



# NIAGARA SUMMIT 2016

HYATT REGENCY, NEW ORLEANS  
MAY 15-17, 2016

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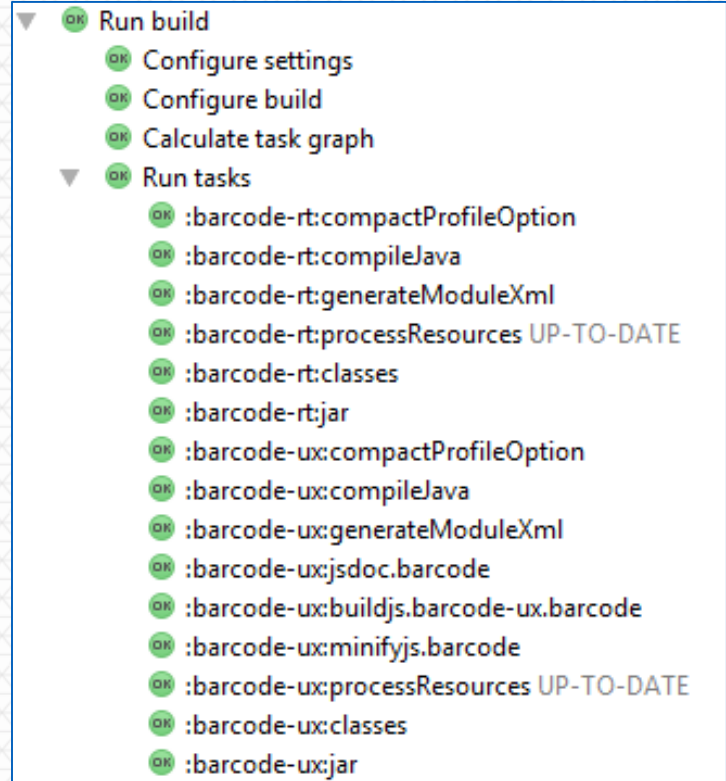
# Building Modules in Niagara 4

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# Agenda

- Building Modules with Gradle
- Annotations for declaring Types and Slots
- Incorporating External Resources
- Working with Gradle
- Security Manager and Permissions Control

<https://github.com/tridium>



```
▼ OK Run build
  OK Configure settings
  OK Configure build
  OK Calculate task graph
  ▼ OK Run tasks
    OK :barcode-rt:compactProfileOption
    OK :barcode-rt:compileJava
    OK :barcode-rt:generateModuleXml
    OK :barcode-rt:processResources UP-TO-DATE
    OK :barcode-rt:classes
    OK :barcode-rt:jar
    OK :barcode-ux:compactProfileOption
    OK :barcode-ux:compileJava
    OK :barcode-ux:generateModuleXml
    OK :barcode-ux:jsdoc.barcode
    OK :barcode-ux:buildjs.barcode-ux.barcode
    OK :barcode-ux:minifyjs.barcode
    OK :barcode-ux:processResources UP-TO-DATE
    OK :barcode-ux:classes
    OK :barcode-ux:jar
```

