You can utilize the Kentico API and Controls in external web applications to load and display data from the Kentico database.

Important: You first need to integrate the Kentico API libraries into your external application and connect to a Kentico database according to the steps described on the Using the Kentico API externally page.

To use Kentico controls, ASCX transformations and other API or components related to web forms, you need to install the **Kentico.Libraries.Web.UI** integration package.

Note: The information on this page applies to external ***web form*** applications. If you wish to display Kentico content in an MVC application, proceed according to the instructions and best practices in the Developing sites using ASP.NET MVC chapter.

Enabling ASCX transformations in external applications

Adding the CMSTransformation class

The *CMSTransformation* partial class allows you to write your own methods for use in ASCX transformations. The system checks the CMSTransformation class for method definitions when loading transformations – an error may occur if the class is not present in your project.

If you plan to use ASCX transformations, add the class to your external project:

1. Create a new class file in your project named **CMSTransformation.cs**.
    - In web site projects, add the file into the *App_Code* folder.
    - In web application projects, you can create the class in any location.

2. Add the following code into the class:

```
namespace CMS.DocumentEngine.Web.UI
{
    /// <summary>
    /// Base class for transformation methods
    /// </summary>
    public partial class CMSTransformation : CMSAbstractTransformation
    {
    }
}
```

3. If you wish to use E-commerce or Message board transformation methods, copy the default content of the **CMSTransformation** partial class from the Kentico project:

    - **~/App_Code/CMSModules/Ecommerce/CMSTransformation.cs**
    - **~/App_Code/CMSModules/MessageBoards/CMSTransformation.cs**

4. Execute the following code in the **Application_BeginRequest** method in your application's Global.asax file (create the file if necessary).

```
void Application_BeginRequest(object sender, EventArgs e)
{
        ...

        if (CMS.DataEngine.CMSApplication.Init())
        {
                // Sets CMSTransformation as the base class for transformation
methods
                CMS.PortalEngine.TransformationInfoProvider.
TransformationBaseClass = "CMS.DocumentEngine.Web.UI.CMSTransformation";
        }
}
```

You can now use all default methods in ASCX transformations and define custom methods inside the CMSTransformation partial class.

Running without the Virtual path provider

Kentico uses a virtual path provider to retrieve the code of ASCX transformations. If you cannot use the virtual path provider in your environment (e.g. when using precompiled applications), you need to:

1. Save your virtual objects in Kentico to the local disk:
    a. Open the **System** application in Kentico.
    b. Select the **Virtual objects** tab.
    c. Click **Store all virtual objects in file system**.

2. Copy the **CMS\CMSVirtualFiles** folder from the Kentico project the to the root of your own project.

See Deployment mode for virtual objects for more information.

Note: To ensure that your application uses the physical files in the *CMSVirtualFiles* folder, deployment mode must remain ***On*** for the connected Kentico application.

Registering file handling routes

Kentico provides several handlers for retrieving images and other types of files (for example the *getattachment* handler for loading page attachments). If you wish to use these handlers in your external web application, you need to register the required routes.

1. Edit your application's Global.asax file.
2. Execute the **CMSApplication.PreInit** method in the **Application_Start** method:
3. Add the routes from **CMS.Routing.Web.HttpHandlerRouteTable** into your application's *RouteTable.*

```
void Application_Start(object sender, EventArgs e)
{
        // Runs the preinitialization of the Kentico API required for the route
registration
        CMS.DataEngine.CMSApplication.PreInit();

        RouteConfig.RegisterRoutes(System.Web.Routing.RouteTable.Routes);
}
```

```
using System.Web.Routing;

using CMS.Routing.Web;

public static class RouteConfig
{
        public static void RegisterRoutes(RouteCollection routes)
        {
                using (routes.GetWriteLock())
                {
                        // Registers the Kentico handler routes
                        foreach (var route in HttpHandlerRouteTable.Default.
GetRoutes())
                        {
                                routes.Add(route);
                        }
                }

                // Add the Kentico routes BEFORE any other routes to ensure that
they work correctly
        }
}
```

Example - Displaying content from Kentico

Using the Kentico API

The following example shows how to retrieve page content from the Kentico database and display it using a standard ASP.NET Repeater control.

