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Purpose

To install Node-RED on your Windows personal computer.

To be ready to create and run a Node-RED application on your personal computer.

Requirements

Development Environment:	Windows 7 PC with 1 free USB port and Internet connectivity
IDE/C Compiler:	N/A
Hardware Tools:	N/A
Software:	Contemporary Browser (Google Chrome is recommended)
Lab Flow Location:	C:\Masters\22080\Flows
Additional Requirements:	Fresh class files installed in "C:\Masters\22080". Internet connection.

Objectives

Node-RED is a programming tool for wiring together a web application. It provides a browser-based editor that makes it easy to wire program flows together. This appendix will help you install it on your personal computer so that you can run it locally and follow the included labs.

An official online Node-Red installation guide can be found here:

<http://nodered.org/docs/getting-started/installation.html>

If you are using an operating system other than Windows (Linux or Mac OS), please follow the instructions in the link above to install Node-RED.

Procedure

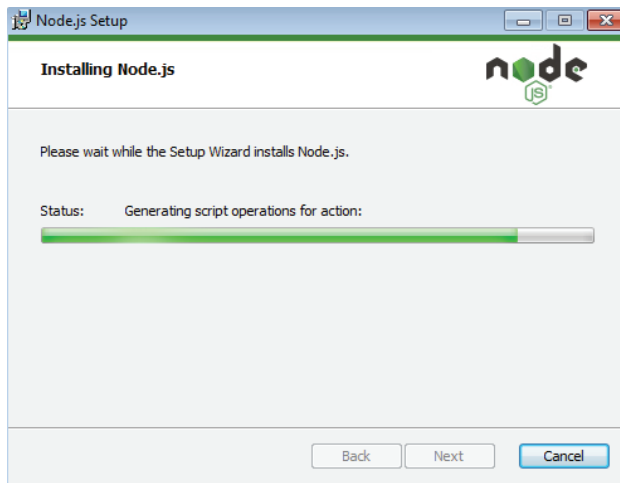
Note: If you currently have a version of Node-RED installed and want a “clean” installation:

- **Un-install Node.js** using the standard Windows program un-installation procedure.
 - This uninstalls all files and deletes “C:\Program Files\nodejs”
- Delete folder “C:\Users\<UserName>\.node-red”
 - This could delete any existing flows and settings, so be sure to save them first!
- Delete (hidden) folder “C:\Users\<UserName>\AppData\Roaming\npm”
 - You will have to re-install any node packages, so please note which packages and libraries you had installed before deleting this folder.
- Delete (hidden) folder “C:\Users\<UserName>\AppData\Roaming\npm-cache”

Step 1. Download and Install Node.js v8.11.0

- a. Download/Install Node.js v8.11.1 using the Windows Installer from the following URL:
<https://nodejs.org/dist/v8.11.1/node-v8.11.1-x64.msi>

