



A CMMI LEVEL 3 COMPANY

Azure Recommendations

Kentico custom module

Table of Contents

1. Introduction	3
2. Features	3
3. Prerequisite	3
3.1. Azure account Properties	3
3.2. Creating azure Properties.....	3
4. Installation steps	8
5. Users page navigation	9
5.1. New user creation	10
5.2. Roles	10
5.3. Search & advanced search	10
5.4. Edit & Delete users	11
6. Model creation	12
7. Collecting Catalog, Usage and generating build.	18
7.1. Catalog data.....	18
7.2. Usage data	18
7.3. Build.....	19
8. Adding items in website	20
9. Recommendations	21
9.1. Default Transformations Included.....	23
10. Appendix	24
10.1. Objects used in Azure Recommender	24

1. Introduction

Azure Recommendations is a module built in Kentico to get recommendations for the product by taking the reference of Recommendations API which is built with Microsoft Azure Machine learning. Using this module we can get User to Item and Item to Item Recommendations. When a user visits a website he can be able to see the recommender items according to his browsing history which may increase the percentage of visitors to a website that convert into customers.

2. Features

Azure recommendations is a Kentico custom module which supports in Kentico v9, v10 and v11.

Below are the key features:

- Created user interface for model (for multiple page types), catalog and usage.
- Displaying status for catalog and usage.
- Displaying list of created models in a table format with three action items (Edit, Delete).
- Displaying recommendations based on item to item and user to item with image.
- Task scheduler for catalog, usage.
- Multiple selection of activity types.
- Background process for updating catalog, usage.

3. Prerequisite

3.1. Azure account Properties

For creating azure models in CMS desk we should have azure Account properties. Those are Azure Endpoint Uri, Azure Admin Key, Azure connection string.

3.2. Creating azure Properties

- User should have the azure subscription. If don't have azure subscription please create one by visiting the Azure Portal.
- Visit [Deployment Instructions](#) we will find the button named deploy to azure as shown in below screenshot.

Product Recommendation Solutions deployment via ARM



Deployment Instructions

Before proceeding, please ensure that you have an active Azure Subscription. If you do not, create one by visiting the [Azure Portal](#). Once this is complete, click on the Deploy To Azure button above. The default parameters should suffice. If you wish to change them, you may go ahead and select a different value from the dropdown for the Account Type, Hosting Plan Sku, and the App Insights Location. We recommend leaving the Deploy Package Uri to its default value.

Once your deployment is complete, please return here to read the Next steps.

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- Click on deploy to azure button, It will redirect us to azure portal login page, Please enter the azure credentials.
- After successful login it will take us to the azure portal's custom deployment page as shown in below screenshot.

Microsoft Azure

Home > Custom deployment

Custom deployment
Deploy from a custom template

BASICS

- * Subscription: Free Trial
- * Resource group: Create new Use existing
[Create a resource group](#)
- * Location: Central US

SETTINGS

- Account Type: Standard_LRS
- Hosting Plan Sku: S2
- App Insights Location: East US
- Deploy Package Uri: <https://github.com/Microsoft/Product-Recommendations/blob/master/deploy ...>

TERMS AND CONDITIONS

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By clicking "Purchase," I (a) agree to the applicable legal terms associated with the offering; (b) authorize Microsoft to charge or bill my current payment method for the fees associated the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s); and (c) agree that, if the

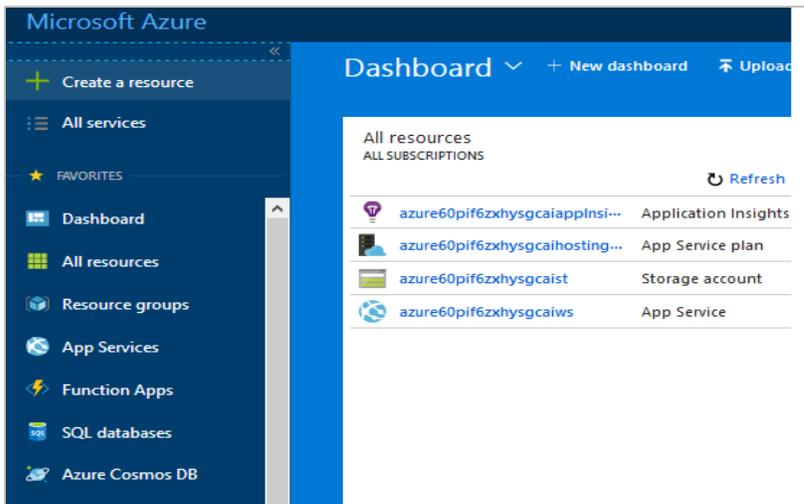
[Purchase](#)

- User has to select the azure subscription type.
- Create a new resource group or select already existed resources
- Then select the location of the resource.
- You can change the type of the account and hosting plan and app insights the location.
- Click on the purchase which will create/reuse necessary services and storages.

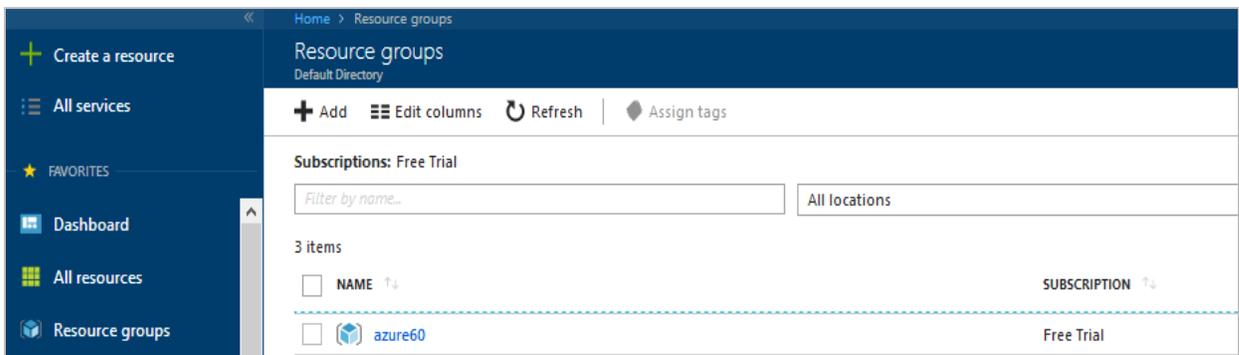
Note: We should not change the deployment package URL.

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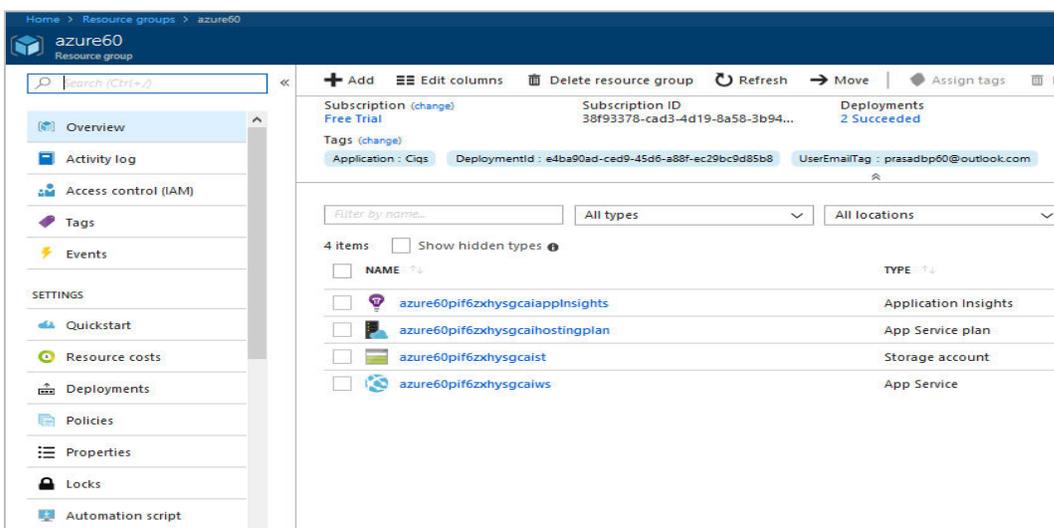
- After The purchase Azure will create the resources as shown in the below screenshot.



