

# Components

## Overview

The largest and most complex of the extension types, a component is in fact a separate application. You can think of a component as something that has its own functionality, its own database tables and its own presentation. So if you install a component, you add an application to your website. Examples of components are a forum, a blog, a community system, a photo gallery, etc. You could think of all of these as being a separate application. Everyone of these would make perfectly sense as a stand-alone system. A component will be shown in the main part of your website and only one component will be shown. A menu is then in fact nothing more than a switch between different components.

Throughout these articles, we will be using {ComponentName} to represent the name of a component that is variable, meaning the actual component name is chosen by the developer. Notice also that case is important. {componentname} will refer to the lowercase version of {ComponentName}, eg. "CamelCasedController" -> "camelcasedcontroller". Similarly, {ViewName} and {viewname}, {ModelName} and {modelname}, {ControllerName} and {controllername}.

## Examples

Here we have a basic front-end component that simply displays a "Hello, World!" message.

**Download:** [Hello World component](#)

In the com\_drwho example component, we demonstrate working with a simple database table. The example shows how to output a listing (with pagination), a form for entering new items, and saving to the database.

**Download:** [Dr Who component](#)

## Directory Structures & Files

Components follow the Model-View-Controller (MVC) design pattern. This pattern separates the data gathering (Model), presentation (View) and user interaction (Controller) activities of a module. Such separation allows for expanding or revising properties and methods of one section without requiring additional changes to the other sections.

In its barest state, no database entry or other setup is required to "install" a component. Simply placing the component into the /components directory will make it available for use. However, if a component requires the installation of database tables or configuration (detailed in the config.xml file), then an administrator must install the component using one of the installation

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options in the administrative back-end.

**Note:** Components not installed via one of the installation options or without a database entry in the #\_\_components table will not appear in the administrative list of available components.

To illustrate the typical component directory structures and files:

```
/hubzero
  /administrator
    /components
      /com_example
    ...
  /components
    /com_example
      /assets
      /css
      /js
      /img
      /controllers
        example.php
      /models
        foo.php
      /views
        /index
        /tmpl
          display.php
          display.xml
      example.php
      router.php
```

In the above example, all component related files and sub-directories are split between the administrator components and front-end components. In both cases, the files are contained within directories titled "com\_example". Some directories and files are optional but, for this example, we've included the most common setup.

The file structure in the administrative portion of the component is exactly the same as in the front side. Note that the view, models, controllers etc. of the front and admin parts are completely separated, and have nothing to do with each other - the front part and the admin part can be thought of as two different components! A view in the /administrator/components/com\_example folder may have a counterpart with the same name in the /components/com\_example folder, yet the two views have nothing in common but their name.

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### Directory & File Explanation

`/com_{componentname}/{componentname}.php`

This is the component's main file and entry point *for the front-end part*.

`/com_{componentname}/views`

This folder holds the different views for the component.

`/com_{componentname}/views/{viewname}`

This folder holds the files for the view `{ViewName}`.

`/com_{componentname}/views/{viewname}/tmpl`

This folder holds the template files for the view `{ViewName}`.

`/site/views/{viewname}/tmpl/default.php`

This is the default template for the view `{ViewName}`.

`/com_{componentname}/models`

This folder holds additional models, if needed by the application.

`/com_{componentname}/models/{modelname}.php`

This file holds the model class `{ComponentName}Model{ModelName}`. This class must extend the base class "HubzeroBaseModel". Note that the view named `{ViewName}` will by default load a model called `{ViewName}` if it exists. Most models are named after the view they are intended to be used with.

`/com_{componentname}/controllers`

This folder holds additional controllers, if needed by the application.

`/com_{componentname}/controllers/{controllername}.php`

This file holds the controller class `{ComponentName}Controller{ControllerName}`. This class must extend the base class "HubzeroComponentsSiteController".

### Naming Conventions

#### Classes

The model, view and controller files use classes from the framework, `HubzeroBaseModel`, `HubzeroComponentView` and `HubzeroComponentSiteController`, respectively. Each class is then extended with a new class specific to the component.

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The base controller class for the site is named {ComponentName}Controller. For the administrative section, an "s" is added to the ComponentName, giving {ComponentName}sController. Classnames for additional controllers found within the controllers/ subdirectory are {ComponentName}Controller{ControllerName} for site/ and {ComponentName}sController{ControllerName} for admin/.

