



SpringSource
dm Server v2.0

Agenda

- dm Server v1.0.x recap
- dm Server v2.0
 - provisioning: plans, repositories
 - web application support
 - regions
 - medic
 - other enhancements
- Supporting tools: bundlor, STS

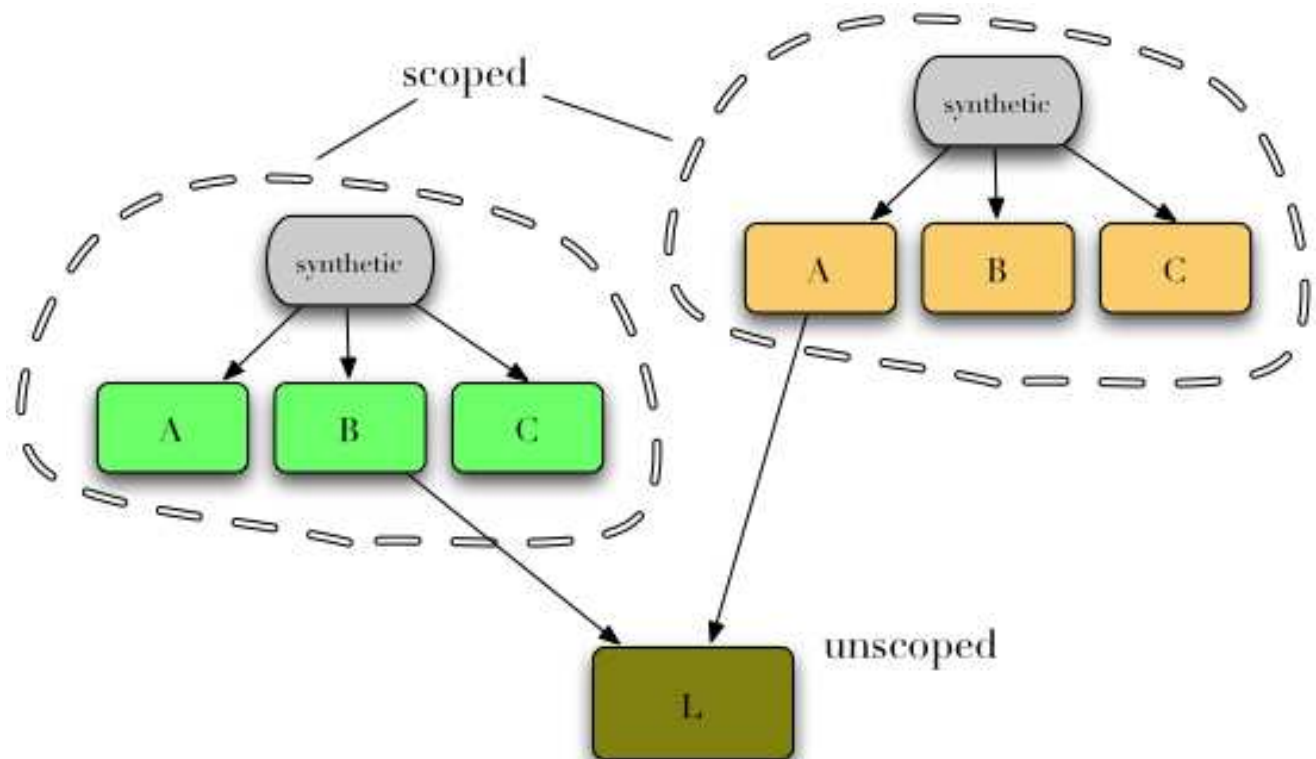
dm Server v1.0

- Open source, GPL licensed. Commercial license available
- OSGi-based kernel + subsystems + application programming model¹
 - built on Equinox
- Provisioning from local repository
- Enhanced serviceability & problem diagnostics
- Existing enterprise library compatibility
- Supports deployment of:
 - any OSGi bundle
 - war files (embedded tomcat)
 - web-module bundles
 - par files

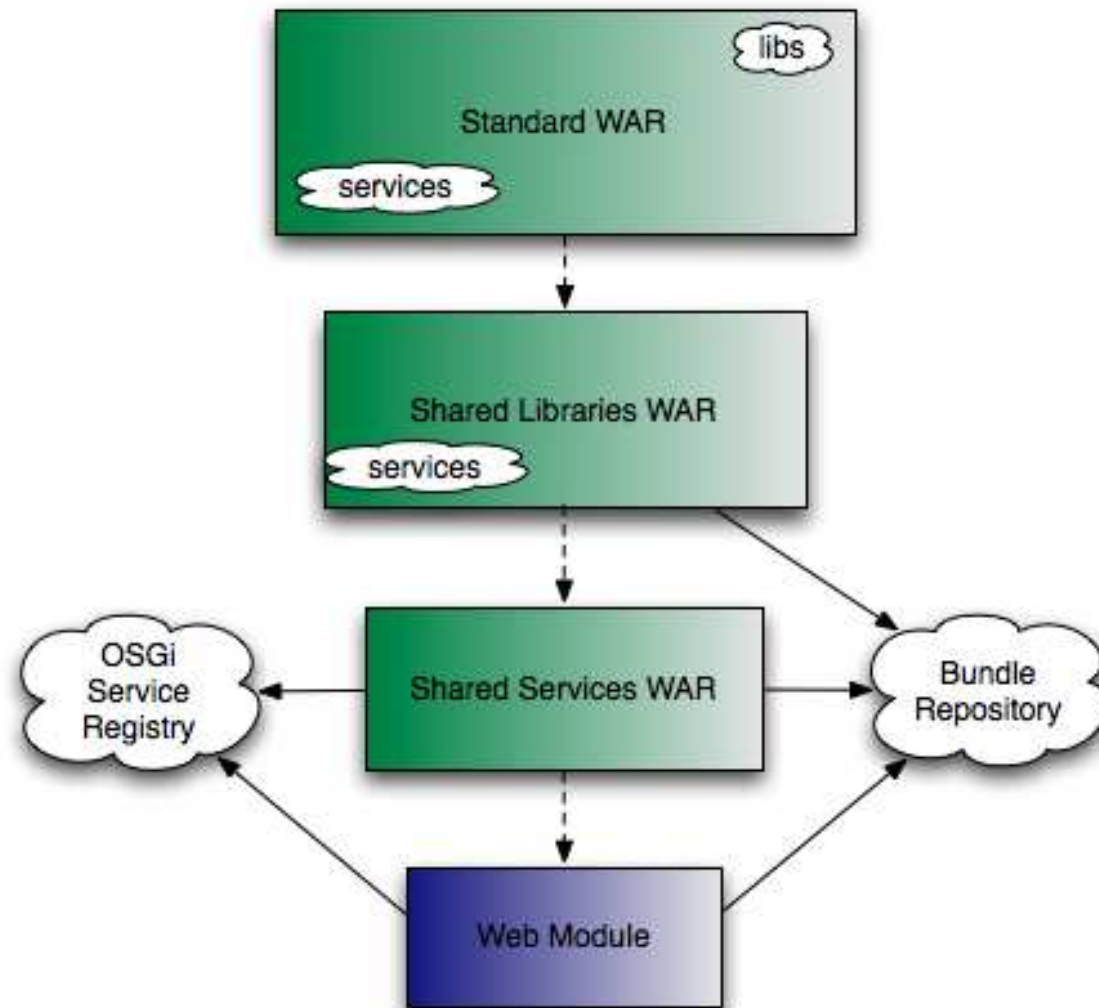
(1) Spring Dynamic Modules programming model is Apache Licensed

