Overview of WebAdmin and UI Frameworks
Agenda

- The heart of oVirt UI – GWT
- GWT Development Lifecycle
- Deferred Binding
- MVP Architecture
- Dependency Injection with GIN
- Modules in Frontend
- Search and Bookmarks
- GUI Prototyping using Pencil
- Q & A
Google Web Toolkit (GWT)

“Productivity for developers, Performance for users”
Google Web Toolkit

- **Open source** set of tools for building rich JavaScript web applications using Java programming language
  - Develop in Java
  - Compile into JavaScript
  - Run on Browser

- GWT is not a library nor framework
- Java to JavaScript Compiler
- Development time debugging
Why GWT?

- Java's rich ecosystem of tools and libraries
- Runs natively on the browser, no plugins needed
- Cross browser compatible.
- Simple built-in Ajax/RPC mechanism
- Based on Sevlet architecture but can support php/python/etc
- Automatic serialization and de-serialization of java objects
GWT Development Lifecycle

1. Download SDK + Browser Plugin
2. Create Project with IDE/Maven
3. Develop & Code
4. Compile to JavaScript
5. Unit Test with Java Tools
6. View & Debug using Dev Mode
7. Deploy to prod Server
GWT Compilation

- Converts Java source to JavaScript
- Supports the vast majority of Java language
- Different compilation modes
  - OBF – obfuscated
  - PRETTY – human readable
  - DETAILED – even more detail
GWT Deferred Binding

• GWT's answer to reflection

• Compile time dynamic binding

• Dynamic class loading at compile time instead of execution time (ex: Database drivers)

• Browser specific implementations

• Why Opera user download code specific to Firefox?

• 4 browsers, 3 languages = 12 permutations
Model View Presenter
MVP Architecture
Advantages of MVP

- Clear separation of UI and business logic
- JSNI – dependent “view” code kept minimal
- Logic we want to test goes into “presenters”
- Hook up the presenters with mock views
- Test runs faster (unlike GWTTestcase)
Dependency Injection

- Instead of a class creating its own dependencies, its dependencies are inserted into it
- Depend upon abstractions not implementations
- Unit-test and mocking friendly
- DI frameworks – object are managed, replacement for Factories
- `@inject` is the magic
- GIN – GWT INjection
Dependency Injection
Frontend Modules
Frontend Modules

- oVirt Application module
  Webadmin

  - frontend
  - uicommonweb
  - uicompat
  - gwt-extension
  - gwt-common
frontend module

- Bridge between client and server
frontend module

- RPC interface for calling oVirt engine

![Diagram showing GWT RPC interface and its implementations]

- Synchronous RPC interface
  - GenericApiGWTService
  - Implemented on server (servlet)

- Asynchronous RPC interface
  - GenericApiGWTServiceAsync
  - Used in client code (GWT)
uicommonweb module

- UI business logic
- Models with behavior and events
uicompat module

- Inherits backend entities
- Compatibility for uicommonweb
- Shared by uicommonweb and frontend modules
- Contains some legacy code
gwt-extension module

- GWT RPC compatibility classes
- Emulation of specific JRE classes

gwt-common module

- Common UI infrastructure
- MVP pattern & Dependency Injection
- Application places
- Common features, widgets and resources
Frontend modules

- Application modules
  - webadmin
  - userportal
Search with Auto Completion

• Easy to search any entity in the system
• Context sensitive auto completion
• SQL-Injection filtering
• Indication of wrong/unavailable entity names
Search with Auto Completion
Search with Auto Completion
Bookmarks

- Browser bookmarking not just enough
- Any search result/query can be bookmarked
- Existing bookmarks are available under the Bookmarks section
Bookmarks
Bookmarks
GUI Prototyping

Pencil add-on for Firefox
How To Contribute

• Git repository
  git://gerrit.ovirt.org/ovirt-engine

• Getting started wiki -
  • http://www.ovirt.org/wiki/Setting_Management_Development_Environment

• IRC Channel
  • #ovirt on oftc
Q & A
THANK YOU!

http://www.ovirt.org
kmayilsa@redhat.com
GWT RPC Communication

ServiceDefTarget (interface)

RemoteService (interface)

RemoteServiceServlet (class)

StockPriceServiceAsync (interface)

StockPriceService (interface)

StockPriceServiceImpl (class)

stockPricesSvc = GWT.create (StockPriceService.class);
(service proxy class)

Translatable Java code (runs as JavaScript on client)

Standard Java code (runs as bytecode on server)

Imported framework classes
Written by you
Generated automatically