The view class is named {ComponentName}View{ViewName}.

The model class is named {ComponentName}Model{ModelName}. Remember that the {ModelName} and the {ViewName} should be the same.

### **Reserved Words**

There are reserved words, which can't be used in names of classes and components.

An example is word "view" (in any case) for view class (except "view" that must be second part of that class name). Because first part of view class name is the same as controller class name, controller class name also can't contain word "view". And because of conversion (although violating of it won't produce an error) controller class name must contain component name, so component name also can't contain word "view". So components can't be named "com\_reviews", or if they are, they must violate naming convention and have different base controller class name (or have some other hacks).

### **Installation**

#### **Installing**

See [Installing Extensions](#) for details.

#### **Uninstalling**

See [Uninstalling Extensions](#) for details.

# Manifests

## Overview

It is possible to install a component manually by copying the files using an SFTP client and modifying the database tables. It is more efficient to create a package file in the form of an XML document that will allow the Joomla! Installer to do this for you. This package file contains a variety of information:

- basic descriptive details about your component (i.e. name), and optionally, a description, copyright and license information.
- a list of files that need to be copied.
- optionally, a PHP file that performs additional install and uninstall operations.
- optionally, an SQL file which contains database queries that should be executed upon install/uninstall

**Note:** All components must be prefixed with com\_.

## Structure

This XML file just lines out basic information about the component such as the owner, version, etc. for identification by the installer and then tells the installer which files should be copied and installed.

A typical component manifest:

```
<?xml version="1.0" encoding="utf-8"?>
<extension type="component" version="1.5.0">
  <name>hello_world</name>
  <!-- The following elements are optional and free of formatting constraints -->
  <creationDate>2007 01 17</creationDate>
  <author>John Doe</author>
  <authorEmail>john.doe@example.org</authorEmail>
  <authorUrl>http://www.example.org</authorUrl>
  <copyright>Copyright Info</copyright>
  <license>License Info</license>
  <!-- The version string is recorded in the components table -->
  <version>Component Version String</version>
  <!-- The description is optional and defaults to the name -->
  <description>Description of the component ...</description>

  <!-- Custom Install Script to execute -->
  <!-- Note: This will be copied from the root of the installation pack
```

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```
age to the administrator directory automatically -->
<installfile>install.eventlist.php</installfile>

<!-- Custom Uninstall Script to execute -->
<!-- Note: This will be copied from the root of the installation pack
age to the administrator directory automatically -->
<uninstallfile>uninstall.eventlist.php</uninstallfile>

<!-- Install Database Section -->
<install>
  <sql>
    <file driver="mysql" charset="utf8">install.mysql.utf8.sql</file>
    <file driver="mysql">install.mysql.nonutf8.sql</file>
  </sql>
</install>

<!-- Uninstall Database Section -->
<uninstall>
  <sql>
    <file driver="mysql" charset="utf8">uninstall.mysql.utf8.sql</file>
    <file driver="mysql">uninstall.mysql.nonutf8.sql</file>
  </sql>
</uninstall>

<!-- Site Main File Copy Section -->
<files>
  <filename>index.html</filename>
  <filename>test.php</filename>
  <folder>views</folder>
</files>

<!-- Site Main Language File Copy Section -->
<languages>
  <language tag="en-GB">en-GB.com_test.ini</language>
  <language tag="de-DE">de-DE.com_test.ini</language>
  <language tag="nl-NL">nl-NL.com_test.ini</language>
</languages>

<!-- Site Main Media File Copy Section -->
<media destination="com_test">
  <filename>image.png</filename>
  <filename>flash.swf</filename>
</media>

