



# Bluemix Hands-On Workshop

# Section 5 - Create your app

Version: Last modification date: Owner:

9 6-Oct-14 IBM Ecosystem Development

### **Table of Contents**

Bluemix Hands-On Workshop	. 1
Section 5 - Create your app	. 1
Exercise 5.a – Your first Node.js application	.3
Exercise 5.b – Working with Node using Eclipse	.4
Exercise 5.c – Working with Node using DevOps Services	. 8
Exercise 5.d – Selecting files to include in your application	12

# Exercise 5.a – Your first Node.js application

In this exercise we switch from Java to Node, which uses javascript on the server.

A typical "hello world" application is :

```
var http = require('http');
http.createServer(function (req, res) {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello World\n');
}).listen(3000);
```

Create this file using a text editor installed on your system<sup>1</sup> in a clean directory and call it app.js. If you have a local install of Node, you could run this using node app.js

This will start a web server and every request will respond with Hello World. To run this on Bluemix we need to make a couple of changes. The first change is to get the application to listen on the port Bluemix has assigned for the application. Environment variables are used by Bluemix to communicate configuration to the application:

```
var http = require('http');
var appport = process.env.VCAP_APP_PORT || 3000;
http.createServer(function (req, res) {
   res.writeHead(200, {'Content-Type': 'text/plain'});
   res.end('Hello World\n');
}).listen(appport);
```

The next is to add a step is to create a package.json – this is required to run a node application on Bluemix.

```
{
   "name": "BINodeTest",
   "version": "0.0.1",
   "description": "Sample Node application"
}
```

Create a new text file called package.json in the same directory as app.js and enter the content above.

To deploy the application on Bluemix we will initially use the CLI. Open a command/terminal window and change to the directory containing app.js and package.json then enter the command

cf push BINodeTest -c 'node app.js'

If you navigate to the Bluemix Web UI you should see the application running – with "Hello World" displayed in the browser when you launch the application.

<sup>&</sup>lt;sup>1</sup> notepad on windows or TextEdit on Mac – please use text mode with smart features turned off, such as smart quotes ''

### **Exercise 5.b – Working with Node using Eclipse**

In this exercise you will use Eclipse to create a Node.js application then deploy it to Bluemix.

Launch Eclipse. If using a fresh workspace you need to create the Bluemix server configuration – we did this in section 3.

Create a new javascript project File -> New -> Other

When the Select a wizard dialog is displayed select Javascript -> JavaScript Project.

Select a wizard			$\rightarrow$
Create a JavaScript project			
Wizards:			
type filter text			
► > CVS			
Database Web Services			
Eclipse Modeling Framework			
🕨 🧁 EJB			
Enterprise Extensions			
🕨 🧁 Git			
🕨 🗁 Java			
🕨 🧁 Java EE			
🕨 🗁 Java Emitter Templates			
V 🔁 JavaScript			
😂 JavaScript Project			
😭 JavaScript Source File			
🕨 🧁 JAXB			
Jazz Source Control			
(?) < Back	Next >	Cancel	Finish
<u> </u>			

When the Create a JavaScript project dialog appears. Give the project a name and remove the Web Page Support option.

