Natural Language Understanding in Node-RED

Hands-On Lab

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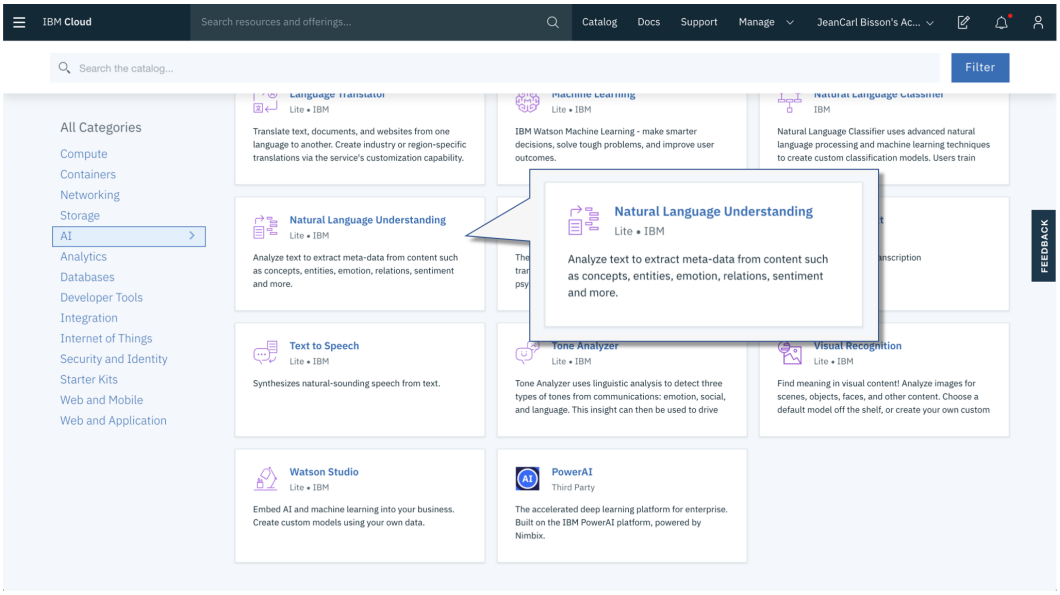
Extract keywords, entities, concepts, sentiment and more from a news article
(see *Analyze a News Article in Node-RED*)

A digital copy of this lab and code snippets can be found at:
`http://ibm.biz/node-red-natural-language-understanding`

Add Natural Language Understanding Service in IBM Cloud

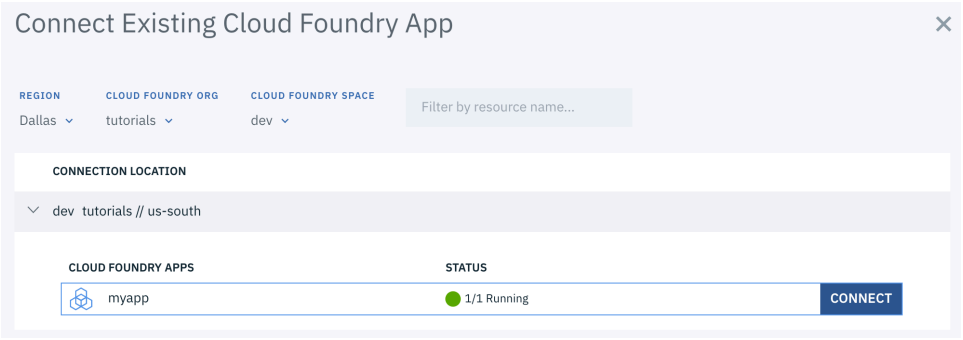
The Natural Language Understanding service analyzes text to extract meta-data from content such as concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles, using natural language understanding. This tutorial uses the Node-RED application in IBM Cloud with the Natural Language Understanding service found under the **Starter Kits** section of the IBM Cloud catalog. To get started using the Natural Language Understanding service, you'll need to create service credentials.

1. Click on the **Catalog** link at the top of the IBM Cloud Dashboard. Under the AI section, click on the **Natural Language Understanding** tile.