dm Server 1.0 – par files

- set of bundles
 - unit of packaging
 - unit of deployment
 - runtime scope
 - type visibility
 - service visibility
 - synthetic context



dm Server 1.0 – web support



dm Server 2.0



springOne

Plan files

- generalize par file concept
 - (optionally) atomic lifecycle (deploy, start, stop, ...)
 - (optionally) scoped
 - more than just bundles

```
<plan name="greenpages.bundles" version="1.0.0" abstract="true">
  <artifact type="bundle" name="greenpages.db" version="1.0.1"/>
  <artifact type="bundle" name="greenpages.app" version="1.0.0"/>
  <artifact type="bundle" name="greenpages.jpas" version="1.0.3"/>
  <artifact type="bundle" name="greenpages.web" version="1.0.0"/>
</plan>

<plan name="greenpages.dev" version="1.0.0" scoped="true" atomic="true">
  <artifact type="properties" name="greenpages.jdbc.dev" version="1.0.0"/>
  <artifact type="plan" name="greenpages.bundles" version="1.0.0"/>
</plan>

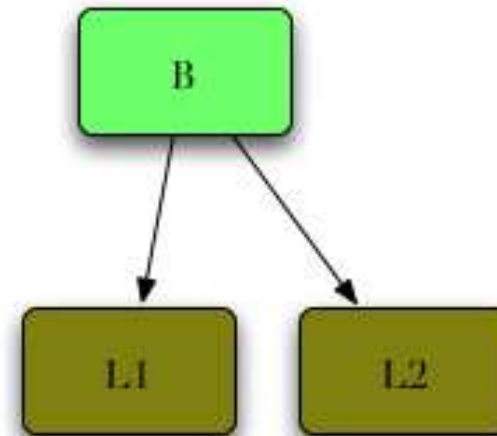
<plan name="greenpages.prod" version="1.0.0" scoped="true" atomic="true">
  <artifact type="properties" name="greenpages.jdbc.prod" version="1.0.0"/>
  <artifact type="plan" name="greenpages.bundles" version="1.0.0"/>
</plan>
```

Plans

- Plans are just artefacts in a repository
- as is everything they refer to
- properties files provisioned from a repository are deployed as configuration admin dictionaries
- configure dm Server with an *initial plan*

Provisioning: bundle dependencies

- Bundle dependencies:

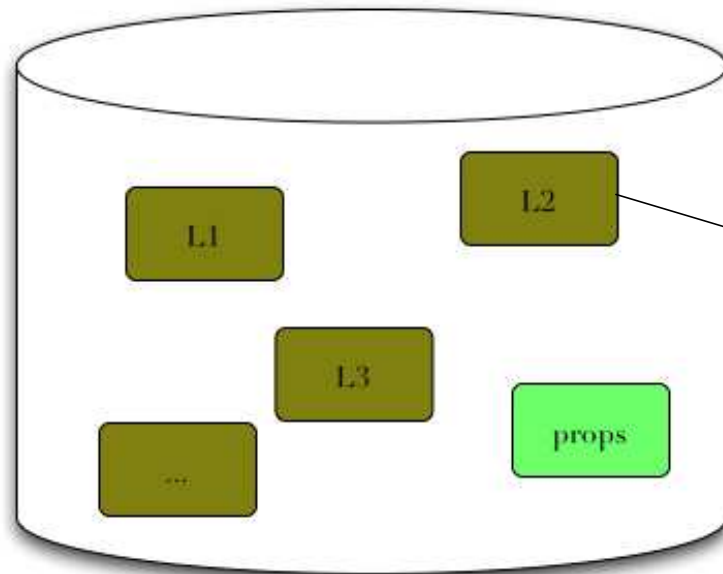


- Attempted installation
-> fail to resolve!

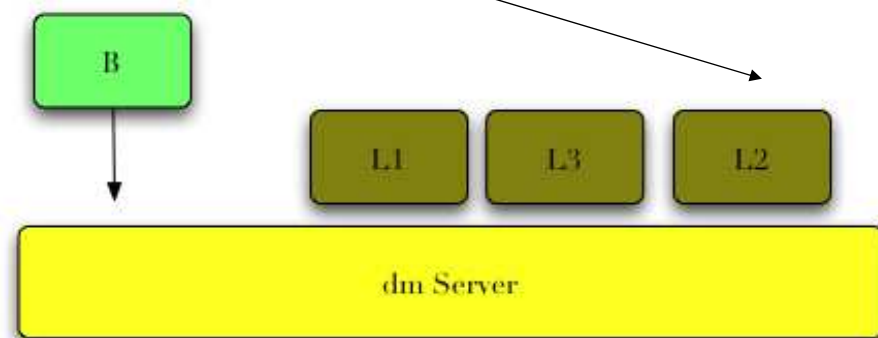


Provisioning

- dm Server detects missing dependencies and automatically provisions bundles from repository to satisfy



