

Rapid Prototyping of AI powered applications with Node-RED

@chugths

Rapid Prototyping of AI powered applications with Node-RED

Node-RED provides a browser-based flow editor that makes it easy to wire together apps using a wide range of nodes. In this session we show how to make use of the full capabilities of the Node-RED AI library to rapidly create real applications with little coding.

We will show you how to construct your own flows, re-use existing sample flows, find nodes and how to create and publish your own nodes.

Agenda

- Introduction
- Node-RED
- Build your 1st Flows:
 - Hello World
 - Web Page
 - Visual Recognition
 - Babel
- Sample Flows
- Node Library
- Roll your own
- Education Resources



chugths top 6% this quarter

MQ Developer, Developer Experience Advocate and Hackathon mentor, with many years of programming experience including Assembler, C/C++, Java, Python, Go and Node.js.

1,814 REPUTATION

• 1 • 6 • 18

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188

6

~19k

answers

questions

people reached



Hursley, United Kingdom



chugths



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Member for 4 years, 3 months



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Visited 742 days, 5 consecutive

By Day

<https://github.com/ibm-messaging/mq-dev-patterns>

No description, website, or topics provided.

Manage topics

58 commits 2 branches 0 packages 0 releases 3 contributors Apache-2.0

Branch: master New pull request Create new file Upload files Find file Clone or download

chugths Merge pull request #9 from chugths/jsonupdates

Go CCDT enable the samples 3 months ago

JMS CCDT Enable the pattern samples 2 months ago

Node.js CCDT enable the pattern samples 2 months ago

Python CCDT enable the samples 3 months ago

.dotnet CCDT Enable the Pattern samples 2 months ago

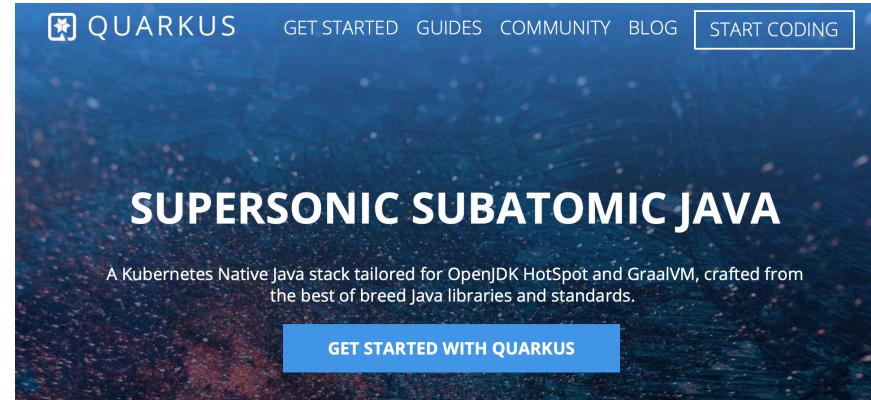
.gitignore Initial release 11 months ago

LICENSE Initial release 11 months ago

README.md CCDT enable the sample patterns 2 months ago

ccdt.json CCDT enable the samples 3 months ago

env.json CCDT enable the samples 3 months ago



<https://developer.ibm.com/messaging/learn-mq/mq-tutorials/>

MQ tutorials, taking you further

Every great achievement starts with a single step.
Here's a set of guided tutorials that provides you with the tools to master MQ.



Search by:

Skill level

- Any Skill Level
- Beginner
- Intermediate
- Advanced

Language

- .NET
- C#
- Go
- Java
- Node.js
- Python

Operating System

App side auto-reconnect and CCDTs

A deep dive into connecting an application to multiple queue managers.

Securing IBM MQ with TLS

Developing with the IBM MQ Mac OS Toolkit

Point to point in C# for .NET Framework

Write a C# application for .NET Framework that uses IBM MQ as a messaging provider. See how to use IBM MQ classes for XMS to put and get messages to and from a queue.

