

Opening the Open Source door

David Spurway
IBM Power Systems CTO, UKI



Agenda

- I am not the expert, I am an enthusiastic amateur!
- A little film from France two years ago, Think 2019 in San Francisco and Ross Cruickshank
- Some initial challenges, then things have become easier!
- The latest instructions from Jesse Gorzinski
 - <https://bitbucket.org/ibmi/opensource/src/master/docs/yum/>
 - <https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>
- Chicken and egg with yum
- One command to install Node.js
- One command to install Node-RED
- Starting examples with Node-RED
- More detail on Open Source in the second session!



Baking with IBM Watson Assistant, Node-RED, Bond Films and more!

David Spurway

IBM Power Systems CTO, UK & Ireland

2019 IBM Systems Technical University
Wednesday 23rd October 2019
Florenc 2-Mezzanine
c109178



I am not Paul Hollywood



“**Paul John Hollywood** (born 1 March 1966) is an English [celebrity chef](#) and television presenter, best known for being a judge on [The Great British Bake Off](#) since 2010.

He began his career at his father's bakery as a teenager and went on to serve as head baker at a number of hotels around Britain and internationally.

- *100 Great Breads* (2004) Cassell, London [ISBN 978-1-8440-3700-1](#)
- *How to Bake* (2012) Bloomsbury [ISBN 978-1-4088-1949-4](#)
- *Paul Hollywood's Bread* (2013) Bloomsbury, London [ISBN 978-1-4088-4069-6](#)
- *Paul Hollywood's Pies and Puds* (2013) Bloomsbury, London [ISBN 978-1-4088-4643-8](#)
- *Paul Hollywood's British Baking* (2014) Bloomsbury USA [ISBN 1408846489](#) [ISBN 978-1408846483](#)
- *The Weekend Baker* (2016) [Michael Joseph](#), London [ISBN 978-0-718-18401-8](#)

Anyone can bake



How I started my journey



Automate resolution of
mundane Helpdesk
tickets with Pepper, IBM
Watson & IBM i

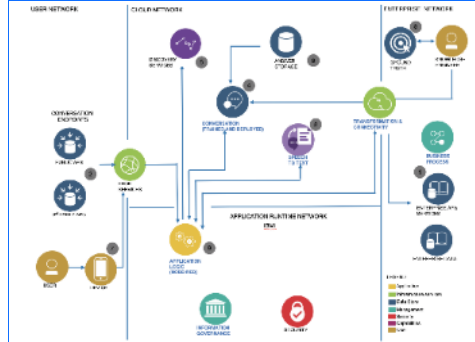
[https://www.youtube.com/
watch?v=O6rJtQgmjDo](https://www.youtube.com/watch?v=O6rJtQgmjDo)

Build an enhanced IT help desk chatbot on IBM i with Watson Assistant

Did you know that as per recent studies, an average of 20% to 50% of all help desk calls are password related? Mundane tasks can be a headache for help desk teams, especially when higher priority jobs need attention. Virtual assistants (also known as chatbots) for IT help desk can automatically process tickets that do not need deep expertise such as managing access credentials and password-related issues, allowing your staff to focus on critical issues and value-added tasks. For instance, a chatbot can analyse the root cause and automatically solve password-related issues.

<https://github.com/ibmrcruicks/IUG2019-iAI/blob/master/ibmi-watson-helpdesk.md>

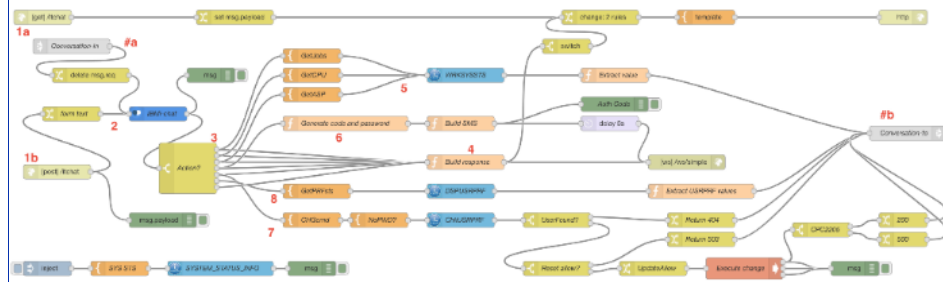
Architecture Diagram



Ross Cruickshank



Node-RED Flow



Heading to Think with a mission



I built an IBM Watsons Assistant for the first time



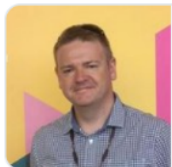
Gary Wilson
@garywilson

Following



Replying to @garywilson @D_Spurway and 2 others

Hey chaps, have published the latest version today at [github.com/garywilson/Wa ...](https://github.com/garywilson/Watson-Assistant-Labs) give me a shout if you want to talk through them. They are standalone guides, but I do run them as workshops too.



garywilson/Watson-Assistant-Labs

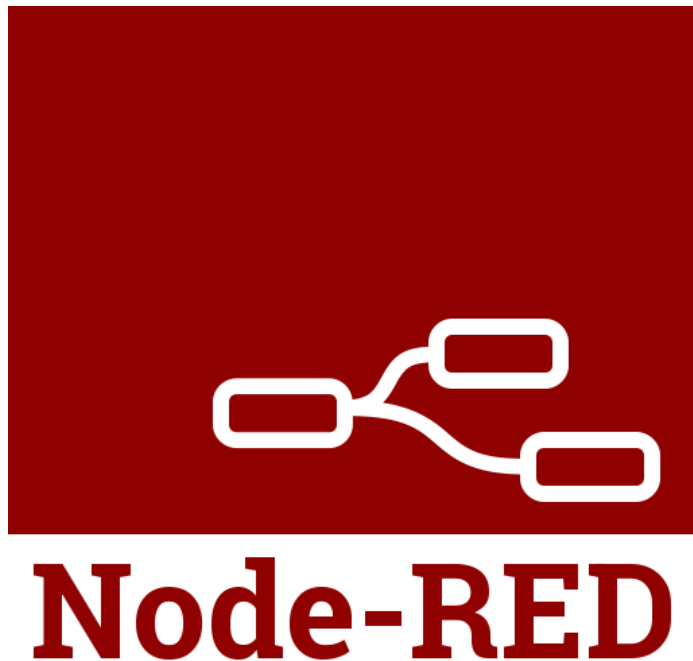
These labs provide you with a set of fully guided tutorials which will help you: build a cognitive chatbot using IBM Watson Assistant, demonstrate how you can use AI when building your ...
github.com

5:20 PM - 18 Feb 2019

“In this lab, IBM Watson Assistant team members will walk through the steps of building a chatbot that helps take coffee orders, and which runs in a Slack workspace. After covering every step from building to deployment to placing the coffee order, lab attendees will be able to put their brew-bots to work with ease.”

<https://github.com/garywilson/Watson-Assistant-Labs>

What is Node-RED?



<https://en.wikipedia.org/wiki/Node-RED>

“**Node-RED** is a [flow-based](#) development tool for [visual programming](#) developed originally by [IBM](#) for wiring together hardware devices, [APIs](#) and [online services](#) as part of the [Internet of Things](#).^[2]

Node-RED provides a [web browser](#)-based flow editor, which can be used to create [JavaScript](#) functions. Elements of applications can be saved or shared for re-use. The runtime is built on [Node.js](#). The flows created in Node-RED are stored using [JSON](#).”

Some challenges getting started

Running Node-RED on IBM i: Installation and first flow

Install Node-RED on your IBM i system and create Node.js programs with a browser-based flow editor

By Christophe Lalevée

Updated October 16, 2017 | Published October 16, 2017

Things have changed since then, for the better!

“What you’ll need

To implement this chatbot on your IBM i system, you need:

- An IBM i 7.3 partition with Node-RED installed
- An IBM Cloud (earlier known as IBM Bluemix®) account to be able to provision Watson Assistant services.”

