

FormaServe From Zero to Production with Node.js Sponsors of International i-Power 2019 **Solue** <u>CS</u>I **△** ESSIST kfa helpsystems TRM meridian IT REDBOURN Rocket SoftLanding. **sync**sort © FormaServe 2019 www.FormaServe.co.uk

Andy Youens

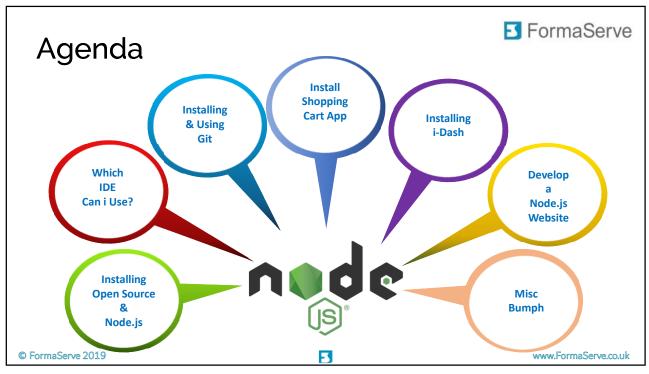
- **I** FormaServe
- IBM i Consultant/Instructor at FormaServe for 29 years
- Over 39 years IT experience working with S/34, S/36, AS400, iSeries & IBM i
- Specialties IBM i, RPG, PHP, Zend Server, Zend Frameworks, SQL, DB2 & Node.js
- Accomplished instructor & an article writer specialising in programming on the IBM i
- Prior to IT, Andy is proud to have served 10 years in the Royal Navy as a communications expert

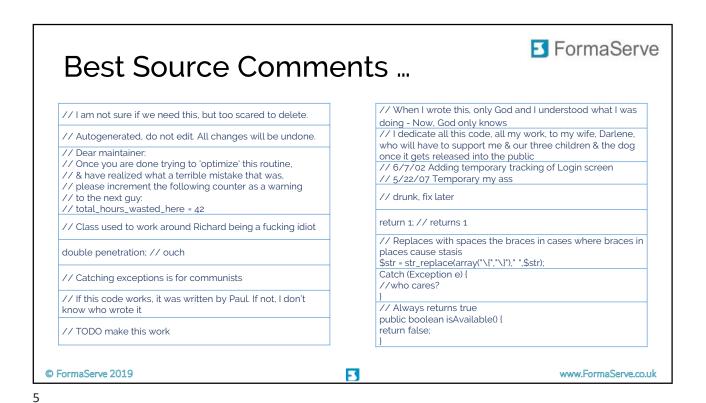


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A Node Application — f_MTD

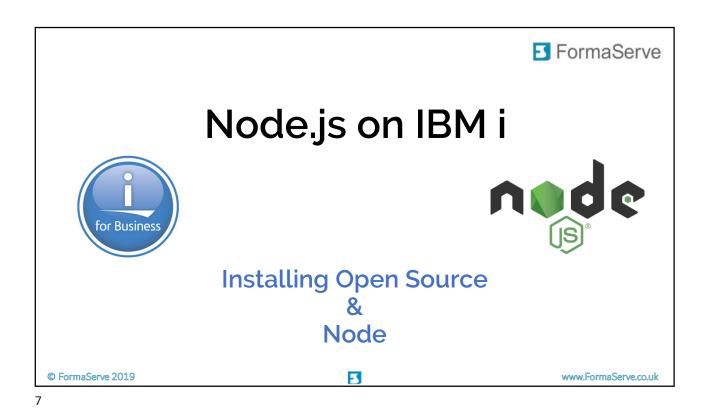
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(_MTD VAT - Muking Tax Digital.

WIT Return Details

Currency Interferent Request For C.

Current Request For C.



OSS Management Flow

Get
57390FS
From
Install
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Wait For Next
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OSS Management Flow

Correct to
Repository

Select Which
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Open Source Management



■ IBM had a lot of pressure to make available

'Open Source on the IBM i'



The PHP Company

- We already had, as Open Source;
 - Apache HTTP Server
 - PASE 1998
 - Zend Server & PHP 2006
- Back in 2015 IBM decided to make available Open Source software as a licensed program – 5733OPS
- Initially these were all empty slots
- These slots could then be filled by PTFs

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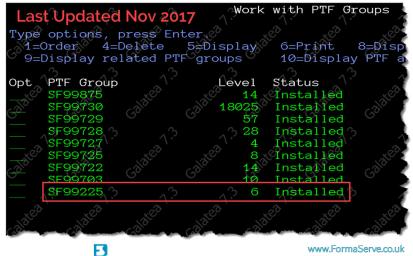
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Open Source Placeholders Display Installed Licensed Programs System Licensed Installed Description Program Status *INSTALI IBM i Open Source Solutions Option 12 *INSTALLED IBM i Open Source Solutions Option 13 *INSTALLED *INSTALLEDIBM i Open Source Solutions Option 14 IBM 1 Open Source Solutions Option 15 *INSTALLED IBM Query for i IBM Portable Utilities for i *COMPATIBLE *INSTALLED OpenSSH, OpenSSL, zlib DB2 Query Mgr and SQL DevKit IBM TCP/IP Connectivity Utilities for *INSTALLED *COMPATIBLE *COMPATIBLE IBM Transform Services for i *COMPATIBLE Transforms - AFP to PDF Transform *COMPATIBLE IBM Universal Manageability Enablement © FormaServe 2019 www.FormaServe.co.uk

Open Source Management



- 5733OPS populated by group PTFs
- Not updated for 2 years
- No future updates!