- Click on the Resource Groups option in the azure left menu section, It will show the list of resources. Please select the resource which is used in deployment. Below is the screenshot.

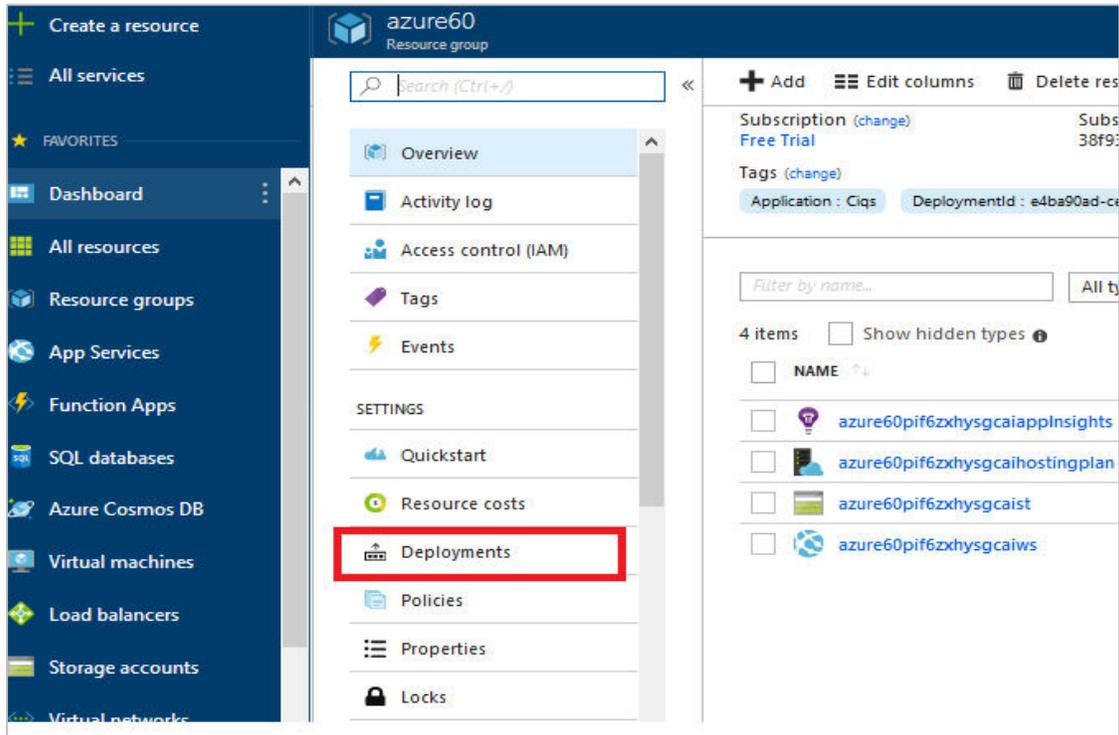


- Double Click on the resource which is used in custom deployment, the following options will display to the user. Below is the screenshot.

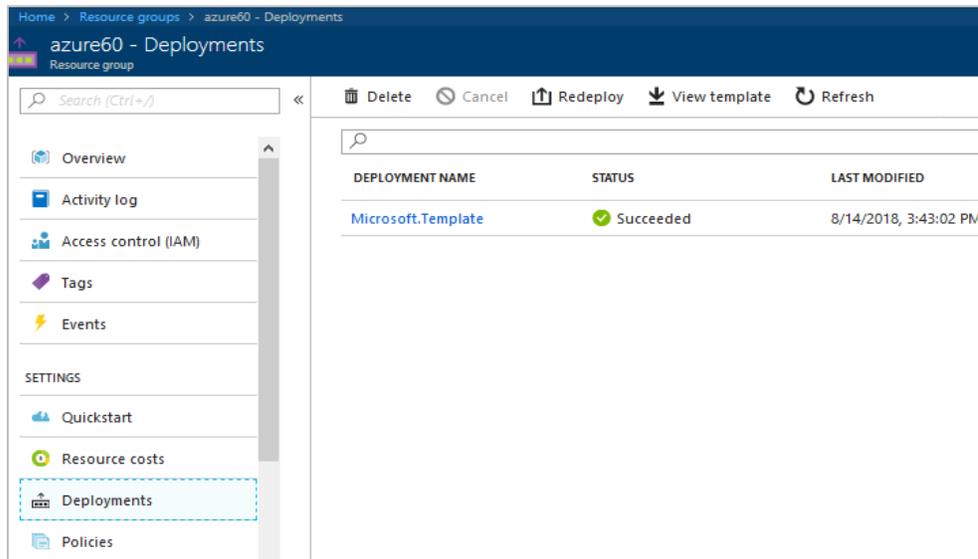


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- Once user clicks on the deployment option from the left menu section of the azure. Below is the screenshot.

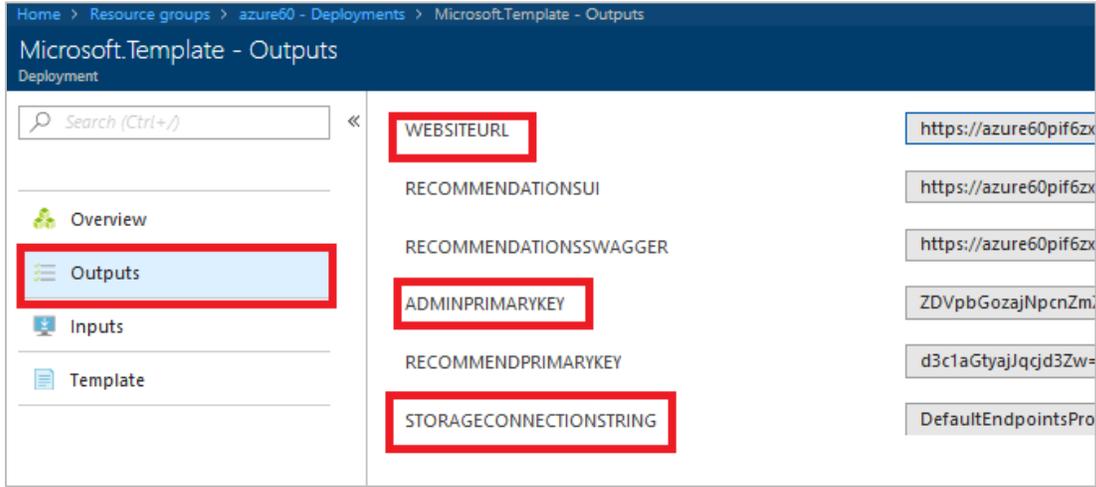


- Once user clicks on deployments it will show the list of the deployment select the deployment. Below is the screenshot.



Azure Recommendations - Kentico custom module

- Once user clicks on the deployment it will show the list of options, please click on the output menu it will show azure properties. Below is the screenshot.