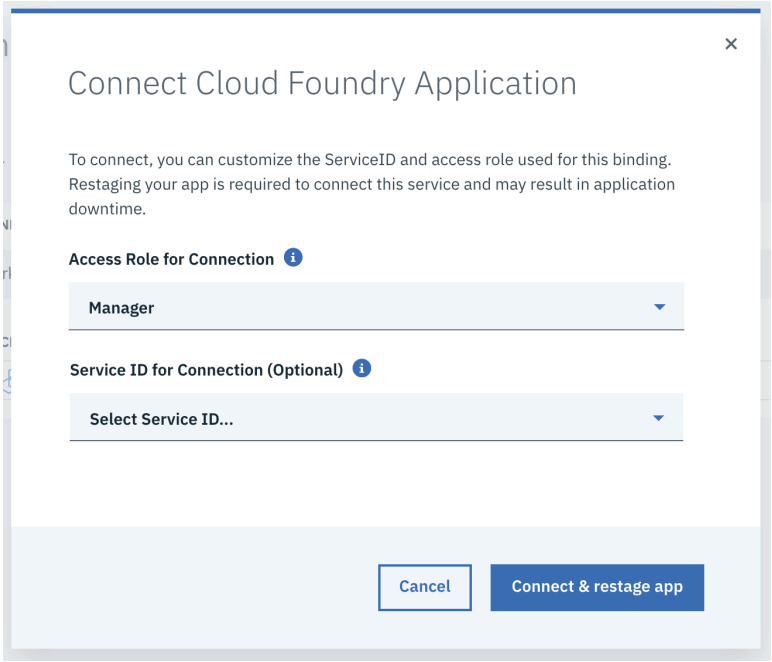


2. You can optionally give the service a custom name or leave it as the one given. Click **Create**.
3. Click on **Connections** in the menu on the left.
4. Click **Create connection** on the right.

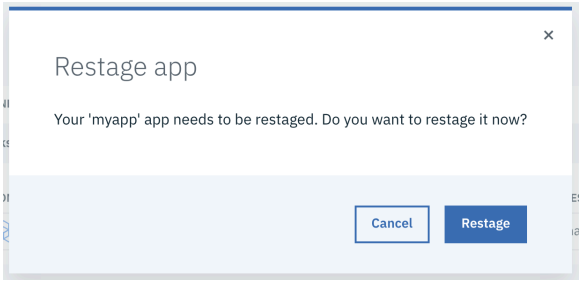
5. Click **Connect** next to the Node-RED application you created earlier.



6. IBM Cloud will prompt to configure access role for the new connection and service ID. Click **Connect & restage app**.



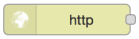
7. IBM Cloud will prompt to restage the application. Click on **Restage**. The application will restart and include the new service credentials in the environment.



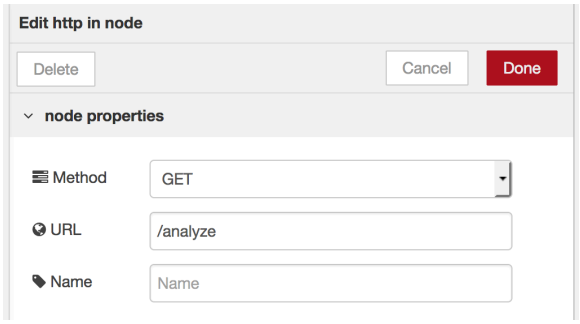
8. When the application has finished restaging, open the Node-RED Flow Editor. If you already have Node-RED open, refresh the page.

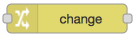
Analyze a News Article in Node-RED

The IBM Watson Natural Language Understanding service takes either a body of text or a publicly-accessible URL to content which the service can analyze. In this section, we will analyze a news article that is accessible via an URL. You can also choose to analyze other URLs that contain a body of text. Please refer to the **Add Natural Language Understanding Service in IBM Cloud** section to create and bind the Natural Language Understanding service to your Node-RED application.