Node.js is required to run Node-RED

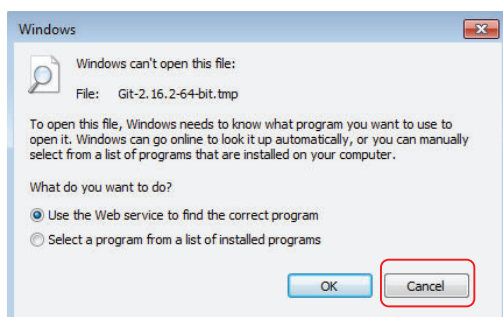


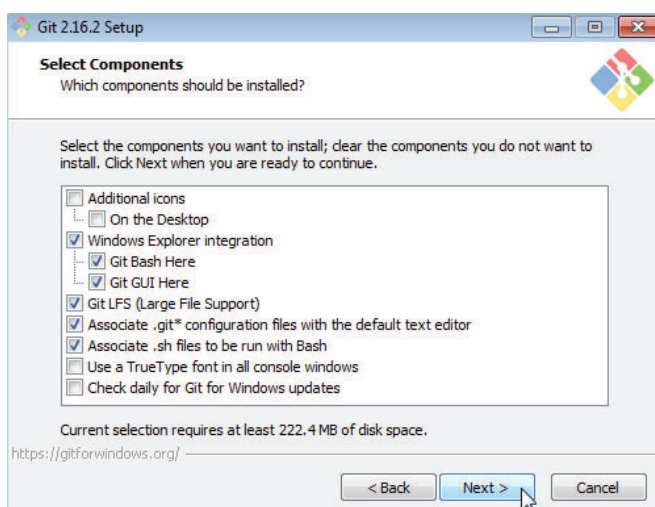
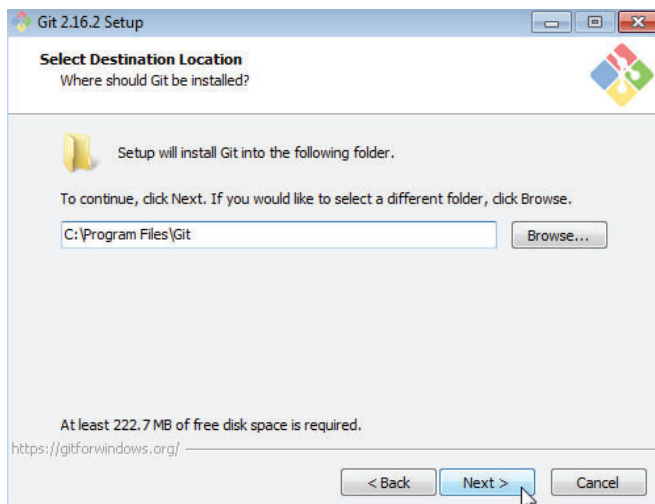
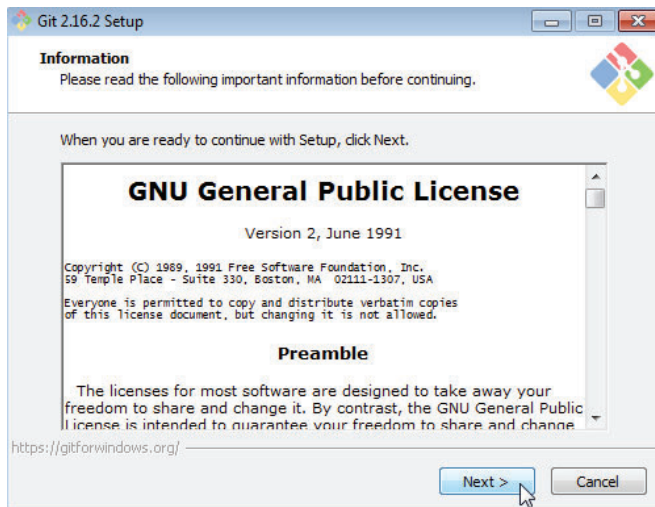
Step 2. Install Git Client for Windows v2.16.2

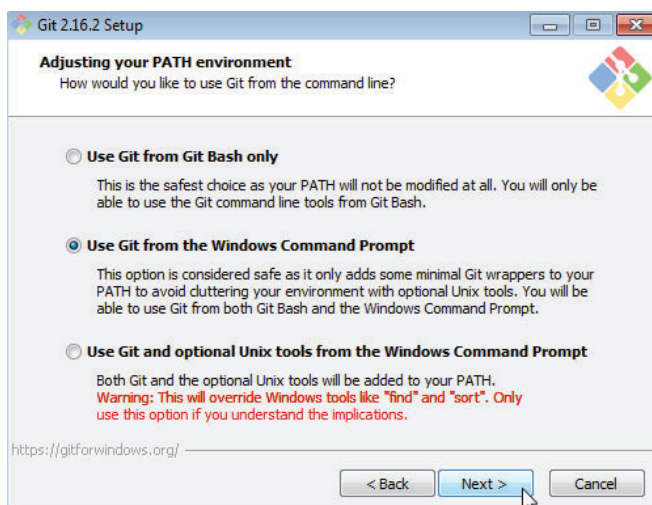
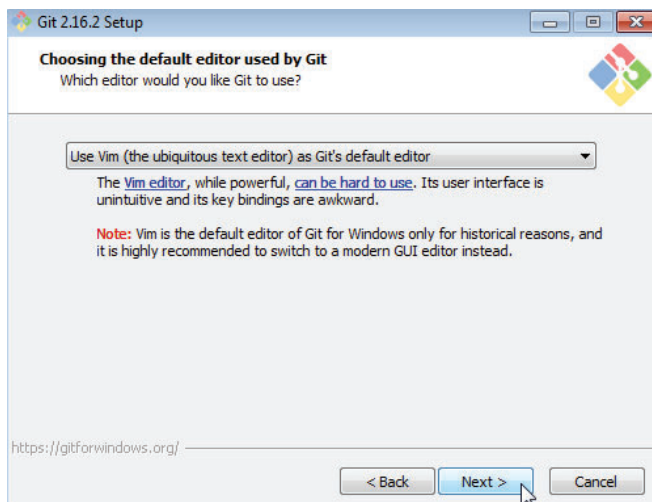
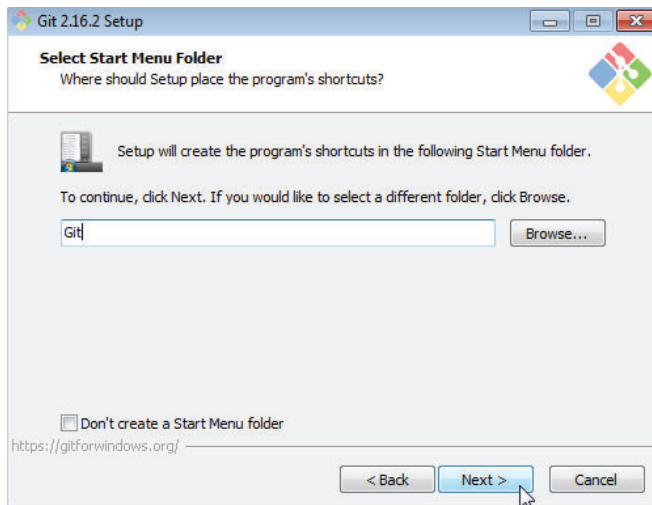
A Windows Git client is required for the nodejs “npm” package manager to install Node-RED nodes which use Git repositories. These instructions will have you install a Windows Git client and ensure it’s executable is in the System “Path” variable.