1. Create a new page (web form) in your external web project using Visual Studio.
2. Add the standard ASP.NET **Repeater** control onto the page.
3. Insert the following item template markup into the *<asp:Repeater>* control element:

```
<asp:Repeater ID="Repeater1" runat="server">

    <ItemTemplate>
        <strong>
        <%# Eval("NewsTitle") %>
        </strong>
        (<%# ((DateTime) Eval("NewsReleaseDate")).ToString("d") %>)
        <br />
        <i><%# Eval("NewsSummary") %></i>
        <br />
    </ItemTemplate>

</asp:Repeater>
```

4. Switch to the page's code behind and add the following using statements to the beginning of the code:

```
using System;
using System.Data;
using CMS.DocumentEngine;
```

5. Add the following code into the page's **Page_Load** method:

```
protected void Page_Load(object sender, EventArgs e)
{
        // Creates a data set containing all released news pages from the
Corporate Site
        TreeProvider tree = new TreeProvider();
        DataSet ds = tree.SelectNodes("cms.news")
                                                       .Path("/news",
PathTypeEnum.Children)
                                                       .OnSite("CorporateSite")
                                                       .OrderBy("NewsReleaseDate
DESC");

        // Binds the news data to the Repeater control
        Repeater1.DataSource = ds;
        Repeater1.DataBind();
}
```

Note

When performing other types of page operations (editing, deleting etc.), you need to initialize the tree provider within the context of a specific user:

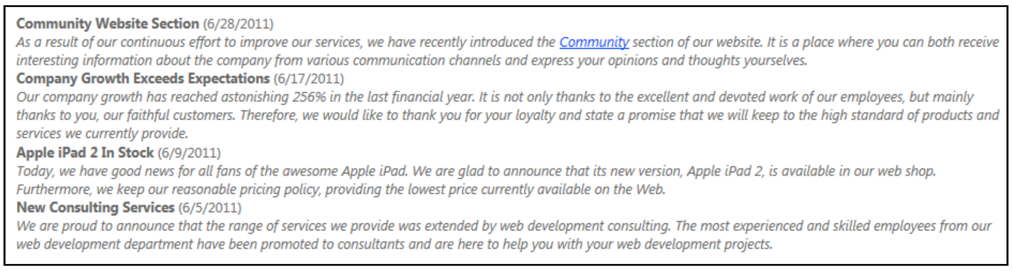
```
using CMS.Membership;

...

// Gets an Info object representing the administrator user
UserInfo user = UserInfoProvider.GetUserInfo("administrator");

// Creates a tree provider instance using administrator context
TreeProvider tree = new TreeProvider(user);
```

If you run the website and open the new page, the Repeater control displays a list of news article summaries.



Community Website Section (6/28/2011)
As a result of our continuous effort to improve our services, we have recently introduced the Community section of our website. It is a place where you can both receive interesting information about the company from various communication channels and express your opinions and thoughts yourselves.
Company Growth Exceeds Expectations (6/17/2011)
Our company growth has reached astonishing 256% in the last financial year. It is not only thanks to the excellent and devoted work of our employees, but mainly thanks to you, our faithful customers. Therefore, we would like to thank you for your loyalty and state a promise that we will keep to the high standard of products and services we currently provide.
Apple iPad 2 In Stock (6/9/2011)
Today, we have good news for all fans of the awesome Apple iPad. We are glad to announce that its new version, Apple iPad 2, is available in our web shop. Furthermore, we keep our reasonable pricing policy, providing the lowest price currently available on the Web.
New Consulting Services (6/5/2011)
We are proud to announce that the range of services we provide was extended by web development consulting. The most experienced and skilled employees from our web development department have been promoted to consultants and are here to help you with your web development projects.

Using Kentico controls

The following example demonstrates how to display the content of Kentico pages using the built-in CMSRepeater control.

Note: For quick access to Kentico controls, add the controls to your Visual Studio Toolbox.