Contents Contents Contents Create new project in workspace Create project from existing source Directory: Tubers/bines/work/Cloud/WU_BCs/BlueMix/Workshop V2/Lab 5/workspace. Browss Br	Contents  Contents  Create new project in workspace Create project from existing source Directory: [/bers/binnes/work/Cloud/WW JICs/BlueMix/Workshop V2/Lab 5/workspace].  Web Page Support  Web Page Support  Use Window as the default SuperType Project layout  Directory as spanar root folder  Contingues default.  Contingues
© Create new project lin workspace © Create project from existing source Directory: //Jsen/Ibines/work/Cloud/WW_JICs/BlueMix/Workshop V2/Lab 5/workspace. ■ Browse Web Page Support Include Web Browser Library ✓ Use Window as the default SuperType Project layout © Use project folder as root for the JavaScript global context © Create a separate root folder Working sets I Add project to working sets	Create new project in workspace Create project from existing source Directory: //Jsen/Jbines/work/Cloud/WW_JICs/JBlueMix/Workshop V2/Lab 5/workspace. Browse Web Page Support Include Web Browser Ubrary Use Window as the default SuperType Project Isyout Directory project folder as root for the javaScript global context Create as project folder as root folder Create as project folder as root folder Create as project folder as root folder
Create rev project in workspace Create project from existing source Directory: //Liens/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab 5/workspace.  Project layout Create a separate root for the JavaScript global context Create a separate root folder  Working sets Add project to working sets	Create new project in workspace     Create project in workspace     Create project in workspace     Directory: IUser/binnes/work/Cloud/WW_UICs/BlueMix/Workshop V2/Lab 5/workspace.     Browse  Web Page Support     Include Web Browser Library     Use Window as the default SuperType Project layout     Directory Support folder as root for the JavaScript global context     Create as separate root folder     Configure default
Create project from existing source      Directory: //Uers/binnes/work/Cloud/WW_IICs/BlueMix/Workshop V2/Lab 5/workspace.      Web Page Support      Include Web Browser Library      // Use Window as the default SuperType  Project layout      O Use project folder as root for the JavaScript global context      Configure default.  Working sets      Add project to working sets	Create project from existing source      Directory: //Users/binnes/work/Cloud/WW.JICs/BlueMix/Workshop V2/Lab 5/workspace.      Browse  Web Page Support      Mindow as the default SuperType  Project layout      Outgoing as note for the JavaScript global context      Orate a separate root folder      Contingues default
Directory: [IJsers/bimes/work/Cloud/WW.JICs/BueMix/Workshop V2/Lab 5/workspace.]  Browse Web Page Support Include Web Browser Library I use Window as the default SuperType Project Liyout I use Window as the default SuperType Working sets I Add project to working sets I I Add project to working sets I I I I I I I I I I I I I I I I I I I	Directory: //Users/binnes/work/Cloud/WW.JICs/BlueMir/Workshop V2/Lab 5/workspace. Browse Web Page Support Include Web Browser Library Use Window as the default SuperType Project Layout O Use project folder as root for the JavaScript global context O Create as aparate root folder Contingues default
Web Page Support       Include Web Browser Library       Ø Use Window as the default SuperType       Project layout       O Use project folder as root for the JavaScript global context       Create a separate root folder       Confloure default       Working sets       Add project to working sets	Web Page Support  Include Web Browser Library  Use Window as the default SuperType  Project layout  O Use project folder as root for the JavaScript global context  O Create as aparate root folder  Configure default
Web Page Support         Include Web Browser Library         Ø Use Window as the default SuperType         Project layout         O Use project folder as root for the JavaScript global context         O create a separate root folder         Confloure default.         Working sets         Add project to working sets	Web Page Support
Include Web Browser Library       Ise Window as the default SuperType       Project Liyout       O Use project folder as root for the JavaScript global context       Create a separate root folder       Confloure default       Working sets       Add project to working sets	Include Web Browser Likrary     ✓ Use Window as the default SuperType  Project layout     ✓ Use project folder as root for the JavaScript global context     Oreate a separate root folder     Configure default
Include Web Browser Library     ✓ Use Window as the default SuperType Project layout     Oreste a separate root folder     Confloure default Working sets     Add project to working sets	Include Web Browser: Library     ✓ Use Window as the default SuperType  Project Lipout     ✓ Use project folder as root for the JavaScript global context     ✓ Create as asparate root folder     Configure default
If Use Window as the default SuperType         Project layout         Image: SuperType         Image: Supe         Image: Supe	
Project layout	Project layout           O Use project folder as root for the JavaScript global context         O Create a separate root folder         Configure default
Project layout       O Use project folder as root for the JavaScript global context     Confloure default       Working sets     Add project to working sets	Project layout  Use project folder as root for the JavaScript global context  Create a separate root folder  Configure default
Use project folder as root for the JavaScript global context     Configure default      Working sets     Add project to working sets	Use project folder as root for the JavaScript global context     Create a separate root folder     Configure default
Configure default     Configure default      Working sets     Add project to working sets	Create a separate root folder     Configure default
O Create a separate root tolder     Confloure defaulture       Working sets     Add project to working sets	Create a separate root folder Configure default
Working sets	
Add project to working sets	Working sets
Add project to working sets	
	Add project to working sets
Working sets:  \$ Select	And project to working acta
	Working sets:
	Working sets:
	Working sets:         2)         Select
	Working sets:
	Working sets:
Working sets: Select	Working sets
	Working sets:
	Working sets
Working sets:  \$\$\$\$ Select	And project to working sets
Horning Jets.	Working sets:
	Working sets:
	Working sets: Select
	Working sets:
Working sets: 1 Select	Add project to working sets
Add project to working sets	Working sets
Add project to working sets	Working sets
Add project to working sets	Working sets
Add project to working sets	Working sets
Add project to working sets	Working sets