60 Minutes

Start tutorial

30 Minutes

Start tutorial

By Night

- <https://github.com/ibm-early-programs>
- <https://github.com/watson-developer-cloud/node-red-node-watson>

[README.md](#)

Node-RED Watson Nodes for IBM Cloud

CLAs signed 22

New in version 0.9.2

- Assistant V2 - Fix bug session expiry bug.

New in version 0.9.1

- Assistant V2 - Allow flow to assign a string session id. The node maps this user specified session id to the real session id. Additional param option allow session id to be reset.

New in version 0.9.0

- Node-RED & IBM-Watson & Use of promises on API invocation & IAM URL construct migration & Removal of default endpoint of
 - Assistant V1
 - Assistant V2
- All Nodes now require Node-RED 1.0.x or above
- Remove watson-developer-cloud dependency
- Remove code for redundant nodes

Watson Nodes for Node-RED

A collection of nodes to interact with the IBM Watson services in [IBM Cloud](#).

 ibm-early-programs

[Repositories 20](#) [Packages](#) [People 12](#) [Teams 1](#) [Projects](#) [Settings](#)

Find a repository... Type: All Language: All Customize pins [New](#)

animal-sounds
Animal Sounds Machine Learning

JavaScript Apache-2.0 22 ⚡ 1 ① 2 0 Updated 15 days ago

node-red-contrib-watson-machine-learning

JavaScript Apache-2.0 7 ⚡ 2 ① 3 0 Updated 23 days ago

node-red-contrib-facebook-messenger-writer
Writer Node for Facebook Messenger

HTML Apache-2.0 6 ⚡ 1 ① 0 0 Updated 29 days ago

node-red-contrib-pdf-hummus

JavaScript Apache-2.0 2 ⚡ 1 ① 0 0 Updated on 17 Jul 2019

node-red-contrib-browser-utils
Browser utilities for node-red

JavaScript 13 ⚡ 9 ① 0 0 Updated on 11 May 2019

watson-tv
Forked from annaet/watson-tv

CSS 15 ⚡ 3 ① 0 0 Updated on 18 Apr 2019

node-red-contrib-media-utils
A collection of Node-RED media nodes that can be used with IBM Watson services

JavaScript 6 ⚡ 5 ① 3 0 Updated on 21 Mar 2019

Top languages

JavaScript HTML CSS

People 12 >



Invite someone

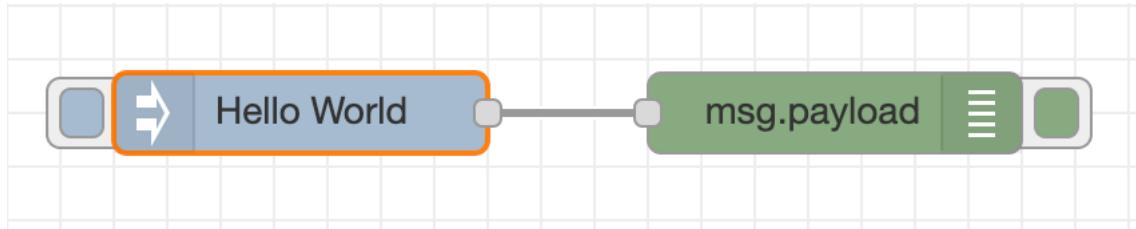
Node-RED

- <https://nodered.org>



The image shows the Node-RED runtime interface running on a Mac OS X desktop. The window title is "Node-RED Introduction". Inside, there's a flow diagram consisting of several nodes: an "http request" node, an "if/then/else" node, a "log" node, a "sentiment" node, another "log" node, and an "http response" node. The "if/then/else" node has two branches: one leading to the "sentiment" node and another to the second "log" node. The "sentiment" node has an output wire that goes to the second "log" node. The "log" nodes have output wires that merge into the "http response" node. On the left side of the interface is a "palette" containing various node icons categorized into groups like "Input", "Output", "Functions", and "Control". On the right side, there are "Info", "debug", and "Logs" tabs. The "Logs" tab shows a log entry: "HTTP: [INFO] GET / HTTP/1.1 [200 OK] - [127.0.0.1:27017] [main handle]". The "Info" tab shows a message: "HTTP: [INFO] GET / HTTP/1.1 [200 OK] - [127.0.0.1:27017] [main handle]". The "debug" tab shows a message: "HTTP: [INFO] GET / HTTP/1.1 [200 OK] - [127.0.0.1:27017] [main handle]".

