

COVERT Tool User Manual

version 2.0

COVERT is a tool for compositional analysis of Android inter-application vulnerabilities. It automatically identifies vulnerabilities that occur due to the interaction of apps comprising a system. Subsequently, it determines whether it is safe for a bundle of apps, requiring certain permissions and potentially interacting with each other, to be installed together. COVERT takes as input Android executable files, so-called APK files. APKs are essentially Java bytecode packages used to distribute and install Android applications. As an output, COVERT produces a list of inter-application vulnerabilities identified in the input applications.



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Covert Command Line Tool

Installation

- 1- Install **JDK 8**
- 2- Unzip COVERT.zip (the unzipped directory: **\$COVERT**)

Usage (Mac, Linux)

- 1- Go to **\$COVERT/app_repo** directory and create a new subdirectory that represents a bundle of apps (**\$bundle**)
- 2- Copy the app files (.apk files) into the created bundle directory (**\$bundle**)
- 3- Open command line and go to the COVERT root directory (**\$COVERT**)
- 4- Run COVERT with the name of **\$bundle** as the only parameter:
`covert.sh $bundle` (e.g., `covert.sh test`)
- 5- The generated report of detected vulnerabilities is a XML file named **\$bundle.xml** (e.g. `test.xml`) in the **\$bundle** directory

Usage (Windows)

Same as Mac/Linux usages, except that (in step5) run `covert.bat $bundle`

Covert Client Tool

Installation (mac)

Use **Covert-2.0.dmg**

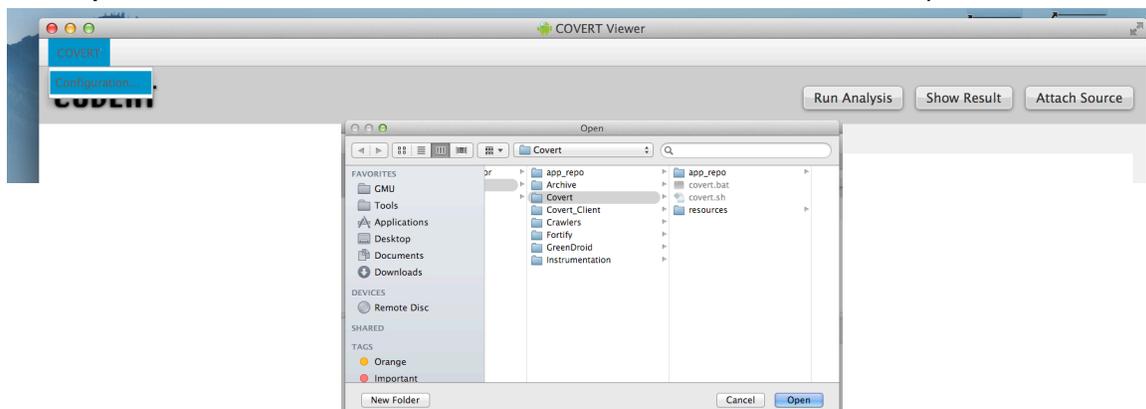
Installation (windows)

Use **Covert-2.0.exe**

(The tool bundle will be copied to `C:/Users/[yourname]/AppData/Local/Covert`)

Usage

1. In menu-> Covert -> Configuration... Set the **\$COVERT** directory (unzipped in step2 of command line installation) as the root directory.



2.
 - a. (Faster, *Recommended*) For viewing the results of covert command line tool (see Covert Command Line Tool Usage in the previous section), click **“Show Result”** and select the **\$bundle.xml** file generated before.
 - b. (Slower) For running the covert analyzer directly from the Client Tool, click **“Run Analysis”** and select the apps (.apk files) to be analyzed.
3. The decompiled source code of the vulnerable components is shown by default. If the app’s source code is available, it can be attached to the result by **“Attach Source”** button.

The screenshot displays the COVERT Viewer application window. The interface is divided into several sections:

- Top Bar:** Contains the title "COVERT" and three buttons: "Run Analysis", "Show Result", and "Attach Source".
- Left Panel (Vulnerability Classes):** Lists various vulnerability types such as "Intent Hijack", "Intent Spoofing", and "Inter-app Information Leakage". A dashed box highlights this section with the label "Vulnerability Classes".
- Right Panel (Exploit Scenario):** Provides a detailed description of an exploit scenario. It states that the app `edu.gmu.covert.sourceapp` sends an Implicit Intent containing sensitive data (`UNIQUE_IDENTIFIER`) in one of its components (`MainActivitySource`). A malicious app can receive this intent and send it to `edu.gmu.covert.sinkapp`, which then puts this data on the network (`AndroidHttpRequestsActivity`). A dashed box highlights this section with the label "A possible exploit scenario".
- Bottom Left Panel (Vulnerabilities):** Shows a tree view of vulnerabilities. The selected vulnerability is `edu.gmu.covert.sinkapp` / `AndroidHttpRequestsActivity` / `onCreate` / `NETWORK`. A dashed box highlights this section with the label "Elements of Vulnerabilities".
- Bottom Right Panel (Vulnerability Overview / Source Code):** Displays a flow diagram illustrating the exploit process. It shows the flow from `edu.gmu.covert.sourceapp` (MainActivitySource) to `edu.gmu.covert.sinkapp` (AndroidHttpRequestsActivity) via `UNIQUE_IDENTIFIER` and `NETWORK`. The process is labeled "Intent Hijacking" and "Activity Launch". A dashed box highlights this section with the label "Vulnerability Overview / Source Code".