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What about 5733OPS?

- The 5733OPS licensed program is now longer required!
- Has now been depreciated by IBM
- End of Life this year
- Anyone tried/brave enough to remove it?
- Do your Open Source applications still work?



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Something Needed to be Done!



- Catch 22!
 - You had to know the name of 5733OPS options to get them they are blank!
 - The PTF delivery route is confusing to non-IBM i people the people IBM is trying to attract to the server!



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Open Source Dependencies



- One of the problems IBM encountered with OSS was with dependencies & updates
- For example, Node.js might have a dependency on OpenSSL, so this would need to be included on install
- So IBM moved over to the Linux world way
- They use a utility called the Red Hat Package Manager to install software packages - RPM
- This is the route IBM now takes to supply IBM i open source software



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RPM Repositories



- IBM has created a RPM repository for open source packages that have been
- RPM packages are stored in a repositories aka repo
- They are not AIX/Unix RPMs
 - They are IBM i RPMs shipping IBM i software
 - Compiled for & are known to run on IBM i
 - Built on IBM i for IBM i



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Yum - What is it?

- Yum is an automatic updater & package installer/remover
- It automatically handles dependencies
- Yum has a plugin interface for adding simple features

Yum works with software repositories – it uses RPM!

A licensed program & PTF process in one!



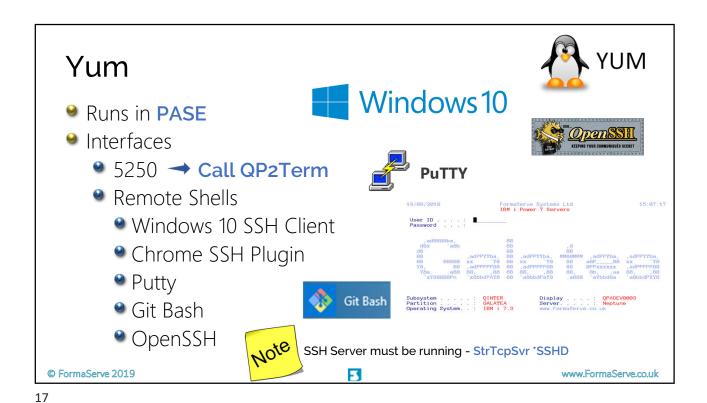




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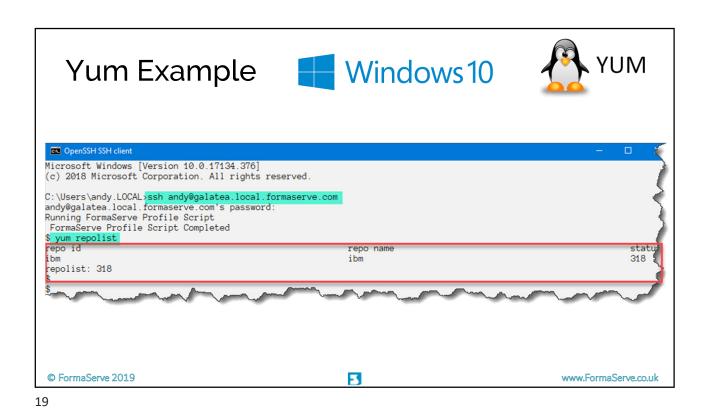