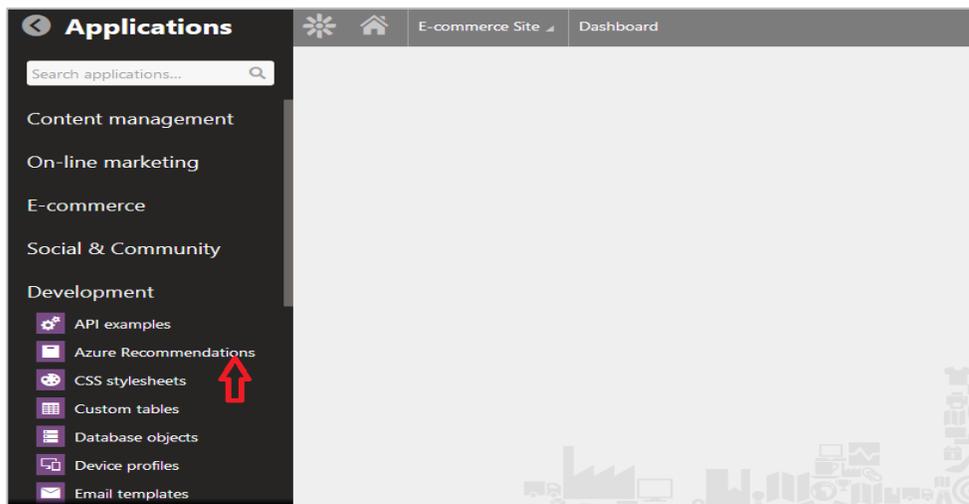
- The required properties are

Key	Value
Azure End Point Uri	Website URL
Azure Admin Key	Admin Primary Key
Connection string	Storage Connection String

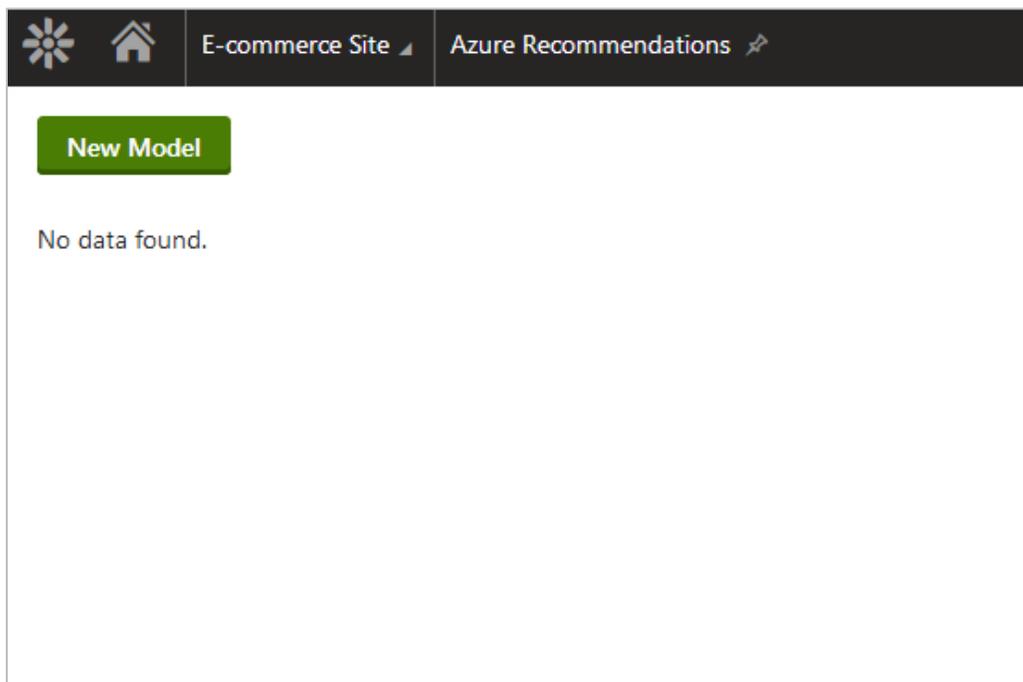
- Copy the key 1, as you'll need it while creating your first model.

4. Installation steps

1. In bin folder we need to add two DLL files like System.Net.Http.Formatting.dll and Newtonsoft.Json.dll.
2. Import the .zip file into your website.
3. You must check **Import code files** and **Global files** while import.
4. After successful import, you must resign macros from **System-->Macros-->Signatures**. Check **Sign all macros** and **click update macro signatures**.
5. Now you need to click on Applications → Development → Azure Recommendations as shown in below screenshot.

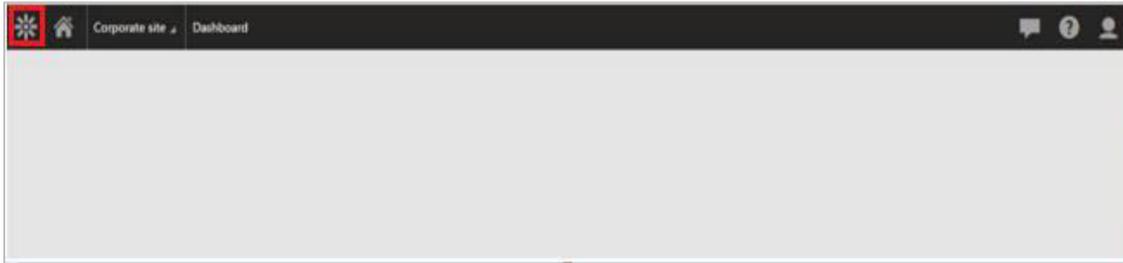


6. Azure recommendations module consist Vertical Tab Structure with list of Azure Models as shown in below screenshot.

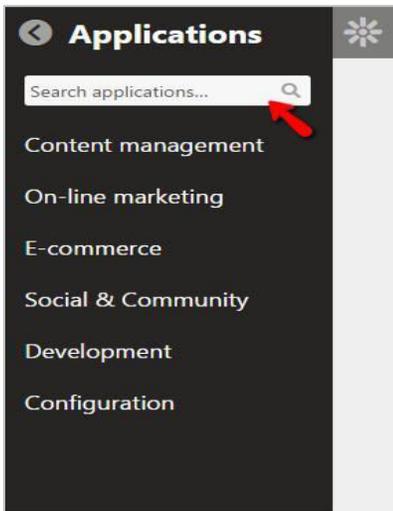


5. Users page navigation

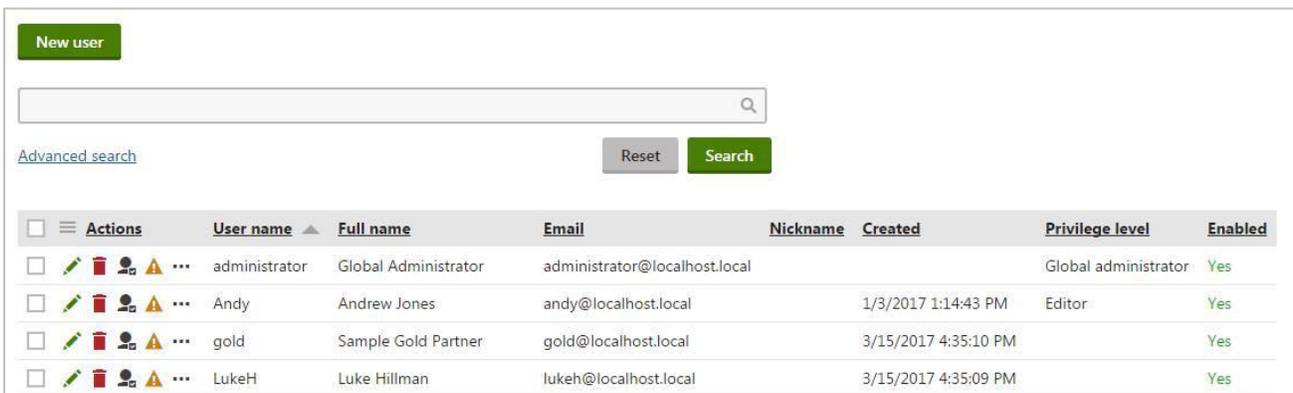
Once we are on landing page, we need to click on the Kentico icon located on left top corner as marked in the below screen shot.



Once we click on the icon, we will be asked to 'Search applications' as below.



Now we need to type in the words 'users' and click 'Enter' or clicks on 'Users' which appears below. Then we would be re-directed to the list of users screen with an option to search users with username (or) email id (or) name.