“If you want to know more about Node-RED and how to get started on IBM i, refer to the previous IBM developerWorks® article, "Running Node-RED on IBM i: Installation and first flow".”

“What you’ll need

To install Node-RED on your IBM i system, you’ll need:

- 5733OPS, option 10 – Node.js v6.x
 - 5733OPS supports only IBM i 7.1 and later
- 5733OPS, option 3 – Chroot with gcc
- 5733OPS, option 7 – Tools (optional)
- 5770SS1, option 33 – Portable App Solutions Environment
- 5733SC1, option 1 – OpenSSH, OpenSSL, zlib
- 5770DG1, *BASE – IBM HTTP Server for i”

IBM i Updates

http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/8/877/ENUSZP18-0438/index.html&lang=en&request_locale=en

IBM i 7.3 TR5 adds support for IBM Power System E980 servers and more

Open source

Many open source offerings are now available in RPM form.

IBM i Access Client Solutions has been enhanced with new interfaces for managing open source packages on IBM i. A package manager (yum) is also included.

Language updates: Perl version 5, Python version 2.6

GNU tools: As part of the RPM-based offering set, IBM delivers industry-standard GNU forms of many common commands.

GNU C Compiler (GCC) and surrounding toolchain: As part of the RPM-based offering set, GCC version 6.3.0 is available.

LFTP: As part of the RPM-based offering set, the LFTP utility is now available. LFTP is a sophisticated file transfer program.

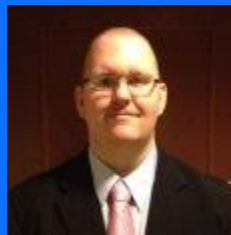
GNU nano: As part of the RPM-based offering set, the 'nano' editor enables easy editing of files within a terminal session.

Going to the source!

“IBM i / opensource / opensource

yum

The world of Open Source continues to rapidly evolve and change. This is also very much the case for the IBM i. Over the past few years we have seen an increased number of Open Source Technologies added to the IBM i. This page is intended to be a landing page to help you understand what is available today, how do you get access to it, as well as links to additional details and documentation.”



Jesse Gorzinski

Business Architect:
Open Source on IBM i

IBM Systems

<https://bitbucket.org/ibmi/opensource/src/master/docs/yum/>

As I am using IBM i in the IBM Cloud, very little is open, so I could not get ACS to connect yet. Therefore, began install without it.

Offline Install Instructions (without ACS)

- Download `bootstrap.sh` and `bootstrap.tar.Z` to your PC
- Transfer these two files to the `/tmp` directory on your IBM i system (via FTP, mapped network drive, scp, etc). *Make sure to transfer them in binary.*
- From a 5250 terminal run the following.

```
QSH CMD('touch -C 819 /tmp/bootstrap.log; /QOpenSys/usr/bin/ksh /tmp/bootstrap.sh > /tmp/bootstrap.log 2>&1')
```

- If you see message QSH005: "Command ended normally with exit status 0" in the job log you're all good. If not, consult `/tmp/bootstrap.log`.

Chicken and egg with yum

Need to install the yum package manager, without a package manager.

The very basic script checks if the file has present and needs uncompressed.

Then, unpacks a number of basic files, including yum, so it can then be used.

Yum can also be used to update itself, so you just need to do this once.

```
sg210.rowtonit.com - PuTTY
MAIN                                IBM i Main Menu                                System:  ORAC
Select one of the following:

1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. IBM i Access tasks

90. Sign off

Selection of Command
==> QSH CMD('touch -C 819 /tmp/bootstrap.log; /QOpenSys/usr/bin/ksh /tmp/boots
trap.sh > /tmp/bootstrap.log 2>&1')
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
(C) COPYRIGHT IBM CORP. 1980, 2015.
```

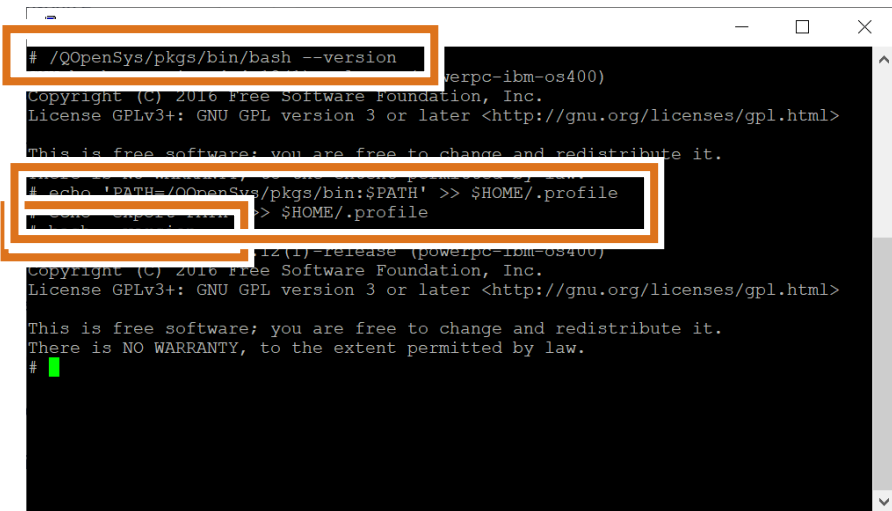
```
sg210.rowtonit.com - PuTTY
MAIN                                IBM i Main Menu                                System:  ORAC
Select one of the following:

1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. IBM i Access tasks

90. Sign off

Selection or command
==>
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
Command ended normally with exit status 0.
```

Showing the way to yum



```
# /QOpenSys/pkg/bin/bash --version
Copyright (C) 2016 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software; you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
# echo 'PATH=/QOpenSys/pkg/bin:$PATH' >> $HOME/.profile
# export PATH >> $HOME/.profile
#
```

“All software provided by the RPMs will install in to the /QOpenSys/pkg prefix. You can fully qualify the path to the program or you can add /QOpenSys/pkg/bin to your PATH to use the software.”

If you want to make your PATH setting permanent, add the above line to your \$HOME/.profile. You can do this easily (from a shell) like so.

```
'PATH=/QOpenSys/pkg/bin:$PATH' >> $HOME/.profile
'export PATH' >> $HOME/.profile
```

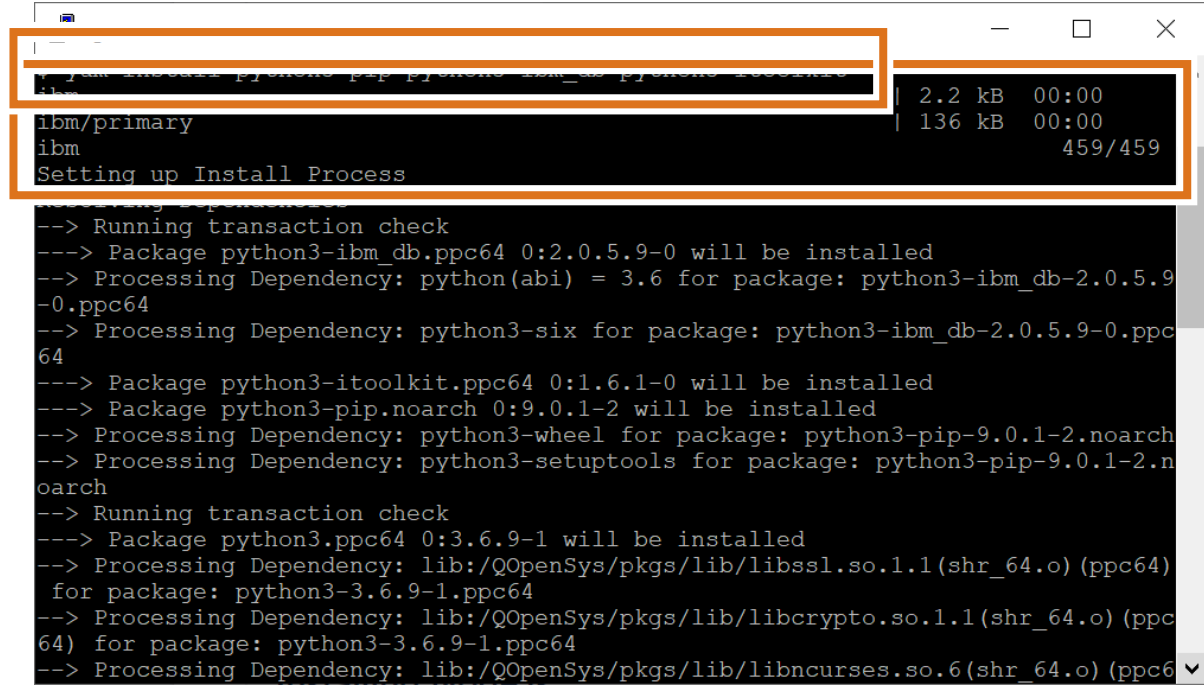
Log out and back in again to have the changes take effect.