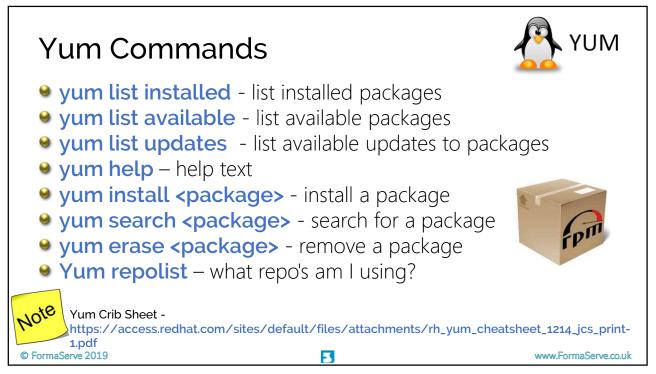


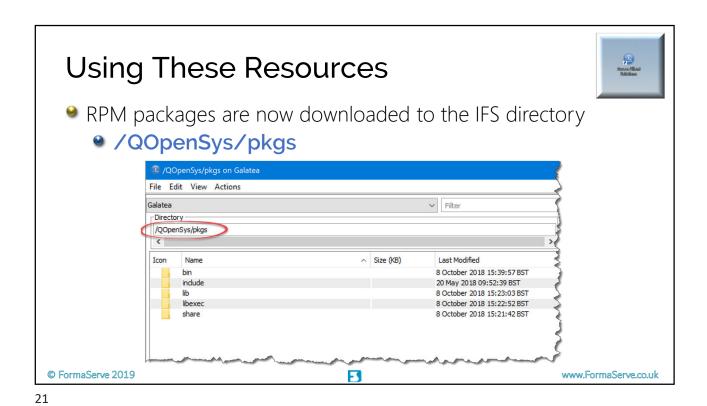


YUM Yum Example Windows 10 C:\Users\andy.LOCAL>ssh andy@galatea.local for andy@galatea.local.formaserve.com's password: Running FormaServe Profile Script FormaServe Profile Script Completed \$ yum list installed Installed Packages bash.ppc64 coreutils-pase-dummy.ppc db.ppc64 installe 7.1-0 4.8.30-0 5.32-4 installe installe file-magic.ppc64 gcc-aix.fat gcc-cpp-aix.fat gmp-aix.fat @ibm @ibm @ibm @ibm libatomic1.ppc64 libbz2-1.ppc64 libcurl4.ppc64 libcxpat1.ppc64 libffi6.ppc64 @ibm 1.0.6-13 7.58.0-2 @ibm @ibm installe installe @ibm 2.2.0-0 3.2.1-1 6.3.0-19 6.3.0-19 libgcc-aix.fat libgcc-aix.fat libgcc_s1.ppc64 libglib-2_0-0.ppc64 libiconv2.ppc64 libint19.ppc64 liblua5_3.ppc64 libmagic1.ppc64 libmagic1.ppc64 libmagcfat libncursac6.ppc64 @ibm 2.52.0-3 1.14-2 0.19.8-0 @ibm @ibm installe install install 5.32-4 @ibm 1.0.3-12 © FormaServe 2019 www.FormaServe.co.uk

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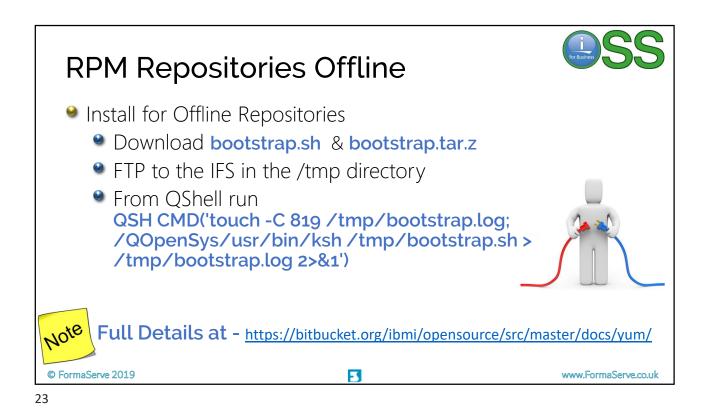
Lic Pgm/PTF Location