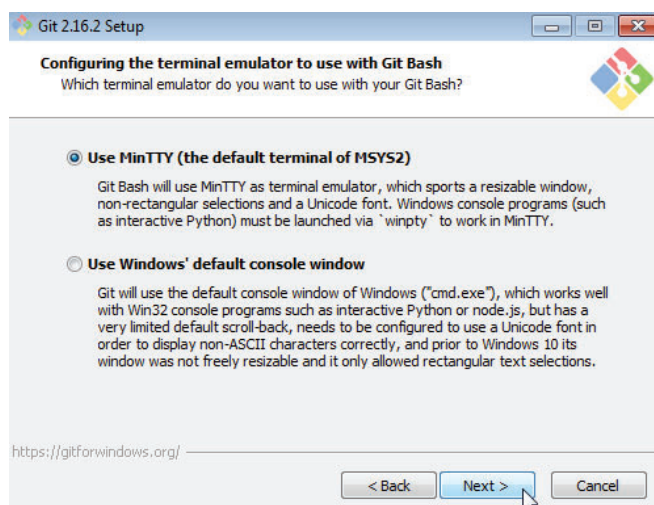
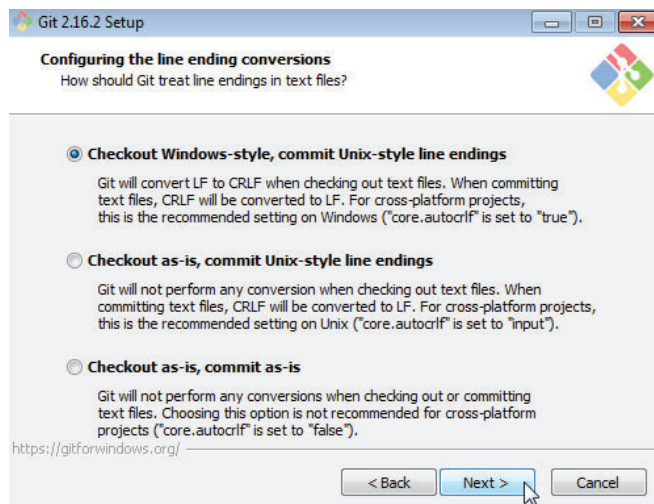
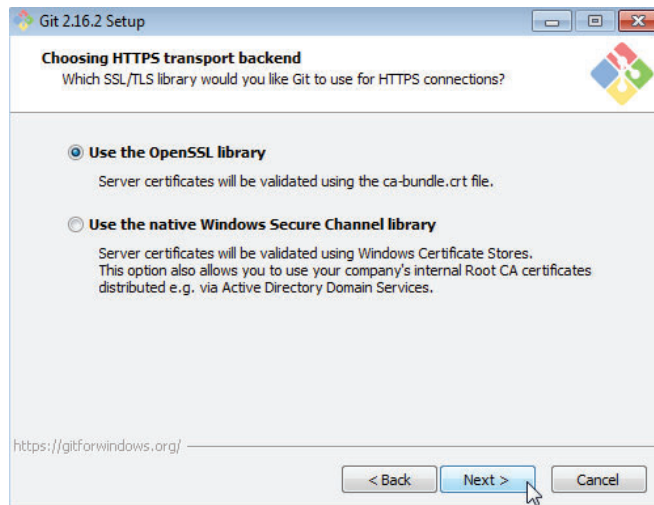
- a. Download and run the 64-bit Git for Windows installer from <https://git-scm.com/download/win>

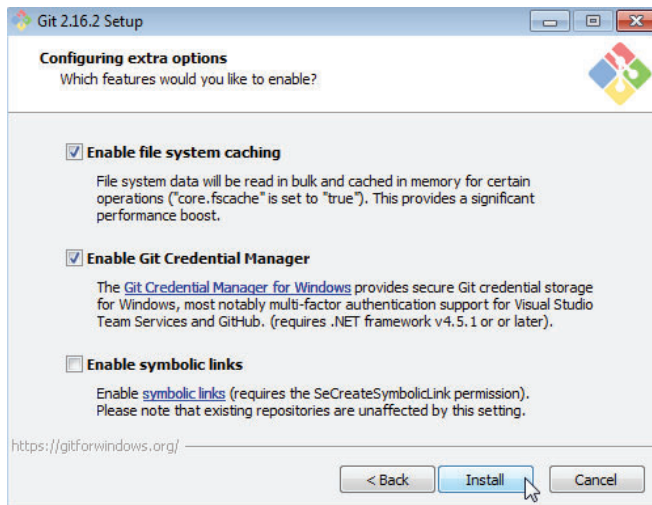
Upon starting the installer, ignore this dialog box (Press Cancel):