Using yum to install python

Assuming your DNS is working and allows access to the repositories on the internet, one command then installs Python.

Installing Python 3 and some useful Python packages

```
yum install python3-pip python3-ibm_db python3-itoolkkit
```



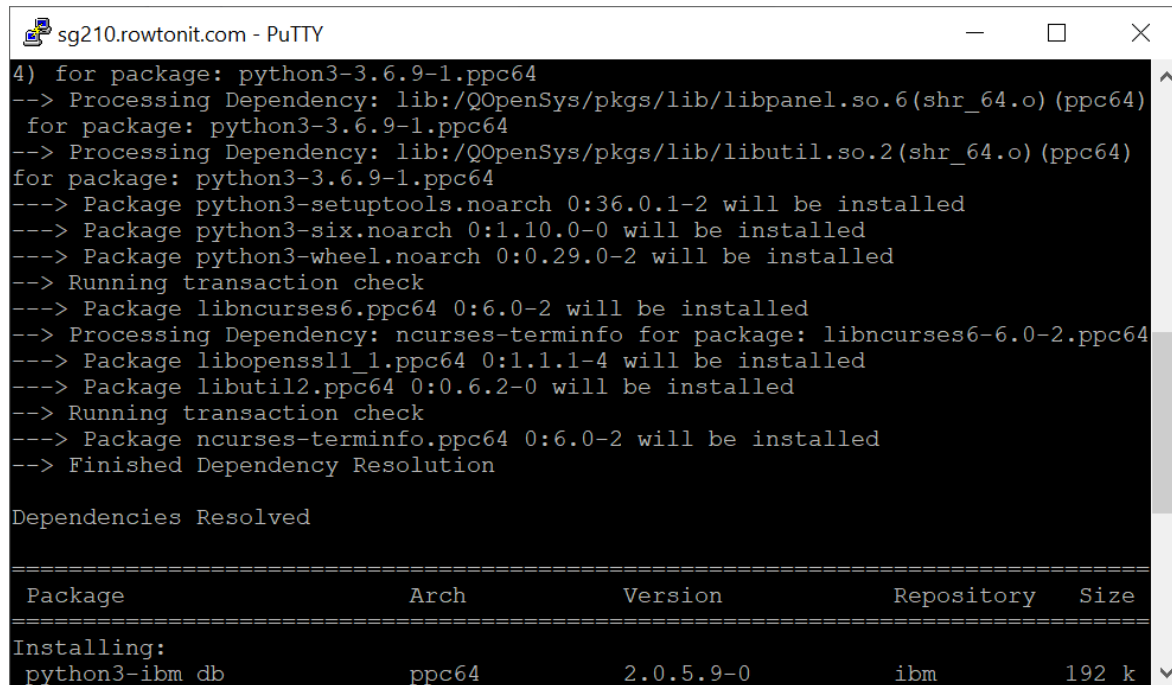
```
yum install python3-pip python3-ibm_db python3-itoolkkit
ibm/primary
ibm
Setting up Install Process
--> Running transaction check
--> Package python3-ibm_db.ppc64 0:2.0.5.9-0 will be installed
--> Processing Dependency: python(abi) = 3.6 for package: python3-ibm_db-2.0.5.9-0.ppc64
--> Processing Dependency: python3-six for package: python3-ibm_db-2.0.5.9-0.ppc64
--> Package python3-itoolkkit.ppc64 0:1.6.1-0 will be installed
--> Package python3-pip.noarch 0:9.0.1-2 will be installed
--> Processing Dependency: python3-wheel for package: python3-pip-9.0.1-2.noarch
--> Processing Dependency: python3-setuptools for package: python3-pip-9.0.1-2.noarch
--> Running transaction check
--> Package python3.ppc64 0:3.6.9-1 will be installed
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libssl.so.1.1(shr_64.o) (ppc64) for package: python3-3.6.9-1.ppc64
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libcrypto.so.1.1(shr_64.o) (ppc64) for package: python3-3.6.9-1.ppc64
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libncurses.so.6(shr_64.o) (ppc64)
```


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Installing Python 3 and some useful Python packages

```
yum install python3-pip python3-ibm_db python3-itoolkkit
```



```
4) for package: python3-3.6.9-1.ppc64
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libpanel.so.6(shr_64.o) (ppc64)
for package: python3-3.6.9-1.ppc64
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libutil.so.2(shr_64.o) (ppc64)
for package: python3-3.6.9-1.ppc64
---> Package python3-setuptools.noarch 0:36.0.1-2 will be installed
---> Package python3-six.noarch 0:1.10.0-0 will be installed
---> Package python3-wheel.noarch 0:0.29.0-2 will be installed
--> Running transaction check
---> Package libncurses6.ppc64 0:6.0-2 will be installed
--> Processing Dependency: ncurses-terminfo for package: libncurses6-6.0-2.ppc64
---> Package libopenssl1_1.ppc64 0:1.1.1-4 will be installed
---> Package libutil2.ppc64 0:0.6.2-0 will be installed
--> Running transaction check
---> Package ncurses-terminfo.ppc64 0:6.0-2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

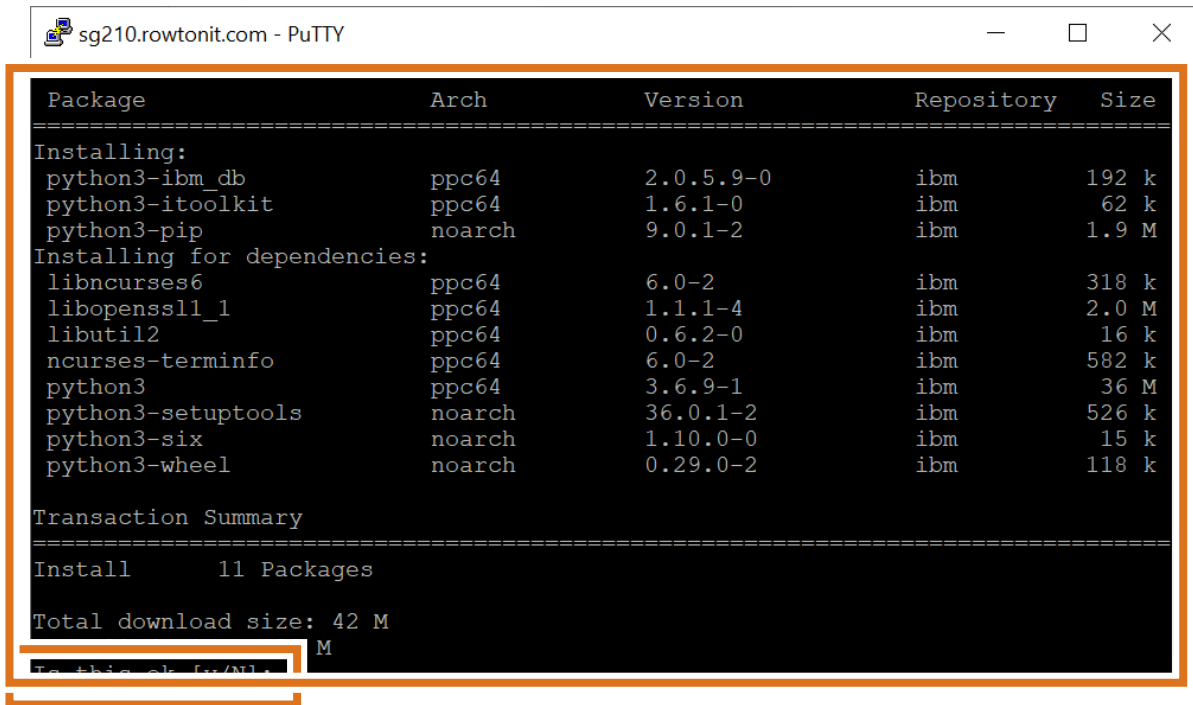
=====
Package                        Arch      Version      Repository  Size
=====
Installing:
python3-ibm_db                 ppc64     2.0.5.9-0    ibm         192 k
```