# Gradle

Replacement for AX **build** command

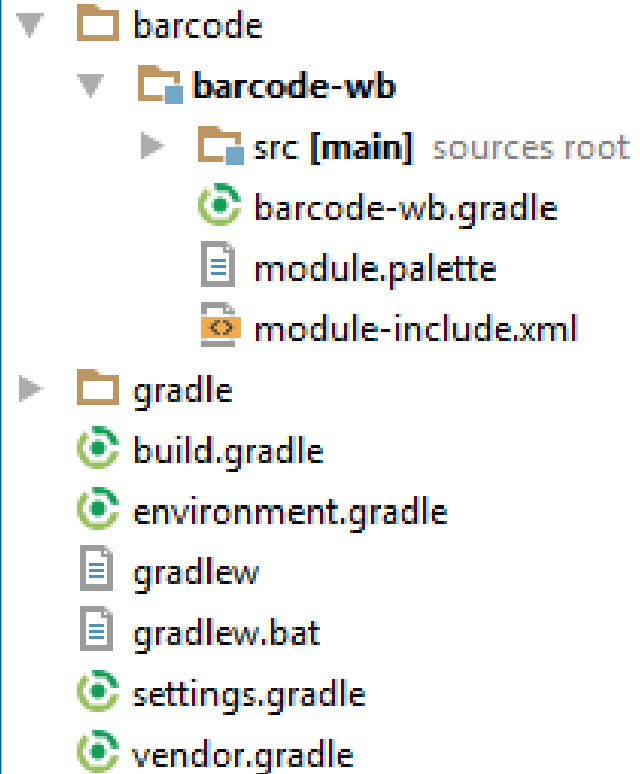


# New Module Wizard

## Gradle Development Environment

Module Template Code

Top-Level Gradle Build Scripts





# Module Build Script

```
//barcode-wb.gradle

description      = "Barcode Generator"
ext {
}
niagaraModule {
    moduleName      = "barcode"
    preferredSymbol = "bcg"
    runtimeProfile  = "wb"
}
dependencies {
    compile "Tridium:nre:4.3"
    compile "Tridium:baja:4.3"
}
```

# Annotations

```
@NiagaraType
@NiagaraProperty
(
    name="timeDelay",
    type="baja:RelTime",
    defaultValue="BRelTime.makeHours(1)",
    facets={@Facet(name=BFacets.MIN, value="BRelTime.makeSeconds(0)")})
)
@NiagaraAction( name="doIt", returnType="baja:Ord" )
@NiagaraTopic( name="done", flags=Flags.HIDDEN )
public class BMyClass extends BComponent
```

# Compiling Modules

Gradle commands

> gradlew slot

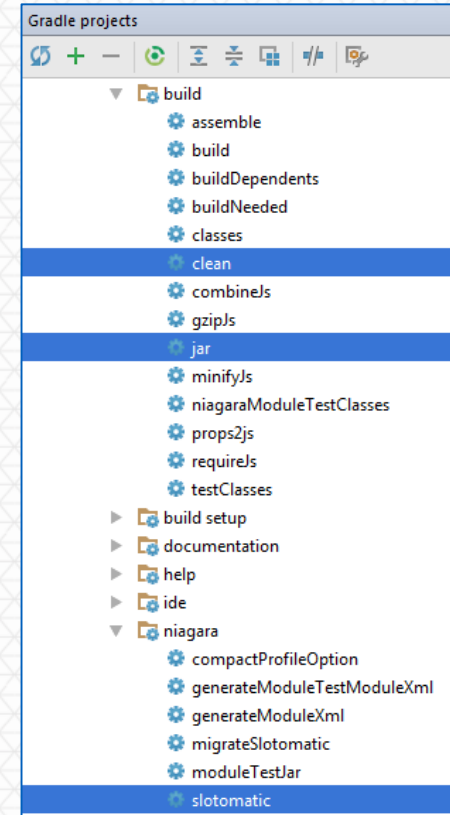
> gradlew clean

> gradlew jar

Scoped to compile single jar

> gradlew :barcode-wb:jar

## Demo 1





# External Resources

```
dependencies {  
    compile "Tridium:baja:4.3"  
    ...  
    uberjar "net.sf.barcode4j:barcode4j:2.1"  
}
```

```
jar {  
    from('src') {  
        include 'rc/images/*.gif'  
        include 'rc/images/*.png'  
    }  
}
```














