

# Node-red Creation

**Brief:** This tutorial will guide you in creating a device in the IBM IoT platform

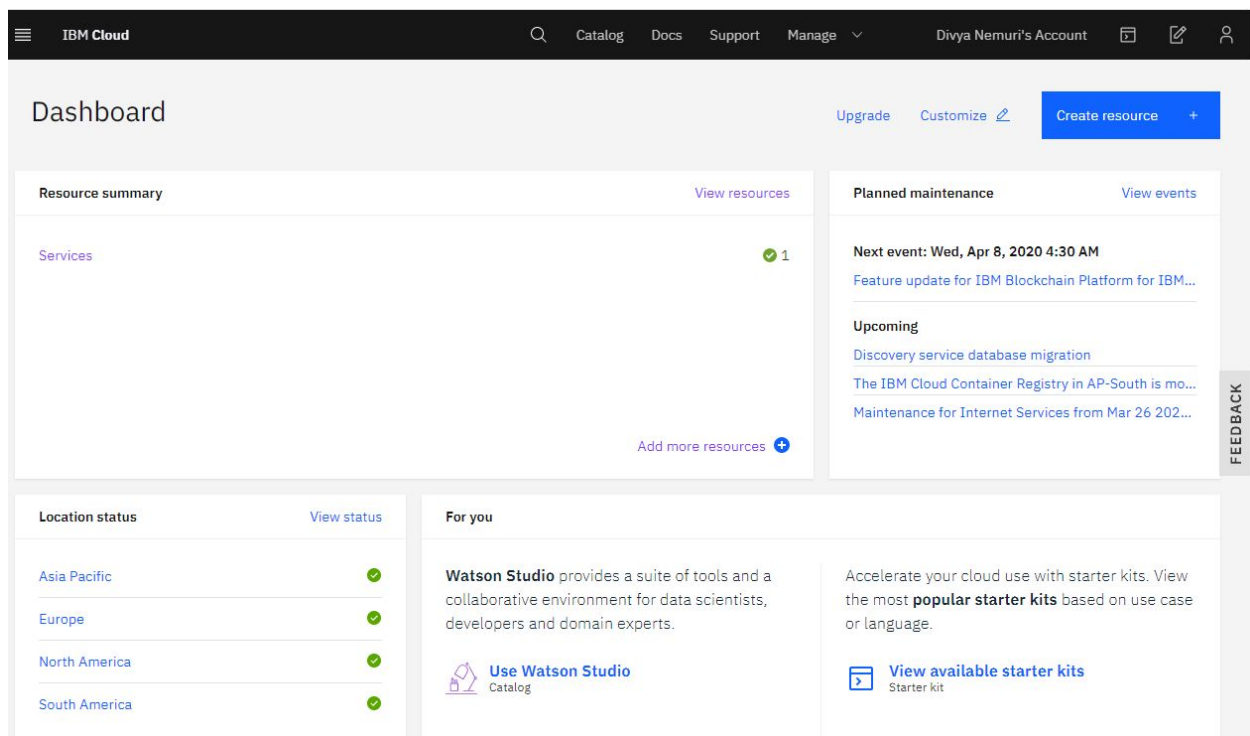
## Outcome:

In this tutorial, you will learn the following activities and tasks.

- Creating a node-red application
- Launch and configure the node-red application
- Basic flow on how to use node-red application.
- Installing dashboard nodes for creating a web UI

## Activity:

Log in to Your IBM account using <https://cloud.ibm.com/>. Upon successful login to the cloud, you will be on the dashboard page. If you are a new user you won't have any resources listed. For a returning user, you will have your previous resources listed.



## Task-1: Create Node-red application

- Click on the catalog on the dashboard.
- Click on the software to find the application
- Search for node-red in the search bar provided.
- Click on the node-red application to create.

The screenshot shows the IBM Cloud Catalog interface. At the top, the 'Catalog' tab is selected in the navigation bar. Below the navigation bar, a search bar contains the text 'node'. The search results are filtered to show 'Software (7)' items. On the left, a sidebar lists various categories and offering types. The main content area displays a grid of software offerings. The 'Node-RED App' is highlighted with a red box and labeled with a red '4'. Other offerings visible include 'Metrics Server', 'Natural Language Understanding Node.js App', and 'Node Exporter'.

IBM Cloud

Try the best of the Catalog for free with no time restrictions with Life plans. The Life filter is enabled. Remove the filter to see the full Catalog.

Catalog

node

Services (1)

Software (7)

All Categories (7)

Compute

Networking

Storage

AI (2)

Analytics

Databases (2)

Developer Tools (2)

Integration

Security and Identity

Web and Application (4)

Offering type

☐ Cloud Paks (6)

☐ Helm charts (67)

☐ Terraform (4)

☐ Starter kits (12)

Deployment target

Software

Explore our expanding catalog of software solutions and take advantage of a simplified installation process.