Using yum to install python

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Installing Python 3 and some useful Python packages

```
yum install python3-pip python3-ibm_db python3-itoolkkit
```



```
sg210.rowtonit.com - PuTTY

Package Arch Version Repository Size
=====
Installing:
python3-ibm_db ppc64 2.0.5.9-0 ibm 192 k
python3-itoolkkit ppc64 1.6.1-0 ibm 62 k
python3-pip noarch 9.0.1-2 ibm 1.9 M
Installing for dependencies:
libncurses6 ppc64 6.0-2 ibm 318 k
libopenssl1_1 ppc64 1.1.1-4 ibm 2.0 M
libutil2 ppc64 0.6.2-0 ibm 16 k
ncurses-terminfo ppc64 6.0-2 ibm 582 k
python3 ppc64 3.6.9-1 ibm 36 M
python3-setuptools noarch 36.0.1-2 ibm 526 k
python3-six noarch 1.10.0-0 ibm 15 k
python3-wheel noarch 0.29.0-2 ibm 118 k

Transaction Summary
=====
Install 11 Packages

Total download size: 42 M
To this ok [y/N]

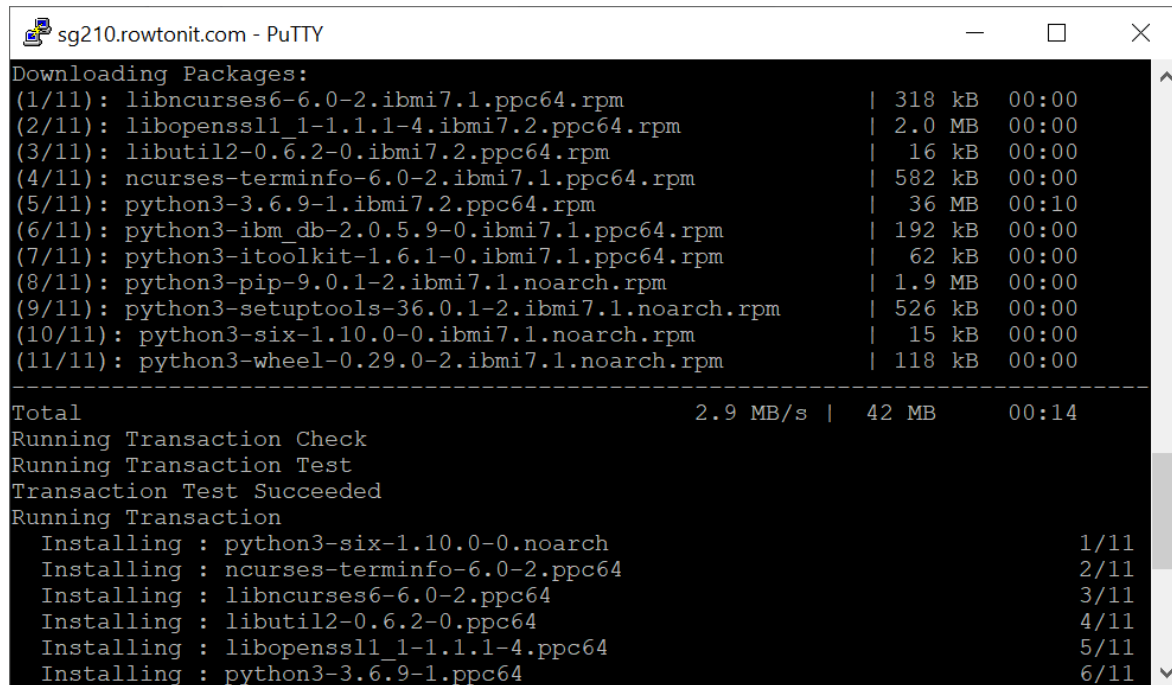
```

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```
yum install python3-pip python3-ibm_db python3-itoolkkit
```



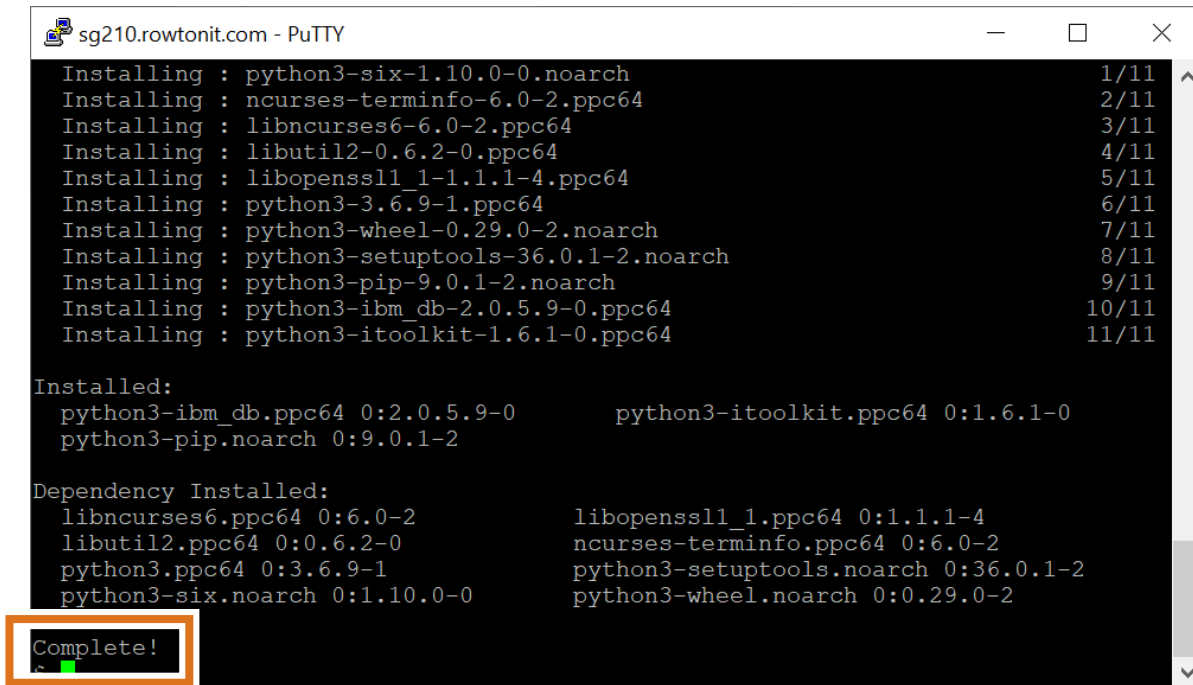
```
sg210.rowtonit.com - PuTTY
Downloading Packages:
(1/11): libncurses6-6.0-2.ibm7.1.ppc64.rpm | 318 kB 00:00
(2/11): libopenssl1_1-1.1.1-4.ibm7.2.ppc64.rpm | 2.0 MB 00:00
(3/11): libutil2-0.6.2-0.ibm7.2.ppc64.rpm | 16 kB 00:00
(4/11): ncurses-terminfo-6.0-2.ibm7.1.ppc64.rpm | 582 kB 00:00
(5/11): python3-3.6.9-1.ibm7.2.ppc64.rpm | 36 MB 00:10
(6/11): python3-ibm_db-2.0.5.9-0.ibm7.1.ppc64.rpm | 192 kB 00:00
(7/11): python3-itoolkkit-1.6.1-0.ibm7.1.ppc64.rpm | 62 kB 00:00
(8/11): python3-pip-9.0.1-2.ibm7.1.noarch.rpm | 1.9 MB 00:00
(9/11): python3-setuptools-36.0.1-2.ibm7.1.noarch.rpm | 526 kB 00:00
(10/11): python3-six-1.10.0-0.ibm7.1.noarch.rpm | 15 kB 00:00
(11/11): python3-wheel-0.29.0-2.ibm7.1.noarch.rpm | 118 kB 00:00
-----
Total | 2.9 MB/s | 42 MB 00:14
Running Transaction Check
Running Transaction Test
Transaction Test Succeeded
Running Transaction
Installing : python3-six-1.10.0-0.noarch 1/11
Installing : ncurses-terminfo-6.0-2.ppc64 2/11
Installing : libncurses6-6.0-2.ppc64 3/11
Installing : libutil2-0.6.2-0.ppc64 4/11
Installing : libopenssl1_1-1.1.1-4.ppc64 5/11
Installing : python3-3.6.9-1.ppc64 6/11
```

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Assuming your DNS is working and allows access to the repositories on the internet, one command then installs Python.

Installing Python 3 and some useful Python packages