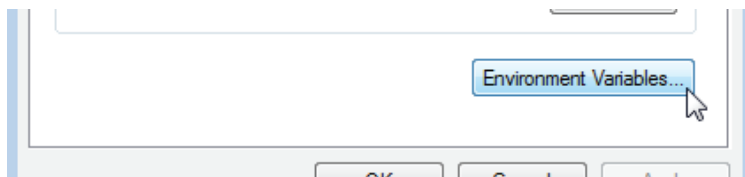




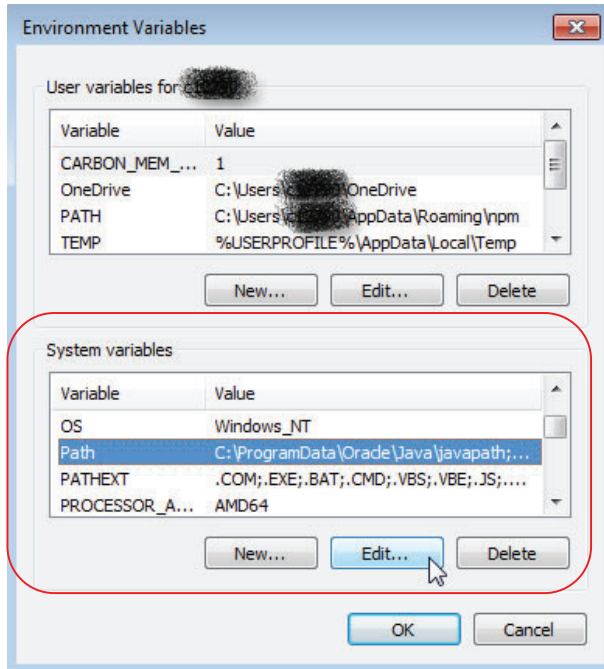
- b. Ensure that Git is installed in your computers PATH variable. Go to **Start->Control Panel->System**
- c. Select “Advanced system settings”



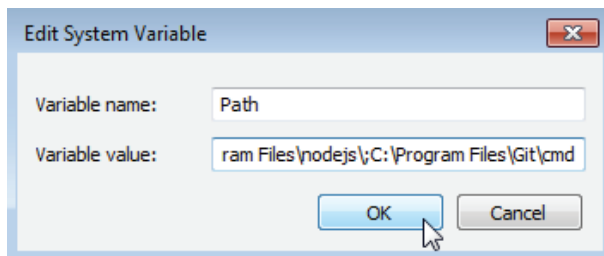
- d. Select “Environment Variables”



- e. Under System Variables, select “Path” then “Edit”:

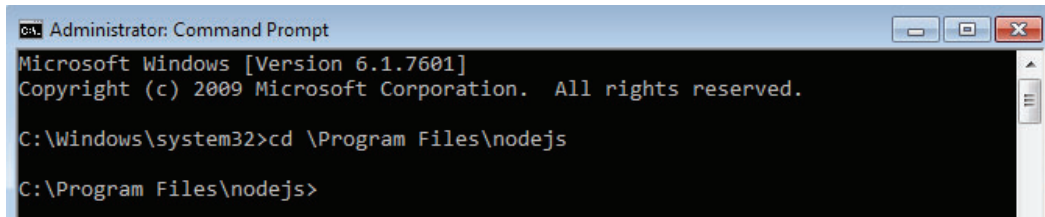


- f. Verify the Git client path is appended to the Path variable (“C:\Program Files\Git\cmd”)



Step 3. Install Node-RED using Node's Package Manager, npm

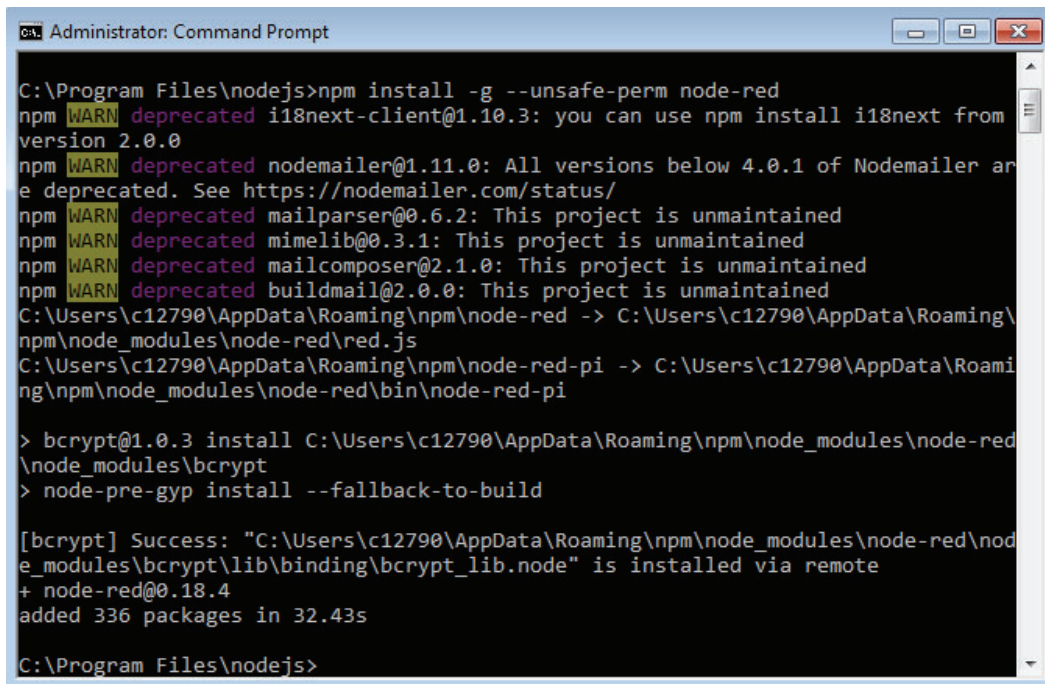
- Open a Windows Administrator Command Prompt (Start Menu -> All Programs -> Accessories -> Command Prompt (Right-click) -> Run as Administrator).
- In the CMD prompt, go to the nodejs installation directory ("C:\Program Files\nodejs")