click Finish – will switch to JavaScipt perspective – accept this recommendation.

Section 5 - Create your app

Project Explorer 않 □ □					E Outline 🛛 🖛	- □ - ▽
	Problems & @ Documentation 😣 Declar	ation				
	Description	Resource	Path	Location	Туре	_

To add Bluemix support to the project you need to add a Facet to the project. Right-click the project name and select Project Facets – select 'Convert to faceted form...'

type filter text	Project Facets 🗢 🗧 🗸 👻
<ul> <li>Resource</li> <li>Android</li> <li>Builders</li> <li>Content Assist</li> <li>File Transfer</li> <li>Formatter</li> <li>JavaScript</li> <li>JSHint</li> </ul>	This project is not configured to use project facets. Converting this project to faceted form will allow you to easily control the available technologies. <u>Convert to faceted form</u>
Preview Settings Project Facets	
Project Natures Project References Run/Debug Settings ▶Task Repository Task Tags ▶Validation WikiText	

then select 'Node.js Application'

	Projec	t Facet
Default synchronization policy for CVS repo     Default synchronization		E Deraure style sneet (cos me)
		Default synchronization policy for CVS report
AR     BB Module     BBDcclet (XDoclet)     Java     JavaScript     JavaServer Faces     JAX-R5 (REST Web Services)		🗔 Dynamic Web Module
G BB Module         IBDoclet (XDoclet)         Java         JavaScript         JavaServer Faces         JAX-BS (REST Web Services)         ↔ JAXB         JCA Module         ↔ JPA         Ø IDD (Signature)         Ø IDD (Signature)         Ø SGI Bundle         IDD (SGI Fragment)         Ø OSGI Fragment		EAR EAR
□ JBBOclet (XDoclet)         □ Java         □ JavaScript         □ JAV-RS (REST Web Services)         ↔ JPA         ● JCGI Application         ← OSGI Bundle         ← OSGI Composite Bundle         ♥ OSGI Fragment		💫 EJB Module
Java     JavaScript     JavaScript     JavaScript     JavaScript     JavaScript     JAX-R5 (REST Web Services)     AvB     JAX     Jose     Jo		EJBDoclet (XDoclet)
JavaScript     JavaScript     JavaScript     JavaScript     JavaServe Faces     JAX-Rs (REST Web Services)     ↔ JAXB     JCA Module     ↔ JAXB     JCA Module     ↔ JAX      Wode, js Application		🕽 Java
JavaServer Faces         JAX-RS (REST Web Services)         ↔ JAAB         JCA Module         ↔ JPA         ⓓ JCA Module         ↔ JPA         ⓓ Young         ☑ Node.js Application         ⓓ OSGI Application         ⓓ OSGI Bundle         ⓓ OSGI Composite Bundle         ⓓ OSGI Fragment		JavaScript
		JavaServer Faces
		JAX-RS (REST Web Services)
CA Module         → JPA         ↓ JPA         ↓ JPA         ↓ JPA         ↓ Derty Feature         ↓ DoSGi Application         ↓ OSGi Application         ↓ OSGi Bundle         ↓ OSGi Bundle         ↓ OSGi Fragment         ↓ OSGi Fragment		↓JAXB
		JCA Module
		↓PA
✓     Node, js Application       ↓ OSGI Application       ↔ OSGI Bundle       ↔ OSGI Composite Bundle       ↓ OSGI Fragment		Liberty Feature
GGi Application     GGi Bundle     SGi Gomposite Bundle     SGi Fragment	1	Node.js Application
OSGi Bundle     OSGi Composite Bundle     OSGi Fragment     OSGI Victoria		G OSGi Application
OSGi Composite Bundle     VOSGi Fragment     Scale With Michael		🐳 OSGi Bundle
OSGi Fragment		OSGi Composite Bundle
B cardo Male Madula		🗇 OSGi Fragment
	6	Canada Matala Matalanta