```
yum install python3-pip python3-ibm_db python3-itoolkkit
```



```
sg210.rowtonit.com - PuTTY

Installing : python3-six-1.10.0-0.noarch                1/11
Installing : ncurses-terminfo-6.0-2.ppc64              2/11
Installing : libncurses6-6.0-2.ppc64                   3/11
Installing : libutil2-0.6.2-0.ppc64                    4/11
Installing : libopenssl1_1-1.1.1-4.ppc64               5/11
Installing : python3-3.6.9-1.ppc64                     6/11
Installing : python3-wheel-0.29.0-2.noarch              7/11
Installing : python3-setuptools-36.0.1-2.noarch         8/11
Installing : python3-pip-9.0.1-2.noarch                 9/11
Installing : python3-ibm_db-2.0.5.9-0.ppc64            10/11
Installing : python3-itoolkkit-1.6.1-0.ppc64           11/11

Installed:
python3-ibm_db.ppc64 0:2.0.5.9-0          python3-itoolkkit.ppc64 0:1.6.1-0
python3-pip.noarch 0:9.0.1-2

Dependency Installed:
libncurses6.ppc64 0:6.0-2          libopenssl1_1.ppc64 0:1.1.1-4
libutil2.ppc64 0:0.6.2-0          ncurses-terminfo.ppc64 0:6.0-2
python3.ppc64 0:3.6.9-1          python3-setuptools.noarch 0:36.0.1-2
python3-six.noarch 0:1.10.0-0     python3-wheel.noarch 0:0.29.0-2

Complete!
```


Using yum to install node.js

Node-RED uses
Node.js, and
one command
installs Node.js

Installing Node.js

yum install nodejs10

```
$ yum install nodejs10
```

```
Resolving Dependencies
--> Running transaction check
--> Package nodejs10.ppc64 0:10.16.3-1 will be installed
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libstdc++.so.6(shr_64.o) (ppc64
) for package: nodejs10-10.16.3-1.ppc64
--> Processing Dependency: nodever for package: nodejs10-10.16.3-1.ppc64
--> Running transaction check
--> Package libstdcplusplus6.ppc64 0:6.3.0-24 will be installed
--> Processing Dependency: lib:/QOpenSys/pkgs/lib/libgcc_s.a(shr.o) (ppc64) for p
ackage: libstdcplusplus6-6.3.0-24.ppc64
--> Package nodever.noarch 0:0.0.10-0 will be installed
--> Running transaction check
--> Package libgcc-aix.fat 0:6.3.0-24 will be installed
--> Finished Dependency Resolution
```

Dependencies Resolved

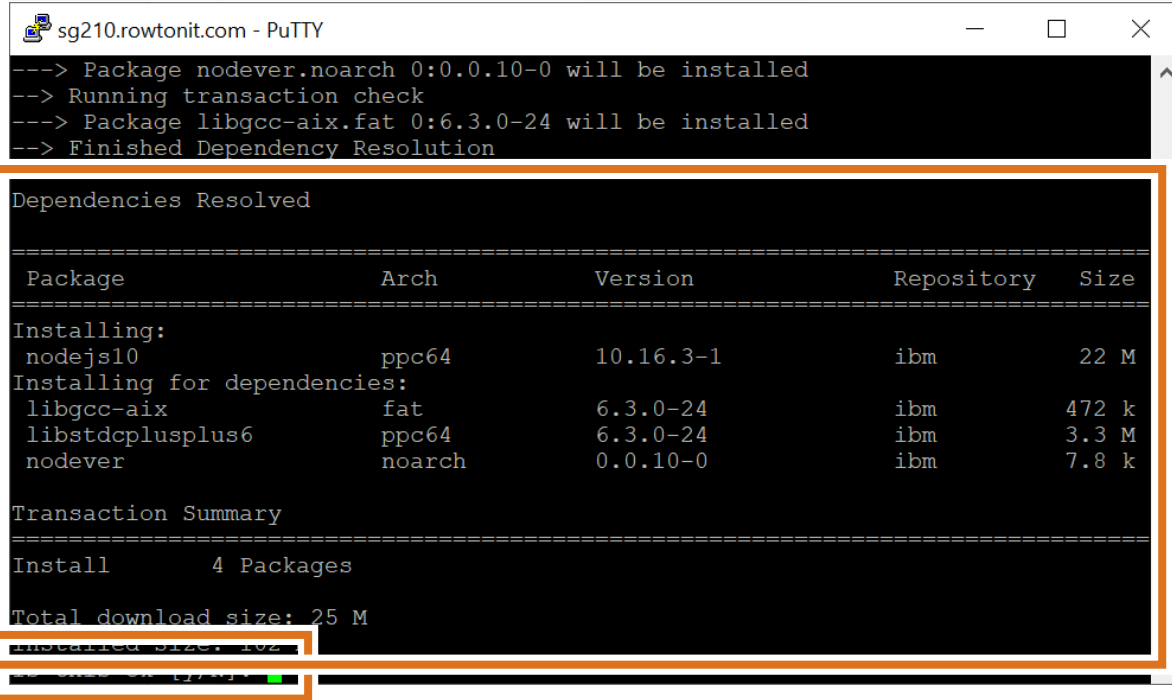
Package	Arch	Version	Repository	Size
Installing:				
nodejs10	ppc64	10.16.3-1	ibm	22 M

Using yum to install node.js

Node-RED uses
Node.js, and
one command
installs Node.js

Installing Node.js

yum install nodejs10



```
sg210.rowtonit.com - PuTTY
--> Package nodever.noarch 0:0.0.10-0 will be installed
--> Running transaction check
--> Package libgcc-aix.fat 0:6.3.0-24 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                        Arch          Version           Repository        Size
=====
Installing:
nodejs10                       ppc64         10.16.3-1         ibm               22 M
Installing for dependencies:
libgcc-aix                     fat           6.3.0-24          ibm              472 k
libstdcplus6                   ppc64        6.3.0-24          ibm              3.3 M
nodever                         noarch       0.0.10-0          ibm              7.8 k