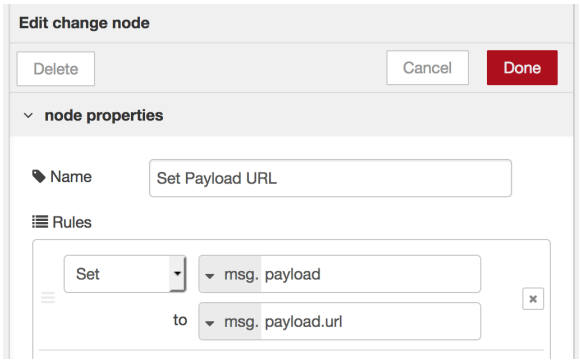
1. Add a 

node as shown below.



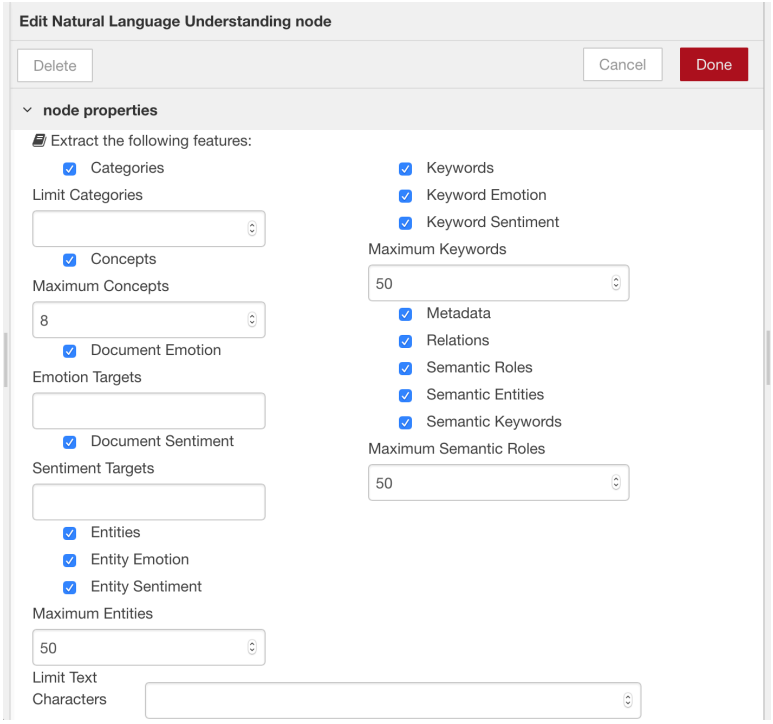
2. Add a 

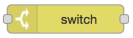
node as shown below. This will take the *url* query parameter and place it in the message *payload* to be passed to the Natural Language Understanding node in the next step.



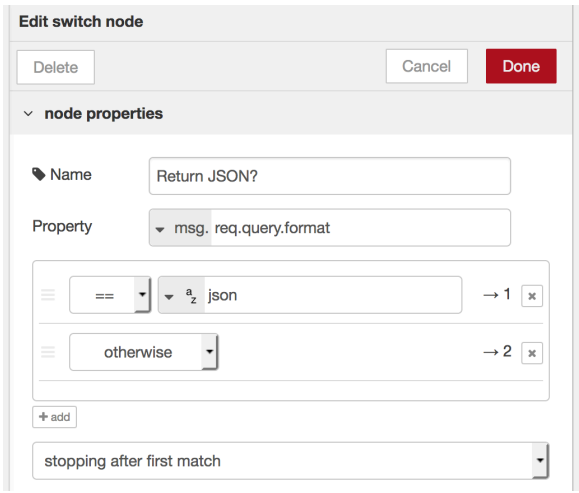
3. Add a 

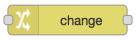
node. Check the options that you want to be included in the response. You can narrow the results by changing the maximum values and/or by unchecking checkboxes next to each feature. For this lab, we have enabled all the options to showcase many of the insights returned by the Watson service.