You will see that app.js and package.json are added to the project and the contents of the file will look similar.



To deploy the application you need to open the Servers view Window -> Show View -> Other. Then in the dialog that opens select Server -> Servers.

😑 🔿 💿 Show View
type filter text
P Debug
🕨 🗁 Git
🕨 🧀 Help
🕨 🗁 Java
🕨 🧁 Java Browsing
JavaScript
JavaServer Faces
🕨 🧀 JPA
▶ 🧀 Make
🕨 🧀 Maven
🕨 🧀 Mylyn
Plug-in Development
Remote Systems
V 🗁 Server
Runtime Explorer
A Servers
🕨 (ឝ Team
Cancel OK

Right-click Bluemix then select your Node application and move it to the Configured column.



The Bluemix deploy wizard will start. Eclipse does not use the manifest file, but you can select to generate a file as a result of the Eclipse deploy:

Application details Specify application details	
Name:	NodeEclipseApplication
Buildpack URL (optional):	
Save to manifest file	
?	< Back Next > Cancel Finish

Give the application a unique name, modify the memory requirement to 128M and select to deploy 2 instances. Complete the deployment – there are no services needed for this deployment.

Once the application is running open the generated manifest.yml file and verify the options to selected are in the manifest file.

Once deployed you can run the Node application by right-clicking the application in the Servers view then selecting to open home page.



Once you have tested the application right click the application under the Bluemix server definition and select to remove the application



## Exercise 5.c – Working with Node using DevOps Services

In Bluemix deploy the Node.js Cache Web Starter from the Catalog view in the Bluemix UI.



Once the application has started from the application overview page select 'ADD GIT'



Ensure the "Populate the repository with the starter application package ..." is selected



### Select 'EDIT CODE' to be taken to the DevOps Services project



The Node.js Web Starter project uses the express framework. If you open the package.json in the DevOps editor you will see the project dependencies.

Node applications do not need to be compiled before they are deployed, so the simple Build & Deploy option within DevOps Services can be used. If you select the BUILD & DEPLOY tab EDIT CODE TRACK & PLAN BUILD & DEPLOY, you will see the project is already configured.

			OFF	SIMPLE	ADVANCED		l	REQUEST	T DEPLOY
Warning: Yo	ur git project has outgoing	changes. Go to the	Git Repository V	iew to comn	nit and push if you	want to include	them in your ap	plication.	
Git URL Deploy from: Deploy to:	https://hub.jazz.net/git/b refs/heads/master ÷ BINodeWebStarter CONFIGURE	vinnes/BINodeWebSt BINodeWebStarter.	arter <u>mybluemix.net</u>						REFRESH
Status	Result	Com	ment		Committee	r	Started		Logs
٥	ОК	Add	starter application p	package	Brian Innes		13 minutes ago		Log

To test the configuration, select REQUEST DEPLOY. After a short while you will see the deploy result

Status	Result	Comment	Committer	Started	Logs
٢	ОК	Add starter application package	Brian Innes	1 minute ago	Log
ø	ОК	Add starter application package	Brian Innes	36 minutes ago	Log