Node-RED Hello World



Web Page

The image shows a Node-RED flow editor interface on the left and a browser screenshot on the right.

Node-RED Flow:

```
graph LR; In([get] /greetings) --> Template{template}; Template --> Out[http]
```

Properties Panel (Template Node):

- Name: Name
- Property: msg. payload
- Template (HTML syntax highlighted):

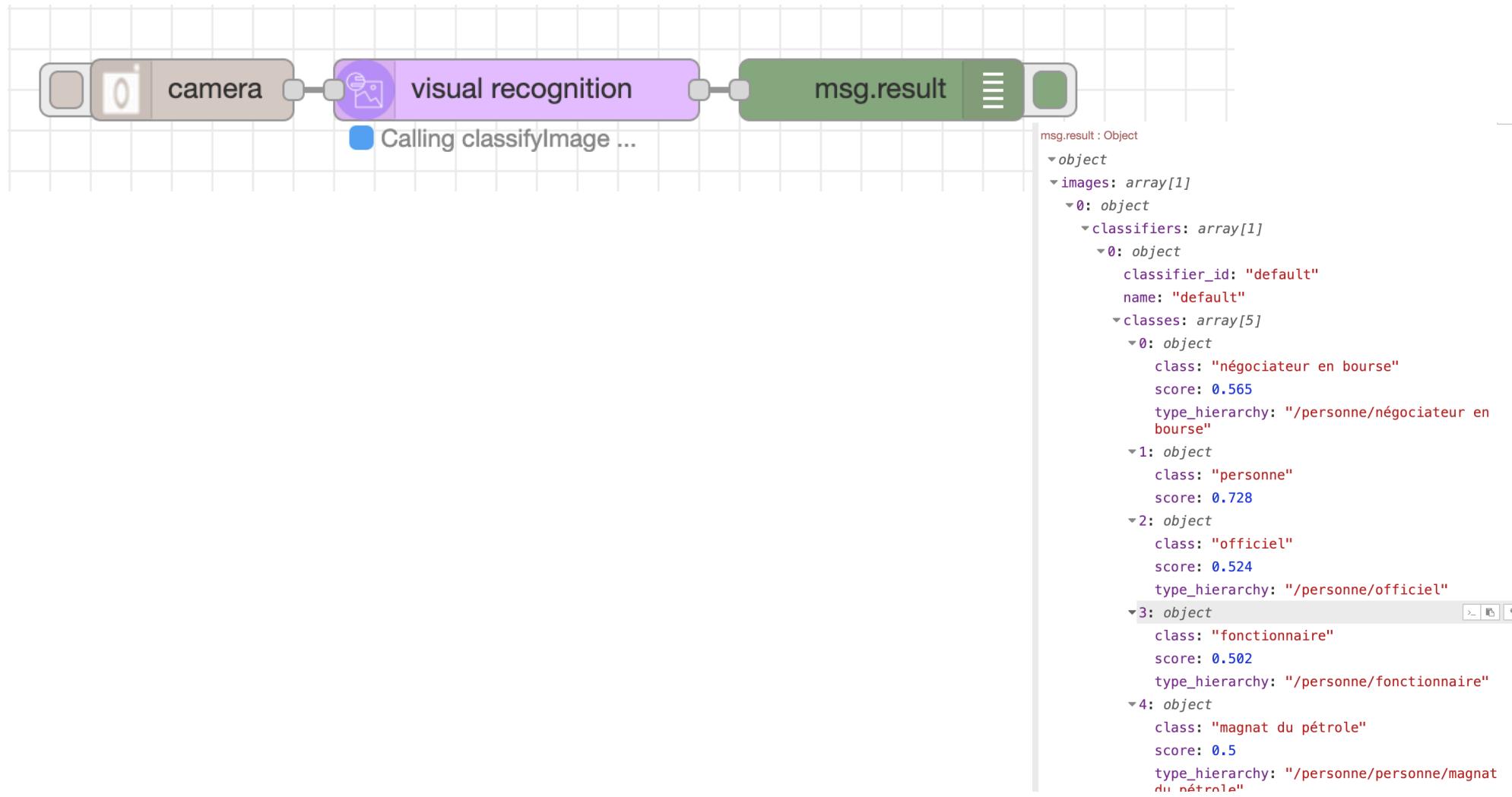
```
1 <html>
2   <head></head>
3   <body>
4     <div>Greetings!</div>
5   </body>
6 </html>
```