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Windows\system32>cd \Program Files\nodejs
C:\Program Files\nodejs>
```

- Run the following command: **npm install -g --unsafe-perm node-red**



```
Administrator: Command Prompt

C:\Program Files\nodejs>npm install -g --unsafe-perm node-red
npm WARN deprecated i18next-client@1.10.3: you can use npm install i18next from version 2.0.0
npm WARN deprecated nodemailer@1.11.0: All versions below 4.0.1 of Nodemailer are deprecated. See https://nodemailer.com/status/
npm WARN deprecated mailparser@0.6.2: This project is unmaintained
npm WARN deprecated mimelib@0.3.1: This project is unmaintained
npm WARN deprecated mailcomposer@2.1.0: This project is unmaintained
npm WARN deprecated buildmail@2.0.0: This project is unmaintained
C:\Users\c12790\AppData\Roaming\npm\node-red -> C:\Users\c12790\AppData\Roaming\npm\node_modules\node-red\red.js
C:\Users\c12790\AppData\Roaming\npm\node-red-pi -> C:\Users\c12790\AppData\Roaming\npm\node_modules\node-red\bin\node-red-pi

> bcrypt@1.0.3 install C:\Users\c12790\AppData\Roaming\npm\node_modules\node-red\node_modules\bcrypt
> node-pre-gyp install --fallback-to-build

[bcrypt] Success: "C:\Users\c12790\AppData\Roaming\npm\node_modules\node-red\node_modules\bcrypt\lib\binding\bcrypt_lib.node" is installed via remote
+ node-red@0.18.4
added 336 packages in 32.43s

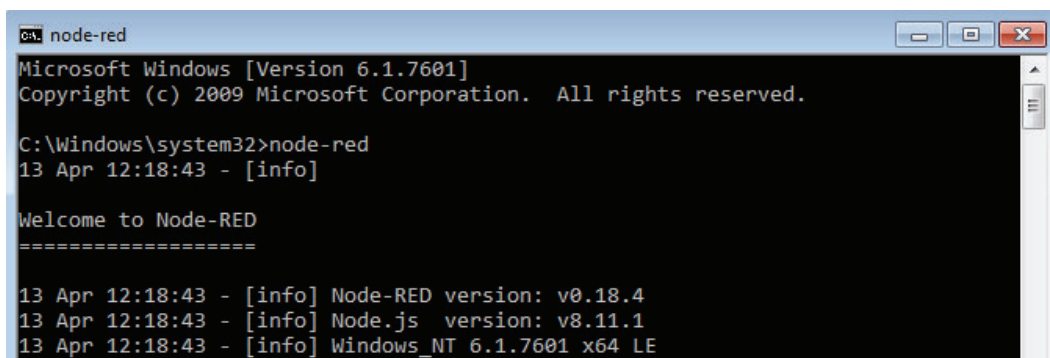
C:\Program Files\nodejs>
```

- Reboot Windows.

Step 4. Install Node-RED Dashboard Module

This module provides a set of nodes in Node-RED to quickly create a live data dashboard:
<https://flows.nodered.org/node/node-red-dashboard>

- After rebooting Windows, open an **Administrator CMD prompt** again.
- In the CMD prompt, we want to run Node-RED once to have it create the “.node-red” sub-directory needed for the following steps. Run the following command: **node-red**



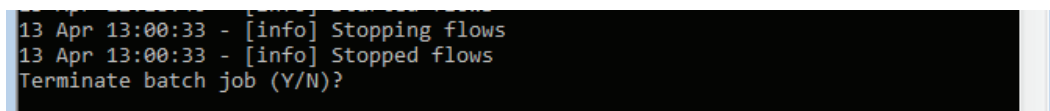
```
cmd - node-red
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Windows\system32>node-red
13 Apr 12:18:43 - [info]