repository of bundles that *might* be installed
- disk footprint only



minimal runtime footprint
maintained

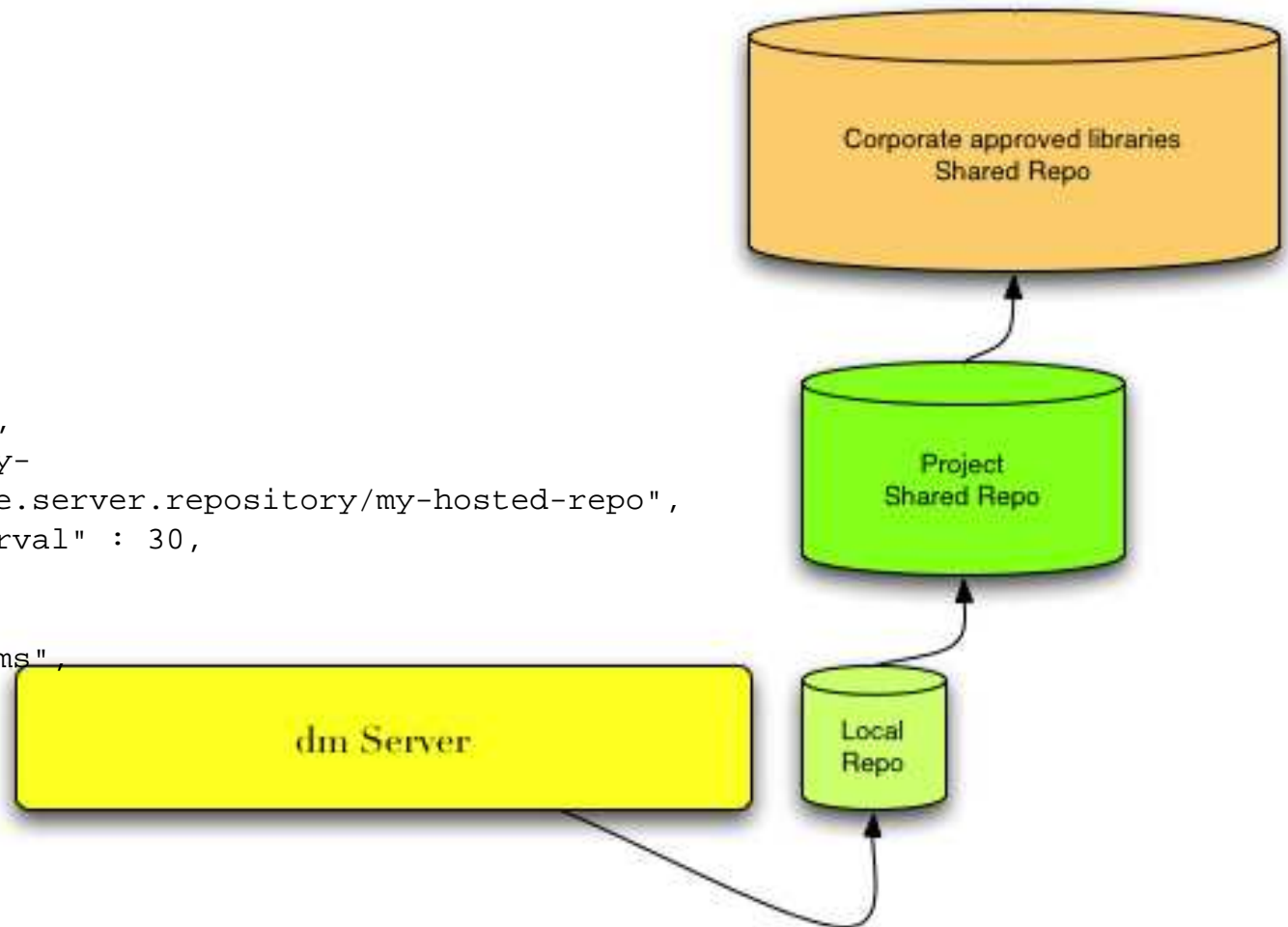
dm Server 2.0

- Provisioning from chained repositories
 - may be local
 - or remote

```

{
  ...
  "remote-repo" : {
    "type" : "remote",
    "uri" : "http://my-
host:8080/com.springsource.server.repository/my-hosted-repo",
    "indexRefreshInterval" : 30,
  },
  "repositoryChain" : [
    "bundles-subsystems",
    "bundles-ext",
    "bundles-usr",
    "libraries-ext",
    "libraries-usr",
    "remote-repo"
  ]
}

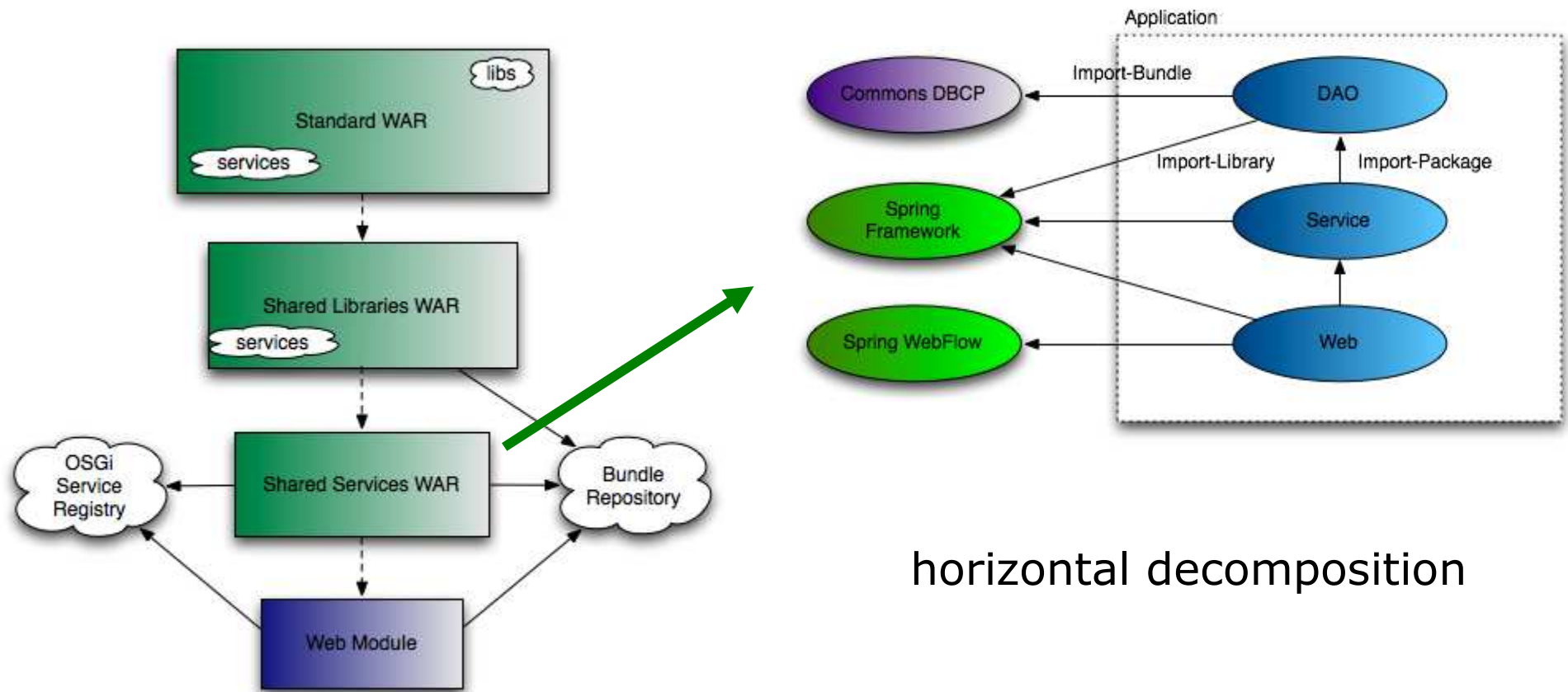
```