5.1. New user creation

Once we are on the list of users, we can see an option for 'New user' creation. When we click on it, we will see the below fields. We need to fill in the form and click on 'Save' to create login.

Privilege level is the role/rights to be assigned to the user to be created. For Azure Recommendations, we have Editor, Administrator and Global Administrator. Also we can see a check box 'assign to website' which also creates a login for Azure Recommendations website along with CMS.

5.2. Roles

Editor: Editor Role is to provide access to CMS but user doesn't have access to Azure Recommender module and if editor need any access to this module global administrator need to create one role and set access to this module and assign this role to editor.

Global Administrator: Global Administrator have entire access to CMS and he can perform all operations.

5.3. Search & advanced search

On the user's list page, we have search option where we can search with username (or) email id (or) name. We also have advanced search which gives more options to filter and get the search results.

5.4. Edit & Delete users

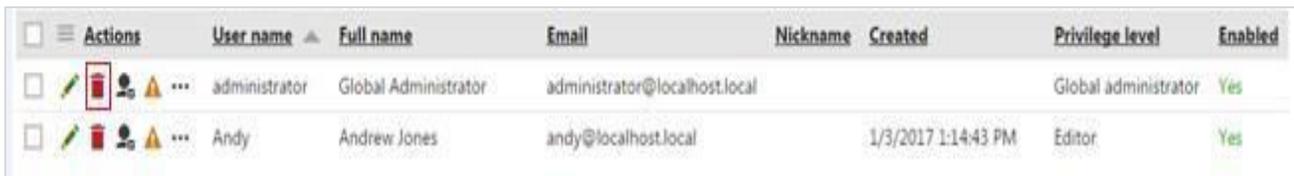
Edit: We can edit the user details clicking on 'Edit' icon marked in red in below screen shot.



<input type="checkbox"/>	Actions	User name	Full name	Email	Nickname	Created	Privilege level	Enabled
<input type="checkbox"/>	    ...	administrator	Global Administrator	administrator@localhost.local			Global administrator	Yes
<input type="checkbox"/>	    ...	Andy	Andrew Jones	andy@localhost.local		1/3/2017 1:14:43 PM	Editor	Yes

Clicking on edit icon will let admin edit the user details like name, user name, email, privilege level, etc.

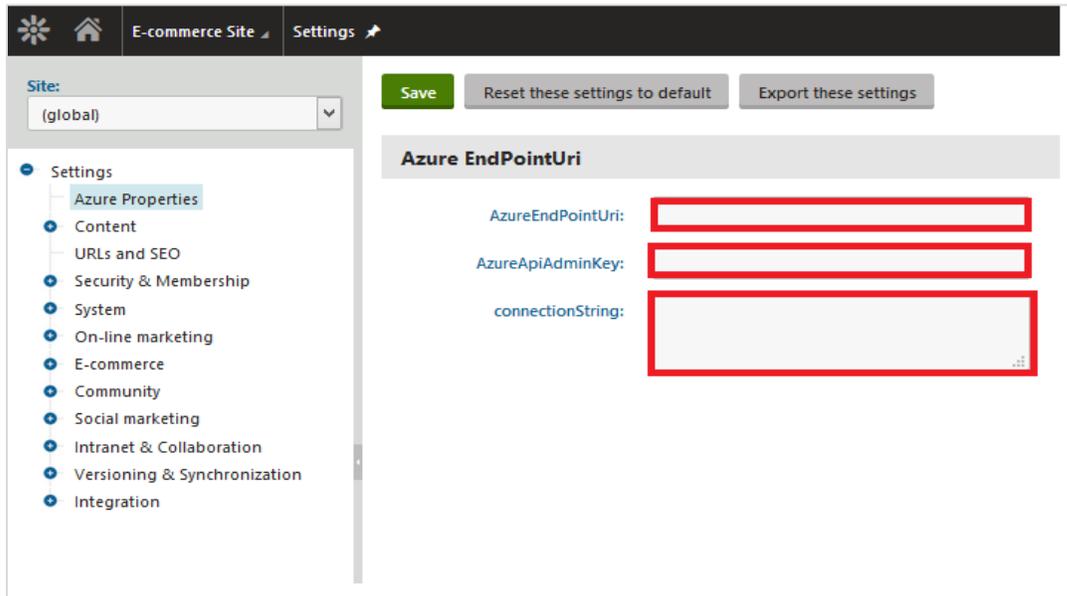
Delete: We can delete an existing user from the list by clicking on 'delete' icon marked in red in below screen shot.



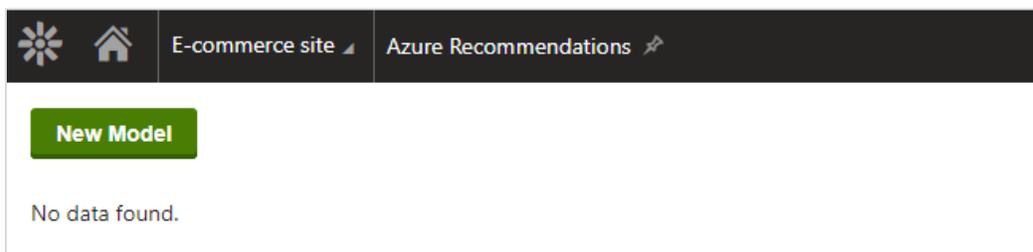
<input type="checkbox"/>	Actions	User name	Full name	Email	Nickname	Created	Privilege level	Enabled
<input type="checkbox"/>	    ...	administrator	Global Administrator	administrator@localhost.local			Global administrator	Yes
<input type="checkbox"/>	    ...	Andy	Andrew Jones	andy@localhost.local		1/3/2017 1:14:43 PM	Editor	Yes

6. Model creation

- Before creating the model we need to set the Azure account key in settings which is marked in red in below screenshot.
- Click on Application List Icon -> Configuration -> Settings->Azure Properties



- To create new model user should open the URL 'http://siteURL/Admin' and should login with valid username and password. A dashboard will be displayed.
- By clicking on 'Kentico icon' list of applications are displayed. Under that click on '**development**' and go to '**Azure recommender**' module. It redirects to a page and is shown in below screenshot.

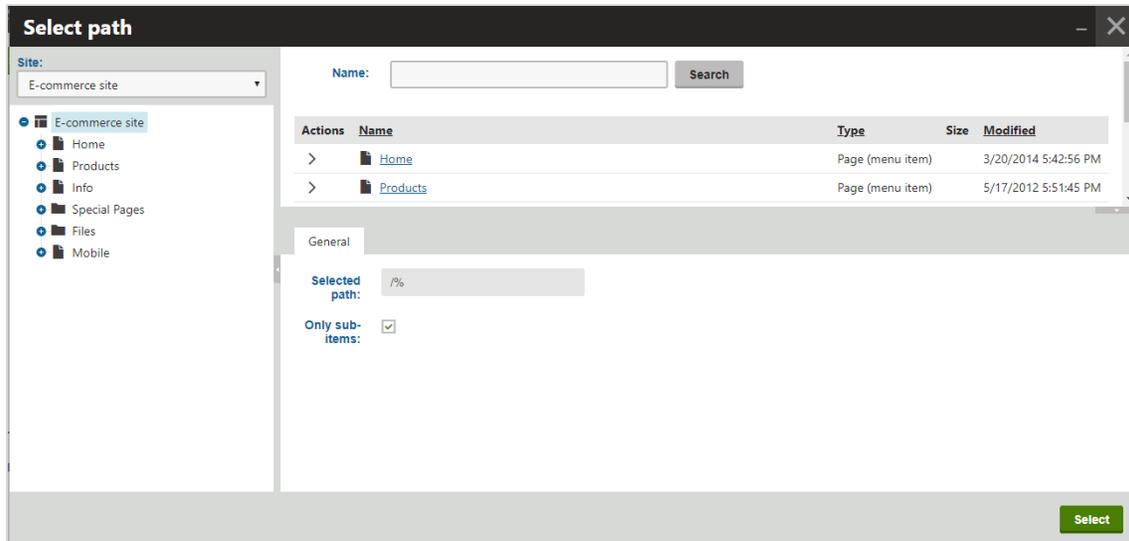


- By clicking on 'New model' button it redirects to a page and is shown in below screenshot