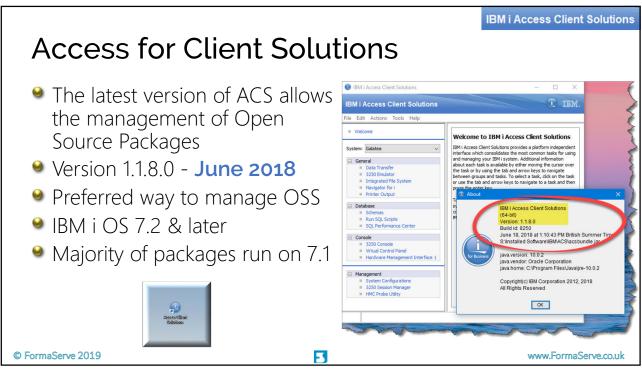
Original location

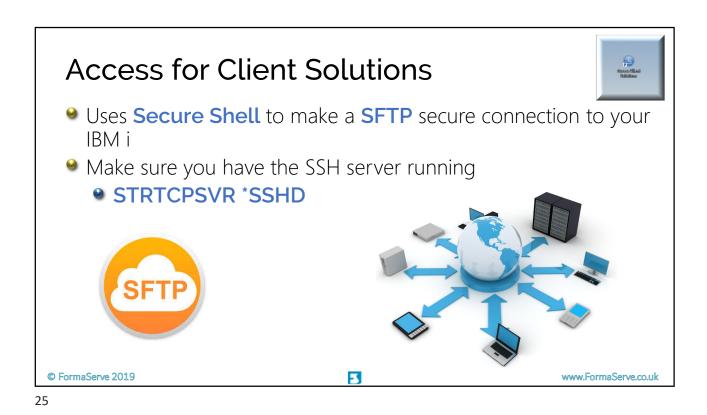
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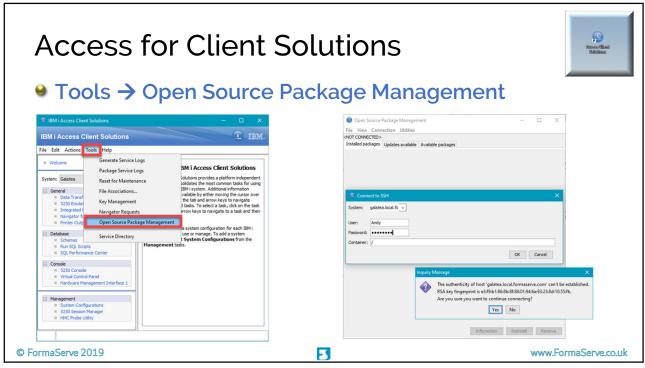
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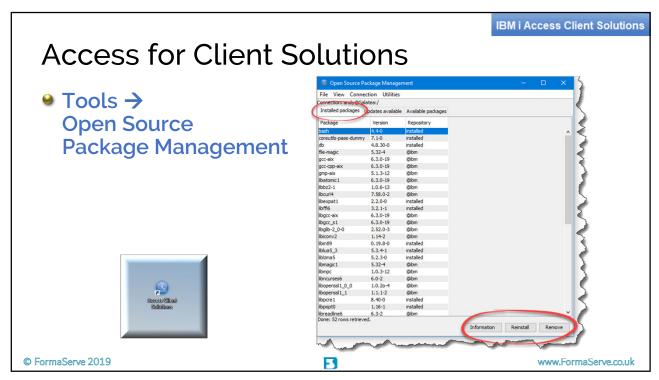
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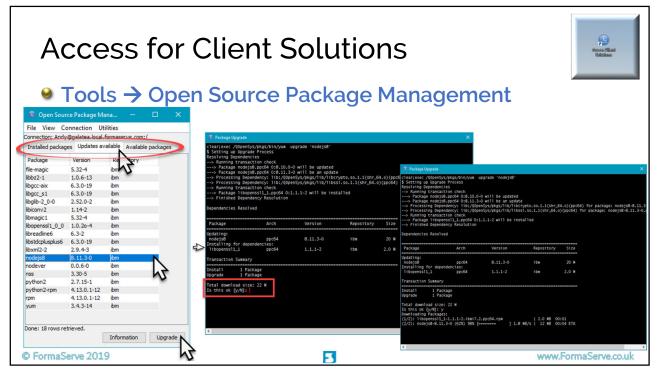


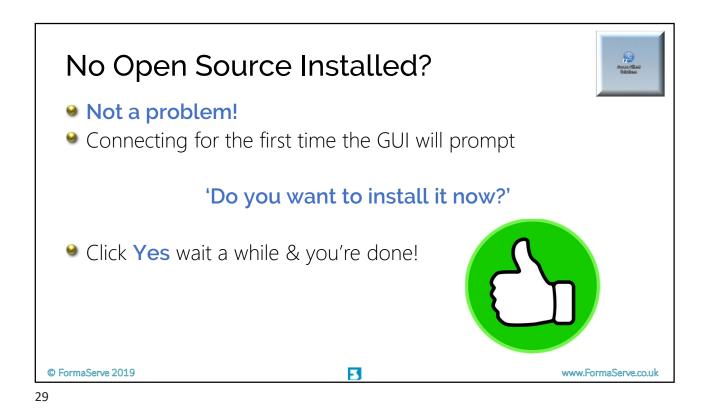


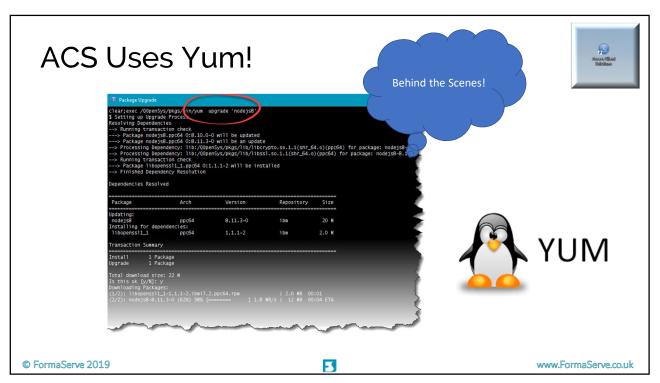












Using These ResourcesTo use any package ensure the /bi

- To use any package ensure the /bin directory is in your path
 - /QOpenSys/pkgs/bin



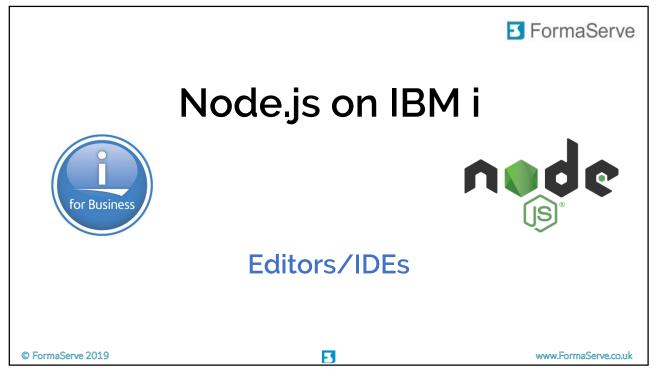
- Change your profile script to set the path (.profile)
 - PATH=/QOpenSys/pkgs/bin:\$PATH