All Categories

Metrics Server

Bitnami • Databases • Developer Tools

Metrics Server is a cluster-wide aggregator of resource usage data. Metrics Server collects metrics from the Summary API, exposed by Kubelet on each node.

Helm charts • IBM Kubernetes Service • Free

Natural Language Understanding Node.js App

IBM • AI • Web and Application

Collection of APIs that can analyze text to help you understand its concepts, entities, keywords, sentiment, and can create a custom model for some APIs to get specific...

Starter kits

Node-RED App

IBM • Web and Application

Start building your next Node-RED app on IBM Cloud.

Node Exporter

Bitnami • Databases

Prometheus exporter for hardware and OS metrics exposed by UNIX kernels, with pluggable metric collectors.

FEEDBACK

- After clicking on the node-red app you will be redirected to the node-red application starter kit page. Click on create

The screenshot shows the 'Node-RED' starter kit details page in the IBM Cloud Catalog. The page title is 'Node-RED' with the subtitle 'Code Pattern • Lite'. A blue 'Create app' button is highlighted with a red box. The page is divided into sections: 'Details' (showing author, updated date, and type), 'Source code' (with a GitHub link), 'Helpful links' (with a Tutorial link), 'Overview' (describing the starter kit), 'This starter kit will help you' (listing benefits), 'What's included?' (listing included services), and 'Services (1)' (showing the Cloudant service).

IBM Cloud

Catalog / Starter kit details

Node-RED

Code Pattern • Lite

Create app

Details

AUTHOR IBM

UPDATED 2/11/2020

TYPE Starter kit

Source code

GitHub

Helpful links

Tutorial

Overview

This starter kit provides a pre-configured Node-RED application, including a Cloudant service to store the application flow configuration. Add services, generate and download the code, use the IBM Cloud Developer Tools CLI to run and debug locally, then deploy to Cloud Foundry or a DevOps Pipeline.

This starter kit will help you

- Generate an application with Node-RED
- Generate an application with files for deploying to Cloud Foundry or a DevOps Pipeline
- Connect to provisioned services

What's included?

Services (1)

Cloudant

Free to start View pricing View docs

FEEDBACK

ASK A QUESTION

- To create the node-red application give the App name. The name should be unique. One may use the default name provided or can be of their choice. Select the region as Dallas for avoiding the conflicts on installing the nodes in the future. Then click on create

IBM Cloud

Catalog / Starter kit details / Create app

Node-RED

App details

App name  
Accept the default name, or enter a value up to 128 characters.

Node RED BRZHK

Resource group  
Default

Tags ⓘ  
Examples: env:dev, version-1

Platform  
☒ Node.js

Region  
Chennai  
Washington DC  
Seoul  
Dallas  
Sydney  
Frankfurt  
Tokyo  
London  
Chennai

Resource group  
Default

Getting started with apps

[View source code](#)

After you create your app, you can add services and use a DevOps toolchain to set up Continuous Delivery for deploying your app to IBM Cloud.

FEEDBACK

ASK A QUESTION

- To create the app it will take sometime meanwhile the cloudant service will be created.

cloud.ibm.com/developer/appservice/apps/688137d6-7271-40bf-bf90-016cae81a9f5

Apps Gmail YouTube Maps Translate

IBM Cloud Catalog Docs Support Manage Divya Nemuri's Account

Resource list / App details

Node RED BRZHK Add tags Resource group: Default Download code

App details Developer resources

Services (1) Connect existing services Create service

Name	Resources	Actions
Cloudant	Provisioning service credentials	

Configure Continuous Delivery

Continuous Delivery is not enabled for this app. Enable Continuous Delivery to automate builds, tests, and deployments through Delivery Pipeline, GitLab, and more.

Deploy your app

Credentials Show

Knowledge Guide

Next steps

To enable Continuous Delivery and deploy to IBM Cloud:

1. Click **Deploy your app**.
2. Select a deployment target, select the toolchain settings, and click **Create**. The deployment starts automatically.
3. Check the deployment status in the **Delivery Pipeline** section.

Download your app for local development:

1. Install the IBM Cloud CLI. [Learn more](#)
2. Run the `ibmcloud dev code <APPNAME>` command to download your app. If you are unsure of the app name or would like to download another app, you can list all the IBM Cloud apps that are in a space by running the `ibmcloud dev list` command.

[Learn more about deploying your app](#)

FEEDBACK ASK A QUESTION

- After the successful creation of cloudant service, click on deploy your app button

IBM Cloud Catalog Docs Support Manage Divya Nemuri's Account

Resource list / App details

Node RED BRZHK Add tags Resource group: Default Download code

App details Developer resources

Services (1) Connect existing services Create service

Name	Resources	Actions
Cloudant	<a href="#">Documentation</a>	

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[Learn more about deploying your app](#)

FEEDBACK ASK A QUESTION

- In the process of deploying you will be prompted for the IBM cloud API key. Click on new to generate the one.

Resource list / App details

## Node RED BRZHK

[Cancel](#) [Create](#)

### Deploy your app

Select your deployment target and configure your DevOps toolchain. After you click **Create**, the toolchain is created, and the deployment process is started automatically.