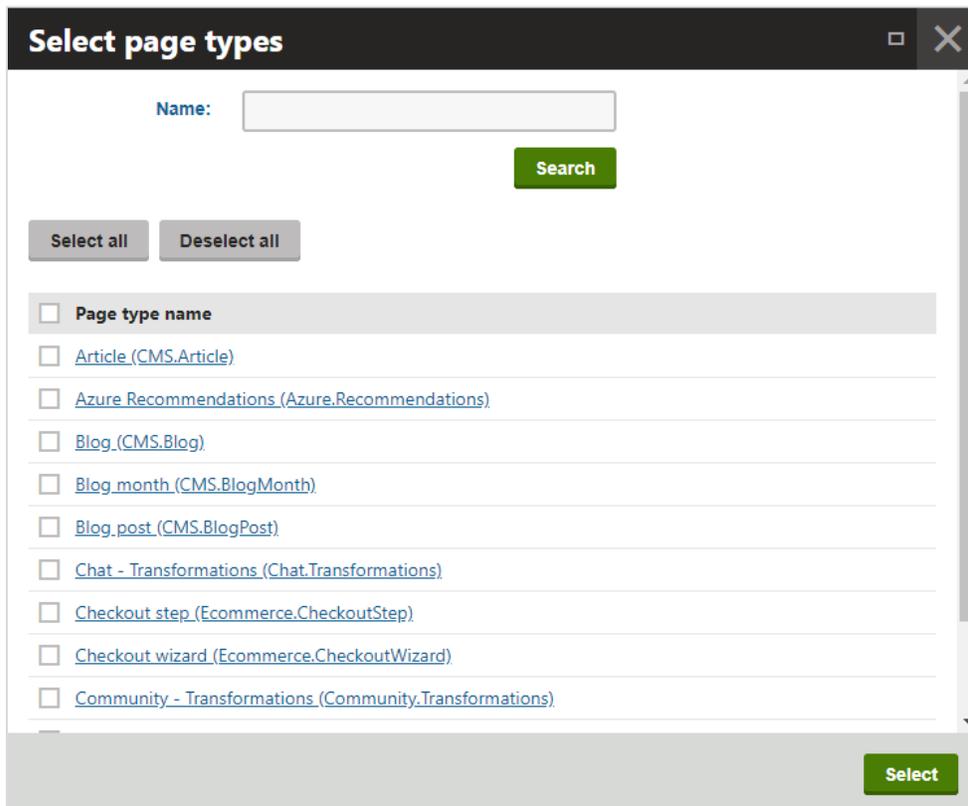
The screenshot shows the configuration interface for Azure Recommendations. It includes a 'Save' button and several required text input fields: Azure Model Name, Description, Azure Blob Name, Usage Data Folder Name, Catalog Name, Usage Catalog Name, Products Path, and Product Page Types. The Products Path and Product Page Types fields have 'Select' buttons. There are also three checkboxes for scheduling and frequently bought together features, and a section for Activity Types with checkboxes for Page visit, Purchase, Product added to shopping cart, and Product removed from shopping cart.

- In general, User needs to enter model name and model description in respective textboxes.
- User needs to enter the blob name, which contains the usage and products catalogs, create new blob if no blob presents in the azure otherwise override the previous one.
- User needs to enter the usage data folder name, which contains the usage data.
- User needs to enter the catalog name which contains the current site the product information based on the given path.
- In Products path, user needs to give path. By clicking on select button a popup window is displayed as shown in below screenshots and user can select any path which are on left side of the window (selected path should have selected page type) and click on select button

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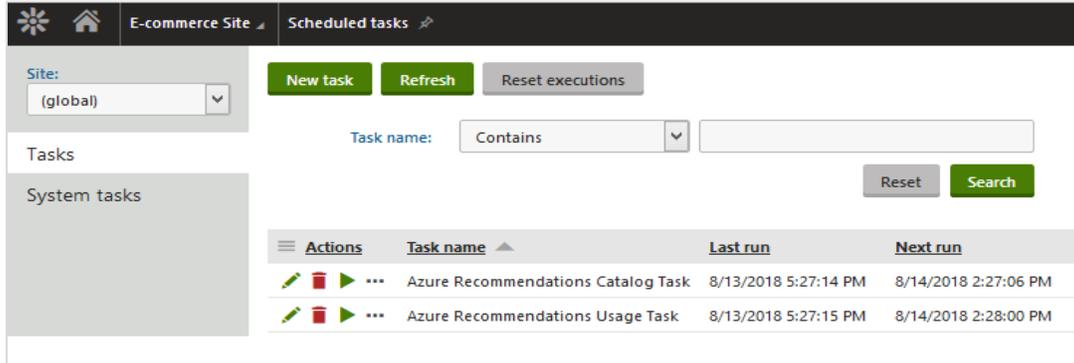


- To select the page type user needs to click on select button. By clicking on select a pop-up window is displayed with list of page types where we can select multiple page types. By clicking, page type will be selected or user can select using search button by entering the page type in text box and is shown in below screenshot.



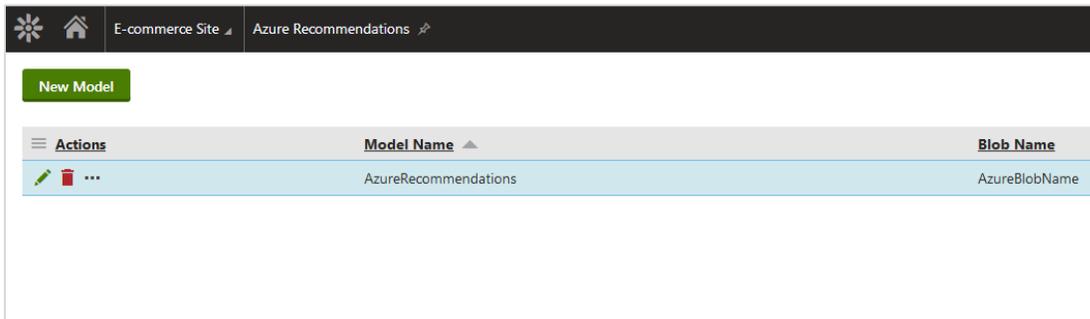
Frequently bought together will be shown if admin selects the frequent bought items while creating the checkbox.

- To update newly created products and the usage data for the model we have Scheduled tasks.
 - Azure recommendation Catalog Task – to update the products catalog.
 - Azure recommendation Usage Task - to update the usage items catalog.



Note: All these scheduled tasks will be in disabled mode. To run any task for a particular period of time we have to enable the task.

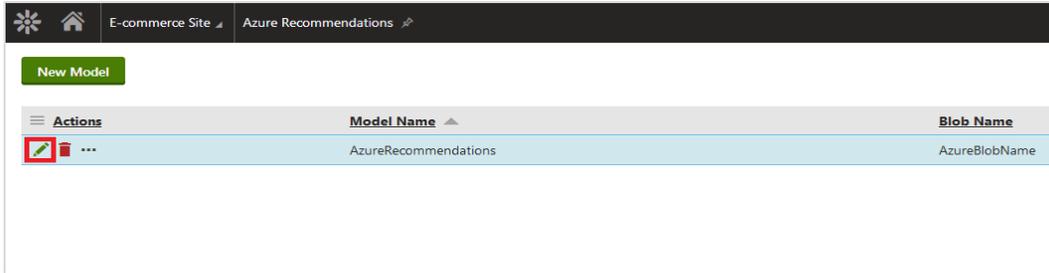
- There is an option called 'Activity types' with multiple activities having checkboxes. User can select multiple activities to get usage data.
- By clicking on save which is on top left corner of the page given details will be saved and a model name with model status and date will be created in a table format and is shown in below screenshot.