Web application support

- web modules deprecated
- replaced by RFC-66 Reference Implementation
- + standard tomcat configuration files
- standard dm Server deployment + URL protocol support
 - `install webbundle:file:formtags.war[?Web-ContextPath=...]`
 - adds necessary manifest entries
 - symbolic name, version, imports etc.
 - sets up `Bundle-Classpath` to include `WEB-INF/classes` and all jars in `WEB-INF/lib`
- all dm Server war options supported (shared services, shared library)

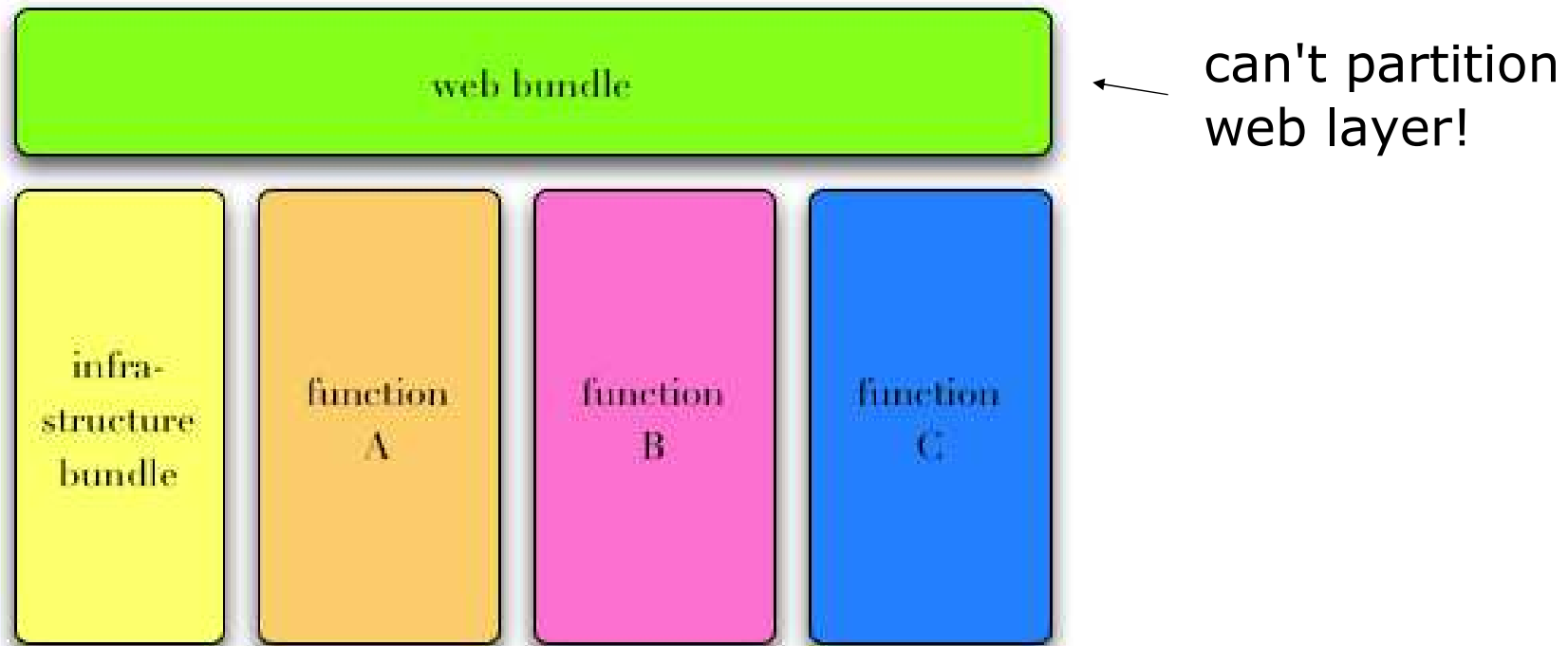
On the criteria for decomposing systems into modules...