Deployment target

**IBM Cloud Foundry**  
Deploy and run your applications without managing servers or clusters. A Lite plan is available for quick and easy deployment.

IBM Cloud API key

[New](#) [+](#)

The value is required.

Number of instances

Memory allocation per instance

64 MB

2000 MB

128

- At the time of API key generation click OK on the popup.

Resource list / App details

## Node RED BRZHK

[Cancel](#) [Create](#)

### Deploy your app

Select your deployment target and deployment process is started

Deployment target

**IBM Cloud Foundry**  
Deploy and run your applications without managing servers or clusters. A Lite plan is available for quick and easy deployment.

IBM Cloud API key

The value is required.

Number of instances

Memory allocation per instance

64 MB

2000 MB

256

**Create a new API key with full access**

**Warning:** This will create a new API key that allows anyone who has it the ability to do anything you could do. You can improve your security posture by using the [IAM UI to create a service ID API key](#) that limits access to only what your pipeline requires, and then pasting that into the template UI instead.

For more information on API keys and access see the [IAM documentation](#).

Key will be called: `API Key for NodeREDBRZHK`

☐ Save this key in a secrets store for reuse

[Cancel](#) [OK](#)

- Increase your memory allocation per instance to 256

**Deploy your app**

Select your deployment target and configure your DevOps toolchain. After you click **Create**, the toolchain is created, and the deployment process is started automatically.

Deployment target

**IBM Cloud Foundry**  
Deploy and run your applications without managing servers or clusters. A Lite plan is available for quick and easy deployment.

IBM Cloud API key

Number of instances: 1

Memory allocation per instance: 64 MB — 2000 MB **256**

Select region to deploy in: London  
Select an organization: divya@thesmartbridge.com  
Select a space: dev

**Step 1. Select the deployment target**

Select your deployment target, and then provide the configuration information.

**IBM Cloud Foundry**

Cloud Foundry is the premier industry standard Platform-as-a-Service (PaaS) that ensures fast, easy, and reliable deployment of cloud-native apps. Cloud Foundry ensures that the build and deploy aspects of coding remain carefully coordinated with any attached services — resulting in quick, consistent and reliable iterating of applications. Cloud Foundry has a Lite plan that allows quick deployments for testing purposes.

**Before you begin**

- If your account doesn't have a Cloud Foundry org, you must create one. [Create org.](#)

**Steps**

1. Select the number of instances, memory allocation, region, org, and space.
2. Select the domain and provide a host name.

- Upon successful creation of the node-red app, you will be prompted with success message popup.

**Node RED BRZHK**

**App details**

Services (1)

Name	Resources	Actions
Cloudfant	<a href="#">Documentation</a>	

**Continuous Delivery**

**Toolchain**

Name	Location	Tool integrations
NodeREDBRZHK	Dallas	

**Delivery Pipelines**

Name	Status
NodeREDBRZHK	No stages detected

**Success!**  
Your DevOps toolchain has been created  
3/19/2020, 2:21:10 PM

**Next steps**

To enable Continuous Delivery and deploy to IBM Cloud:

1. Click **Deploy your app**.
2. Select a deployment target, select the toolchain settings, and click **Create**. The deployment starts automatically.
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Download your app for local development:

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[Learn more about deploying your app](#)



## Task-2: Launch the node-red application and customization

- To launch the node-red application click on cloud foundry apps in the dashboard
- If it is stopped click on start to start the application. Click on the service to launch

IBM Cloud

Q

Catalog

Docs

Support

Manage

Divya Nemuri's Account

## Resource list

Create resource

Collapse all | Expand all

Name	Group	Location	Status	Tags
Q Filter by name or IP address...	Filter by group or org...	Filter...	Q Filter...	Filter...
Devices (0)				
VPC infrastructure (0)				
Clusters (0)				
Cloud Foundry apps (1)				
Node RED BRZHK	divya@thesmartbridge.com / dev	London	Stopped	
Cloud Foundry services (1)				
node-red-brzhk-cloudant-15846075...	divya@thesmartbridge.com / dev	London	Provisioned	<div>Start</div> <div>Edit name</div> <div>Add tags</div> <div>Delete</div>
Services (3)				
Storage (0)				
Network (0)				
Cloud Foundry enterprise environments (0)				
Functions namespaces (0)				
Apps (1)				
Developer tools (1)				
VMware (0)				
Schematics workspaces (0)				

FEEDBACK

- Click on visit app URL to launch the app

IBM Cloud

☰

Resource list /

Node RED BRZHK

● This app is awake.

