

# Software Packaging

**Craig Gardner**

Software Engineer

[cgardner@suse.com](mailto:cgardner@suse.com)



# What We'll Cover

## *Very Short*

- Why Packaging is Critically Important
- Overview of Software Packaging
- RPM Package Management

## *Focus*

- Hands On  
Demonstration
- ... Introduction to “Advanced Packaging Topics”

# Why Packaging is Critically Important

# Software for Everyone

Software is integral to your business

- Server applications
- Desktops applications
- Labs environments
- Front office / Back office / Web presence
- Production, Operations, Payroll, R&D, HR



# Complications?

More and More computers

More and More Software

- Auditing, Policies, and Regulations
- Risk management
- Balancing Control and Flexibility
- People and Tools
- Getting the Job Done



# Software Packaging

Gets your software where it needs to go

- Consistency
- User-appropriate
  - Varying expertise
  - External Customers
  - Internal Users
- Cross platform ; multiple architectures
- Easy to distribute
- Easier to scale

# Overview of Software Packaging

# Your Software Wants to Be Used!

How to get software to the customer?

- What distro do customers use? Architecture?
- What level of expertise do the customers have?
- Source code?
- How will customers install it?
- What runtime dependencies exist?
- How will customers get the latest updates?



# What is Software?

- Executable program, libraries, scripts, data
  - /usr/bin/foo (0755 root root)
  - /usr/lib64/libfoo.so.1 (0755 root root)
- Configuration files
  - /etc/foo (0644 root root)
- Documentation (yes please!)
  - Maybe the customer doesn't want the docs; optional
- Development files
  - Files others can use to build more apps that work with yours



# Managing the Bits and Bytes

- Keep Track of All the Files
  - And their changes!
- Consistent, Reproducible and Predictable
- Update and Upgrade
  - Easy!
- Uninstall
  - It's a shame, but don't make the customer suffer

**Manged with METADATA**

# Package Metadata

- Version tracking
- Manifest of files
- Descriptive data
- Rules for
  - Installing
  - Updating
  - Uninstalling
- Dependencies

# Packaging Benefits

Benefits for user and developer

- Consistency
- Reproducibility
- Tracking, auditing and management
- Integrity
- Tie binaries back to sources for support
- Log changes



# RPM Package Management

# RPM Package Management

- Principal Distributions
  - SUSE / openSUSE
  - RedHat / Fedora
- Build
  - “spec” file is the build specification
  - Builds from sources (or not)
  - Metadata about software
- Delivers
  - Creates .rpm file



# RPM Repositories

- SUSE® / openSUSE®
  - zypper (yast) client tools
  - repomd repository format
- RedHat / Fedora
  - yum client tools
  - yum repository format (effectively same as repomd)



# RPM Packaging Fundamentals

- “package”
  - Normal .rpm file (delivers the software)
  - The set of files necessary to build
- RPM database
- rpm
- rpmbuild
  - Builds from sources
  - Builds for a specific architecture
  - Creates version'd binary packages for installation/upgrade
  - cpio archive of files + scriptlets



# Hands On Demonstration



**Corporate Headquarters**  
Maxfeldstrasse 5  
90409 Nuremberg  
Germany

+49 911 740 53 0 (Worldwide)  
[www.suse.com](http://www.suse.com)

Join us on:  
[www.opensuse.org](http://www.opensuse.org)

## **Unpublished Work of SUSE. All Rights Reserved.**

This work is an unpublished work and contains confidential, proprietary and trade secret information of SUSE. Access to this work is restricted to SUSE employees who have a need to know to perform tasks within the scope of their assignments. No part of this work may be practiced, performed, copied, distributed, revised, modified, translated, abridged, condensed, expanded, collected, or adapted without the prior written consent of SUSE. Any use or exploitation of this work without authorization could subject the perpetrator to criminal and civil liability.

## **General Disclaimer**

This document is not to be construed as a promise by any participating company to develop, deliver, or market a product. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. SUSE makes no representations or warranties with respect to the contents of this document, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. The development, release, and timing of features or functionality described for SUSE products remains at the sole discretion of SUSE. Further, SUSE reserves the right to revise this document and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes. All SUSE marks referenced in this presentation are trademarks or registered trademarks of Novell, Inc. in the United States and other countries. All third-party trademarks are the property of their respective owners.