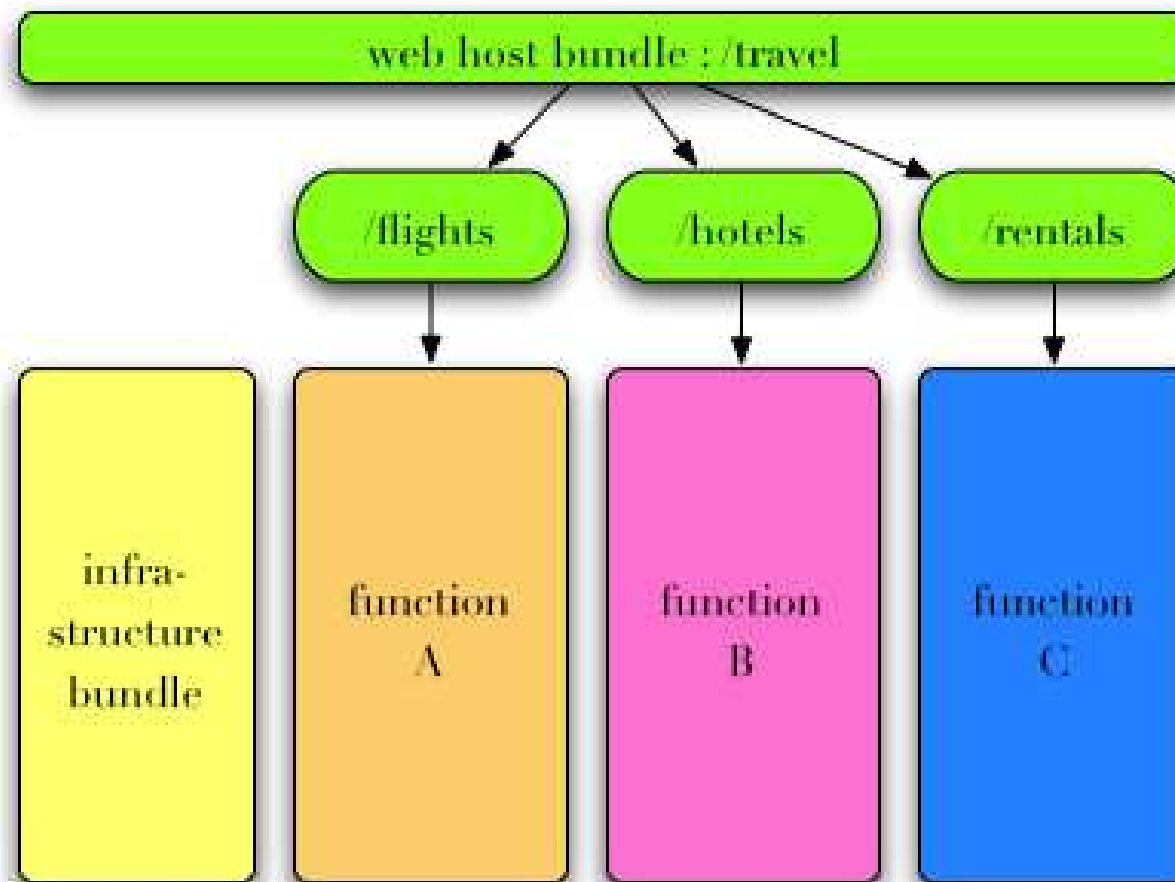
horizontal decomposition

On the criteria for decomposing systems into modules...

- We want **vertical decomposition** by business function as primary decomposition mechanism