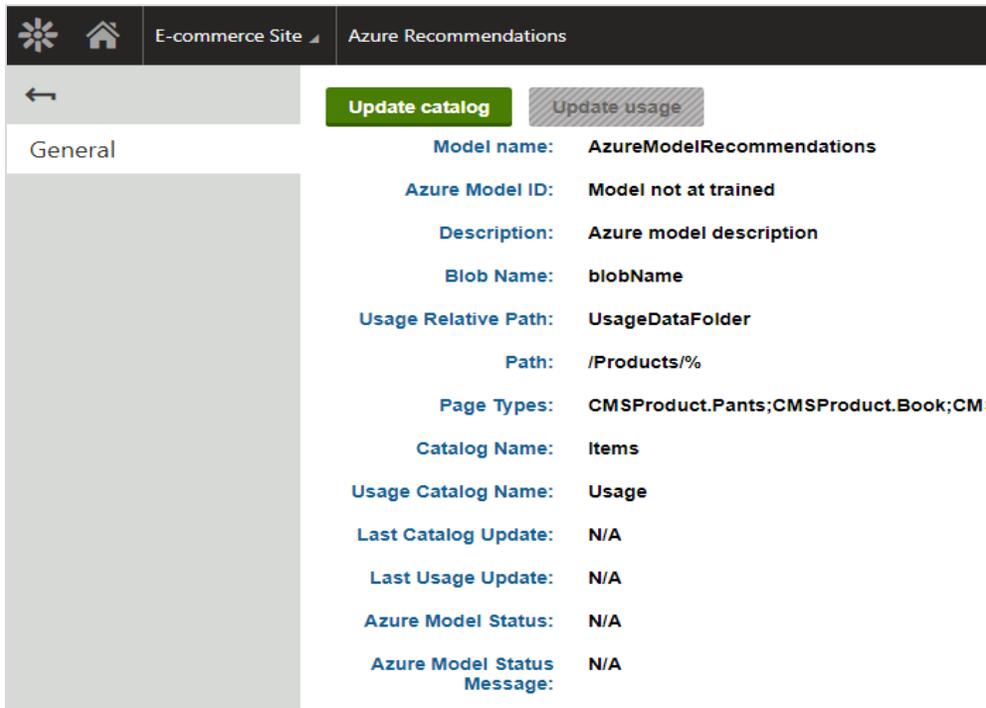
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EDIT:

- By clicking on 'edit' icon which is marked in red and is shown in below screenshot user can edit the details.



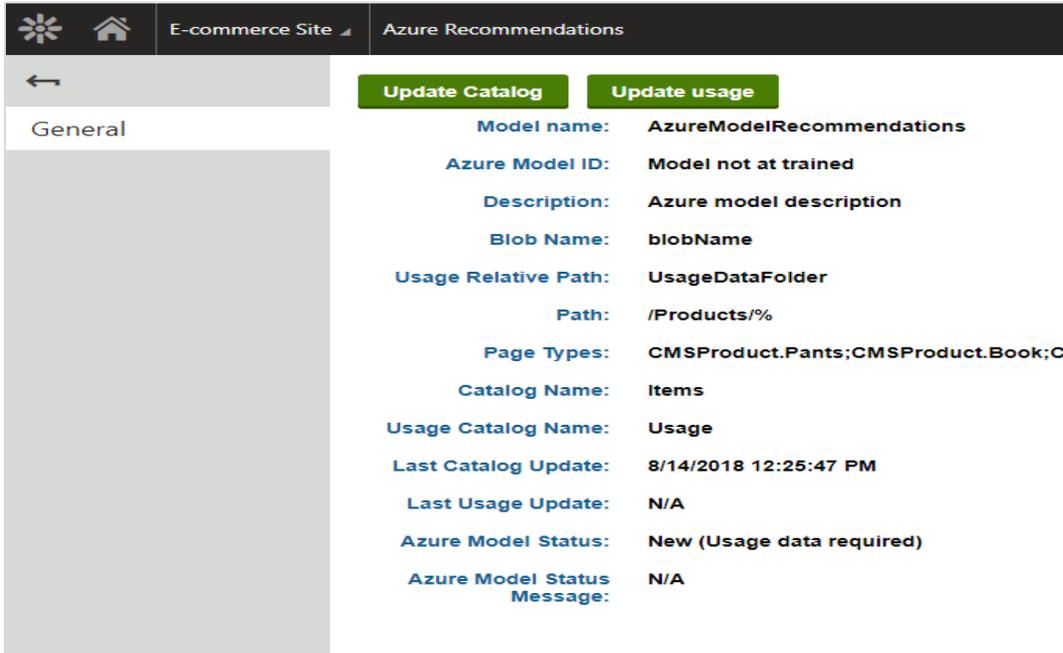
- Once the model is created user needs to upload catalog data. In the edit page to the left hand side there will be an option called 'model info'. By clicking on it model info page will be displayed.
- By default '**Update Catalog**' button will be enabled to upload catalog data. Below is the



screenshot.

Azure Recommendations - Kentico custom module

- Once catalog items are uploaded 'Update Usage' button is enabled to upload usage data. Below is the

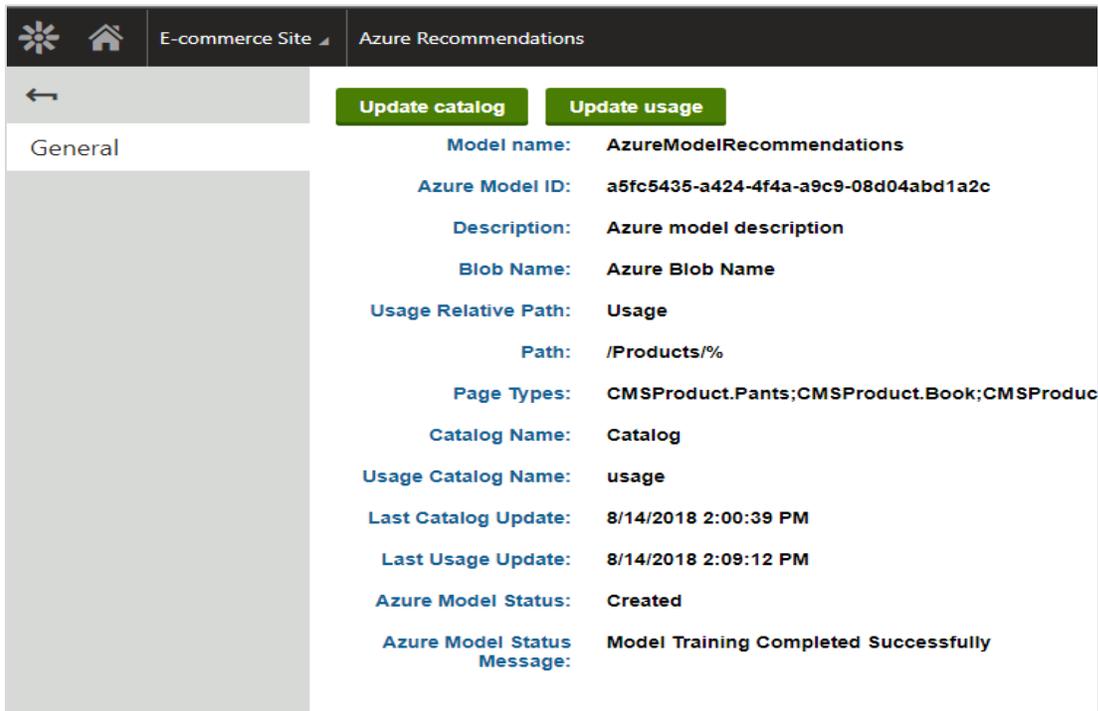


The screenshot shows the 'Azure Recommendations' configuration page. The 'Update usage' button is highlighted in green. The configuration details are as follows:

Model name:	AzureModelRecommendations
Azure Model ID:	Model not at trained
Description:	Azure model description
Blob Name:	blobName
Usage Relative Path:	UsageDataFolder
Path:	/Products/%
Page Types:	CMSProduct.Pants;CMSProduct.Book;C
Catalog Name:	Items
Usage Catalog Name:	Usage
Last Catalog Update:	8/14/2018 12:25:47 PM
Last Usage Update:	N/A
Azure Model Status:	New (Usage data required)
Azure Model Status Message:	N/A

screenshot.