Browser Screenshot:

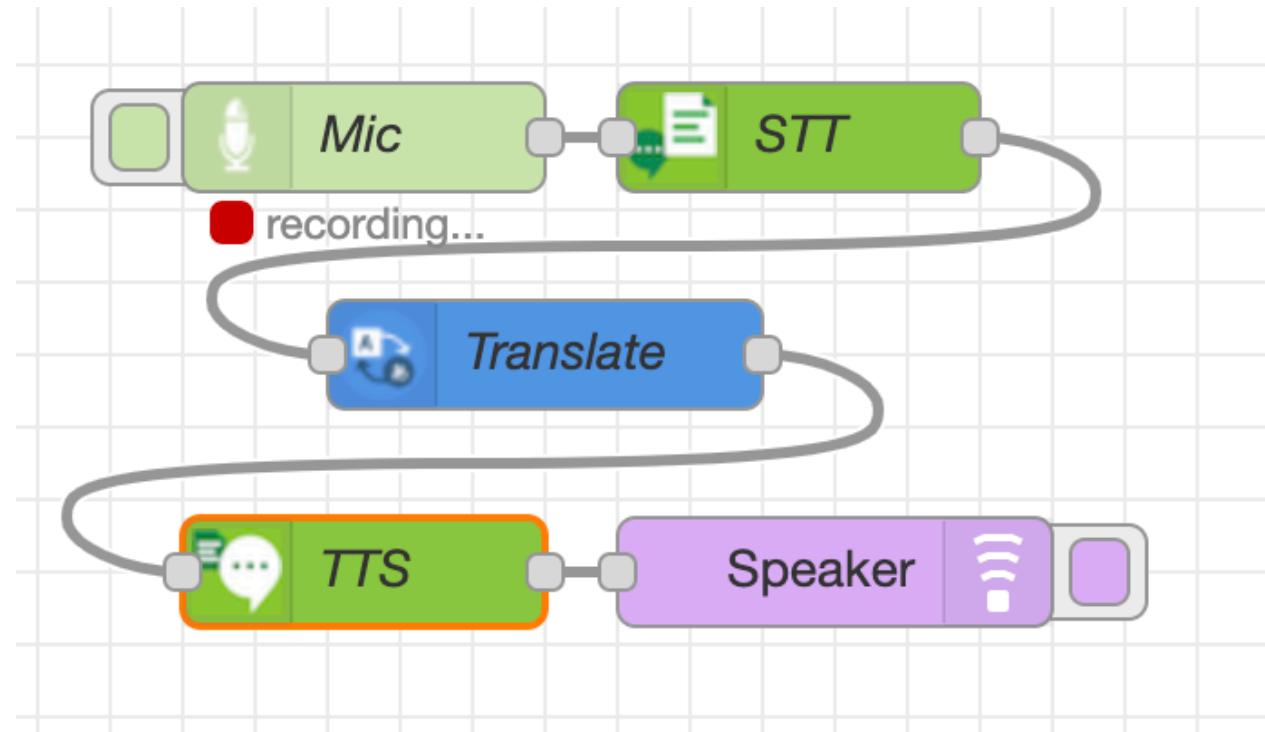
Address bar: 080-node-red-watson.us-south.cf.appdomain.cloud/greetings

Page content: Greetings!

