



Libabigail - keep your C/C++ application ABI compatible

Sinny Kumari
<sinnykumari@fedoraproject.org>

Why ABI compatibility matters?

Case Study:

- Package **foo** provides shared library **libfoo.so** which is used by **N** number of packages.
- **libfoo.so** provides a function **f()** which is used in all **N** packages.
- During a bug fix, function **f()** got removed and new version of **foo** is available.
- All **N** packages will break with this update and requires to rebuild with fix
- Removal of function **f()** is an incompatible ABI change

What is Libabigail?

- A library that reads ELF and DWARF information from binaries and builds internal representation of ABI artifacts
 - variables, functions and their types
- Set of tools has been written using the library to find incompatible ABI in C/C++ applications

Tools provided by libabigail

- **abidw** – generates XML representation of ABI artifacts of a binary
- **abidiff** – provides ABI changes between two binaries
- **abipkgdiff** – provides ABI changes between two packages (supports deb, rpm, tar and directory format)
- **fedabipkgdiff** - provides ABI changes result between packages built in Fedora koji

Upcoming tool in near future :

- **kmidiff** – tell ABI changes between two kernel trees (consist of vmlinux and kernel modules)

Latest libabigail package is available in distributions
like Fedora, Debian, openSUSE

Are we doing ABI checking in Fedora?

Yes! but right now only on packages listed in critpath, using taskotron abicheck task.

What else is the plan in Fedora?

- Extend ABI checking on all C/C++ packages
- Integrate with bodhi to block pushing updates to stable repository when incompatible ABI changes found
- Find a way to notify package maintainers whose package might need to be rebuilt due to incompatible ABI package update

References

- <https://www.sourceware.org/libabigail/wiki>
- <https://taskotron.fedoraproject.org/resultsdb/results?testcases=dist.abicheck>
- <https://fedoraproject.org/wiki/ABICompatibilityDefinitions>
- <https://admin.fedoraproject.org/pkgdb/api/critpath>

Thanks!