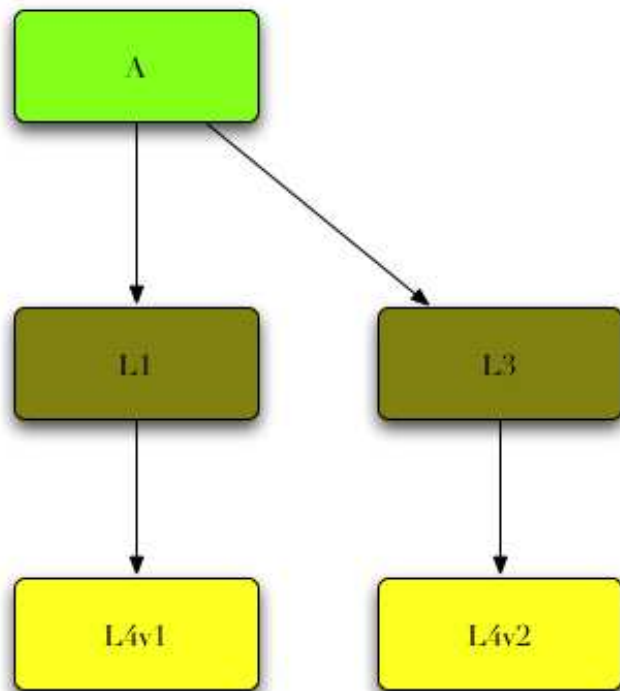


Web slices

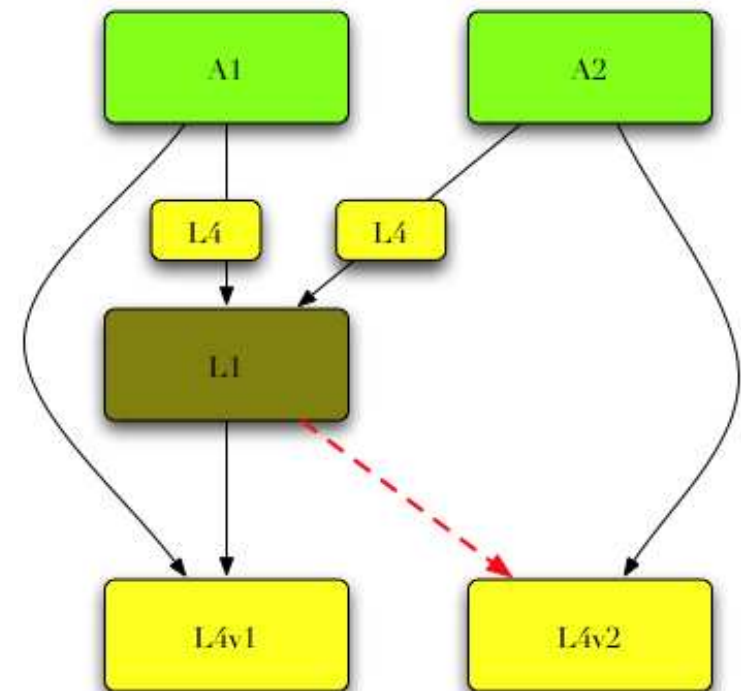


Version isolation

This works in OSGi

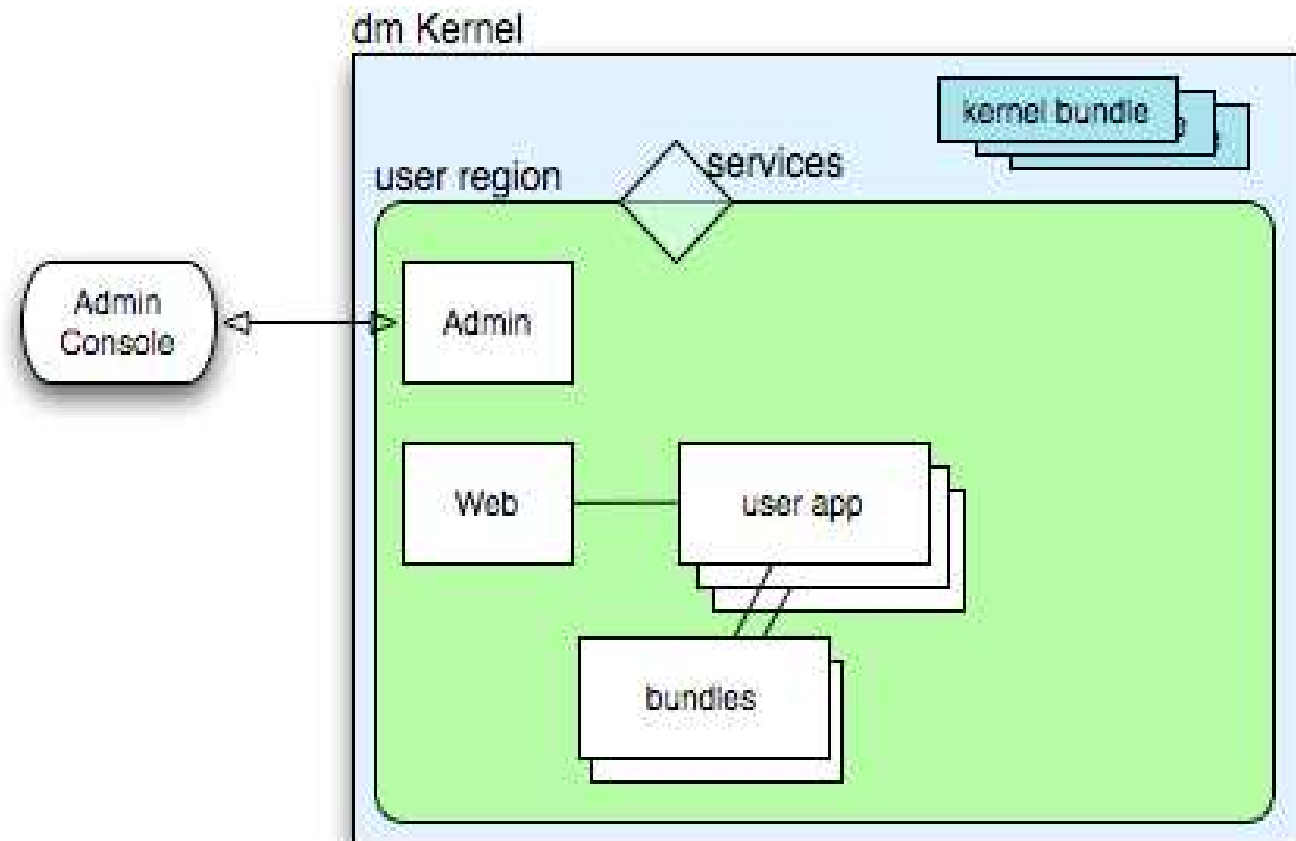


This doesn't



Regions

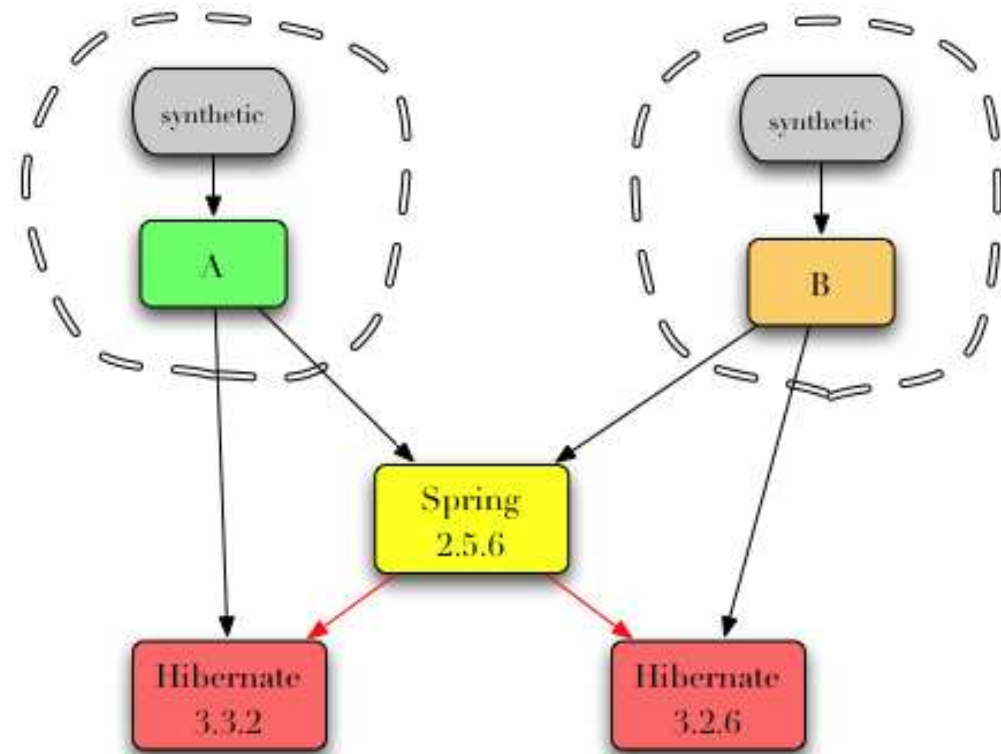
- Regions isolate user code from dm server kernel code
- Kernel and users can use different versions of Spring



Version isolation

- Application A
 - Spring 2.5.6
 - Hibernate 3.3.2

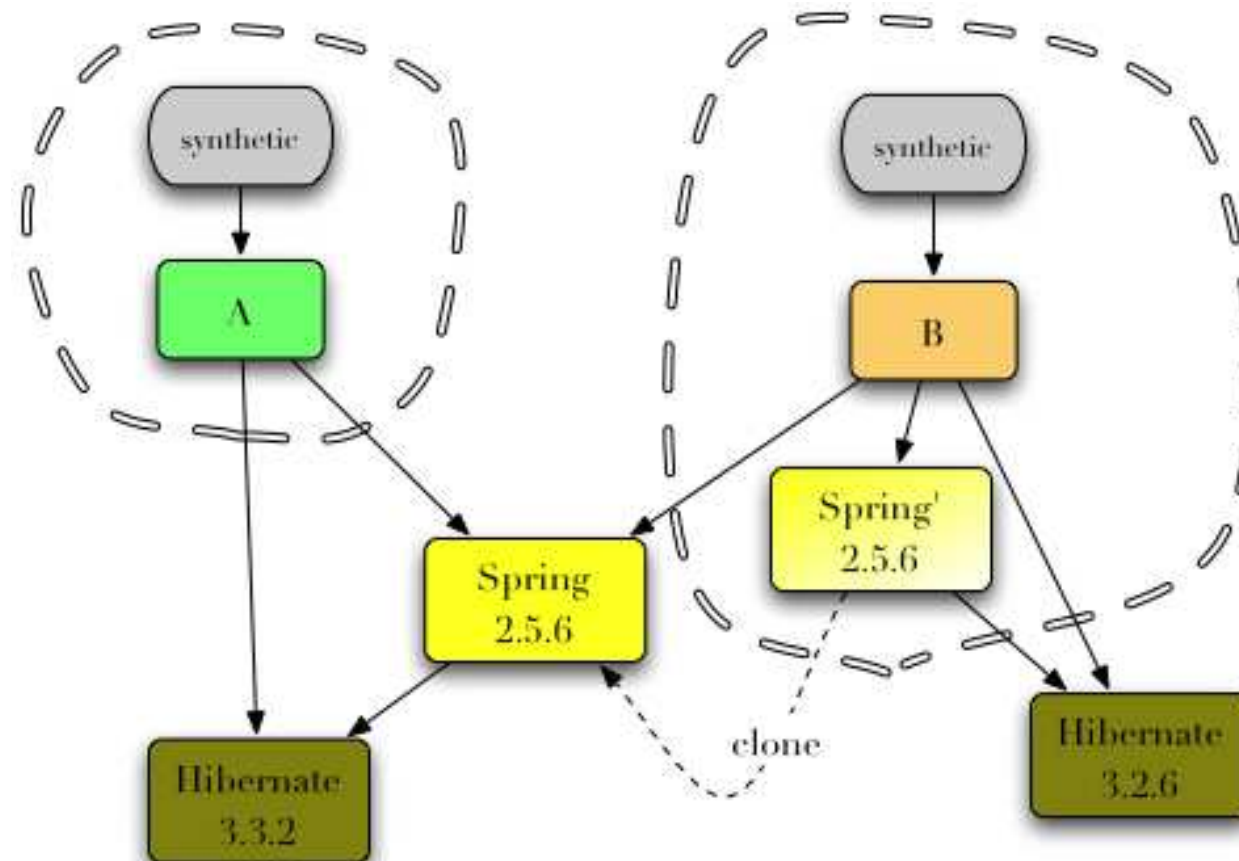
- Application B
 - Spring 2.5.6
 - Hibernate 3.2.6