Visual Recognition



Babel



Sample Flows

- <https://github.com/watson-developer-cloud/node-red-labs/tree/master/starter-kits>

accessibility	Updated Accessibiliti starter-kit flow
aide	New starter kit 'Aide' added and README updated
babelfish	Babelfish starter kit created
breaking_news	Adding JSON file
dashboard_translation	UPDATE dashboard translation readme
dictaphone	README's updated
interpreter	Add files via upload
ok_watson	Update links to developercloud
selfie_description	README's updated
selfie_training	Update README.md
text_to_speech_audio	New starter kits added
video_captioning	Minor grammer and spelling changes
README.md	New starter kit 'Aide' added and README updated
README.md	

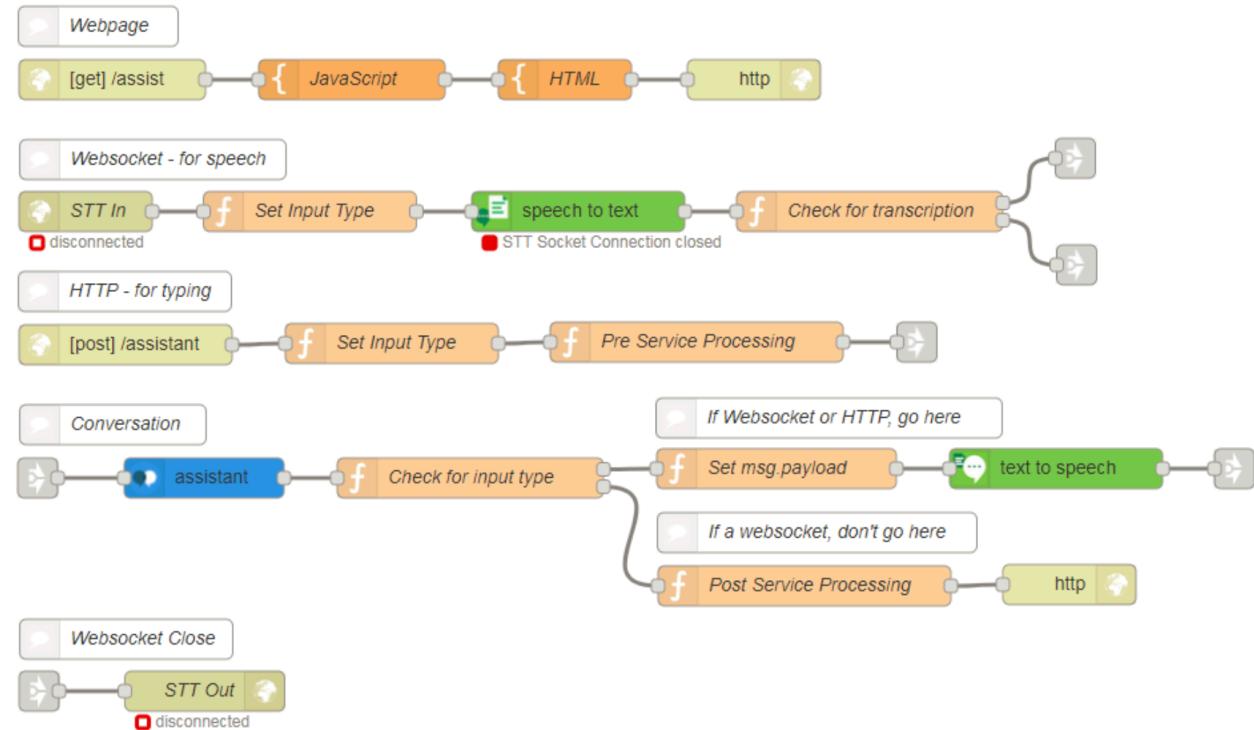
Node-RED Starter-kits

This is a collection of sample apps using the Watson nodes in [Node-RED](#). The apps are starter kits to help you create apps using Node-RED and the [Watson Nodes](#).

There are 12 applications exploring the capabilities of Watson Developer Cloud in Node-RED. Each application has an introduction, which shows each application in use.

1. [Interpreter](#) - uses Speech to Text, Language Translator and Text to Speech to translate audio from one language to another.
2. [Video Captioning](#) - uses Speech to Text, Language Translator and FFmpeg nodes to add captions to video.
3. [Breaking News](#) - uses Discovery and Tone Analyzer to search Twitter for related news categories and displays tweets and tone analysis in a dashboard.