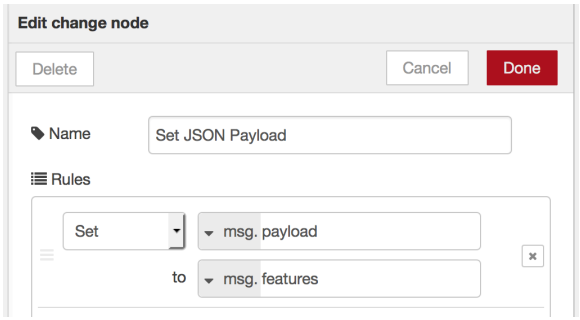
4. To make this application versatile, we'll split the flow so our application will return the results in two formats. The first option will be where the results are returned in JSON format, great for use with applications that can call the web endpoint and consume the JSON. The second option will be a webpage showing the data in a human readable report. Add a 

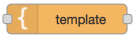
node as shown below.



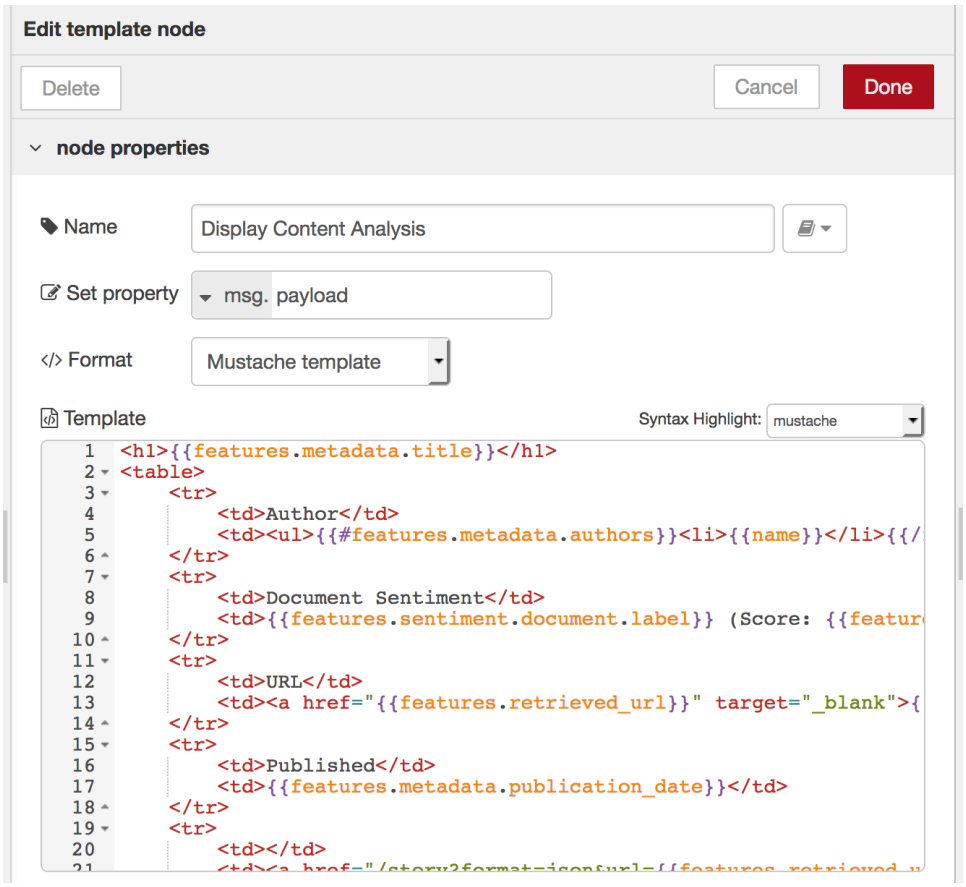
5. For the flow where the JSON should be returned, we can simply return the contents of *msg.features*. Add a 

node as shown below. This will move the results from the *features* property to the message *payload*.

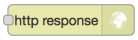


6. For the flow where a webpage should be returned, add a 

node with the HTML from the file at `ibm.biz/BdiBpU`



Get the code:
`ibm.biz/BdiBpU`

7. Add a 

node. Connect the nodes together as shown below.