- Once catalog and usage data are uploaded model will be trained and gets the azure model ID from the azure. Below is the screenshot.

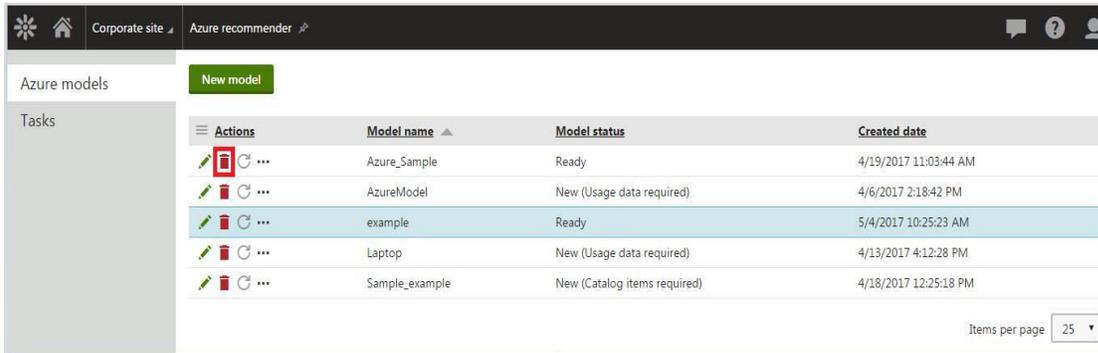


The screenshot shows the 'Azure Recommendations' configuration page after successful training. The 'Update usage' button is highlighted in green. The configuration details are as follows:

Model name:	AzureModelRecommendations
Azure Model ID:	a5fc5435-a424-4f4a-a9c9-08d04abd1a2c
Description:	Azure model description
Blob Name:	Azure Blob Name
Usage Relative Path:	Usage
Path:	/Products/%
Page Types:	CMSProduct.Pants;CMSProduct.Book;CMSProduc
Catalog Name:	Catalog
Usage Catalog Name:	usage
Last Catalog Update:	8/14/2018 2:00:39 PM
Last Usage Update:	8/14/2018 2:09:12 PM
Azure Model Status:	Created
Azure Model Status Message:	Model Training Completed Successfully

DELETE:

- By clicking on 'delete' icon in models page which is marked in red and is shown in below



screenshot user can delete the model from azure end also.

7. Collecting Catalog, Usage and generating build.

7.1. Catalog data

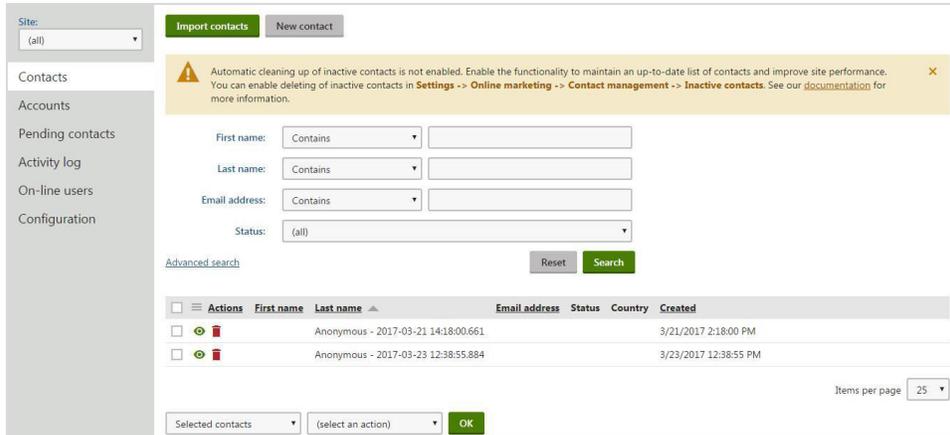
Catalog data is list of items which are available under the selected path and page types.

7.2. Usage data

- Before getting usage data user needs to check the following fields which are mandatory
 - o In applications user needs click on 'configuration'. Under configuration go to 'settings'. In settings click on online marketing and select the checkbox 'Enable online Marketing'.
 - o Activities in contact management under online marketing, select the checkbox 'log activities'.
 - o Web analytics in contact management under online marketing, select the checkbox 'Enable web analytics'
 - o In system under settings, in scheduler section select the checkbox 'scheduler tasks enabled'.

Azure Recommendations - Kentico custom module

- To get usage data user needs to know the user activity in website. Go to applications and click on 'online marketing'. Under this, click on 'contact management' module a page will be displayed. A list of



options are displayed to the left corner as shown in below screenshot.

- To know users activity in website click on 'activity log'. By clicking a page is displayed with list of actions in a table format and is shown in below screenshot.

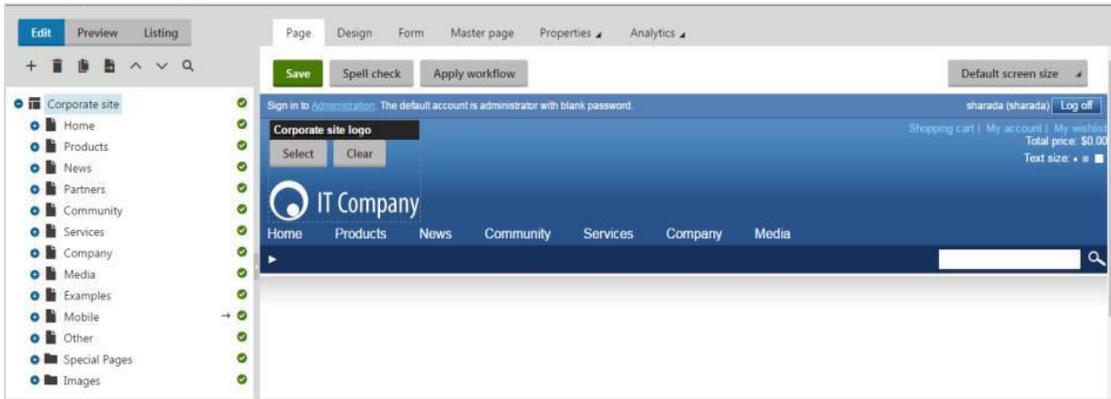
Actions	Title	Type	Contact
<input type="checkbox"/>	Product added to shopping cart 'Apple iPhone 3GS'	Product added to shopping cart	Anonym
<input type="checkbox"/>	Page visit 'Dell XPS 15z with iPhone 4'	Page visit	Anonym
<input type="checkbox"/>	Page visit 'Apple MacBook Pro MC723LL/A'	Page visit	Anonym
<input type="checkbox"/>	Page visit 'Dell XPS 15z'	Page visit	Anonym
<input type="checkbox"/>	Page visit 'HP - Pavilion x360 2-in-1 13.13" Touch-Screen Laptop - Intel Core i5 - 8GB Memory - 128GB Solid Stat'	Page visit	Anonym

7.3. Build

- To get the recommendations need to trigger a build for the Model. For triggering a build usage data should have minimum 20 records. Otherwise build ID cannot be generated.
- Each build will take time depending on catalog data and usage data.