Application Flow



[Get the flow here](#)

More Sample Flows

- <https://flows.nodered.org>

Recent flows

The screenshot shows the homepage of flows.nodered.org. At the top right is a search bar labeled "Search library". Below it are three tabs: "nodes", "flows" (which is selected), and "collections". To the right are buttons for "recent", "downloads", and "rating". A red banner at the bottom of the page reads "Flows for the real world".

Recent flows

- VMware Carbon Black Cloud Audit and Remediation**
This is a collection of subflows to work with the VMware Carbon Black Cloud Audit and Remediation API.
the4tress ★ 5.0 flow
- VMware Carbon Black Cloud Endpoint Standard**
This is a collection of subflows to help interact with the VMware Carbon Black Cloud Endpoint Standard API.
the4tress ★ 5.0 flow
- ServiceNow Incidents**
Basic interactions with ServiceNow for testing APIs in incident response flows.
the4tress flow

[see more \(1467\) ▶](#)

The screenshot shows the Node-RED flows library interface. At the top is a search bar labeled "Search library". Below it are three tabs: "nodes", "flows" (selected), and "collections". To the right are buttons for "recent", "downloads", and "rating".

flows

- VMware Carbon Black Cloud Audit and Remediation**
This is a collection of subflows to work with the VMware Carbon Black Cloud Audit and Remediation API.
the4tress ★ 5.0 flow
- VMware Carbon Black Cloud Endpoint Standard**
This is a collection of subflows to help interact with the VMware Carbon Black Cloud Endpoint Standard API.
the4tress ★ 5.0 flow
- ServiceNow Incidents**
Basic interactions with ServiceNow for testing APIs in incident response flows.
the4tress flow
- Break up message**
Testing breaking up a message into parts
HalEEfacts flow
- node-red-contrib-firstnode**
This is my test flow
taminhhienmor flow
- simple dawn-dusk loop**
This is a really simple flow that changes brightness and color of my 5W GU10 Zigbee bulb, according to dawn and dusk timing set in
sysdumped flow
- Two trigger nodes action in sequence**
First trigger node (presence) activates second trigger node (door open) which casts greeting to
HalEEfacts flow
- Fire TV Remote**
A flow to remote control your Amazon Fire TV.
trockenasche flow
- How to use Alpha Vantage, PostgreSQL and Grafana to display stock prices in Node-RED**
This flow shows how to query Alpha Vantage for stock prices and display them in Grafana.
rodened flow
- Dashboard slideshow**
Dashboard slideshow
aiot-maker flow
- File upload and delete in Dashboard**
This is a simple subflow that will allow you to upload files in the Dashboard and also select and delete them. The directory to upload to is
natcl flow
- Zscaler Sandbox**
This is a collection of subflows to work with the Zscaler ZIA Sandbox.
the4tress flow
- VMware Carbon Black Cloud: Enterprise EDR**
This is a collection of subflows for working with the VMware Carbon Black Cloud Enterprise EDR API.
the4tress ★ 5.0 flow
- VMware Carbon Black Cloud: LiveResponse**
This is a collection of flows for the VMware Carbon Black Cloud LiveResponse APIs.
the4tress ★ 5.0 flow

Node Library

nodes flows collections recent downloads rating

node-red-node-rbe
A Node-RED node that provides report-by-exception (RBE) and deadband capabilities.

v0.2.8 ⚡ 15964 ★ 5.0 node

node-red-dashboard
A set of dashboard nodes for Node-RED

v2.19.4 ⚡ 15599 ★ 4.7 node

node-red-node-tail
A node to tail files for Node-RED

v0.1.1 ⚡ 14938 node

node-red-node-email
Node-RED nodes to send and receive simple emails

v1.7.7 ⚡ 6273 ★ 5.0 node

node-red-contrib-play-audio
A node-red node for playing audio in the browser

v2.4.0 ⚡ 5050 node

node-red-node-twitter
A Node-RED node to talk to Twitter

v1.1.6 ⚡ 5047 node

node-red-node-feedparser
A Node-RED node to get RSS Atom feeds.