Visit App URL

Routes

⋮

Org: divya@thesmartbridge.com

Location: London

Space: dev

Add tags

Runtime

js

SDK for Node.js™

1

All instances are running  
Health is 100%

256

MB MEMORY PER INSTANCE

256

TOTAL MB ALLOCATION  
0MB still available

Connections (1)

node-red-brzhk-cloudant-1584607563375-71694

Create connection

Runtime cost

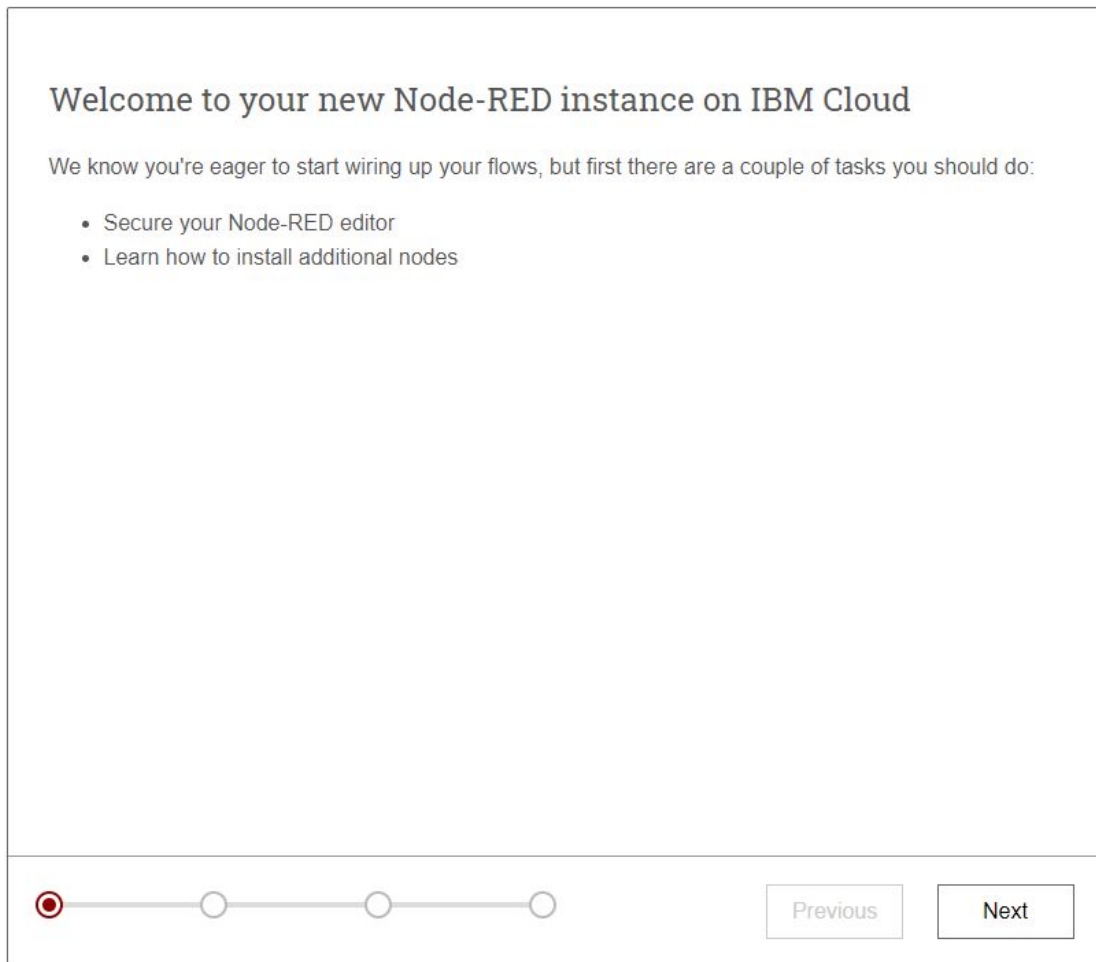
\$0.00

Estimated total for billing period  
(Mar 1, 2020 - Mar 31, 2020)

\$0.00

Current charges for billing period

- Upon launching the app you are redirected to the following page. Click on next



- In the next step, you are asked for securing the node-red app, if you want you can provide the credentials as your wish but remember forgetting those credentials leads to deleting the app and have to be started from the beginning. So better avoid giving credentials.
- Click the two checkboxes as shown in the below image. This step is for not securing the node-red editor.



### Secure your Node-RED editor

☒ Secure your editor so only authorised users can access it

Username

Password

Must be at least 8 characters

☐ Allow anyone to view the editor, but not make any changes

☐ *Not recommended:* Allow anyone to access the editor and make changes

Previous

Next

- Then after selecting the not recommended you are asked for confirmation proceed with that and click on next

### Secure your Node-RED editor

☐ Secure your editor so only authorised users can access it

☒ *Not recommended:* Allow anyone to access the editor and make changes

Your editor will not be secured. Anyone with the URL will be able to access your flows, data and bound services.

1

☐

Tick this box to confirm you want your editor to be insecure

Previous

2  
Next

- Click on next and finish for the two further steps to finish the launch of node-red.
- This procedure is done only for the first time launch.
- For a returning user, you can directly browse from the cloud foundry apps in the dashboard. And click on the visit app URL after getting the app is awake/running.