- *Spring bundle(s) can't simultaneously bind to both Hibernate 3.3.2 and Hibernate 3.2.6*

Cloning

- Cloning enables
 - maximum flexibility, minimal footprint
 - also solves “shared static” issues



medic

- dm Server serviceability suite
 - tracing
 - logging
 - dumping
- available for application use
 - logback configuration
 - control format, destination for any bundle or group of bundles
 - independent configuration

Admin console improvements



SpringSource dm Server™

Artefact Management **Dump Inspector**

Admin Console

Result of the last operation: 'Applications Listed'.

Deployed Artefacts

Name	Version	Origin	Date	Undeploy
com.springsource.server.admin.plan	2	Hot Deployed	03-Jul-2009 14:46:15 BST	(N/A)
Associated Modules:				
com.springsource.server.admin.web		(type: Web Bundle)	/admin	
com.springsource.server.admin.content		(type: Bundle)	No personality identifier	
com.springsource.server.admin.plan.synthetic.content		(type: Bundle)	No personality identifier	

Admin console improvements

The screenshot displays the SpringSource dm Server Admin Console interface. At the top, there is a green header with the SpringSource logo and the text "SpringSource dm Server™". Below the header, there are two tabs: "Artefact Management" and "Dump Inspector". The "Dump Inspector" tab is active, showing a section titled "Dump Inspector".

Under "Dump Inspector", there are two main sections:

- Dumps available for inspection:** A list box containing one entry: "20090703144707-0 - 03-Jul-2009 at 14:47:08". Below this list is a "Select Dump" button.
- Dump entries available for inspection:** A list box containing four entries: "osgi_20090703144707-0.zip", "summary_20090703144707-0.txt", "system_20090703144707-0.json", "thread_20090703144707-0.txt", and "trickle_20090703144707-0.log". Below this list is a "Select Entry" button.

Below these sections is a section titled "Dump Entry Viewer". It displays the following information:

```
Date:          03-Jul-2009
Time:          14:47:07 BST
dm Server:     2.0.0.D-20090701121909
Cause: MANUAL
```

Blueprint Service

- Support for OSGi Blueprint Service (4.2 specification)
 - aka “RFC 124”
- Standardization of Spring Dynamic Modules + core of Spring container as an OSGi Compendium Service
- Track the Spring Dynamic Modules 2.0 release

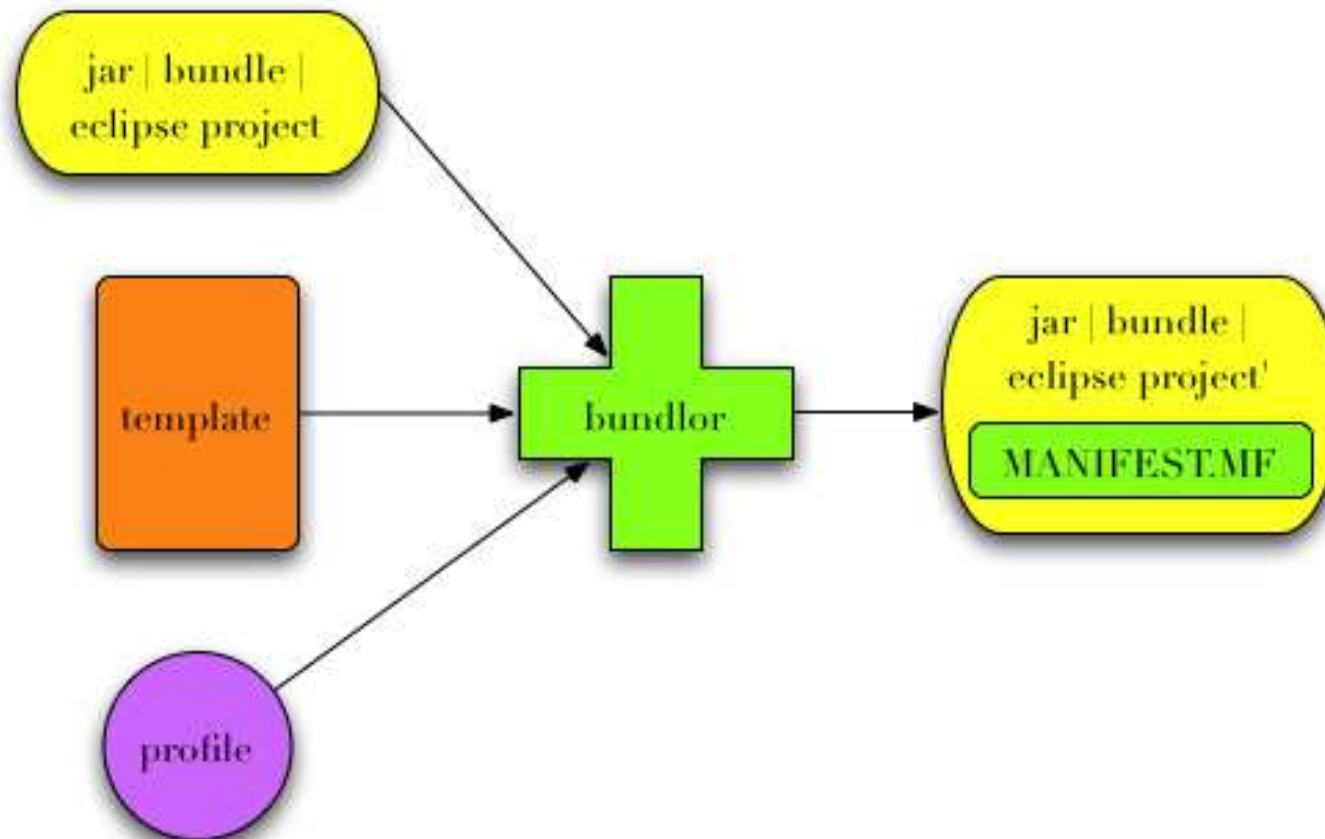
tools



springOne

Bundlor

- Consistent management of manifest across ant, maven, command-line, and your IDE



