Node-RED Overview

The problem

We need tools that make it easier for developers at all levels to bring together the different streams of events, both Physical and Digital that make up the Internet of Things

Why Node-RED?

The Internet does not have a one-size-fits-all solution

- Every new “thing” has a new API that must be understood
- Solutions often require pulling together several different device API’s and online services in new and interesting ways
- Time spent pondering how to access a serial port, or complete an OAuth flow to Twitter is not time spent on creating the real time of a solution

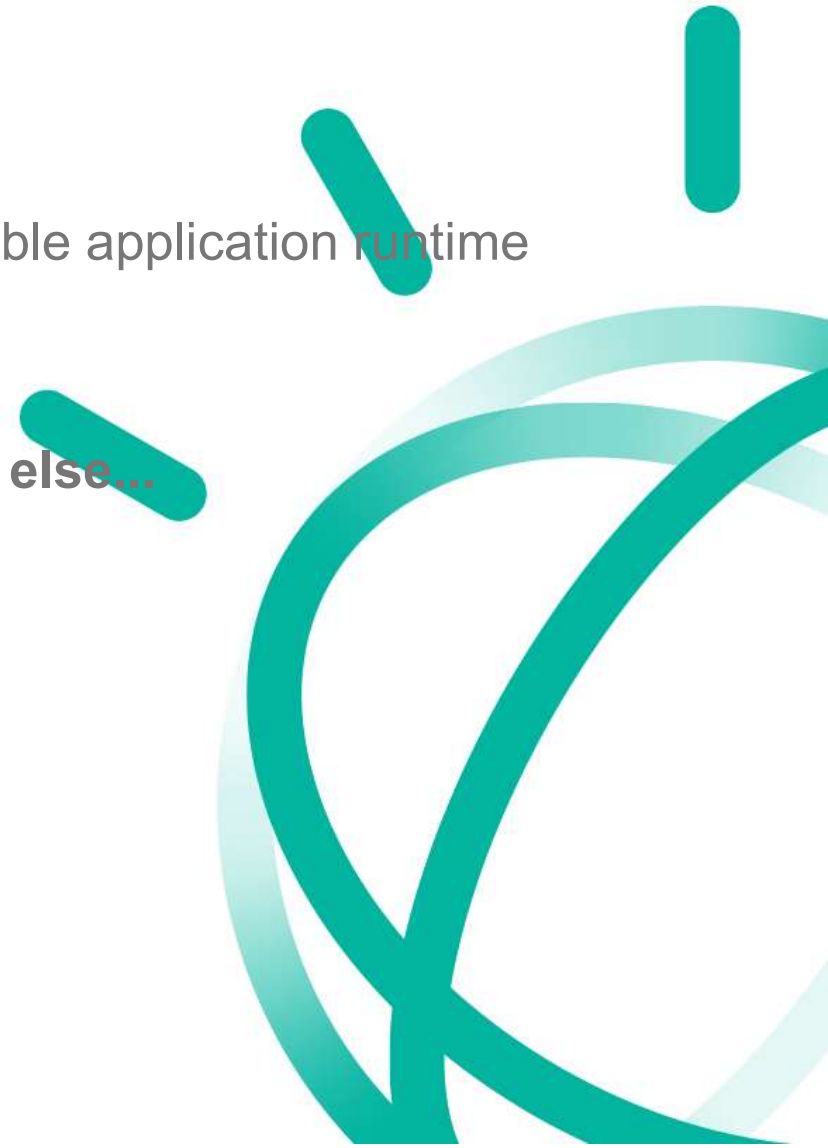
Node-RED is

A **Visual Tool** for **Wiring** functions / services

- Flow based programming tool
- An application composition tool experience
- A lightweight proof of concept runtime
- Easy to use for simple tasks
- Simple to extend to add new capabilities and types of integration
- Capable of creating the backend glue between social applications
- A great way to try...
  - "Can I just get this data from here to there?"
  - "and maybe change it just slightly along the way..."