### Learn how to install additional nodes

Node-RED provides a **huge catalog of extra nodes** you can install into the editor.

Many of these nodes can be installed directly from the editor's palette manager feature. However that can cause issues due to the limited memory of the default Node-RED starter application.

The *recommended approach* is to edit your application's `package.json` file to include the additional node modules and then redeploy the application. This can be done using the Continuous Delivery feature on the application's IBM Cloud dashboard.

For more information, follow [this tutorial on IBM Developer](#).

PreviousNext

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## Finish the install

You have made the following selections:

- *Not recommended:* Allow anyone to access the editor and make changes

You can change these settings at any time by setting the following environment variables via the IBM Cloud console:

- NODE\_RED\_USERNAME - the username
- NODE\_RED\_PASSWORD - the password
- NODE\_RED\_GUEST\_ACCESS - if set to 'true', allows anyone read-only access to the editor



Previous

Finish

- After completing the procedure of launching node-red you are asked to go to the editor. Click on go to the editor button to launch the application

**Node-RED on IBM Cloud**

# Node-RED

Flow-based programming for the Internet of Things

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.

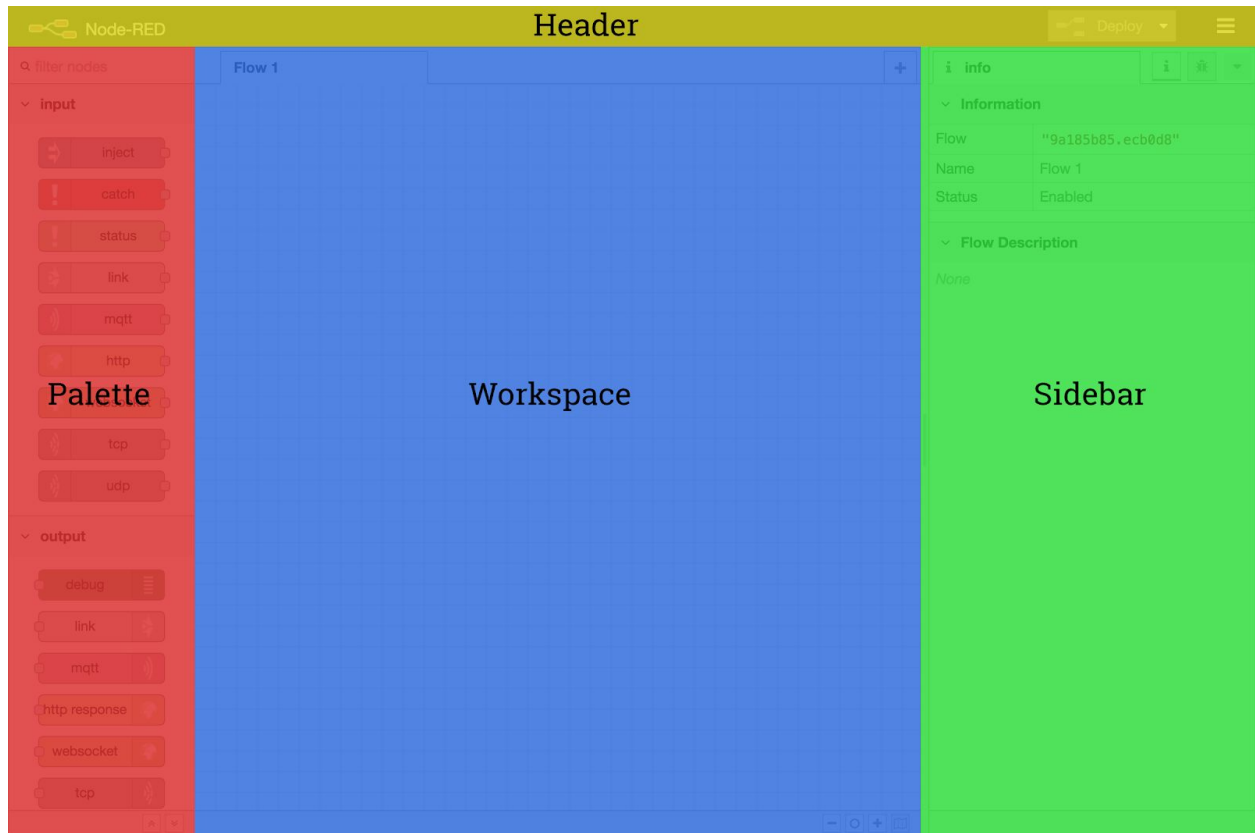
More information about Node-RED, including documentation, can be found at [nodered.org](http://nodered.org).