8. Click on the red 

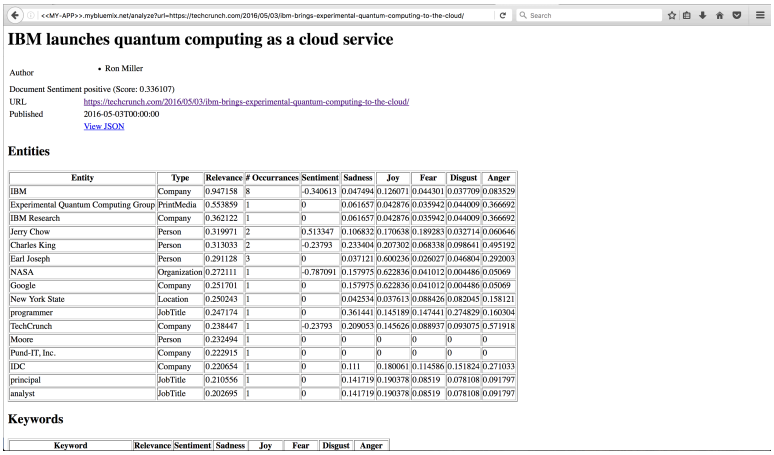
button in the top-right corner of the screen to save and deploy your changes.
9. Visit a news website and copy the URL of a publicly accessible news article. Make sure the content isn't behind an authentication wall where you need to sign in to access the content.

10. Open a browser tab and visit your application's endpoint, passing in the URL to the content:

    ```
    http://<<MY-APP>>.mybluemix.net/analyze?url=<<URL-TO-STORY>>
    ```

    - Replace <<MY-APP>> with the host of the Node-RED application you chose.
    - Replace <<URL-TO-STORY>> with the URL of the content.

11. Depending on the content located at the URL, you may see a list of attributes including concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles and more mentioned within the text.



IBM launches quantum computing as a cloud service

Author • Ron Miller

Document Sentiment positive (Score: 0.336107)

URL https://techcrunch.com/2016/05/03/ibm-brings-experimental-quantum-computing-to-the-cloud/

Published 2016-05-03T00:00:00

View JSON

Entities

Entity	Type	Relevance	# Occurrances	Sentiment	Sadness	Joy	Fear	Disgust	Anger
IBM	Company	0.947158	8	-0.340613	0.047494	0.126071	0.044301	0.037709	0.083529
Experimental Quantum Computing Group	PrintMedia	0.553859	1	0	0.061657	0.042876	0.035942	0.044009	0.366692
IBM Research	Company	0.362122	1	0	0.061657	0.042876	0.035942	0.044009	0.366692
Jerry Chow	Person	0.319971	2	0.513347	0.106832	0.170638	0.189283	0.032714	0.060646
Charles King	Person	0.313033	2	-0.23793	0.233404	0.207302	0.068338	0.098641	0.495192
Earl Joseph	Person	0.291128	3	0	0.037121	0.600236	0.026027	0.046804	0.292003
NASA	Organization	0.272111	1	-0.787091	0.157975	0.622836	0.041012	0.004486	0.05069
Google	Company	0.251701	1	0	0.157975	0.622836	0.041012	0.004486	0.05069
New York State	Location	0.250243	1	0	0.042534	0.037613	0.088426	0.082045	0.158121
programmer	JobTitle	0.247174	1	0	0.361441	0.145189	0.147441	0.274829	0.160304
TechCrunch	Company	0.238447	1	-0.23793	0.209053	0.145626	0.088937	0.093075	0.571918
Moore	Person	0.232494	1	0	0	0	0	0	0
Pund-IT, Inc.	Company	0.222915	1	0	0	0	0	0	0
IDC	Company	0.220654	1	0	0.111	0.180061	0.114586	0.151824	0.271033
principal	JobTitle	0.210556	1	0	0.141719	0.190378	0.08519	0.078108	0.091797
analyst	JobTitle	0.202695	1	0	0.141719	0.190378	0.08519	0.078108	0.091797

Keywords

Keyword	Relevance	Sentiment	Sadness	Joy	Fear	Disgust	Anger

12. To see the JSON representation of the content insert *format=json* in the URL query string:

    ```
    http://<<MY-APP>>.mybluemix.net/analyze?format=json&url=<<URL-TO-STORY>>
    ```

13. Return to Step #3 and experiment by disabling some of the features to see how the results change. Try analyzing other URLs and see what results are returned.