

Part II

# RELIABILITY

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# This is all too familiar...

A new version of [blah] is available. Would you like to upgrade?

# YES!

Oops.

# Recovery (you will not get enough sleep)

- What happened?
- Where did that come from?
- Do I need to roll back?
- How do I do that?
- How do I manage dependencies?



The Open  
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# Automated Crash Recovery

With OSGi

# Overview

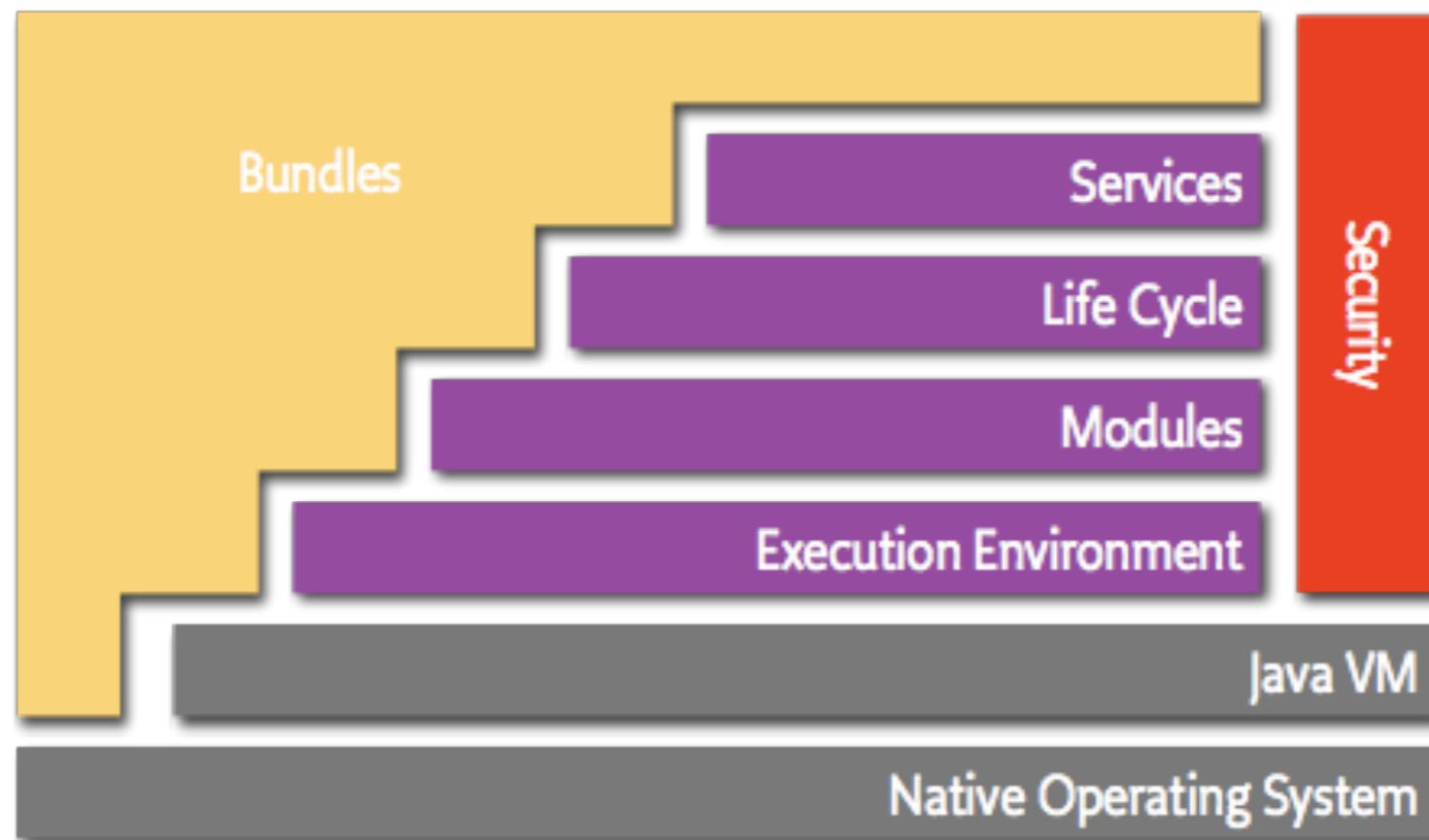
- Detect crash
- Identify culprit
- Automatically rollback to older version, and handle dependencies

# OSGi

- “The OSGi technology is a set of *specifications* that define a dynamic component system for Java.”  
[<http://www.osgi.org>]
- *Bundles* are components that can be installed, started, stopped, updated, and uninstalled

# OSGi Architecture

- source: <http://www.osgi.org/Technology/WhatIsOSGi>



# Bundles, what are they?

- a .jar file
- version number convention: x.y.z
- dependency information
  - e.g. `Import-Package: my.bundle;version="[1.0.0,2.0.0)"`
  - optional dependencies

# Our Solution (you may sleep tonight after all)



- Detect crash
- Identify problematic bundle
- Compute closest configuration given a distance function
  - based on bundles' version numbers
- Automatically deploy the new configuration

# Case Study 1: Eclipse

- Eclipse platform
- Uses OSGi
- hundreds of components

# Case Study 2: Gentoo Linux



- Portage package management system
- ebuild files
  - dependencies
  - optional dependencies
  - conflicts
  - masking
  - etc.
- over 15k packages

# Any Questions?



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