Go to your Node-RED flow editor

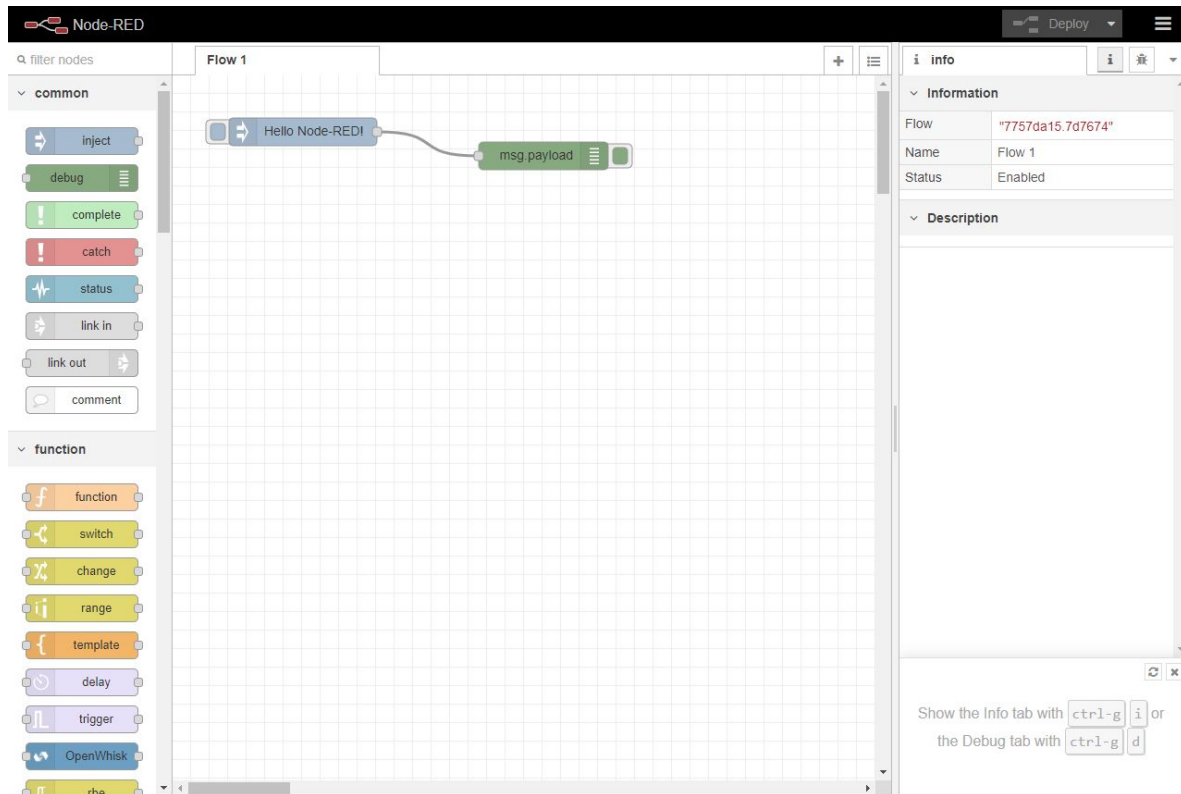
[Learn how to customise Node-RED](#)

### Task-3: Basic Node-red flow

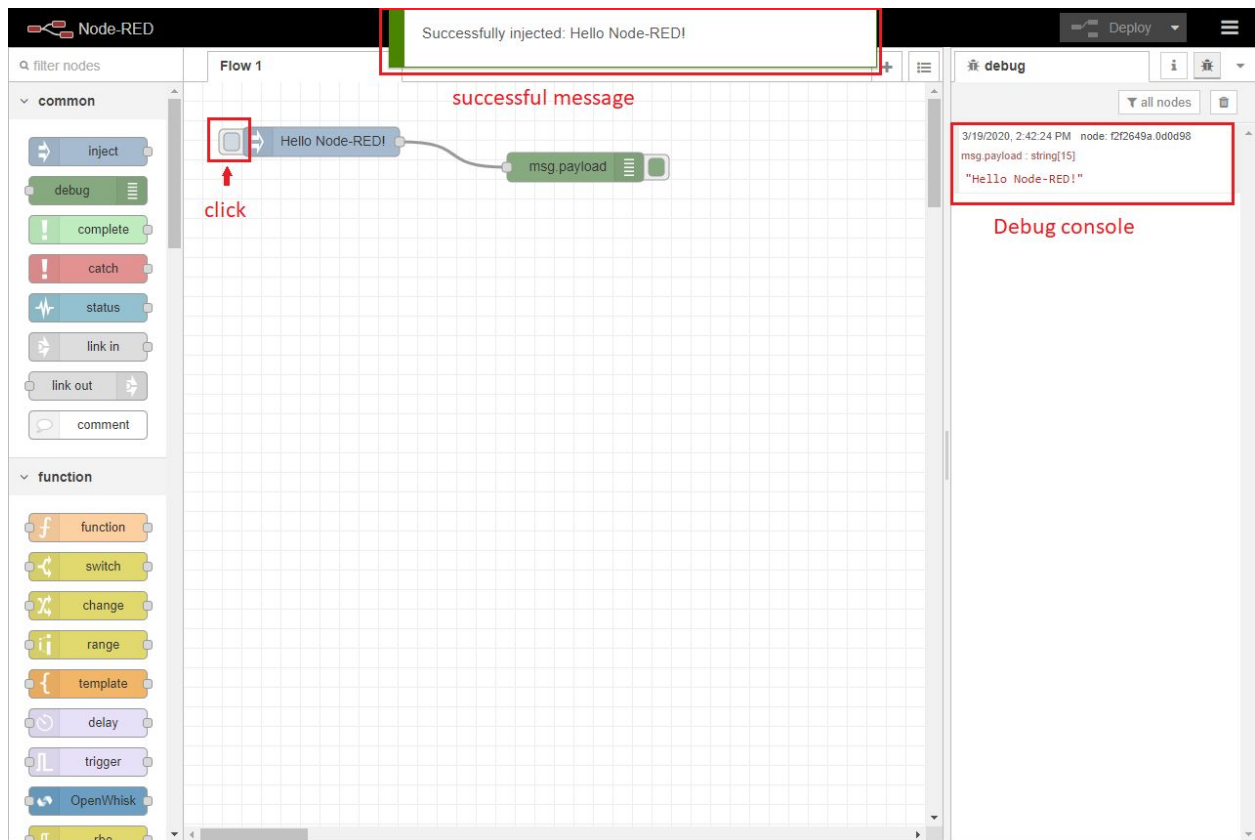
- On launching your node-red application you will be on the editor pane where one can drag and drop the nodes.



