available to the page. For example, in order to embed Java in a tag and reference ATG specific classes, you must use an `@import` directive to make `atg.servlet` package available to the page. For example:

```
<%@ page import="atg.servlet.*"%>
```

Changing the tag library directive

A tag library can be deployed in two ways. By default, the DSP tag libraries tld files are kept in the tag library jar file inside `WEBINF/lib`. The URI used in JSP page directives are defined in the tld itself.

The URI in the page directive must match the URI specified in either the tag library's tld file (as is the case with the DSP tag libraries) or `web.xml`. If you want to define a different URI for the DSP tag libraries, specify the new URI and tld location in `web.xml`. Then, you can use either the default or the new URI in your JSPs.

For instructions on making your J2EE application deployment-ready, see the J2EE information provided by your application server vendor.

If you prefer a prefix other than the default and wish to use the Document Editor, you must use one of the following URIs:

- `http://www.atg.com/taglibs/daf/dspjspTaglib1_0`
- `dspTaglib`
- `dsp`

Then you need to modify the tag libraries `web.xml` file and the JSPs that use it.

Although you can set the URI to any value you want, a URI other than these three causes the Document Editor to disregard the prefix setting in the page directive and instead use the default (`dsp`).

When you change the prefix in the DSP tag libraries declaration statement, the Document Editor adjusts to the new prefix and provides it to any new tags you insert. Existing tags must be updated manually.

Displaying Property Values

JSPs can display the property values of Nucleus components. This gives your application a simple way to display dynamic information based on the states of Java objects.

Importing Components

In order to display a component's properties in a JSP, you first must import it so it is visible in the Document Editor. This is accomplished by an `import` construct modeled after Java class imports:

```
<dsp:importbean bean="full-component-name"/>
```

For example, if you import the `/samples/Student_01` component, the following line is added to your file:

```
<dsp:importbean bean="/samples/Student_01"/>
```

To add a `dsp:importbean` tag to a page:

1. Navigate to the Imported Beans tab of the Available Page Values Editor and click **Import**.
2. From the Select Component to Import dialog, pick a component by module or by path, and click **OK**.

After you import a component, the component and its properties become available in the Dynamic Element Editor. Also, importing a component into a page lets the page omit a component's full path name in references to it. You're not required to import any Nucleus components.

Inserting a dsp:valueof tag

You can specify to display a component property with the `dsp:valueof` tag. To insert the `<dsp:valueof>` tag:

1. In the Available Page Values Editor (visible in the Dynamic Element Editor panel), go to the Imported Beans tab and expand the desired component to list its properties.
2. Select the property to display and click **Insert**.

   The `dsp:valueof` tag appears in the Text Editor.
3. To include a default value, remove the final back slash, add an end tag (`</dsp:valueof>`), and insert your default value between that start tag and end tag.

For example:

```
<%@ taglib uri=http://www.atg.com/taglibs/daf/dspjspTaglib1_0 prefix="dsp" %>

<dsp:page>
<dsp:importbean bean="/samples/Student_01"/>

<html>
<body>

Name: <dsp:valueof bean="Student_01.name"/><p>
Age: <dsp:valueof bean="Student_01.age"/><p>

</body>
</html>
```

```
</dsp:page>
```

Note: Because the component `/samples/Student_01` is imported, the inserted `dsp:valueof tag` includes only the component and property names and excludes the pathname.

Previewing JSPs

If an open JSP is in a running application, you can preview a JSP in the Document Editor if it is in a running application: simply click the **Preview** button. This opens the page in your Web browser.

You can also open a JSP directly in your browser. For instructions, see the *ATG Installation and Configuration Guide*.

Embedding Documents

`dsp:include` lets you embed one page in another. For example, to embed `content.jsp` in `foyer.jsp`:

1. Open `foyer.jsp` in the Document Editor.
2. Click **InsertDocument** in the toolbar.

   The Select a Document dialog box appears, displaying all files in the document root.
3. Find `content.jsp` click **OK**.

   The Document Editor inserts the `dsp:include` tag, using the page attribute to identify the page you are embedding:

   ```
   <dsp:include page="content.jsp"></dsp:include>
   ```

   Note: The Document Editor assumes the embedded page is in the current Web application. For information about embedding pages from other Web applications, see dsp:include (page 158).

Inserting ATG Servlet Beans

You can use the Document Editor to insert ATG servlet beans. For example, you can insert a `ForEach` servlet bean as follows:

1. Place the cursor in the body of the document where you wish to insert the servlet bean.
2. From the Insert menu, select Insert Servlet Bean. The Insert Servlet Bean dialog box opens.
3. Select Servlet Beans from the Categories list, then select `ForEach` from the Components list. Click **OK**.
4. In the Insert `ForEach` Servlet Bean wizard, click the "**...**" button.

5. In the Choose a Dynamic Value dialog box, enter the array property whose elements you wish to retrieve. For example:

   ```
   bean="/samples/Student_01.subjects
   ```

6. Click **OK**, and then click Next in the wizard.
7. In the Specify output text box, specify the output to display for each property element. For example:

   ```
   <li><dsp:valueof param="element"></dsp:valueof>
   ```

8. Click **Next**.
9. In the Specify `outputStart` text box, enter the text to display before loop execution begins. For example:

   ```
   <p>The student is registered for these courses:
   ```

10. Click **Next**.
11. Leave the Specify `outputEnd` text box blank, and click **Next**.
12. Leave the Specify `empty` text box blank, and click **Finish**.