Node-RED is not

- A fully-scalable, high-performance, enterprise-capable application runtime
- A dashboard with widgets
- A mobile application builder
- The **answer to life, the universe, and everything else...**

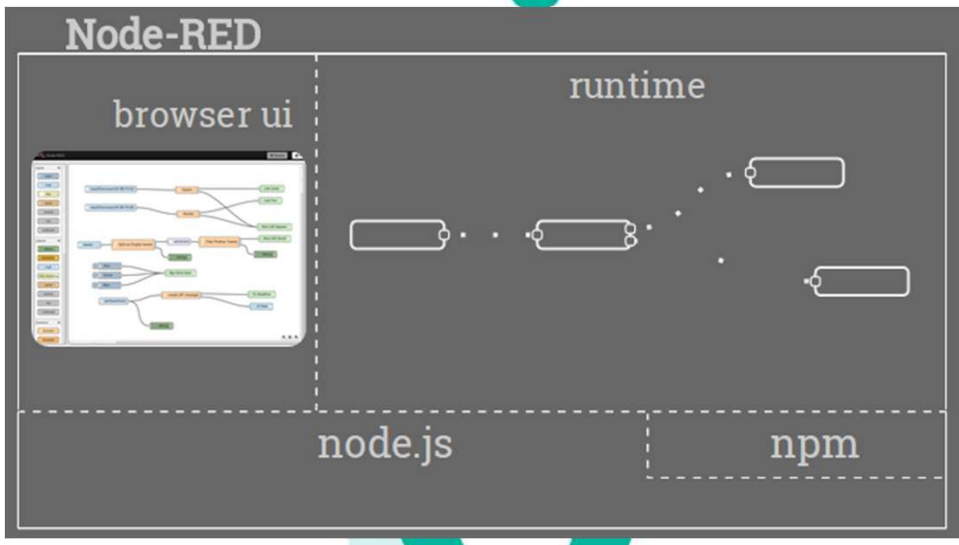


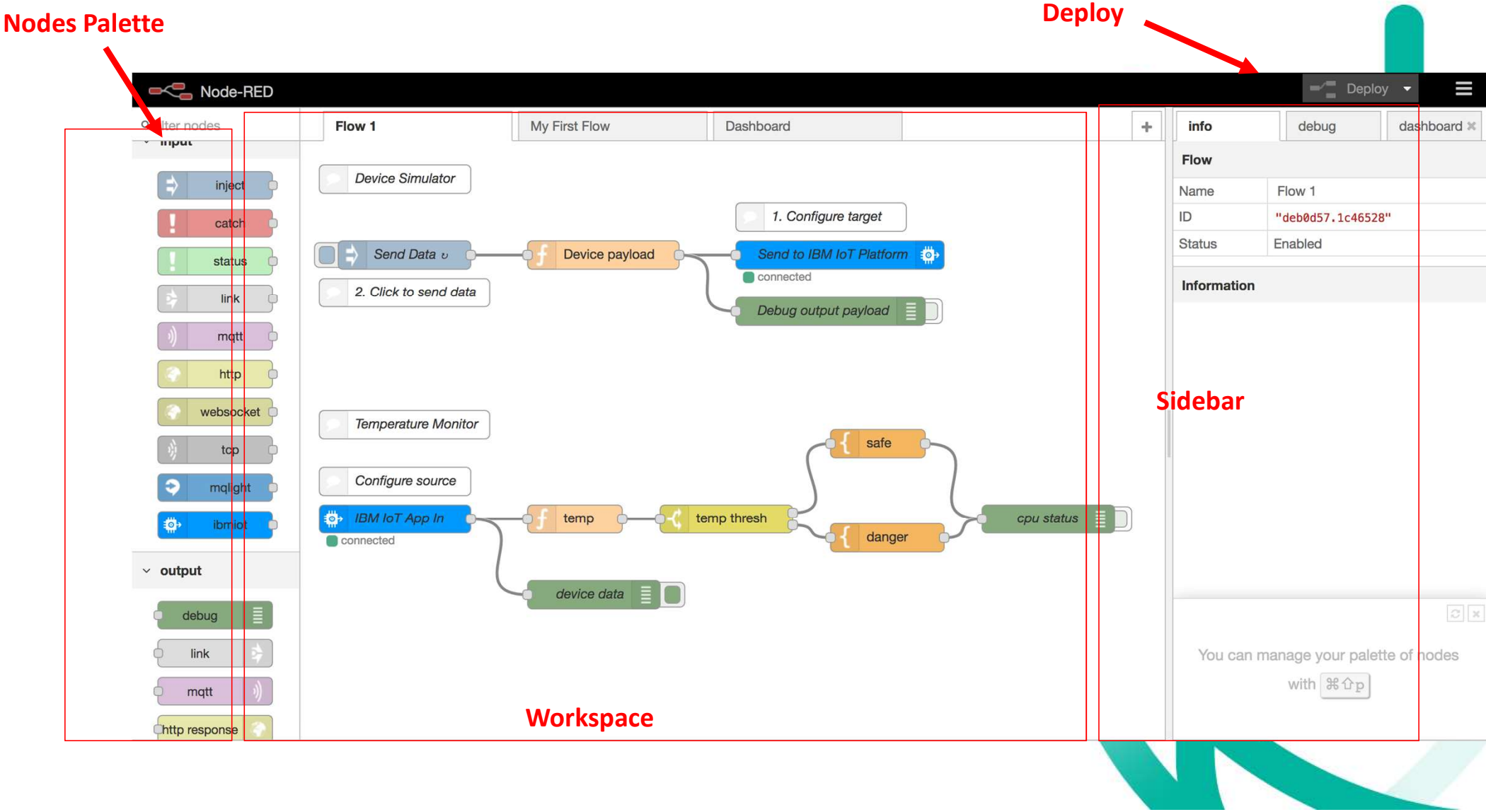
Node-RED Architecture

- Node.js  engine driven: **so fast**
- Event-driven, asynchronous IO. **It's all about the events**
- Single-threaded event-queue: **built for fairness**
- JavaScript front and back: only one language runtime to deal with
- Built using express, d3, jQuery and ws

- Node-RED is available on IBM Cloud
  - Easy install and usage

- Can be installed locally




Nodes Palette
Deploy
Node-RED
Deploy
Flow 1
My First Flow
Dashboard
info
debug
dashboard
Flow
Name
Flow 1
ID
"deb0d57.1c46528"
Status
Enabled
Information
inject
catch
status
link
mqtt
http
websocket
tcp
mqlight
ibmiot
output
debug
link
mqtt
http response
Device Simulator
Send Data
Device payload
