Application Binary Interface Analysis :

State of the ABIGAIL onion.

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Presentation plan

1) What is ABIGAIL
2) Modus operandi
3) Recent notable milestones
4) What’s brewing

What is ABIGAIL

- ABI Generic Analysis & Instrumentation Library
- Library of tools to
  - Compare the ABI of two ELF binaries
  - Get a textual representation of the ABI of a binary
  - Compare the ABI of binaries of a distribution package
    - Deb, RPM, tar.
- Libabigail: a shared library to write more tools.

How it works (1/2)

- Libabigail Front-End
  - Builds an Internal Representation
    - Declarations
      - Functions & variables
      - ELF symbol
      - Types of declarations
        - Sub-declarations
        - Sub-types
    - ABI Corpus

How it works (2/2)

- Middle End
  - Acts on the IR
    - Compares two instances of ABI Corpus
    - Builds an IR of the result of the comparison (Diff IR)
    - Performs transformations on the Diff IR
      - Categorization
      - Suppression
- Back End
  - Walks the (Diff) IR to emit
    - ABIXML
    - Change reports

Recent Milestones

- Support of DWARF 5 (GCC 11, LLVM 14)
- Multi-front-end architecture
  - Supports CTF debug info
- Multi-back-end architecture
  - Different reports back-ends

On the horizon

- Support BTF for Kernel ABI analysis
- Support projects-specific requests
    - Library-set ABI analysis

Questions ?

- https://sourceware.org/libabigail/
- https://sourceware.org/git/gitweb.cgi?p=libabigail.git
- https://inbox.sourceware.org/libabigail/
- irc://irc.oftc.net#libabigail

Thank you !