Welcome to Node-RED
=====

13 Apr 12:18:43 - [info] Node-RED version: v0.18.4
13 Apr 12:18:43 - [info] Node.js version: v8.11.1
13 Apr 12:18:43 - [info] Windows_NT 6.1.7601 x64 LE
```

- In the CMD prompt, press **Ctrl-C** to end the Node-RED process. You may need to type “Y” to confirm that you want to end the process:



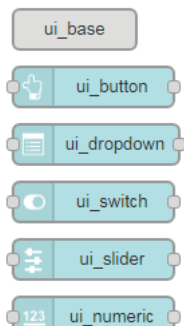
```
13 Apr 13:00:33 - [info] Stopping flows
13 Apr 13:00:33 - [info] Stopped flows
Terminate batch job (Y/N)?
```

- In the CMD prompt, go to your Node-RED directory (“C:\Users\<UserName>\.node-red”)

- e. Install the Node-RED Dashboard with the following command: **npm install node-red-dashboard**

```
C:\Windows\system32>cd \Users\c...\.node-red  
C:\Users\c...\.node-red>npm install node-red-dashboard
```

This command will install nodes to Node-RED that allow graphing, etc. Some of these nodes are shown below in the Node-RED pallet:

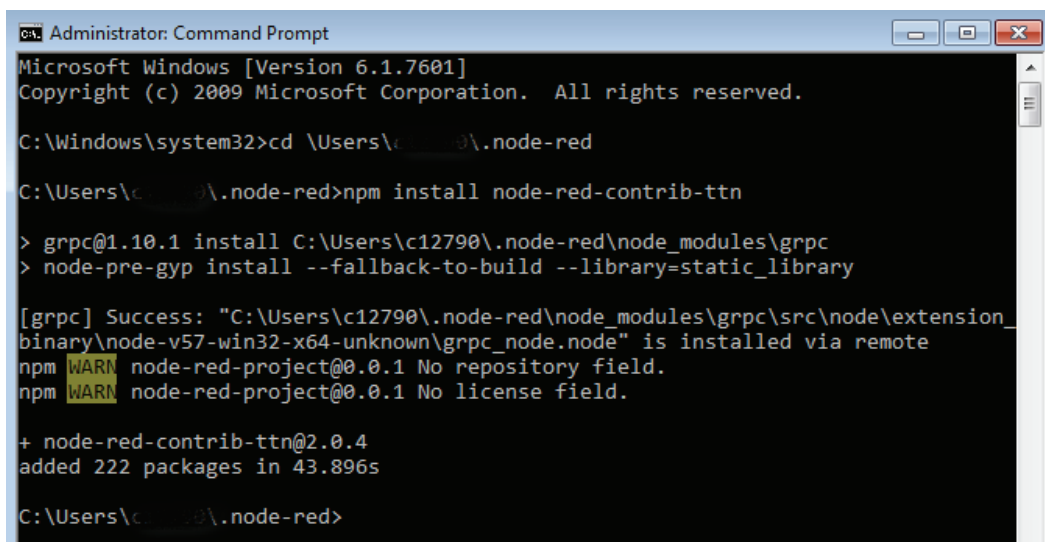


For further information on this package, visit:
<https://flows.nodered.org/node/node-red-dashboard>

Step 5. Install Node-RED TTN Module

The Things Network (TTN) Nodes Module for Node-RED is used to receive device events and messages as well as send messages to devices: <https://flows.nodered.org/node/node-red-contrib-ttn>

- Still using the **Administrator CMD prompt**, navigate to the user Node-RED directory (`"C:\Users\<UserName>\.node-red"`)
- Install the Node-RED TTN modules with the following command: **npm install node-red-contrib-ttn**



```
C:\Windows\system32>cd \Users\c12790\.node-red

C:\Users\c12790\.node-red>npm install node-red-contrib-ttn

> grpc@1.10.1 install C:\Users\c12790\.node-red\node_modules\grpc
> node-pre-gyp install --fallback-to-build --library=static_library

[grpc] Success: "C:\Users\c12790\.node-red\node_modules\grpc\src\node\extension_
binary\node-v57-win32-x64-unknown\grpc_node.node" is installed via remote
npm WARN node-red-project@0.0.1 No repository field.
npm WARN node-red-project@0.0.1 No license field.