- From the palette, one can drag the nodes and drop them on the editor.
- The sidebar will be useful to know the info about nodes by selecting them and debug console helps us to debug the errors or the output is display on the console.
- The default node-red after launching the node-red application for a new user will contain two nodes connected to each other.
- The first node is the input used to inject the input for output.
- The debug node to display the output

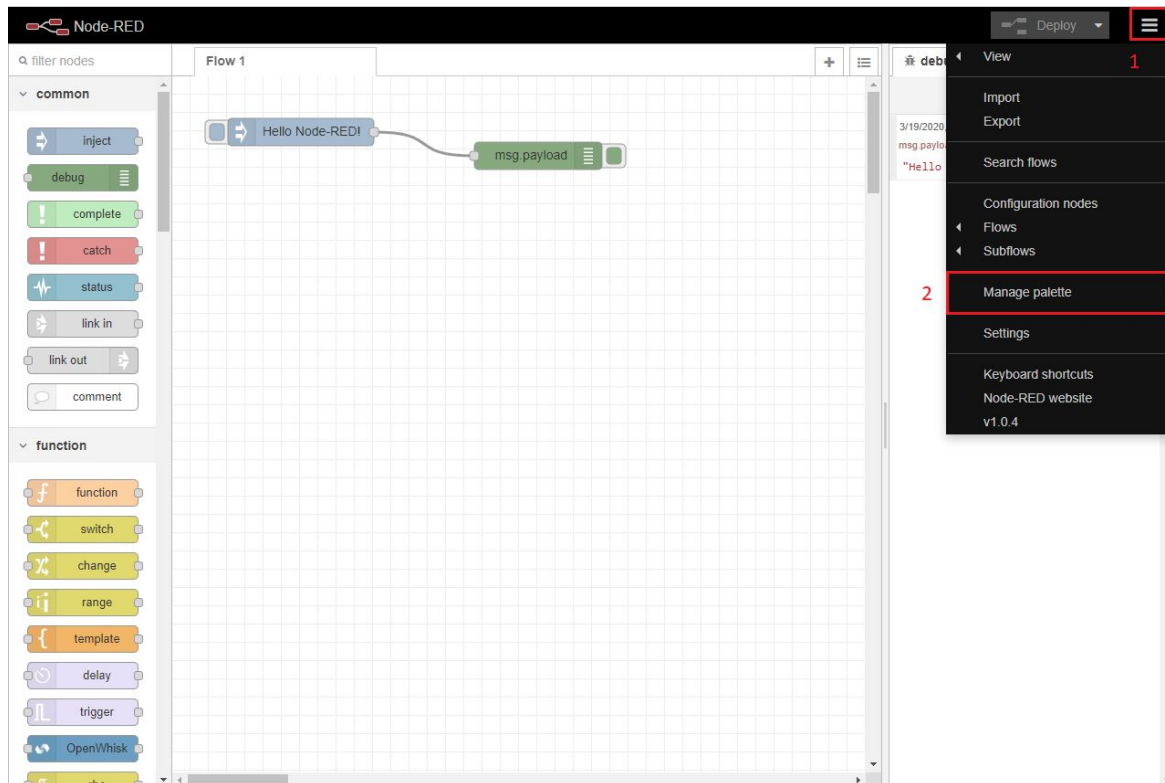


- Click on the inject node to inject the input to display on output.