Transaction Summary
=====
Install      4 Packages

Total download size: 25 M
Installed size: 102 M

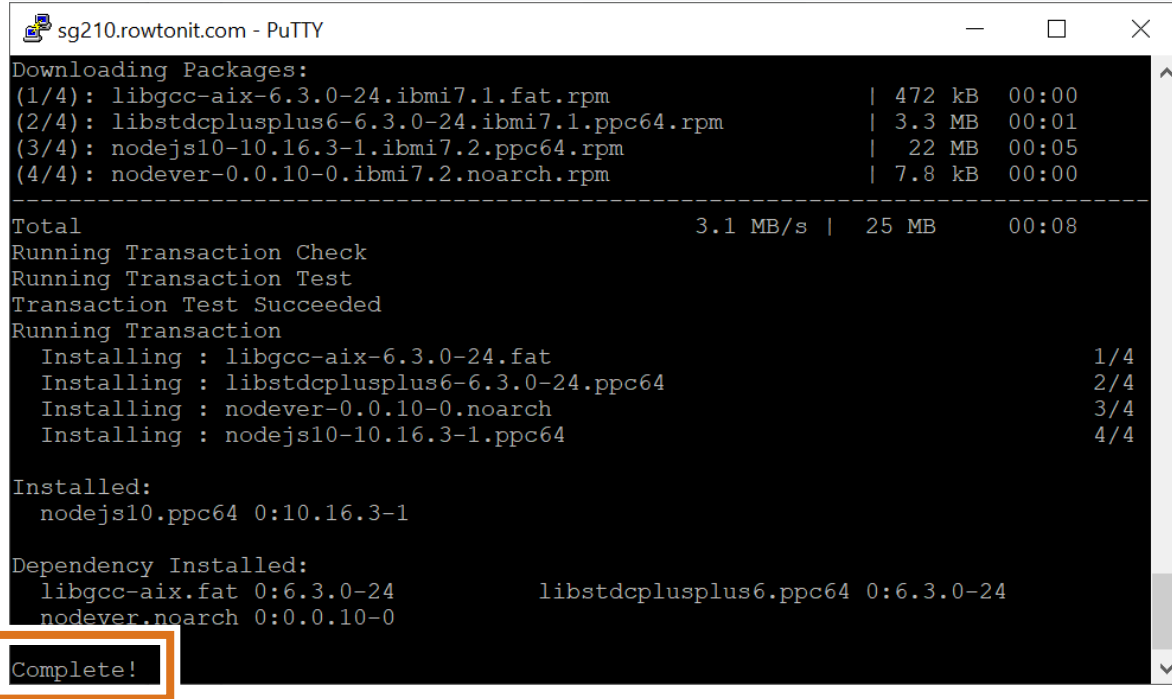
```

Using yum to install node.js

Node-RED uses
Node.js, and
one command
installs Node.js

Installing Node.js

yum install nodejs10



```
sg210.rowtonit.com - PuTTY
Downloading Packages:
(1/4): libgcc-aix-6.3.0-24.ibm7.1.fat.rpm | 472 kB 00:00
(2/4): libstdcplusplus6-6.3.0-24.ibm7.1.ppc64.rpm | 3.3 MB 00:01
(3/4): nodejs10-10.16.3-1.ibm7.2.ppc64.rpm | 22 MB 00:05
(4/4): nodever-0.0.10-0.ibm7.2.noarch.rpm | 7.8 kB 00:00
-----
Total | 3.1 MB/s | 25 MB 00:08
Running Transaction Check
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : libgcc-aix-6.3.0-24.fat 1/4
  Installing : libstdcplusplus6-6.3.0-24.ppc64 2/4
  Installing : nodever-0.0.10-0.noarch 3/4
  Installing : nodejs10-10.16.3-1.ppc64 4/4

Installed:
  nodejs10.ppc64 0:10.16.3-1

Dependency Installed:
  libgcc-aix.fat 0:6.3.0-24 libstdcplusplus6.ppc64 0:6.3.0-24
  nodever.noarch 0:0.0.10-0

Complete!
```

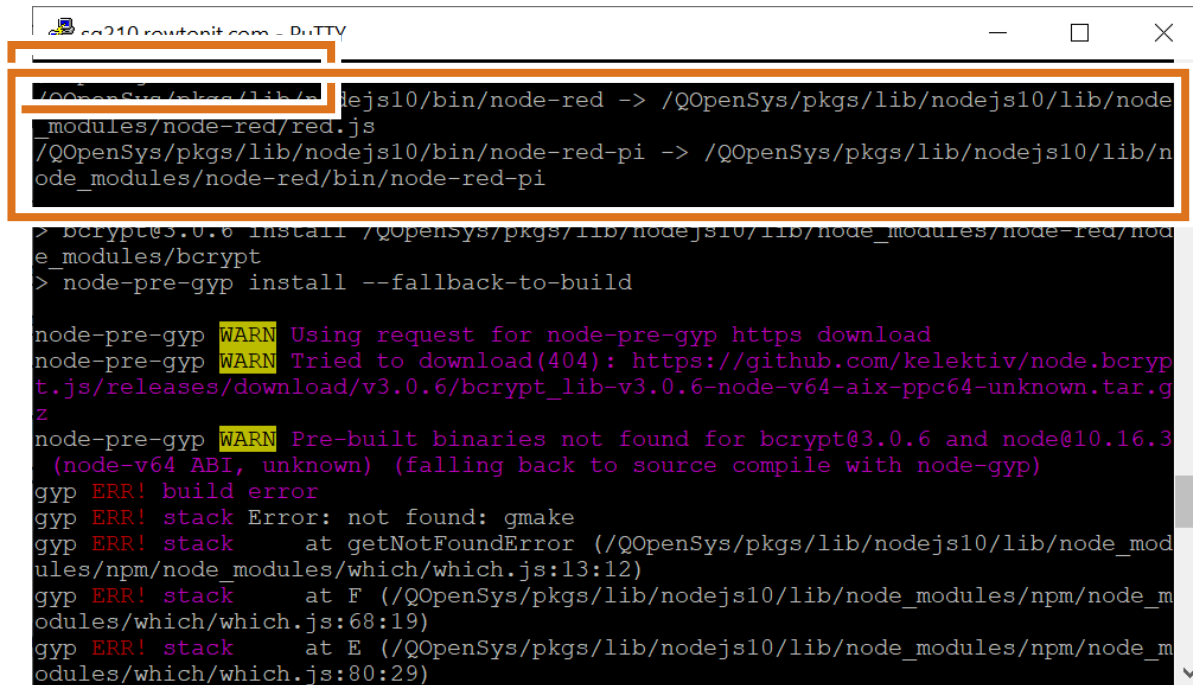
You are now ready to install Node-RED!

You have the dependencies installed, on to the next set of instructions here:

<https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>

A single command now installs Node-RED.