1. Configure target
Send to IBM IoT Platform
connected
2. Click to send data
Debug output payload
Temperature Monitor
Configure source
IBM IoT App In
connected
temp
temp thresh
safe
danger
cpu status
device data
You can manage your palette of nodes
with
Sidebar
Workspace

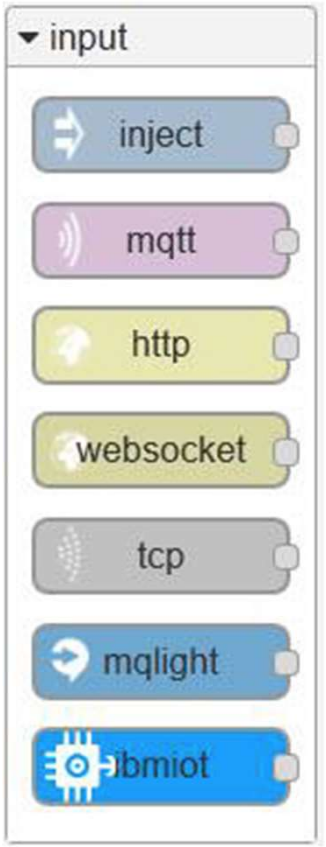
Basic Node types

- **Inject Node**
  - Allows manual triggering of flows
  - Can inject events at scheduled intervals
- **Debug Node**
  - Show message content; either payload or entire object
- **Template Node**
  - Modifies the output based on a Mustache Template

Node-RED Hello World

- When you click on the **Inject Node,** it sends an event through the flow – triggering the **template node** and sending the result to the **Debug Node**

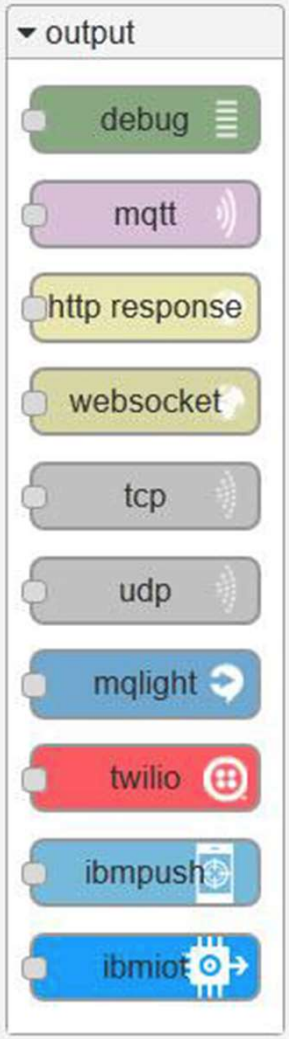
Other Input Nodes



- **HTTP**
  - Act as an HTTP endpoint
  - Great for building RESTful services
- **ibmiot**
  - Receive messages from an attached IOT Foundation account