v0.1.15 ⚡ 4288 node

node-red-node-random
A Node-RED node that when triggered generates a random number between two values.

v0.1.4 ⚡ 4036 node

node-red-node-sentiment
A Node-RED node that uses the AFINN-165 wordlists for sentiment analysis of words.

v0.1.6 ⚡ 4020 node

node-red-node-serialport
Node-RED nodes to talk to serial ports

v0.10.0 ⚡ 3254 ★ 5.0 node

node-red-node-smooth
A Node-RED node that provides several simple smoothing algorithms for incoming data values.

v0.1.2 ⚡ 2772 ★ 4.0 node

node-red-node-ping
A Node-RED node to ping a remote server, for use as a keep-alive check.

v0.1.0 ⚡ 2693 node

node-red-node-pi-gpio
The basic Node-RED node for Pi GPIO

v1.0.6 ⚡ 2510 node

node-red-node-mysql
A Node-RED node to read and write to a MySQL database

v0.0.19 ⚡ 2485 ★ 3.0 node

node-red-node-twilio
A Node-RED node to send SMS messages via the Twilio service.

v0.1.0 ⚡ 2314 node

1 of 165 [Next ▶](#)

chughts| + Sign in w recent downloads rating

nodes flows collections

node-red-node-watson
A collection of Node-RED nodes for IBM Watson services

v0.9.2 ⚡ 1519 ★ 5.0 node

node-red-contrib-watson-machine-learning
Interact with Watson Machine learning

v0.1.0 ⚡ 49 node

node-red-contrib-facebook-messenger-writer
A node to write output to Facebook Messenger

v0.0.5 ⚡ 175 node

node-red-contrib-pdf-hummus
Extract Text from a pdf using hummusjs

v0.0.3 ⚡ 11 node

node-red-contrib-browser-utils
A collection of Node-RED nodes for browser interaction

v0.0.9 ⚡ 1854 node

node-red-contrib-media-utils
A collection of Node-RED media nodes that can be used with IBM Watson services

v0.0.8 ⚡ 163 node

node-red-contrib-deebeetwoforced
Interact with z/DB2

v0.0.1 ⚡ 2 node

node-red-contrib-uk-ea-flood-warnings
Wrapper tp UK EA Flood Warnings API

v0.0.3 ⚡ 3 node

node-red-contrib-file-buffer
Create a file buffer for a file

v0.0.3 ⚡ 65 node

node-red-contrib-sensor-rotation-to-phrase
A node to interpret sensor rotation as phrases