<administration>
  <!-- Administration Menu Section -->
```

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```
<menu img="components/com_test/assets/test-16.png">EventList</menu>
<submenu>
  <!-- Note that all & must be escaped to & for the file to be valid
XML and be parsed by the installer -->
  <menu link="option=com_helloworld&task=hello&who=world">Hello World
!</menu>
  <!-- Instead of link you can specify individual link attributes -->
  <menu img="icon" task="hello" controller="z" view="a" layout="b" su
b="c">Hello Again!</menu>
  <menu view="test" layout="foo">Testing Foo Layout</menu>
</submenu>

<!-- Administration Main File Copy Section -->
<!-- Note the folder attribute: This attribute describes the folder
to copy FROM in the package to install therefore files copied
in this section are copied from /admin/ in the package -->
<files folder="admin">
  <filename>index.html</filename>
  <filename>admin.test.php</filename>
</files>

<!-- Administration Language File Copy Section -->
<languages folder="admin">
  <language tag="en-GB">en-GB.com_test.ini</language>
  <language tag="de-DE">de-DE.com_test.ini</language>
  <language tag="nl-NL">nl-NL.com_test.ini</language>
</languages>

<!-- Administration Main Media File Copy Section -->
<media folder="admin" destination="com_test">
  <filename>admin-image.png</filename>
  <filename>admin-flash.swf</filename>
</media>
</administration>
</extension>
```



# Entry Point

## Overview

The CMS is always accessed through a single point of entry: `index.php` for the Site Application or `administrator/index.php` for the Administrator Application. The application will then load the required component, based on the value of 'option' in the URL or in the POST data. For our component, the URL would be:

For search engine friendly URLs:  
`/hello`

For non-SEF URLs:  
`/index.php?option=com_hello`

This will load our main file, which can be seen as the single point of entry for our component: `components/com_hello/hello.php`.

## Implementation

```
<?php
// No direct access
defined( '_JEXEC' ) or die( 'Restricted access' );

// Get the requested controller
$controllerName = JRequest::getCmd('controller', JRequest::getCmd('view', 'one'));

// Ensure the controller exists
if (!file_exists(JPATH_COMPONENT . DS . 'controllers' . DS . $controllerName . '.php'))
{
    $controllerName = 'one';
}
require_once(JPATH_COMPONENT . DS . 'controllers' . DS . $controllerName . '.php');
$controllerName = 'ExampleController' . ucfirst(strtolower($controllerName));

// Instantiate controller
$controller = new $controllerName();
```

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```
// Execute whatever task(s)
$controller->execute();
// Redirect as needed
$controller->redirect();
```

The first statement is a security check.

JPATH\_COMPONENT is the absolute path to the current component, in our case components/com\_hello. If you specifically need either the Site component or the Administrator component, you can use JPATH\_COMPONENT\_SITE or JPATH\_COMPONENT\_ADMINISTRATOR.

DS is the directory separator of your system: either '/' or '\'. This is automatically set by the framework so the developer doesn't have to worry about developing different versions for different server OSs. The 'DS' constant should always be used when referring to files on the local server.

First we look for a requested controller name. There is a default set in case none has been passed or if the requested controller is not found. With the controller name, we build the class name for the controller following the standard camel-cased pattern of {Component name}Controller{Controller name}

After the controller is created, we instruct the controller to execute the task, as defined in the URL: index.php?option=com\_hello&task=sometask. If no task is set, the default task 'display' will be assumed. When display is used, the 'view' variable will decide what will be displayed. Other common tasks are save, edit, new...

The controller might decide to redirect the page, usually after a task like 'save' has been completed. This last statement takes care of the actual redirection.

The main entry point (hello.php) essentially passes control to the controller, which handles performing the task that was specified in the request.

Note that we don't use a closing php tag in this file: ?>. The reason for this is that we will not have any unwanted whitespace in the output code. This is default practice and will be used for all php-only files.

# Controllers

## Overview

The controller is responsible for responding to user actions. In the case of a web application, a user action is (generally) a page request. The controller will determine what request is being made by the user and respond appropriately by triggering the model to manipulate the data appropriately and passing the model into the view. The controller does not display the data in the model, it only triggers methods in the model which modify the data, and then pass the model into the view which displays the data.

Most components have two controllers: one for the front-end and one for the back-end.

## Creating the Front-end Controller

```
<?php
// No direct access
defined('_JEXEC') or die('Restricted access');

class HelloControllerOne extends HubzeroComponentSiteController
{
    public function displayTask()
    {
        // Pass the view any data it may need
        $this->view->greeting = 'Hello, World!';

        // Set any errors
        if ($this->this->getError())
        {
            foreach ($this->getErrors() as $error)
            {
                $view->setError($error);
            }
        }

        // Output the HTML
        $this->view->display();
    }
}
```

The first, and most important part to note is that we're extending

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HubzeroComponentSiteController which brings several tools and some auto-setup for us.

**Note:** HubzeroComponentSiteController extends HubzeroBaseObject, so all its methods and properties are available.

In the execute() method, the list of available tasks is built from only methods that are 1) public and 2) end in "Task". When calling a task, the "Task" suffix should be left off. For example:

```
// This route
JRoute::_('index.php?option=com_example&task=other');

// Refers to
....
public function otherTask()
{
    ...
}
....
```

If no task is supplied, the controller will default to a task of "display". The default task can be set in the controller:

```
<?php
// No direct access
defined('_JEXEC') or die('Restricted access');

ximport('Hubzero_Controller');

class HelloControllerOne extends HubzeroComponentSiteController
{
    public function execute()
    {
        // Set the default task
        $this->registerTask('__default', 'mydefault');

        // Set the method to execute for other tasks
        // The following can be called by task=delete and will execute the r
        emoveTask method
        $this->registerTask('delete', 'remove'); // (task, method name);

        parent::execute();
    }
    ...
}
```

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```
}
```

Each controller extending `HubzeroComponentSiteController` will have the following properties available:

- `_option` - String, component name (e.g., `com_example`)
- `_controller` - String, controller name
- `view` - Object (`JView`)
- `config` - Object (`JRegistry`), component config
- `database` - Object (`JDatabase`)
- `juser` - Object (`JUser`)

```
class HelloControllerOne extends HubzeroComponentSiteController
{
    public function displayTask()
    {
        $this->view->userName = $this->juser->get('name');
        $this->view->display();
    }
}
```

### Auto-generation of views

The `HubzeroComponentSiteController` automatically instantiates a new `HubzeroComponentView` object for each task and assigns the component (`$option`) and controller (`$controller`) names as properties for use in your view. Controller names map to view directory and task names directly map to view names.

```
/{component}
  /views
    /one (controller name)
      /tmpl
        /display.php
        /remove.php
```

Example usage within a view:

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```
<p>This is component <?php echo $this->option; ?> using controller: <?php echo $this->controller; ?></p>
```

### Changing view layout

As mentioned above, the view object is auto-generated with the same layout as the current `$task`. There are times, however, when you may want to use a different layout or are executing a task after directing through from a previous task (example: `saveTask` encountering an error and falling through to the `editTask` to display the edit form with error message). The layout can easily be switched with the `setLayout` method.

```
{component}
  /views
    /one (controller name)
      /tmpl
        /display.php
        /world.php

//-----
//-----

class HelloControllerOne extends HubzeroComponentSiteController
{
  public function displayTask()
  {
    // Set the layout to 'world.php'
    $this->view->setLayout('world');

    // Output the HTML
    $this->view->display();
  }
}
```

Any assigned data or vars to the view will not be effected.

### Creating the Admin Controller

Administrator component controls are built the same and function the same as the Front-end (site) controllers with one key difference: they extends `HubzeroComponentAdminController`.

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```
<?php
// No direct access
defined('_JEXEC') or die('Restricted access');

class ExampleControllerOne extends HubzeroComponentAdminController
{
    ...
}
```

# Helpers

## Overview

A helper class is a class filled with static methods and is usually used to isolate a "useful" algorithm. They are used to assist in providing some functionality, though that functionality isn't the main goal of the application. They're also used to reduce the amount of redundancy in your code.

## Implementation

Helper classes are stored in the helper sub-directory of your component directory. Naming convention typically follows a pattern of {ComponentName}Helper({HelperName}). Therefore, our helper class is called HelloHelperOutput.

Here's our com\_hello/helpers/output.php helper class:

```
<?php
// No direct access

defined( '_JEXEC' ) or die( 'Restricted access' );

/**
 * Hello World Component Helper
 */
class HelloHelperOutput
{
    /**
     * Method to make all text upper case
     *
     * @access public
     */
    public static function shout($txt='')
    {
        return strToUpper($txt).'!';
    }
}
```

We have one method in this class that takes all strings passed to it and returns them uppercase with an exclamation point attached to the end. To use this helper, we do the following:



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```
class HelloControllerHello extends HubzeroComponentSiteController
{
    public function display()
    {
        include_once(JPATH_COMPONENT.DS.'helpers'.DS.'output.php');

        $greeting = HelloHelperOutput::shout("Hello World");
        $this->set( 'greeting', $greeting );

        $this->view->display();
    }
}
```

# Models

## Overview

The concept of model gets its name because this class is intended to represent (or 'model') some entity.

## Creating A Model

All HUBzero models extend the HubzeroBaseModel class. The naming convention for models in the framework is that the class name starts with the name of the component, followed by 'model', followed by the model name. Therefore, our model class is called HelloModelHello.