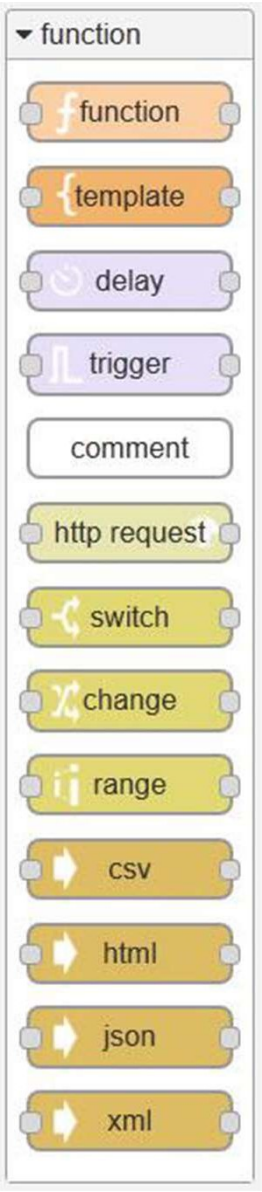
- Can also receive from WebSockets, TCP, MQ Light, MQTT

Other Output Nodes



- **HTTP Response**
  - required as the final node when the input comes from an HTTP Request
- **IBMIOT**
  - send events out to the attached IOT Foundation account
- **Twilio**
  - send SMS messages via the Twilio service
- **IBM Push**
  - Send Push notifications to mobile devices•
- Also can send requests through TCP, UDP, MQLight, WebSockets.

Watson IoT

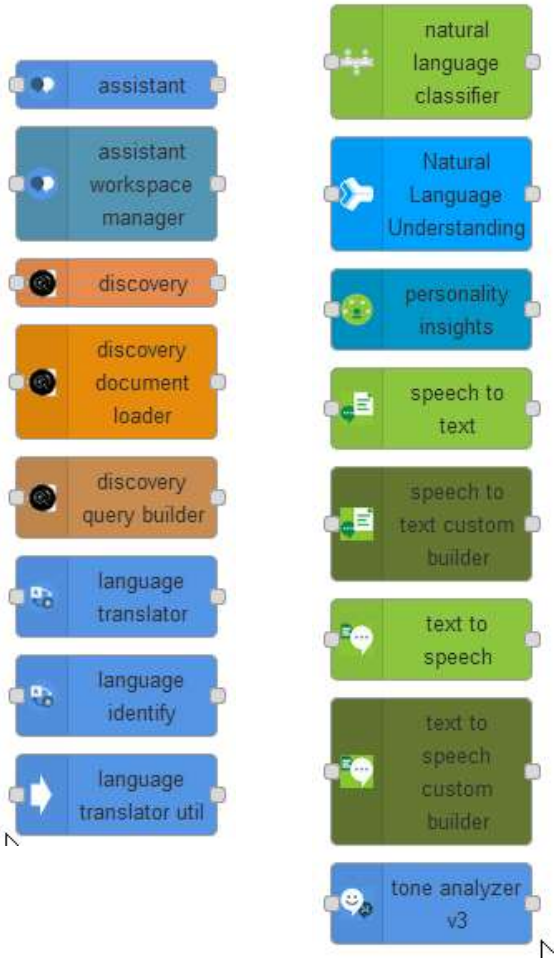


Function Nodes Types

- **Function node**
  - Run user-defined node.js code on the messages going by
  - Uses vm.createScript under the covers to sandbox execution
  - Console, util, Buffer included for convenience
- **Switch**
  - Change flow to different options based on a comparison

Watson IoT

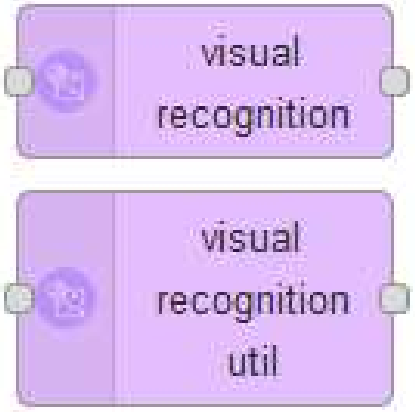
Watson Services Nodes



- Watson Node for Watson Service
  - For querying
  - For training / customizing
- Included in IBM Cloud Node-Red instance
  - Created / maintained by IBM
- Available on npm to be added to your local instances of Node-RED

Watson Visual Recognition Nodes

- 2 nodes for Visual Recognition



- 1 Node to query models
  - Specify parameters in editors
  - Pass the parameters in the flow
  - Result is provided in msg.result
- 1 Node to create / update / retrieve / delete custom models

Useful Nodes for Labs

- Useful nodes to interact with your application
- Load file
- Use Microphone
- Take picture with the WebCam

Thank You

IBM