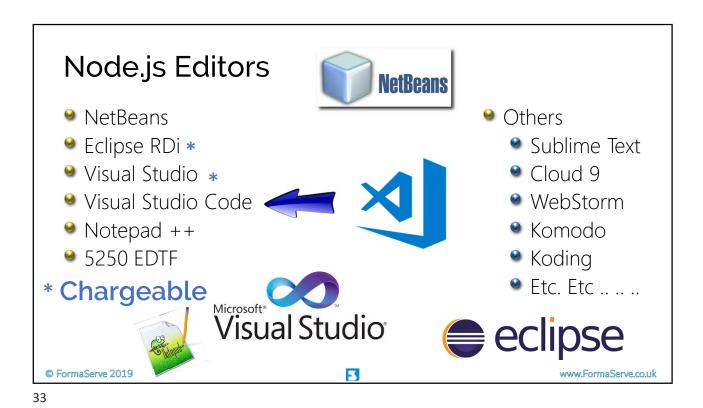


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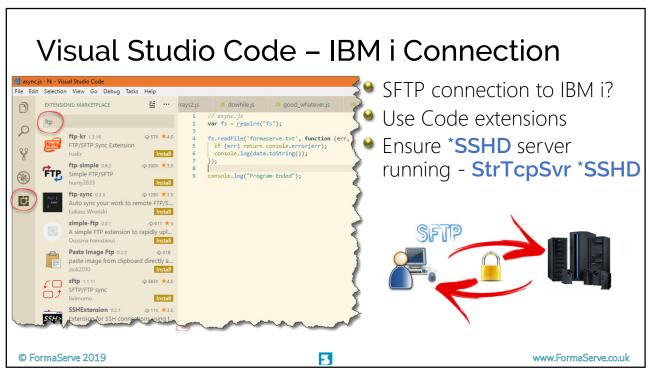
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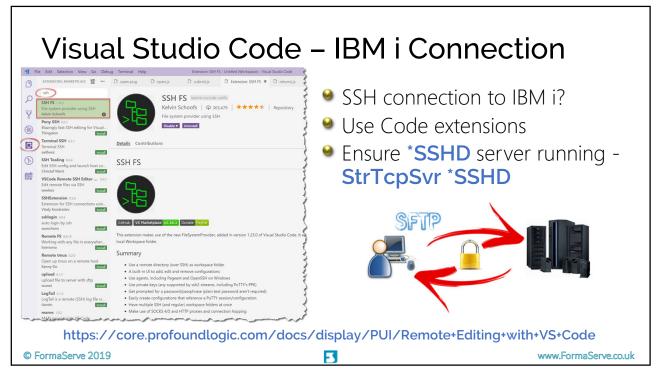
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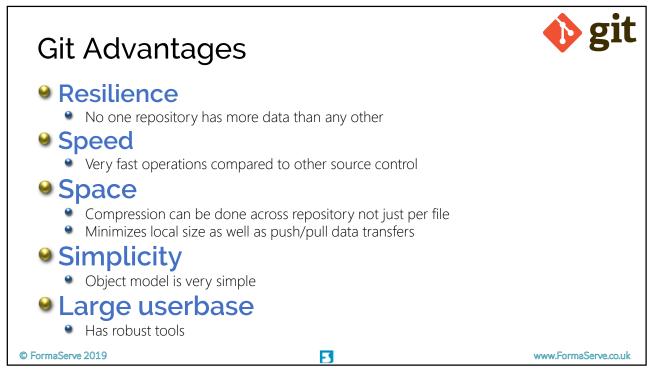












Git is Different!



- Technically
 - Not a server
 - Runs thro' SSH
 - Distributed developers work on their own copy
 - Stores info in .git directory
 - Very fast!

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Some GIT Disadvantages

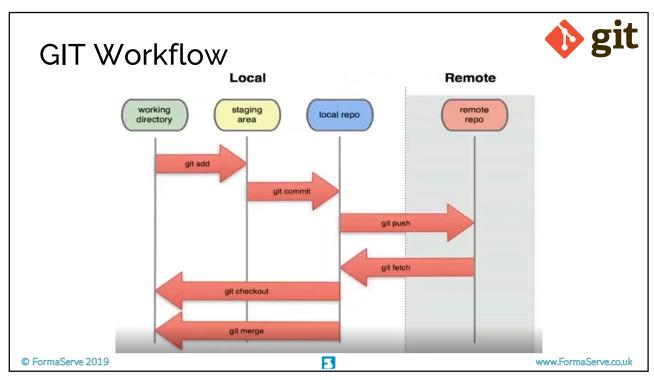


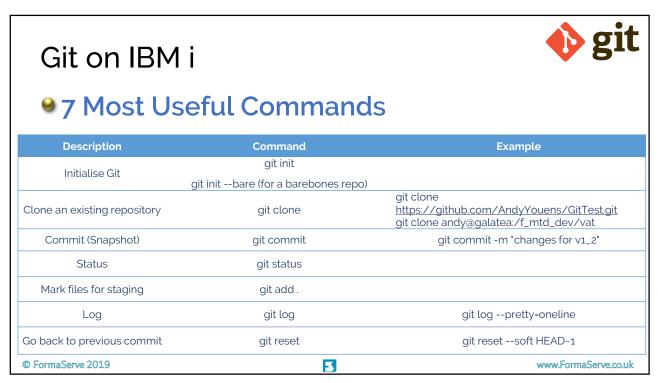
- Definite learning curve
 - Especially for those used to centralised systems
 - Can sometimes seem overwhelming to learn
- Documentation mostly through manual pages, but improving all the time
- Terminology unfamiliar with existing SCMs
- Windows support can be an issue IBM i even more!