The document should now contain these tags:

```
<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param bean="/samples/Student_01.subjects" name="array"/>
  <dsp:oparam name="outputStart">
    <p>The student is registered for these courses:
  </dsp:oparam>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element"></dsp:valueof>
  </dsp:oparam>
</dsp:droplet>
```

Importing servlet beans

To make a servlet bean visible in the Dynamic Element Editor, import the component into the page with `dsp:importbean`. For example:

```
<dsp:importbean bean="/atg/dynamo/droplet/ForEach"/>
```

Importing the servlet bean lets you refer to it without including the entire path, as in this line:

```
<dsp:droplet name="ForEach">
```

By importing a Nucleus component into the `pageContext` with the `dsp:importbean` tag, other (non-EL) references to that component can exclude the Nucleus address.

Inserting a Targeting Servlet Bean

The Document Editor in the Control Center includes wizards for embedding targeting servlet beans in your page. To embed a targeting servlet bean in a JSP:

1. Open a Document Editor for the page in which you want the targeted content to appear.
2. Place the cursor in the body of the document, immediately below the two lines you just added.
3. Click the **InsertTargetingServlet** button, which looks like this:
   The Insert Targeting Servlet dialog box opens.
4. Select Personalization from the Modules list, then select Servlet Beans from the Categories list.
5. From the Components list, select the targeting servlet bean you want to use, and click **OK**.
6. In the Specify Targeting Service dialog, select the targeter to use with the servlet bean.
7. Depending on which targeting servlet you selected, the Document Editor presents a series of dialogs that prompt you for the values of the parameters that configure the behavior of the servlet. You can also use the ATG Servlet Bean Editor to set the parameters of the targeting servlet bean.

Adding Slots

Slots let you display dynamic content on your Web site pages. To add the slot where you wish it to appear in the JSP:

1. Open the JSP.
2. Click **InsertTargetingServletBean** and add an appropriate servlet bean—for example `TargetingForEach`.
3. In the wizard dialog Specify Targeting Service, specify the slot component. The system enters the slot component as the `Targeter` parameter of the servlet bean.

Inserting Forms

You can use the Insert Form wizard to create a form that uses a form handler:

1. Open a document in the Document editor.
2. Place the insertion point within the body of the document, and from the Insert menu, select Insert Form.
3. In the Insert Form Wizard, click the "**...**" button.
4. In the Select Form Handler Component dialog box, select [all modules] from the Modules list, then select Form Handlers from the Categories list.

   The Components list shows you all of the form handlers available.
5. Select a form handler and click **OK**.

The wizard then guides you through the process of creating the form. The dialogs are tailored to the type of form handler you have selected.

Creating Profile Form Pages

The Control Center provides two shortcuts for creating JSPs that contain profile form:

- Start with a blank page template, and use the Insert Form wizard to insert a profile form.
- Start with a profile form template that contains the type of profile form you want.

Using the Insert Form Wizard

To create a profile form with the Insert Form wizard:

1. Create a document from the Page (JSP) template.
2. Open the document and place the insertion point within the body,
3. From the Insert menu, select Insert Form.
4. In the Insert Form Wizard, click **...**
5. In the Select Form Handler Component dialog box, click the **ByPath** radio button. Navigate to `/atg/userprofiling`, and select `ProfileFormHandler`. Click **OK**.
6. In the Insert Form Wizard, click **Next**.

   The Configure Input Fields dialog appears, displaying all of the available profile properties.
7. For each profile property to include in the profile form, specify the following:
   - Check `Include` to include the property.
   - In the Input Field Format column, select an input field format from the choices provided. (When you click on the Input Field Format cell for the property, a drop-down list of field formats appears.)
   - In the Default Value column, select whether the current value of the property should appear in the field when the user accesses the page, or that the field should be empty. (In most cases, you should select the current value of the property as the default. If the default is empty, and the user does not fill in the field, then the property is set to null when the user submits the form. Also, note that if the `extractDefaultValuesFromProfile` property of the Profile Form Handler is false, all fields will be empty in the form, regardless of the defaults you select.)
   - Check `Req'd` if the property is required to have a value. (If a user submits a form without completing a required field, an error results.)
8. Click **Next**. The Configure Submit Buttons and URLs dialog box appears.
9. In the lower part of the dialog box, enter text in the Button Text column for each submit operation you want to include on your page. (The text you enter appears on the button that invokes the operation.
10. To specify pages where you wish to redirect the after the operation succeeds or fails, click **...** and select the Web application and file that serves as the success or failure destination. (The `cancel` operation cannot have an Failure URL associated with it, so that value cannot be specified.)
11. Click **Finish**.

The complete form appears in the Document Editor. Note that the profile property input fields appear on the page in alphabetical order, which might not be the order you desire. Edit the form in the Document Editor until the fields appear in the desired order.

Using a Form Template

You can create a page containing a profile form by starting from a profile form template. The Personalization module includes the following profile form templates:

- Login Form (JSP)
- Logout Form (JSP)
- Change Password Form (JSP)

Each of these templates is a complete JSP containing a profile form, which you can then edit to match the content and format you want. To create a document from one of these templates:

1. In the Control Center, select the Pages and Components » Pages window.
2. From the File menu, choose **NewDocument**.
3. In the Select a Document Template dialog box, select **Personalization** from the Modules list, and then select the template you want from the Templates list. Click **OK**.
4. In the Document Title dialog box, enter a title for the document, and click **Finish**.
5. In the Input New Document Name dialog box, select where in the hierarchy you want to place the document, enter a name for the document, and then click **OK**.

   The document is created, and opens in the Document Editor.

Note: Each of these forms uses the properties in the standard profile template that comes with ATG Personalization. You might need to edit the profile forms to match the profile properties of your specific profile template.

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