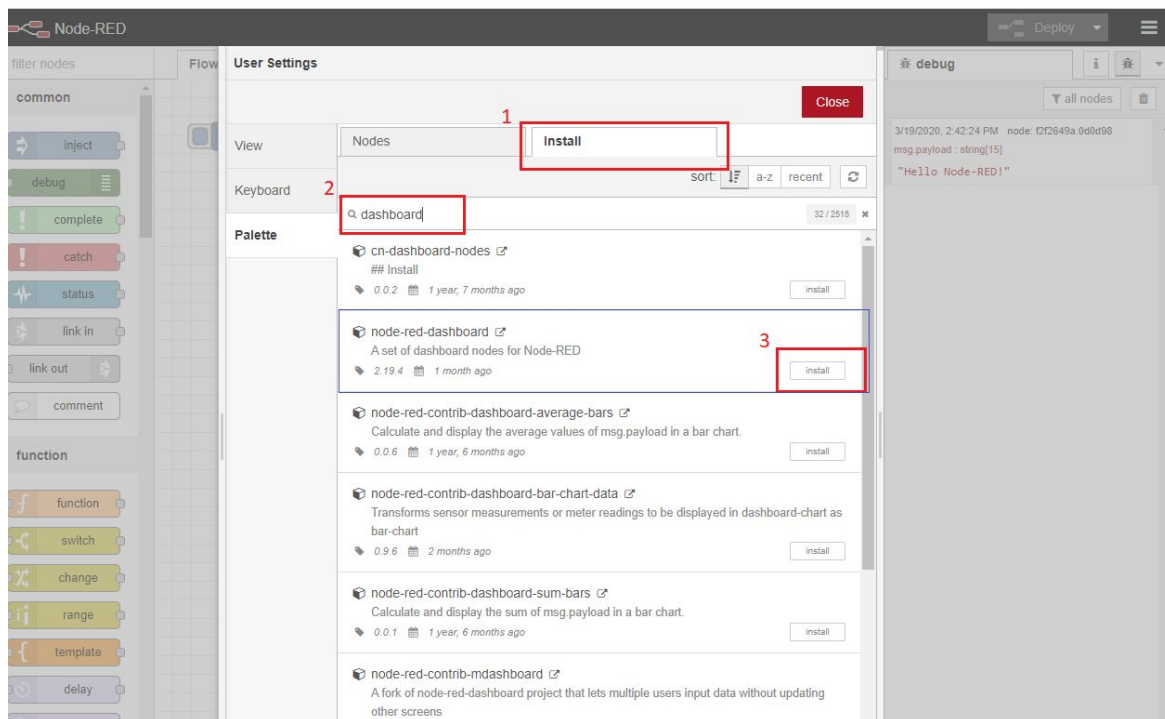


#### Task-4: Dashboard nodes installation

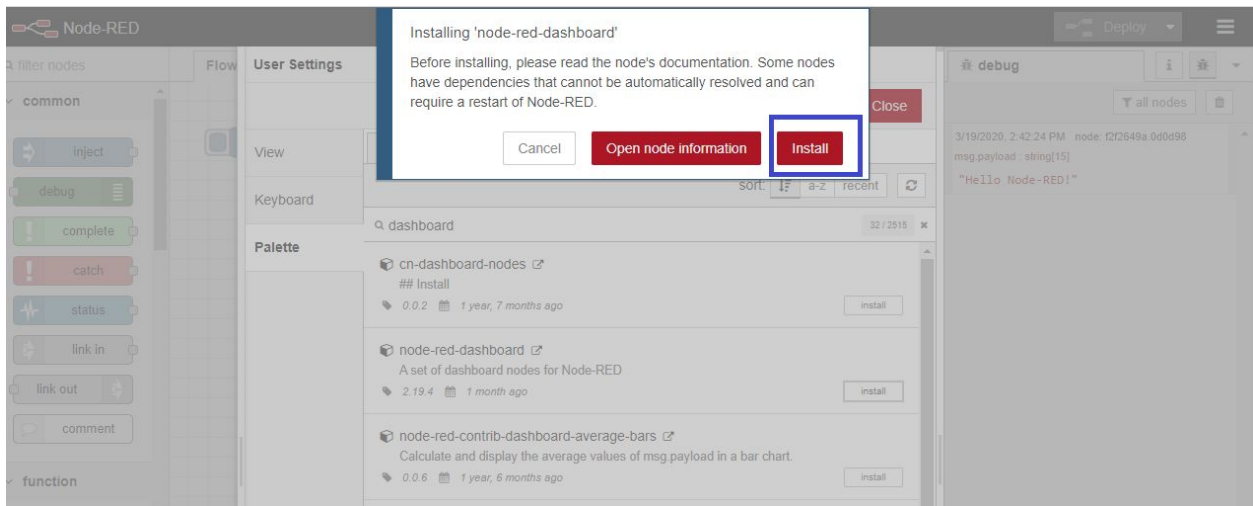
- Navigate to manage palette for installing the nodes required.



- Search for node-red-dashboard for installing the UI nodes used to create web App



- Click on Install in the confirmation popup to install the UI nodes



- Upon successful installation you are prompted with the list of nodes installed. To view the nodes installed search for UI in the palette