```
npm -g i node-red
```



```
node-pre-gyp WARN Using request for node-pre-gyp https download
node-pre-gyp WARN Tried to download(404): https://github.com/kelektiv/node.bcrypt.js/releases/download/v3.0.6/bcrypt_lib-v3.0.6-node-v64-aix-ppc64-unknown.tar.gz
node-pre-gyp WARN Pre-built binaries not found for bcrypt@3.0.6 and node@10.16.3 (node-v64 ABI, unknown) (falling back to source compile with node-gyp)
gyp ERR! build error
gyp ERR! stack Error: not found: gmake
gyp ERR! stack at getNotFoundError (/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modules/which/which.js:13:12)
gyp ERR! stack at F (/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modules/which/which.js:68:19)
gyp ERR! stack at E (/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modules/which/which.js:80:29)
```

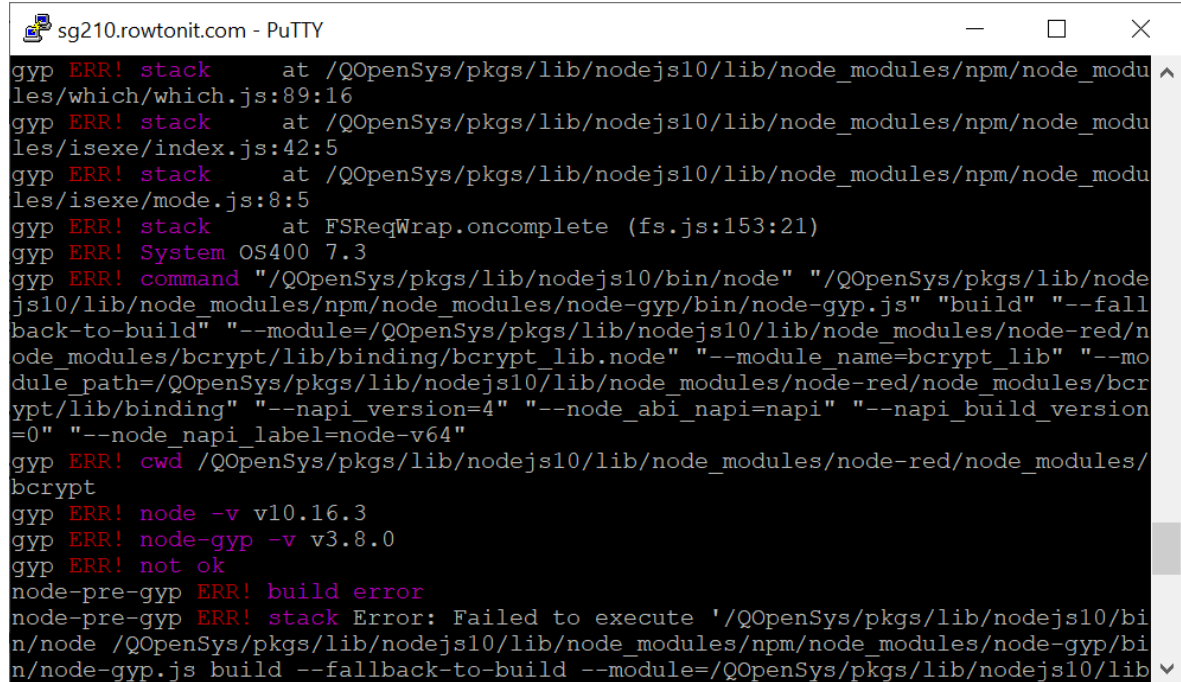
You are now ready to install Node-RED!

You have the dependencies installed, on to the next set of instructions here:

<https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>

A single command now installs Node-RED.

```
npm -g i node-red
```



The screenshot shows a PuTTY terminal window titled "sg210.rowtonit.com - PuTTY". The terminal output displays a series of errors during the installation of node-red. The errors include "gyp ERR! stack" messages pointing to various files in the node_modules directory, a "gyp ERR! System OS400 7.3" message, and a "gyp ERR! command" message showing the build command being executed. The final error is "node-pre-gyp ERR! build error" and "node-pre-gyp ERR! stack Error: Failed to execute", indicating that the installation failed due to a build error on the OS400 system.

```
sg210.rowtonit.com - PuTTY
gyp ERR! stack at /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modu
les/which/which.js:89:16
gyp ERR! stack at /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modu
les/isexe/index.js:42:5
gyp ERR! stack at /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modu
les/isexe/mode.js:8:5
gyp ERR! stack at FSReqWrap.oncomplete (fs.js:153:21)
gyp ERR! System OS400 7.3
gyp ERR! command "/QOpenSys/pkgs/lib/nodejs10/bin/node" "/QOpenSys/pkgs/lib/node
js10/lib/node_modules/npm/node_modules/node-gyp/bin/node-gyp.js" "build" "--fall
back-to-build" "--module=/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/n
ode_modules/bcrypt/lib/binding/bcrypt_lib.node" "--module_name=bcrypt_lib" "--mo
dule_path=/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/node_modules/bcr
ypt/lib/binding" "--napi_version=4" "--node_abi_napi=napi" "--napi_build_version
=0" "--node_napi_label=node-v64"
gyp ERR! cwd /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/node_modules/
bcrypt
gyp ERR! node -v v10.16.3
gyp ERR! node-gyp -v v3.8.0
gyp ERR! not ok
node-pre-gyp ERR! build error
node-pre-gyp ERR! stack Error: Failed to execute '/QOpenSys/pkgs/lib/nodejs10/bi
n/node /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/npm/node_modules/node-gyp/bi
n/node-gyp.js build --fallback-to-build --module=/QOpenSys/pkgs/lib/nodejs10/lib
```


You are now ready to install Node-RED!

You have the dependencies installed, on to the next set of instructions here:

<https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>

A single command now installs Node-RED.

```
npm -g i node-red
```

You are now ready to install Node-RED!

You have the dependencies installed, on to the next set of instructions here:

<https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>

A single command now installs Node-RED.

```
npm -g i node-red
```

```

sg210.rowtonit.com - PuTTY
node-pre-gyp ERR! command "/QOpenSys/pkgs/lib/nodejs10/bin/node" "/QOpenSys/pkgs
/lib/nodejs10/lib/node_modules/node-red/node_modules/.bin/node-pre-gyp" "install
" "--fallback-to-build"
node-pre-gyp ERR! cwd /QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/node
_modules/bcrypt
node-pre-gyp ERR! node -v v10.16.3
node-pre-gyp ERR! -v v0.12.0
node-pre-gyp ERR! not ok
Failed to execute '/QOpenSys/pkgs/lib/nodejs10/bin/node /QOpenSys/pkgs/lib/nodej
s10/lib/node_modules/npm/node_modules/node-gyp/bin/node-gyp.js build --fallback-
to-build --module=/QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/node_mod
ules/bcrypt/lib/binding/bcrypt_lib.node --module_name=bcrypt_lib --module_path=/
QOpenSys/pkgs/lib/nodejs10/lib/node_modules/node-red/node_modules/bcrypt/lib/bin
ding --napi_version=4 --node_abi_napi=napi --napi_build_version=0 --node_napi_la
bel=node-v64' (1)
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: bcrypt@3.0.6 (node_modules/node-
red/node_modules/bcrypt):
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: bcrypt@3.0.6 install: `node-pre-
gyp install --fallback-to-build`
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: Exit status 1

+ node-red@1.0.2
added 296 packages from 304 contributors in 33.31s
$

```

Starting up Node-RED

This example used Node.js 10, so Node-RED is called from that Path.