+ node-red-contrib-ttn@2.0.4
added 222 packages in 43.896s

C:\Users\c12790\.node-red>
```

This command will install nodes to Node-RED that are used to receive device events and messages as well as send messages to devices. Some of these nodes are shown below in the Node-RED pallet:



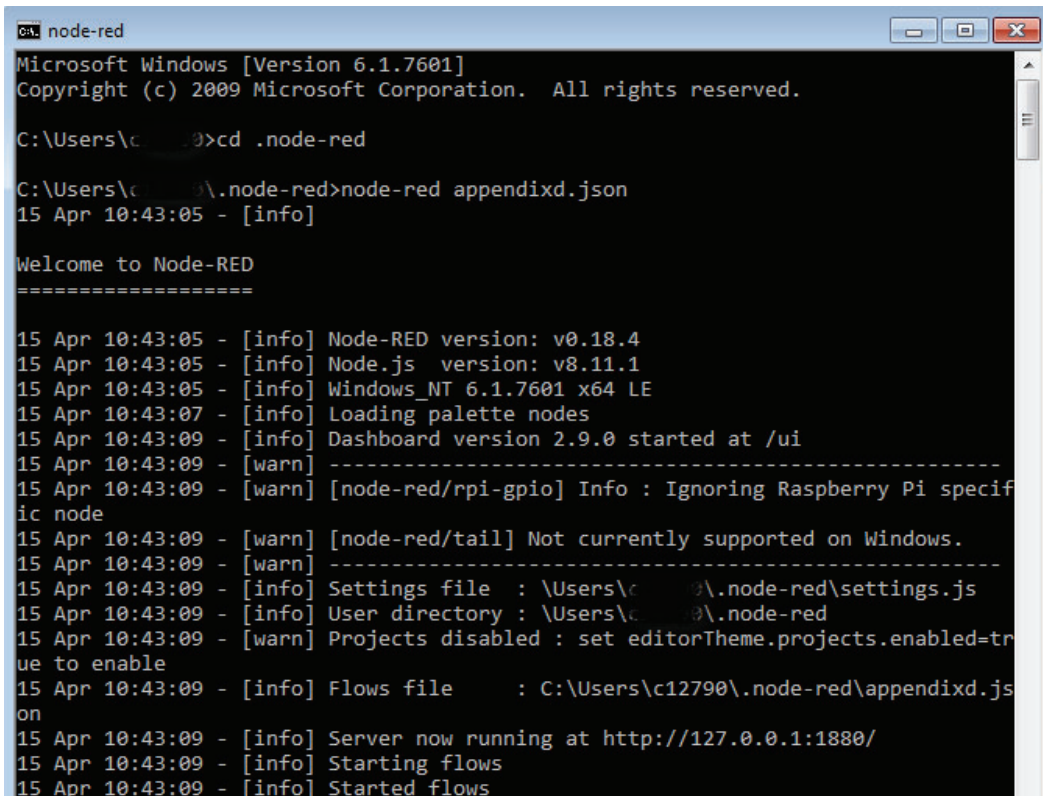
For further information on this package, visit:
<https://flows.nodered.org/node/node-red-contrib-ttn>

and the GitHub Page:
<https://github.com/TheThingsNetwork/nodered-app-node>

Step 6. Run Node-RED

In Node-RED, all flows (by default) are stored in “\Users\<username>\.node-red”, so you will need to copy a test flow from your course files into this folder.

- Copy all flows (*.json files) from “C:\Masters\22080\Flows” to “C:\Users\<username>\.node-red”.
- Open a Windows User Command Prompt** (Start Menu -> All Programs -> Accessories -> Command Prompt).
- Navigate to “C:\Users\<username>\.node-red”
- Start Node-RED and open the flow file provided in the folder: **node-red appendixd.json**



```
C:\Users\c12790>cd .node-red
C:\Users\c12790\.node-red>node-red appendixd.json
15 Apr 10:43:05 - [info]