The Simple automatic deployment works the same way as the Advanced that we used in section 4. Select EDIT CODE and open file routes/cache.js in the editor. Scroll to the bottom of the file and locate the putCache and removeCache functions. Change the strings that are displayed on the web UI when a cache operation stores or removes a key:

```
Put successfully. => Stored it
     Remove successfully. => deleted it
43 exports.getCache = function(req, res) {
      var key = req.params.key;
      console.log("get key:" + key);
```

```
46
        wxsclient.get(key, function(wxsres) {
47
            res.json({
48
                value : wxsres
49
            });
50
        });
51 };
52
53 exports.putCache = function(req, res) {
54
        var key = req.query.key;
55
        var value = req.query.value;
56
        wxsclient.put(key, value, function() {
57
            res.json({
58
                value : "Stored it"
59
            });
60
        });
61
    };
62
63
    exports.removeCache = function(req, res) {
64
        var key = req.params.key;
65
        wxsclient.remove(key, function() {
66
            res.json({
67
                value : "deleted it"
68
            });
69
            console.log('finished remove');
        });
70
71 };
```

44

45

Make sure you save the file

File	Edit	View
New	/	> eb
Sav	е	жs
Import		>
Exp	ort	>

then switch to the Git Repository

0	
✨	
⊵	
ඹ	
Ô	

select all changed files, enter a comment for the commit

Working Directory Changes	🛨 🛓 🔛 🛅 СОММІТ
Modified cache operation confirmation strings	4
Amend previous commit Add Change-ID to message	more
Select All 4 files selected	⊕ ⊝
✓ > + .cfignore	
✓ > + .gitignore	
✓ > 🕂 project.json	
✓ > 🗅 routes/cache.js	

then select COMMIT. Once you committed the changes push them to the remote branch by selecting Push -> Push All.

Active Bran	nch (master) 🛛 🕆	SYNC	Worki
	Working Directory Changes Nothing to commit.		En
	G (1)	PUSH 🗸	0/
2	Modified cache operation conf strings Brian Innes on 6 October 2014 1 BST more	Push All Force Push Al Push Branch Force Push Br	anch

Quickly switch to the BUILD & DEPLOY tab and you will see that a deploy has been initiated.

After a short while the deploy will complete and you should see a success status with the commit message displayed in the comment.

		OFF SIMPLE AD	DVANCED	REQ	UEST DEPLOY
Git URL Deploy from: Deploy to:	https://hub.jazz.net/git/binnes/B refs/heads/master : BINodeWebStarter <u>BINode</u> CONFIGURE	INodeWebStarter			
					REFRESH
Status	Result	Comment	Committer	Started	Logs
٥	ОК	Modified the cache operation strings	Brian Innes	Less than one minute ago	Log
0	ОК	Add starter application package	Brian Innes	35 minutes ago	Log
0	ОК	Add starter application package	Brian Innes	1 hour ago	Log

You can launch the application by selecting the link on the 'Deploy to:' line. Add a value to the cache and you will see the modified message displayed Grid Operations:

	eun	
Stor	ed it	
Value:	key	
Key:	test	

## Exercise 5.d – Selecting files to include in your application

The .cfignore file controls what files are pushed to Bluemix.

In the Bluemix Web UI open the Node.js Web Starter app that was deployed in previous sections of this section. Navigate to the Files and Logs section and open the app directory

▼ 🛅 app		
▶ 🛅	.bluemix	
▶ 🗅	.buildpack-diagnostics	
	.cfignore	
	.gitignore	
	.npmrc	
▶ 🛅	.profile.d	
	License.txt	
	Procfile	
	README.md	
	README.txt	
Þ	app.js	
	instructions.md	
	manifest.yml	
▶ िि	node modules	

you will see the files that are deployed, including a file named instructions.md. This is a file that explains what the starter application is and is not part of the application. We want to stop this file from being deployed to Bluemix.

In DevOps Services open the '.cfignore' file in the editor and add instructions.md to the end of the file on a new line.

1 launchConfigurations/
2 .git/
3 instructions.md

Save the file then commit and push the changes to the remote repository. This will force the project to be redeployed.

Switch back to the Bluemix UI and open the Files and Logs section of the application. You should now see that the 'instructions.md' file is no longer included with the application deployed to Bluemix.