```
<?php
// No direct access
defined( '_JEXEC' ) or die( 'Restricted access' );

/**
 * Hello Model
 */
class HelloModelHello extends HubzeroBaseModel
{
    /**
     * Gets the greeting
     * @return string The greeting to be displayed to the user
     */
    public function getGreeting()
    {
        return 'Hello, World!';
    }
}
```

You will notice a lack of include, require, or import calls. Hubzero classes are autoloaded and map to files located in the /libraries/Hubzero directory. See more on [naming conventions](#).

## Using A Model

Here's an example of using a model with our Hello component (com\_hello).

```
<?php
```

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```
// No direct access
defined( '_JEXEC' ) or die( 'Restricted access' );

/**
 * HTML View class for the HelloWorld Component
 */
class HelloWorldView extends HubzeroComponentSiteController
{
    public function display()
    {
        $model = new HelloWorldModel();
        $greeting = $model->getGreeting();

        $this->set( 'greeting', $greeting )
            ->display();
    }
}
```

# Languages

## Setup

Language files are setup as key/value pairs. A key is used within the component's code and the translator retrieves the associated string for the given language. The following code is an extract from a typical component language file.

```
; Module - Hello World (en-US)
COM_HELLOWORLD_LABEL_USER_COUNT = "User Count"
COM_HELLOWORLD_DESC_USER_COUNT = "The number of users to display"
COM_HELLOWORLD_RANDOM_USERS = "Random Users for Hello World"
COM_HELLOWORLD_USER_LABEL = "%s is a randomly selected user"
```

Translation keys can be upper or lowercase or a mix of the two and may contain underscores but no spaces. HUBzero convention is to have keys all uppercase with words separated by underscores, following a pattern of `COM_{ComponentName}_{Text}` for naming. Adhering to this naming convention is not required but is strongly recommended as it can help avoid potential translation collisions.

See the [Languages](#) overview for details.

## Translating Text

Below is an example of accessing the translate helper:

```
<p><?php echo JText::_("COM_EXAMPLE_MY_LINE"); ?></p>
```

`JText::_` is used for simple strings.

`JText::sprintf` is used for strings that require dynamic data passed to them for variable replacement.

Strings or keys not found in the current translation file will output as is.

See the [Languages](#) overview for details.

# Views

## Directory Structures & Files

Views are written in PHP and HTML and have a .php file extension. View scripts are placed in `/com_{componentname}/views/`, where they are further categorized by the `/viewname}/tpl`. Within these subdirectories, you will then find and create view scripts that correspond to each controller action exposed; in the default case, we have the view script `default.php`.

```
/hubzero
  /components
    /com_{componentname}
      /views
        /{viewname}
          /tpl
            default.php
```

Overriding module and component presentation in templates is further explained in the [Templates: Overrides](#) section.

## Creating A View

The task of the view is very simple: It retrieves the data to be displayed and pushes it into the template.

```
// Instantiate a new view
$view = new HubzeroComponentView(array(
    'name' => $this->_controller,
    'layout' => 'foo'
));

// Assign data to the view
$view->greetings = 'Hello';

// Echo out the results
$view->display();
```

In the above example, the view constructor is passed an array of options. The two most

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important options are listed: name, which is the folder to look for the view file in and will typically correspond to the current controller's name, and layout, which is the specific view file to load. If no layout is specified, the layout is typically auto-assigned to the current task name. So, if the controller in the example code is one, the directory structure would look as follow:

```
/com_example
  /views
    /one
      /tmpl
        /foo.php
```

### Method Chaining

All Hubzero view objects support method chaining for brevity and ease of use.

```
// Instantiate a new view
$view = new HubzeroComponentView(array(
    'name' => $this->_controller,
    'layout' => 'foo'
));

$view->set('greetings', 'Hello')
    ->setLayout('bar')
    ->display();
```

# Routing

## Overview

All components can be accessed through a query string by using the option parameter which will equate to the name of the component. For example, to access the "Blog" component, you could type `http://yourhub.org/index.php?option=com_blog`.