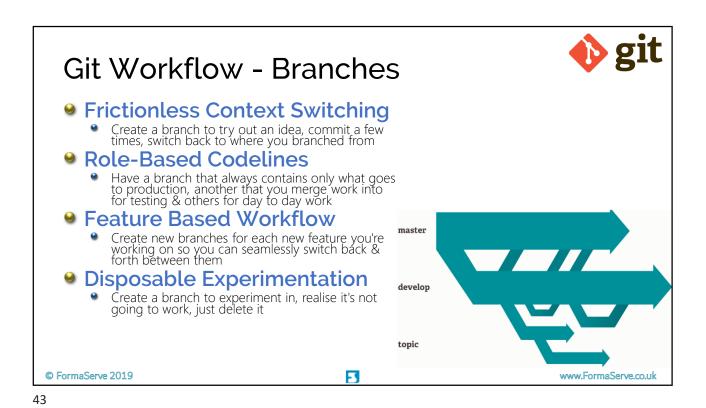
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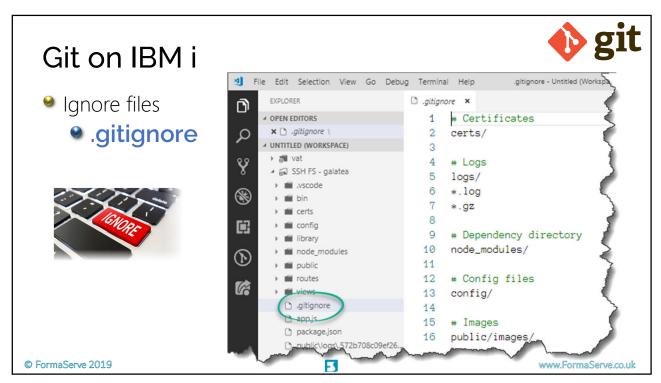


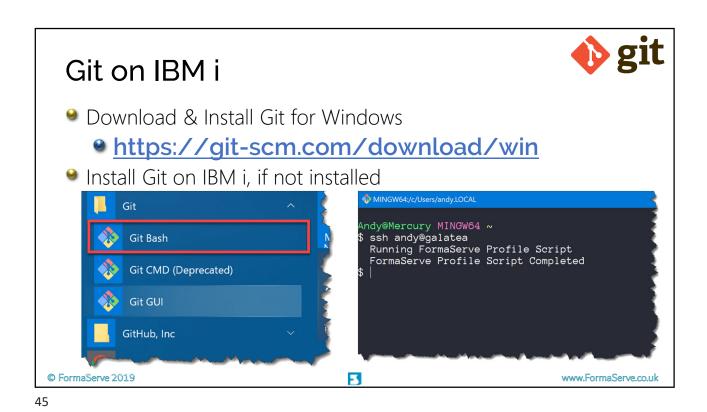
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Package.json

- A manifest for your project
- A central repository of configuration for tools
- Where NPM stores the names & versions of the package it installs

package it insta

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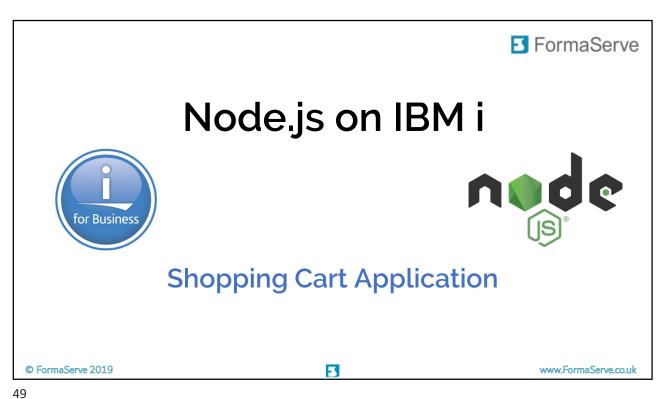
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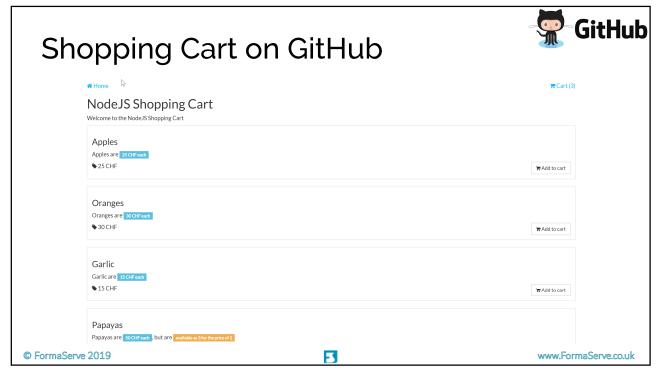
Package.JSON - Versioning



Versions have 3 digits – 1st = Major Release, 2nd = Minor Release & 3rd = Patch Release