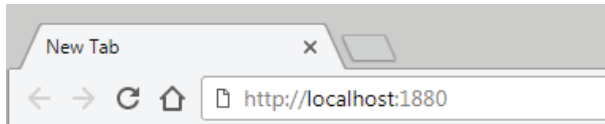
Welcome to Node-RED
=====

15 Apr 10:43:05 - [info] Node-RED version: v0.18.4
15 Apr 10:43:05 - [info] Node.js version: v8.11.1
15 Apr 10:43:05 - [info] Windows_NT 6.1.7601 x64 LE
15 Apr 10:43:07 - [info] Loading palette nodes
15 Apr 10:43:09 - [info] Dashboard version 2.9.0 started at /ui
15 Apr 10:43:09 - [warn] -----
15 Apr 10:43:09 - [warn] [node-red/rpi-gpio] Info : Ignoring Raspberry Pi specific node
15 Apr 10:43:09 - [warn] [node-red/tail] Not currently supported on Windows.
15 Apr 10:43:09 - [warn] -----
15 Apr 10:43:09 - [info] Settings file : \Users\c12790\.node-red\settings.js
15 Apr 10:43:09 - [info] User directory : \Users\c12790\.node-red
15 Apr 10:43:09 - [warn] Projects disabled : set editorTheme.projects.enabled=true to enable
15 Apr 10:43:09 - [info] Flows file : C:\Users\c12790\.node-red\appendixd.json
15 Apr 10:43:09 - [info] Server now running at http://127.0.0.1:1880/
15 Apr 10:43:09 - [info] Starting flows
15 Apr 10:43:09 - [info] Started flows
```

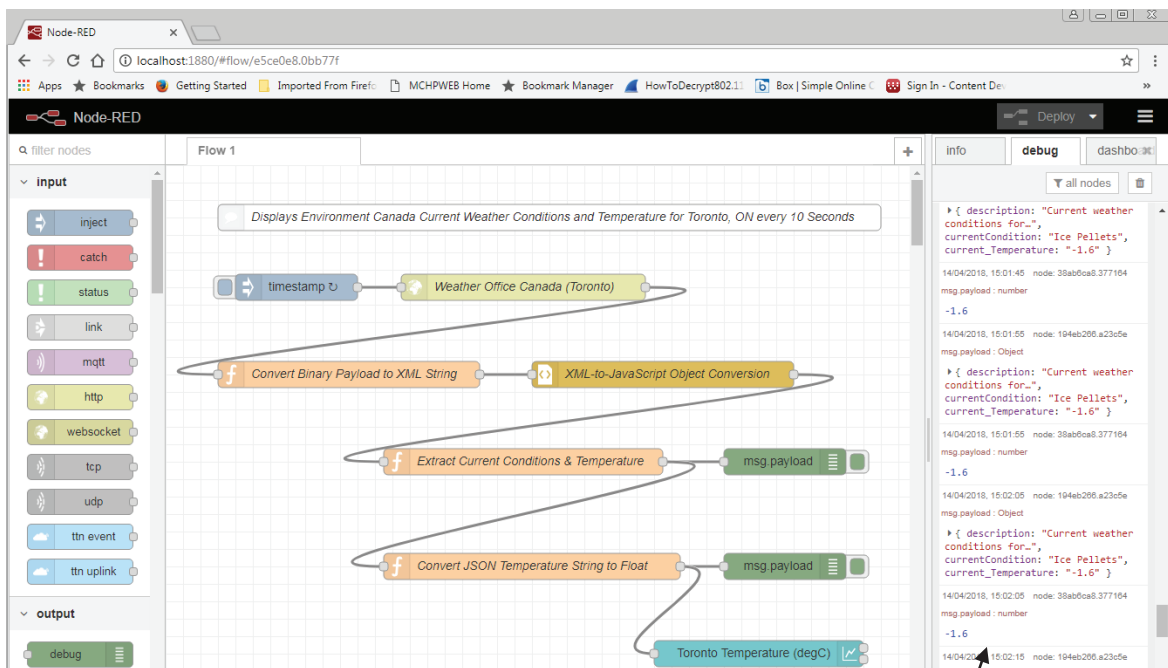
This flow periodically retrieves the current weather conditions for Toronto, ON Canada and plots the current temperature on a Chart.

Step 7. View and Edit the Node-RED Flow

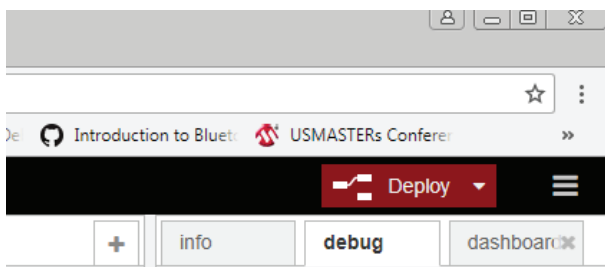
- a. After starting Node-RED (see Step 6), **open** a browser and **enter** the following URL:
<http://localhost:1880>



You should see the following flow:

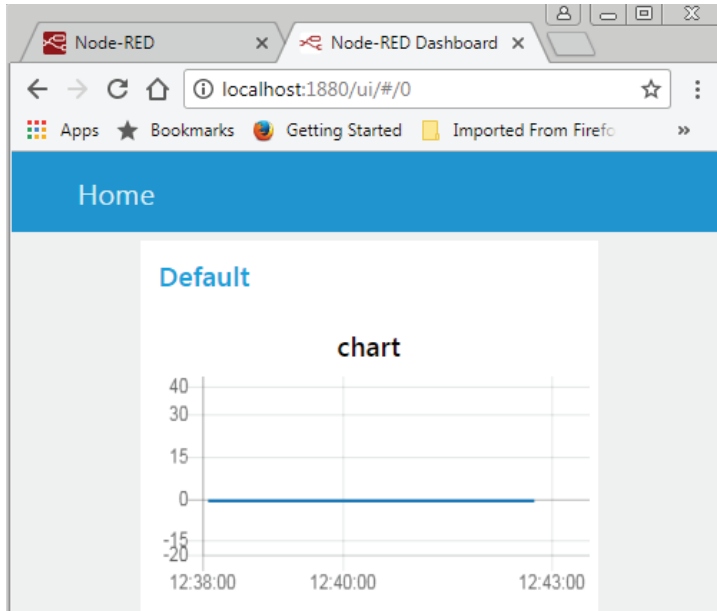


- b. If not already done, deploy the flow by pressing the “Deploy” button:



You should see messages appearing in the debug tab every 10 seconds.

- c. To view the data dashboard, type the following URL in your browser: <http://localhost:1880/ui>



- d. To stop the Node-RED process, press **Ctrl-C** at the command prompt, then press “Y”:

```
14 Apr 11:56:20 - [info] Started flows
14 Apr 12:01:05 - [info] Stopping flows
14 Apr 12:01:05 - [info] Stopped flows
Terminate batch job (Y/N)? Y

C:\Masters\22080\Flows\AppendixD>
```