v0.0.3 ⚡ 1 node

node-red-contrib-json2csv
A node to convert json to csv

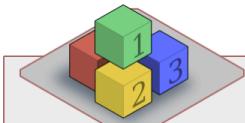
v0.0.3 ⚡ 177 node

1 of 1

Roll your own

- <https://nodered.org/docs/>

Documentation



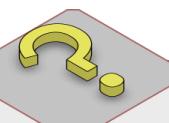
Getting Started

Everything from first install to deploying flows



User Guide

The definitive guide to using Node-RED



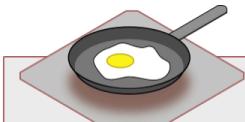
Frequently Asked Questions

And hopefully some answers



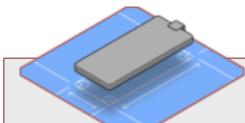
Tutorials

Examples of what you can do, taken one step at a time



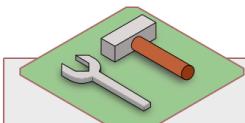
Cookbook

Recipes to help you get things done with Node-RED



Creating Nodes

How to create nodes to extend the Node-RED palette



Developing the core

Help to develop the core of Node-RED



API Reference

Admin, runtime and storage APIs

Creating your first node

- <https://nodered.org/docs/creating-nodes/first-node>

The screenshot shows a documentation page for creating a first node. At the top, there's a red header bar with the navigation path: "docs • creating nodes • first node". Below the header, the main title "Creating your first node" is displayed in a large, bold, dark font. A horizontal line separates the title from the content. The left sidebar contains a list of topics under "Creating Nodes", including "Creating your first node", "Creating a simple node", "package.json", "lower-case.js", "lower-case.html", "Testing your node in Node-RED", "Unit Testing", and "test/lower-case_spec.js". Further down the sidebar, there's a list of general node properties: "JavaScript File", "HTML File", "Storing Context", "Node properties", "Node credentials", "Node appearance", "Node status", "Configuration nodes", "Help style guide", "Adding examples", "Packaging", and "Internationalisation". The main content area starts with a paragraph about nodes being created when a flow is deployed. It then discusses the components of a node: a JavaScript file defining the node's behavior and an HTML file defining its properties, edit dialog, and help text. It also mentions the use of a package.json file for packaging the module. Below this, there's a section titled "Creating a simple node" which provides instructions for creating a node that converts payloads to lowercase. It includes a note about Node.js version requirements.

Creating your first node

Nodes get created when a flow is deployed, they may send and receive some messages whilst the flow is running and they get deleted when the next flow is deployed.

They consist of a pair of files:

- a JavaScript file that defines what the node does,
- an html file that defines the node's properties, edit dialog and help text.

A `package.json` file is used to package it all together as an npm module.

- **Creating a simple node**
 - `package.json`
 - `lower-case.js`
 - `lower-case.html`
- **Testing your node in Node-RED**

Creating a simple node

This example will show how to create a node that converts message payloads to all lower-case characters.

Ensure you have the current LTS version of Node.js installed on your system. At the time of writing this is 10.x.

Open Source

```
this.on('input', function(msg) {
  node.status({ fill: 'blue', shape: 'dot', text: 'initialising' });

  var connection = null;
  var token = null;
  var method = config['wml-mode'];
  var params = {};

  start(msg, config)
    .then( () => {
      return checkForParameters(msg, config, method, params);
    })
    .then( () => {
      return checkPayload(msg, method, params);
    })
    .then( () => {
      return checkConnection(node.connectionNode);
    })
    .then( () => {
      node.status({ fill: 'blue', shape: 'dot', text: 'requesting token' });
      return getToken(node.connectionNode);
    })
    .then( (t) => {
      token = t;
      node.status({ fill: 'blue', shape: 'dot', text: 'executing' });
      return executeMethod(method, node.connectionNode, token, params);
    })
    .then( (data) => {
      node.status({ fill: 'blue', shape: 'dot', text: 'processing response' });
      return processResponse(msg, data);
    })
    .then(function() {
      node.status({});
      node.send(msg);
    })
    .catch(function(err) {
      reportError(node,msg,err);
      node.send(msg);
    });
});
```

Courses

- <https://cognitiveclass.ai/courses/node-red-basics-to-bots>



Node-RED: basics to bots

This badge earner understands how to create simple to complex applications in the Node-RED flow editor. These applications include a Node-RED boilerplate that uses JavaScript and built in IBM Bluemix; a REST API; Watson cognitive applications that can translate text, analyze tone, replay audio and video, and send tweets to Twitter; and a Facebook Messenger bot that uses the Watson Conversation service.



Introduction to Machine Learning with Sound

Earners of this badge know how to prepare data so that it can be consumed by machine learning models by using IBM Watson Studio, build a binary classification model that can predict which animal is making a sound, build multiclass classification models to detect whether a birdsong is from a bird from a specific order, make predictions on audio files by using a Node-RED app, and create a UI in Node-RED and integrate the Watson Visual Recognition service to identify images of animals.

- <https://cognitiveclass.ai/courses/machine-learning-sound>

Node-RED Essentials

- <https://developer.ibm.com/components/node-red/videos/node-red-essentials/>

About this video series

The [Node-RED Essentials video series](#) introduces you to the components and features of this low-code editor.

From creating your first flow, to wiring nodes together, to using the sidebar, to managing messages, you can quickly learn Node-RED fundamental skills in these 3 to 4 minute videos.