```
/QOpenSys/pkg/lib/nodejs10/bin/node-red
```

```
$ /QOpenSys/pkg/lib/nodejs10/bin/node-red
```

```
Welcome to Node-RED
=====
```

```
4 Nov 19:10:03 - [info] Node-RED version: v1.0.2
```

```
4 Nov 19:10:03 - [info] Node.js version: v10.16.3
```

```
4 Nov 19:10:06 - [info] Settings file : /home/SPURWAY/.node-red/settings.js
4 Nov 19:10:06 - [info] Context store : 'default' [module=memory]
4 Nov 19:10:06 - [info] User directory : /home/SPURWAY/.node-red
4 Nov 19:10:06 - [warn] Projects disabled : editorTheme.projects.enabled=false
4 Nov 19:10:06 - [info] Flows file : /home/SPURWAY/.node-red/flows_orac.RIT.
LOCAL.json
4 Nov 19:10:06 - [info] Creating new flow file
```

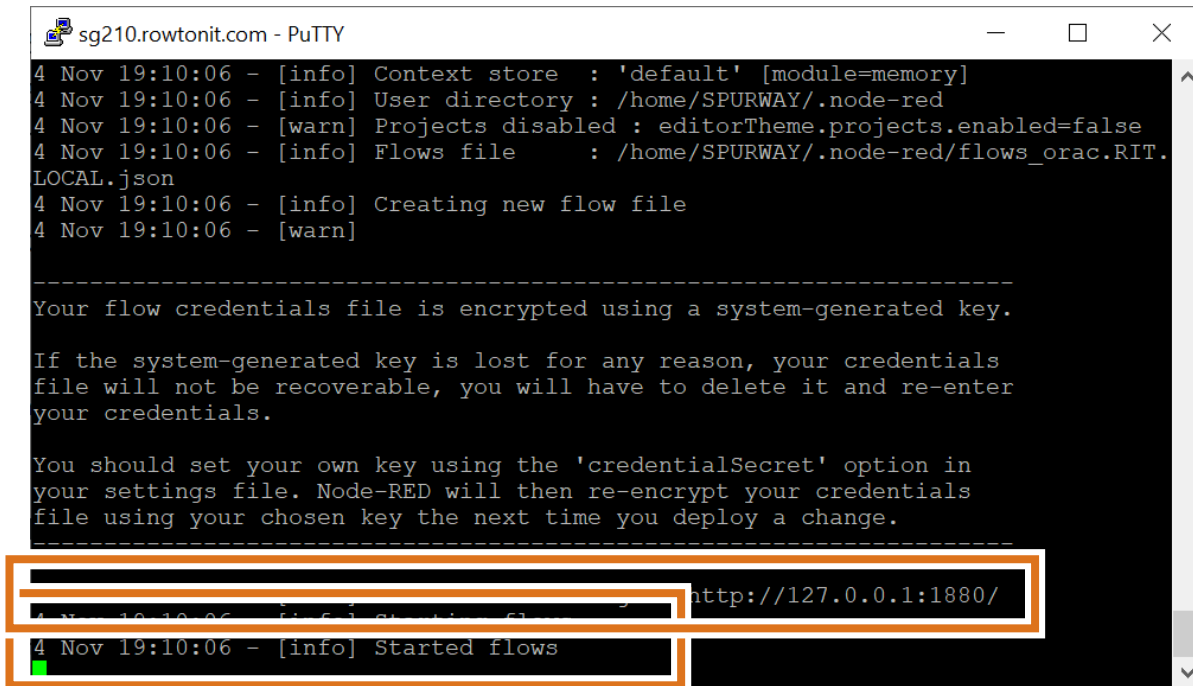
```
-----
Your flow credentials file is encrypted using a system-generated key.

If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
```

Starting up Node-RED

This example
used Node.js
10, so Node-
RED is called
from that Path.

/QOpenSys/pkg/lib/nodejs10/bin/node-red



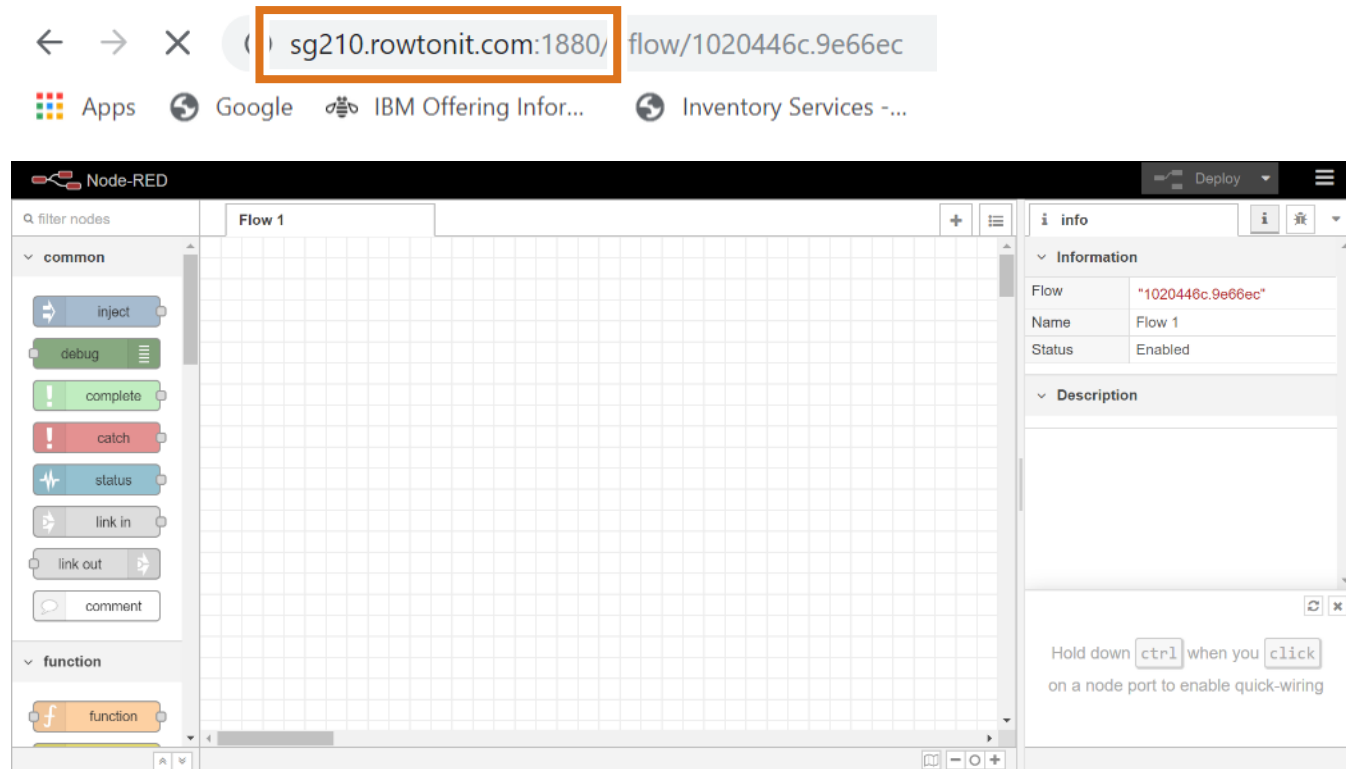
```
sg210.rowtonit.com - PuTTY
4 Nov 19:10:06 - [info] Context store : 'default' [module=memory]
4 Nov 19:10:06 - [info] User directory : /home/SPURWAY/.node-red
4 Nov 19:10:06 - [warn] Projects disabled : editorTheme.projects.enabled=false
4 Nov 19:10:06 - [info] Flows file : /home/SPURWAY/.node-red/flows_orac.RIT.
LOCAL.json
4 Nov 19:10:06 - [info] Creating new flow file
4 Nov 19:10:06 - [warn]
-----
Your flow credentials file is encrypted using a system-generated key.

If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
your credentials.

You should set your own key using the 'credentialSecret' option in
your settings file. Node-RED will then re-encrypt your credentials
file using your chosen key the next time you deploy a change.
-----
4 Nov 19:10:06 - [info] Starting flows http://127.0.0.1:1880/
4 Nov 19:10:06 - [info] Started flows
```

And Node-RED is working!

Point your browser at the IP address of your IBM i server, with the port for Node-RED, and you are off!



In my case, <http://sg210.rowtonit.com:1880>

Agenda

- I am not the expert, I am an enthusiastic amateur!
- A little film from France two years ago, Think 2019 in San Francisco and Ross Cruickshank
- Some initial challenges, then things have become easier!
- The latest instructions from Jesse Gorzinski
 - <https://bitbucket.org/ibmi/opensource/src/master/docs/yum/>
 - <https://github.com/IBM/ibmi-oss-examples/tree/master/nodejs/node-red>
- Chicken and egg with yum
- One command to install Node.js
- One command to install Node-RED
- Starting examples with Node-RED
- More detail on Open Source in the second session!

Thank you!

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