Nelease & 3 – Lateri Nelease	
Symbols	Description
~	if you write ~0.13.0, you want to only update patch releases: 0.13.1 is ok, but 0.14.0 is not!
٨	if you write $^{\circ}$ 0.13.0, you want to update patch & minor releases: 0.13.1, 0.14.0 & so on
*	if you write *, that means you accept all updates, including major version upgrades
>	You accept any version higher than the one you specify
>=	You accept any version equal to or higher than the one you specify
<=	You accept any version equal or lower to the one you specify
<	You accept any version lower to the one you specify
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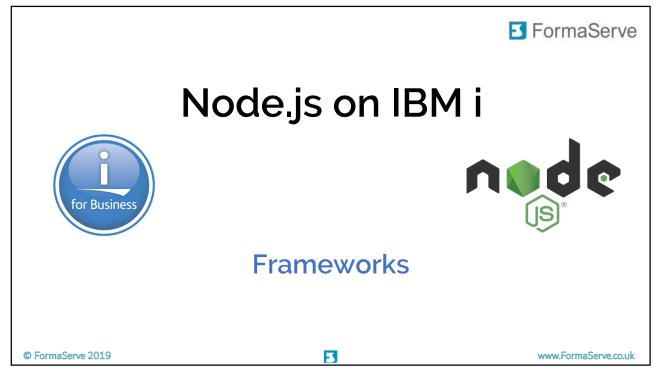
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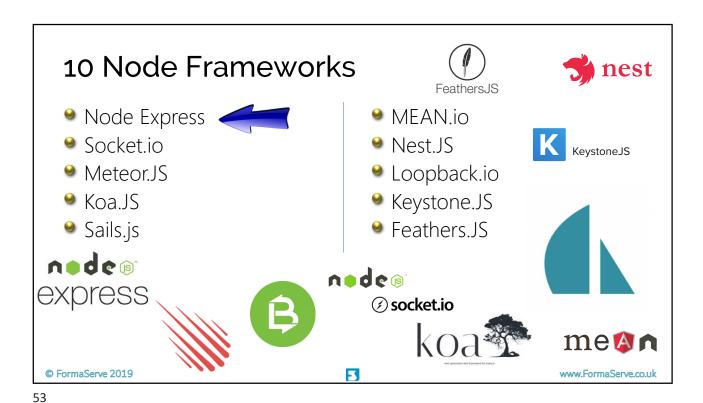
Shopping Cart on GitHub Use Git to clone on IBM i git clone https://github.com/gtsopour/nodejs-shopping-cart.git your_project Edit source to use your port number Run Modify Add more products to the list Increase prices by 15% NodeJS Shopping Cart Microme to the NodeJS Shopping Cart

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Node Express Website

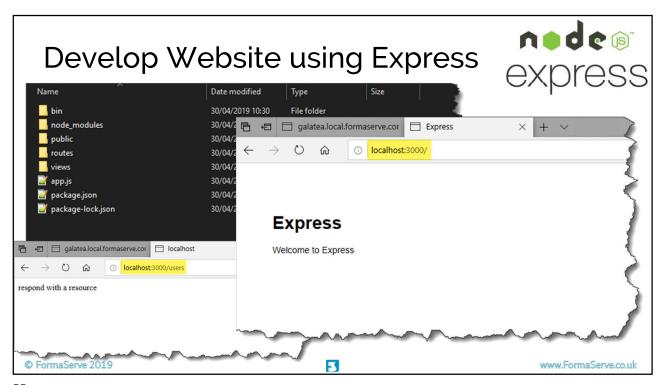


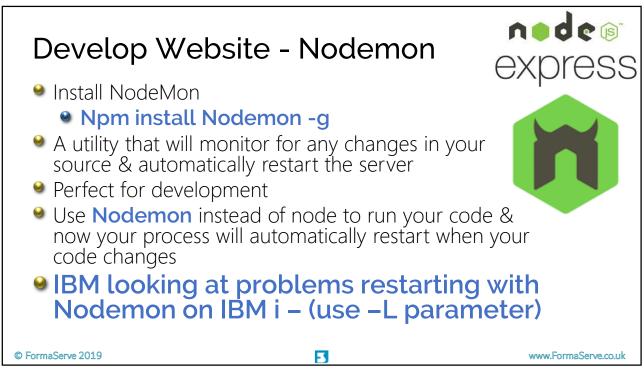
- Install Express
 - Npm init ~ Input your project info
 - Npm install --save express
 - Express name_of_your_app --view pug
 - Change directory
 - cd name_of_your_app
 - Install dependencies
 - npm install
 - Run the app
 - SET DEBÜG=vat:* & npm start
- Creates the application file directory structure
- Uses port 3000 by default