When SEF URLs are being employed, the first portion after the site name will almost always be the name of a component. For the URL `http://yourhub.org/blog`, the first portion after the slash translates to the component `com_blog`. If a matching component cannot be found, routing will attempt to match against an article section, category, and/or page alias.

While not required, most components will have more detailed routing instructions that allow SEF URLs to be made from and converted back into query strings that pass necessary data to the component. This is done by the inclusion of a file called `router.php`.

## The Router

Every `router.php` file has two methods: `{ComponentName}BuildRoute()` which takes a query string and turns it into a SEF URL and `{ComponentName}ParseRoute()` which deconstructs a SEF URL back into a query string to be passed to the component.

```
function ExampleBuildRoute(&$query)
{
    $segments = array();

    if (!empty($query['task']))
    {
        $segments[] = $query['task'];
        unset($query['task']);
    }
    if (!empty($query['id']))
    {
        $segments[] = $query['id'];
        unset($query['id']);
    }
    if (!empty($query['format']))
    {
        $segments[] = $query['format'];
        unset($query['format']);
    }

    return $segments;
}
```

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```
}

function ExampleParseRoute($segments)
{
    $vars = array();

    if (empty($segments))
    {
        return $vars;
    }
    if (isset($segments[0]))
    {
        $vars['task'] = $segments[0];
    }
    if (isset($segments[1]))
    {
        $vars['id'] = $segments[1];
    }
    if (isset($segments[2]))
    {
        $vars['format'] = $segments[2];
    }

    return $vars;
}
```

### **{ComponentName}BuildRoute()**

This method is called when using `JRoute::_()`. `JRoute::_()` passes the query string (minus the `option={componentname}` portion) to the method which returns an array containing the necessary portions of the URL to be constructed *in the order* they need to appear in the final SEF URL.

```
// $query = 'task=view&id=123&format=rss'
function ExampleBuildRoute(&$query)
{
    $segments = array();

    if (!empty($query['task']))
    {
        $segments[] = $query['task'];
        unset($query['task']);
    }
}
```



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```
if (!empty($query['id']))
{
    $segments[] = $query['id'];
    unset($query['id']);
}
if (!empty($query['format']))
{
    $segments[] = $query['format'];
    unset($query['format']);
}

return $segments;
}
```

Will return:

```
Array(
    'view',
    '123',
    'rss'
);
```

This will in turn be passed back to `JRoute::_()` which will construct the final SEF URL of `example/view/123/rss`.

### **{ComponentName}ParseRoute()**

This method is automatically called on each page view. It is passed an array of segments of the SEF URL that called the page. That is, a URL of `example/view/123/rss` would be separated by the forward slashes with the first segment automatically being associated with a component name. The rest are stored in an array and passed to `{ComponentName}ParseRoute()` which then associates each segment with an appropriate variable name based on the segment's position in the array.

```
function ExampleParseRoute($segments)
{
    $vars = array();

    if (empty($segments))
    {
```

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```
    return $vars;
}
if (isset($segments[0]))
{
    $vars['task'] = $segments[0];
}
if (isset($segments[1]))
{
    $vars['id'] = $segments[1];
}
if (isset($segments[2]))
{
    $vars['format'] = $segments[2];
}

    return $vars;
}
```

**Note:** Position of segments is very important here. A URL of `example/view/123/rss` could yield completely different results than a URL of `example/rss/view/123`.

# Packaging

## Overview

Packaging a component for distribution is relatively easy. All front-end files are placed within a directory called /site and all administration files are placed within a directory called /admin. Here's what a typical package will look like:

```
/com_{componentname}
  {componentname}.xml
  /site
    {componentname}.php
    controller.php
    /views
      /{viewname}
        /tmpl
          default.php
    /models
      {modelname}.php
    /controllers
      {controllername}.php
  /admin
    {componentname}.php
    controller.php
    /views
      /{viewname}
        /tmpl
          default.php
    /models
      {modelname}.php
    /controllers
      {controllername}.php
```

Just "zip" up the primary directory into a compressed archive file. When the ZIP file is installed, the language file is copied to /language/{LanguageName}/{LanguageName}.{ComponentName}.ini and is loaded each time the module is loaded. All of the other files are copied to the /components/{ComponentName} and /administrator/components/{ComponentName} directories of the Joomla! installation.