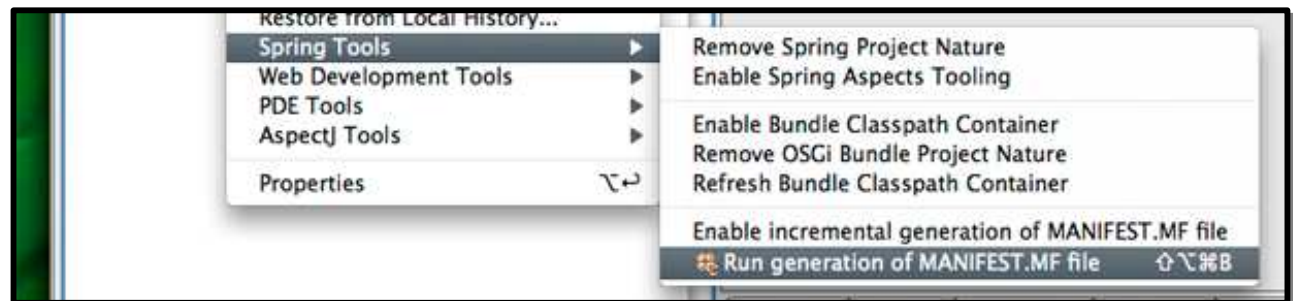
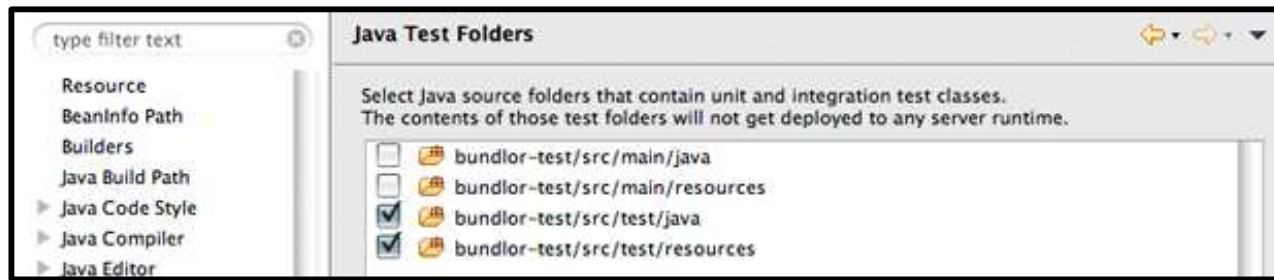
Bundlor benefits

- Automatic management of imports based on scanning project / jar
 - + Spring config, Hibernate, JPA, properties, *web.xml*, ...
- Import-Template supports specification of version information and optional imports without redundancy
 - Import-Template:

```
org.springframework.*;version="[2.5.4.A,3.0.0)"
```
- Automatic management of *versioned* exports based on bundle version
 - can provide explicit version info with Export-Template
 - can restrict with Excluded-Exports
- Property substitution
- Version-range policies

Bundlor benefits

- Automated manifest generation inside Eclipse
 - removes common developer pain point



SpringSource Tool Suite

- OSGi development support
 - Bundle Classpath Container (inc. test.mf support)
 - Automated manifest creation using Bundlor
 - dm Server support in WTP
 - drag-and-drop deployment
 - repository management
 - console access
 - bundle, package, service visualizations
 - bundle inspection
 - cluster deployment on EC2, VMware LabManager

SpringSource Tool Suite

The screenshot displays the SpringSource Tool Suite interface. At the top, a toolbar includes icons for Problem, Javadoc, Declarati, Servers, EC2 AMI, EC2 Elas, EC2 Inst, EC2 Sec, Console, and Internal. Below this is a table listing servers:

Server	State	Status
▶ Amazon EC2 Tomcat v6.0 Cluster	Stopped	
▶ SpringSource dm Server v1.0 at localhost	Stopped	
▼ SpringSource dm Server v1.0 EC2 Cluster	Started	Synchronized
▶ org.springframework.showcase.forhtags		Synchronized
▶ SpringSource dm Server v2.0 at localhost	Stopped	

Below the server list, there are two main panels. The left panel, titled "Overview", shows "General Information" for the "SpringSource dm Server v1.0 EC2 Cluster". It includes fields for "Server name", "Host name", "Runtime Environment", and "Configuration path". There is also a "Redeploy Behavior" section with a list of file patterns to be copied into the server without redeploying the bundle or application.

The right panel, titled "Bundle Dependency Graph", shows a dependency graph for the "org.springframework.osgi.extender (1.1.3.RELEASE)" bundle. The graph displays various bundles and their dependencies:

- com.springsource.server.kernel.core (1.0.2.RELEASE)
- com.springsource.server.management.proxy (1.0.2.RELEASE)
- com.springsource.server.ffdc.core (1.0.2.RELEASE)
- com.springsource.server.config.core (1.0.2.RELEASE)
- com.springsource.server.concurrent.core (1.0.2.RELEASE)
- com.springsource.server.io.core (1.0.2.RELEASE)
- com.springsource.server.control.core (1.0.2.RELEASE)
- com.springsource.server.deployer.core (1.0.2.RELEASE)
- com.springsource.server.profile.core (1.0.2.RELEASE)
- com.springsource.server.deployer.hot (1.0.2.RELEASE)
- com.springsource.server.system.core (1.0.2.RELEASE)
- com.springsource.server.servlet.core (1.0.2.RELEASE)
- com.springsource.server.servlet.tomcat (1.0.2.RELEASE)

The graph shows that all these bundles depend on the "org.springframework.osgi.extender (1.1.3.RELEASE)" bundle.

Summary

- dm Server v2.0
 - provisioning: plans, repositories
 - web application support
 - full version isolation
 - medic
 - blueprint service, other enhancements
- Supporting tools: bundlor, STS
- Keep up at blog.springosource.com