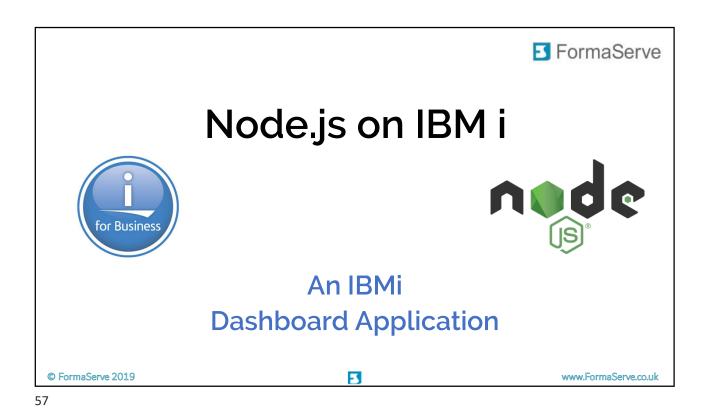
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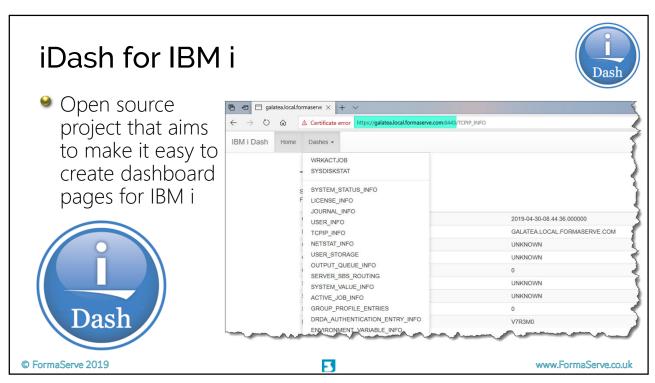


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iDash



- Install on IBM i
 - git clone https://bitbucket.org/litmis/ibmidash.git idash
 - npm install
 - Create SSL certificates
 - openssl genrsa -out ibmidash-key.pem 2048
 - openssl req -new -sha256 -key ibmidash-key.pem -out ibmidash-csr.pem
 - openssl x509 -req -in ibmidash-csr.pem -signkey ibmidash-key.pem -out ibmidash-cert.pem
- Use Node Version 8
 - /QOpenSys/pkgs/bin/nodever 8
- Edit source to use your port number

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iDash - Your Enhancements



- Can you think of any enhancements?
- How about adding?
 - Display Server Firmware
 - Display the History Log for the last 24 hours
 - Show all scheduled jobs
 - Show top 10 table index advisors

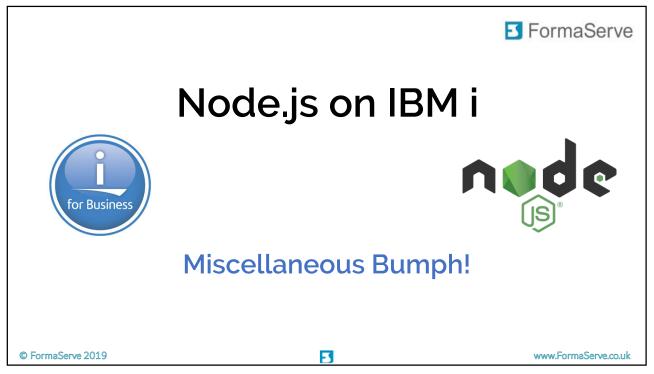


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Node - REPL

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- Read, Evaluate, Print & Loop
- An interactive environment
- A command line for Node Node's QCMD!
- Run individual commands Same as CL!
- Used to test your code
- To start:
 - Type NODE into QShell
 - To return to QShell .exit



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Node Debug

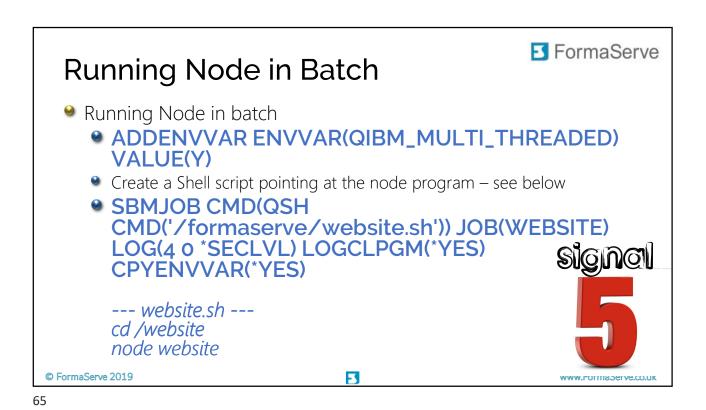
- FormaServe
- Instructions for using Node.js Debug with Chrome Developer Tools on the IBM i can be found at:
 - https://groups.google.com/forum/#!topic/c omp.sys.ibm.as400.misc/UBgEyol5OCI

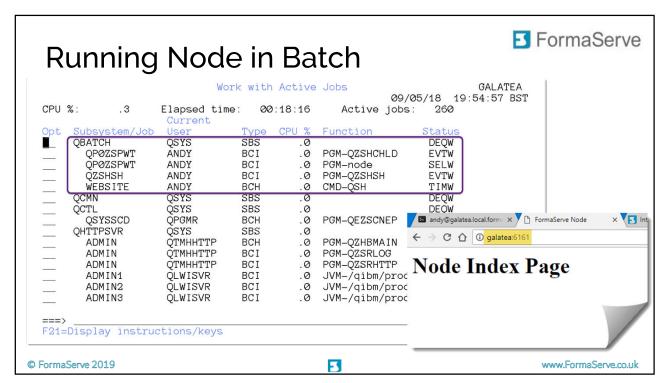


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