<http://search.maven.org>

# Multi-Jar Builds

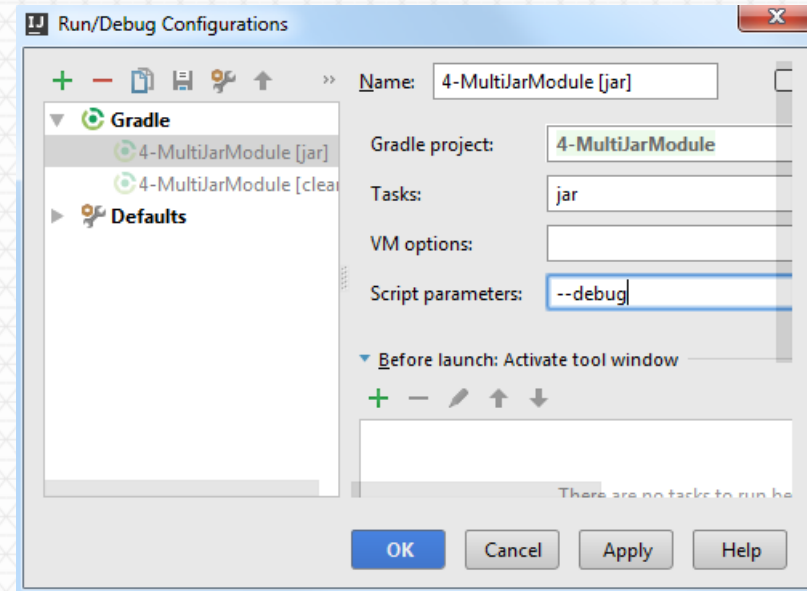
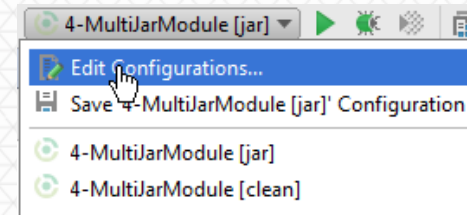
```
niagaraModule {  
    moduleName      = "barcode"  
    preferredSymbol = "bcg"  
    runtimeProfile  = "rt"  
  
    modulePart {  
        name = 'barcode-wb'  
        runtimeProfile = 'wb'  
    }  
    modulePart {  
        name = 'barcode-ux'  
        runtimeProfile = 'ux'  
    }  
}
```

## Demo 2

- ▼  barcode
  - ▶  barcode-rt
  - ▶  barcode-ux
  - ▶  barcode-wb
- ▶  gradle
  -  build.gradle
  -  environment.gradle
  -  gradlew
  -  gradlew.bat
  -  settings.gradle
  -  vendor.gradle

# Working with Gradle

- Debugging Gradle
  - --info and --debug options
  - --stacktrace option
  - Gradle daemon logs
- Customized Gradle Build
  - Tasks, plugins, properties
  - <https://plugins.gradle.org/>



# Unit Testing

## TestNG

- srcTest folder
- moduleTest-include.xml file
- niagaraTest task

**Test results**  
1 suite, 1 failed test

All suites

**barcodeTest\_TestBarcodeNumeric**

**Info**

- [unset file name]
- 1 test
- 0 groups
- Times
- Reporter output
- Ignored methods
- Chronological view

**Results**

- 5 methods, 1 failed, 4 passed
- Failed methods (hide)
  - ✖ nullImage
- Passed methods (show)

# 3rd Party Permission Groups

## module-permissions.xml

Think of Smart Phone App Permissions

- Phone – User grants explicit permissions
- Niagara – Module is granted permissions, user is notified.

```
<permissions>
  <niagara-permission-groups type="station">
    <req-permission>
      <name>LOGGING</name>
      <purposeKey>I need to log</purposeKey>
    </req-permission>
  </niagara-permission-groups>
</permissions>
```

## Demo 3

Group	Risk Level
AUTHENTICATION	Mild
DIAGNOSTICS	Severe
GET_ENVIRONMENT_VARIABLES	Mild
LOAD_LIBRARIES	Severe
LOGGING	Moderate
MANAGE_EXECUTION	Moderate
MODIFY_IO_STREAMS	Moderate
NETWORK_COMMUNICATION	Moderate
SET_SYSTEM_TIME	Mild
SHUTDOWN_HOOKS	Mild
SYSTEM_PROPERTIES	Mild
UI	Mild