8. Adding items in website

- To display the items in website user needs to click on '**content management**' in applications and go to '**pages**'. A page will be displayed with list of items in left corner and is shown in below screenshot.



- To create a new product user needs to select the product type for which he wants to add and click on '+' marked in red as shown in below screenshot a page will be displayed with list of page types and



user needs to select the page type for which he wants to add.

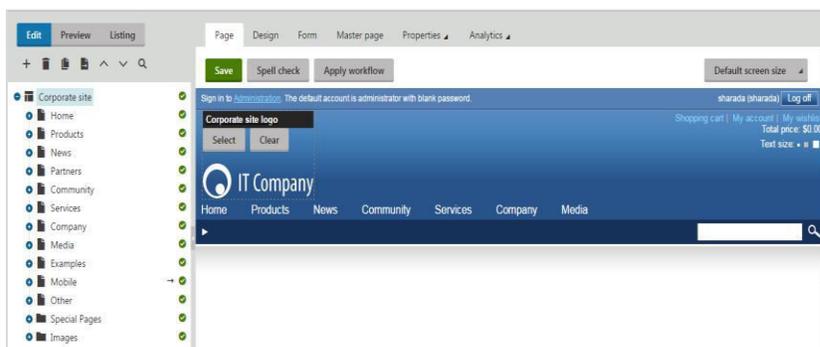
- User needs to enter the product details like product name, price department, etc. as shown in below

screenshots. Finally user needs to click on save button to save the product details.

Finally product is displayed on website.

9. Recommendations

- To display the items into website user needs to click on '**content management**' in applications and go to



pages. A page will be displayed with list of items in left corner and is shown in below screenshot.

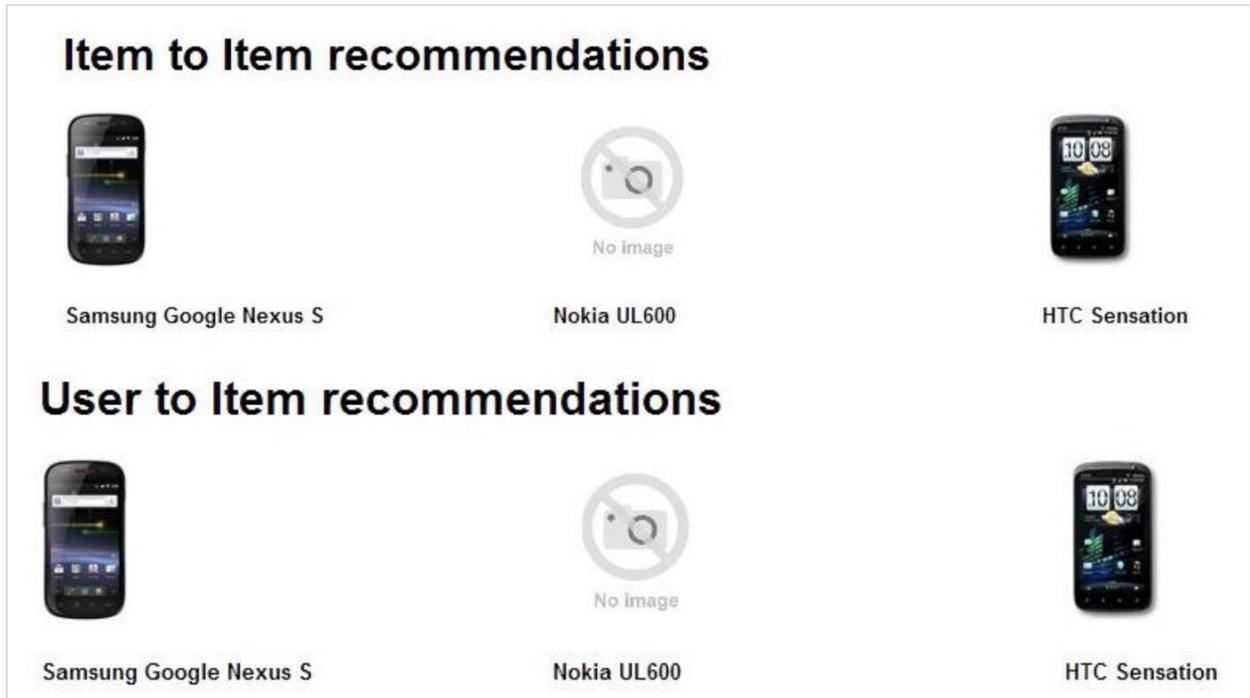
Azure Recommendations - Kentico custom module

- To get recommendations for an item user needs to add the web part in the design .
- To get the web parts for this module user needs to go to Applications → Development Web Parts.
- In Web parts application go to Azure Recommendations category.
- For getting recommendations we have two types - **Item to Item** and **user to Item (user need to login)**.
- Add the recommendations web part to display recommendations and configure the web part properties.

The screenshot shows the 'Web part properties (Item to Item Recommendations)' dialog box. It has a 'General' tab selected. Under the 'Default' section, there are two input fields: 'Web part control ID:' with the value 'ItemToItemRecommendations1' and 'Web part title:' which is empty. Below this is a 'Visibility' section with a 'General' sub-section. It contains a 'Model Name:' dropdown menu set to 'AzureRecommendations', a 'Number Of Results:' input field with '10', and a 'Minimal Score:' input field with '0'. The 'Item transformation:' dropdown is set to 'Azure.Recommendations.XProduct', with 'Select', 'Edit', and 'New' buttons next to it. At the bottom left, there is a checked 'Refresh content' checkbox. At the bottom right, there are 'Apply', 'Cancel', and 'Save & Close' buttons. A watermark 'Activate Windows' is visible in the background.

The screenshot shows the 'Web part properties (User to Item Recommendations)' dialog box. It has a 'General' tab selected. Under the 'Default' section, there are two input fields: 'Web part control ID:' with the value 'UserToItemRecommendations' and 'Web part title:' which is empty. Below this is a 'Visibility' section with a 'General' sub-section. It contains a 'Model Name:' dropdown menu set to 'AzureRecommendations', a 'Number Of Results:' input field with '10', and an 'Item transformation:' dropdown set to 'Azure.Recommendations.XProduct', with 'Select', 'Edit', and 'New' buttons next to it. At the bottom left, there is a checked 'Refresh content' checkbox. At the bottom right, there are 'Apply', 'Cancel', and 'Save & Close' buttons. A watermark 'Activate Windows' is visible in the background.

- In this under general section user needs to select proper model name, give number of results and transformation type. By clicking on save & close button given settings will be saved.
- By clicking on an item in a website recommendations are displayed in the page.
- Below are the screen shots of Item to Item and User to Item recommendations.



9.1. Default Transformations Included

Below are the transformations that are included in this package which can be considered as an example for creating customized transformations.

Page Type	Transformation Name
Azure.Recommendations	Xarticle
Azure.Recommendations	Xproduct

10. Appendix

10.1. Objects used in Azure Recommender

OBJECTS/TYPE	DESCRIPTION
Page Type	
Azure Recommendations	This is container page type from Azure Recommender Module, it contains default Transformations which displays the content.
Resource Strings	
	All the Resource string are used to display the alert messages and breadcrumbs.
Web Parts	
Item to Item Recommendations	This web part render the recommended items. It has the option to select the model, number of results to display.
User to Item Recommendations	This web part render the recommended items for the user. It has the option to select the model, number of results to display.
Setting keys	
Azure Endpoint Uri	This property is used to insert the azure end point uri
Azure API Admin Key	Azure admin key to access the azure properties with the set and get access.
Connection string	Azure connection string which is useful to access the azure.
Scheduled tasks	
Azure recommender catalog task	To upload catalog items for a particular period of time.
Azure recommender usage task	To upload usage items for a particular period of time.