1. Create a new page (web form) in your application's project using Visual Studio.
2. Add the **CMSRepeater** control onto the page.
    - You can either drag the control from the toolbox or manually register the *CMS.DocumentEngine.Web.UI* assembly on the page and then use the Visual Studio IntelliSense.
3. Set the following properties for the *CMSRepeater* control:

- **Path:** path where you want to load the data from
- **ClassNames**: page code name
- **SiteName**: your site code name
- **TransformationName**: transformation code name
- **SelectedItemTransformationName**: transformation code name
  You can generate default transformation when creating a new transformation on the **Transformations** tab of the page type. The default transformation contains the evaluation of the fields the page type contains. You can add your markup around the content.

  ```
  <%@ Register Assembly="CMS.DocumentEngine.Web.UI" Namespace="CMS.
  DocumentEngine.Web.UI" TagPrefix="cms" %>

  ...

  <cms:CMSRepeater ID="CMSRepeater1" runat="server" Path="/Articles/%"
  ClassNames="dancinggoat.article" SiteName="DancingGoat" TransformationName="
  dancinggoat.article.preview" SelectedItemTransformationName="dancinggoat.
  article.detail" />
  ```

4. Save the web form.
5. Right-click the web form in the Solution explorer and select **View in Browser**.

The page will display the data that you loaded in the *CMSRepeater* control.

Handling page links in external applications

The default URLs of Kentico pages are based on the structure of the content tree and the settings of individual pages. These URLs will not work correctly outside of the Kentico application.

The following steps extend the previous example so that links in transformations used in the repeater control work in external applications.

1. Log in to the Kentico administration interface and open the **Page types** application.
2. Edit (✎) the page type that contains the transformation that you specified in the *TransformationName* property of the repeater.
3. Select the **Transformations** tab and edit the transformation.
4. Place a link in the transformation code that defines the link URL:

   ```
   <a href="?aliasPath=<%# Eval("NodeAliasPath") %>">
   ```

5. Click **Save**.

You could also use the *GetDocumentUrl()* transformation method generates page URLs in the default Kentico format. The link URL that you created leads to the same page containing the listing control, but with an **aliasPath** parameter in the query string of the URL. The parameter contains the alias path of the corresponding page.

Kentico listing controls automatically process the *aliasPath* URL parameter and insert its value into the **Path** property. In this case, the link URLs ensure that the CMSRepeater control only loads one specific page. When the source data only contains one page, the control uses the transformation specified by the **SelectedItemTransformationName** property to display the details of the given page.

Note: Controls cache transformations, so you need to restart your application to apply the changes.

Implementing custom page selection for listing controls

You can alternatively use your own custom logic to dynamically set the path of listing controls according to the URL or other variables.

For example, the following steps demonstrate how to ensure page selection based on a custom URL parameter:

1. Edit the transformation that you specified in the *TransformationName* property of the repeater again and change the name of the URL parameter in the link code to *customParameter*.

```
<a href="?customParameter=<%# Eval("NodeAliasPath") %>">
```

2. Open the markup of the page in Visual Studio and set the **DataBindByDefault** property of the CMSRepeater control to *fal se*.
3. In the page's code behind, add the following code into the **Page_Load** method:

```
protected void Page_Load(object sender, EventArgs e)
{
        // Checks whether the URL contains the 'customParameter' query string
parameter
        if (Request.QueryString["customParameter"] != null)
        {
                // Limits the path of the CMSRepeater to the page specified by
the URL parameter
                CMSRepeater1.Path = Request.QueryString["customParameter"];

                // Sets a "detail view" transformation
                CMSRepeater1.TransformationName = "dancinggoat.article.detail";
        }
        else
        {
                // Loads pages from the entire website if the URL doesn't contain
the 'customParameter' parameter
                CMSRepeater1.Path = "/%";

                // Sets a "list view" transformation
                CMSRepeater1.TransformationName = "dancinggoat.article.preview";
        }

        // Loads and binds the data of the CMSRepeater control (with regard to
the dynamically set Path)
        CMSRepeater1.ReloadData(true);
}
```

Setting control properties dynamically

By default, Kentico listing controls load content during the *Init* stage of the control life cycle. If you need to programmatically assign control properties that affect the content, use one of the following approaches:

a. Set the **DelayedLoading** property to *true* in the control's markup.
- This moves the automatic data binding to the control's *Load* event.

b. Assign the required properties during the page's *Load* event (in the **Page_Load** handler) or sooner.

OR

a. Set the **DataBindByDefault** property to *false* in the control's markup.
- This completely disables automatic data binding for the control.

b. Assign the required properties at any appropriate point in the page life cycle.
c. Explicitly call the control's **ReloadData(true)** method.

The control then loads the content based on the dynamically assigned properties.

The page now uses the *customParameter* query string parameter to select specific pages. The custom parameter works the same way as the default *aliasPath* parameter.