Bringing Windows applications to Linux app stores with WINE snaps

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Overview

- What is “Snapcrafters”? 
- How to snap Windows applications? 
- History of snapping Windows apps 
- Sommelier deep-dive 
- Useful tools for creating WINE snaps 
- Useful tools for creating snaps 
- Q&A
Snapcrafters

A group of volunteers creating snap packages to easily install third-party applications on Linux

+ Creating tooling such as sommelier-core

73 snaps, 33 volunteers
1.500.000 weekly active users
across 57 distributions

Join us
How to snap Windows applications?
First: how to make a snap

```
kcalc/snapcraft.yaml
```

```
$ snapcraft
```

```
kcalc.snap
```

```
$ snapcraft push kcalc.snap
```

```
snapcraft.io/kcalc
```

```
$ sudo snap install kcalc
```

```
/snap/kcalc
```

```yaml
1 name: kcalc
2 version: 19.08.0
3 grade: stable
4 adopt-info: kcalc
5
6 confinement: strict
7 base: core18
8
9 apps:
10  kcalc:
11     common-id: org.kde.kcalc.desktop
12     command: kcalc
13     extensions:
14         - kde-neon
15     plugs:
16         - home
17         - opengl
18         - network
19         - network-bind
```
### Windows apps in the Snap Store?

We’ve found 45 snaps

<table>
<thead>
<tr>
<th>App Name</th>
<th>Developer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notepad++ (WINE)</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>foobar2000 (WINE)</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>TrackMania Nations Forever</td>
<td>Snapcrafters</td>
</tr>
<tr>
<td>PhotoScape</td>
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<tr>
<td>AniTuner (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>AniFX (WINE)</td>
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<tr>
<td>GOG Galaxy</td>
<td>Lucy Llewellyn</td>
</tr>
<tr>
<td>HeidiSQL (WINE)</td>
<td>Klanda</td>
</tr>
<tr>
<td>Notepad3 (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>C&amp;C: Red Alert 2 Yuri’s Re...</td>
<td>Taqi Raza</td>
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<tr>
<td>C&amp;C: Red Alert (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>Resource Hacker (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>µTorrent (WINE)</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>C&amp;C: Tiberian Sun (WINE)</td>
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<tr>
<td>Live For Speed (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>PSPad (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>IrfanView (WINE)</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>WinSnap (WINE)</td>
<td>Taqi Raza</td>
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<tr>
<td>BlackBox Component Pass...</td>
<td>Konstantin</td>
</tr>
<tr>
<td>Legends of Runeterra (W...</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>Stereogram Lab MTS (Wine)</td>
<td>Scott Pakin</td>
</tr>
<tr>
<td>Paladins</td>
<td>Turan Mahmudov</td>
</tr>
<tr>
<td>WinRAR (WINE)</td>
<td>Taqi Raza</td>
</tr>
<tr>
<td>CrypTool 1</td>
<td>Snapcrafters</td>
</tr>
<tr>
<td>HyperPlay: Game launche...</td>
<td>HyperPlay</td>
</tr>
<tr>
<td>PowTTY</td>
<td>Nils Schimmelmann</td>
</tr>
<tr>
<td>MPC-HC</td>
<td>the-mentor</td>
</tr>
<tr>
<td>XNote Stopwatch (UNOFF...)</td>
<td>Buoy-ren, Lin</td>
</tr>
<tr>
<td>Bridge Designer 2016</td>
<td>Twine</td>
</tr>
<tr>
<td>firstobject XML editor (Wi...</td>
<td>VisualG</td>
</tr>
</tbody>
</table>
Sommelier-core

Helper tools to snap Windows applications

- Prepares the environment for Wine
- Connects to Wine content snap
- Installs winetricks
- Installs theme
- Downloads app
- Runs app in Wine

More info & docs:
https://github.com/snapcrafters/sommelier-core
Step 1: Add sommelier-core script to snap

```
parts:
  sommelier-core:
    plugin: make
    source: https://github.com/snapcrafters/sommelier-core.git
    source-branch: "1.0"
```
Step 2: Add Wine content snaps

plugs:
  wine-runtime:
    interface: content
    target: $SNAP/wine-runtime
    default-provider: wine-platform-runtime
  wine-5-stable: # number must match the number in default-provider
    interface: content
    target: $SNAP/wine-platform
    default-provider: wine-platform-5-stable # must be a valid snap
Step 3: Add app config

```yaml
apps:
  my-windows-app:
    extensions: [gnome-3-28]
    command: bin/sommelier run-exe
    environment:
      RUN_EXE: C:\path\to\installed\executable.exe
      INSTALL_URL: http://example.com/installer.exe
      INSTALL_FLAGS: /silent # optional commandline flags to pass to plugs:
                        # change these as required
                        - home
                        - network
                        - network-bind
                        - removable-media
```
The Wine configuration in /home/merlijn/snap/tmnationsforever/common/.wine is being updated, please wait...
Result!
Result!

*Gold Medal*

0:25.87

0:09.34

393 m

272
History of snapping Windows apps
First there was a game...

TrackMania Nations Forever

- Snap made to appease Martin Wimpress’ racing gaming requirements
- Was a “scratch your own itch” effort by Alan Pope and Martin Wimpress

(Has been unfairly accused of being the reason why Martin loses tournaments)
…Then came an editor…

Notepad++

- Open Source Windows-only editor
- Popular on Windows among enthusiasts
- Snap created by Taqi Raza (mmtrt)
Primarily based on the TrackMania Nations Forever snap’s code
Lucy incorporated improvements by Taqi Raza in Notepad++ snap’s code
Initial Sommelier template project created on GitHub
Initial efforts to make launch script generic

- Added Hooks
- Added usage of environment variables to control behaviour

```plaintext
environment:
  INSTALL_URL: "<INSERT URL TO PUBLICLY AVAILABLE INSTALLER>>"
  TRICKS: "corefonts vcrun2017"
  WINEPREFIX: "$SNAP_USER_COMMON/.wine"
  DLLOVERRIDES: "mscoree,mshtml" # Prevent pop-ups about Wine Mono and Wine Gecko
  LC_ALL: "C.UTF-8"
  SNAP_TITLE: "$SNAPCRAFT_PROJECT_SUMMARY"
  SNAP_ICON: "$SNAP/meta/gui/icon.png"
  SNAP_SUPPORT_URL: "<INSERT SUPPORT URL HERE>>"
  ENABLE_DXVK: 'true'
  ENABLE_ESYNC: 'true'
```
Improvements by Merlijn

- More work on making launch script generic
- Convert to use Taqi Raza’s WINE content snaps
- Use Gnome extension

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Call for testing: snap Windows apps with sommelier-core

**sommelier-core** is an attempt to create a universal script for snapping Windows applications. It merges the original sommelier script from @Wimpress, @popeye and @lucylaw with the work @mmbrt is doing to create platform snaps for Wine. The goal of this script is that “everything just works”.

**Features:**
- Uses Wine from the wine-platform snaps to reduce the size of your snap.
- Uses the gnome-3-28 extension for initializing all the generic desktop stuff.
- Includes the “Modern” theme from ReactOS so Windows applications look less ugly. [optional]
- Updates the Wine prefix every time Wine changes. Can upgrade a 32-bit Wine prefix to 64-bit.
- Reinstalls the Windows app every time the snap version changes.
- Reconfigures Wine every time the snap revision or the Wine version changes.
- Users can run myapp.wine to run arbitrary applications inside this snap.
- Users can run myapp.winetricks to modify the Wine environment.

**Cons:**
- The script is not 100% compatible with the original sommelier. If you need something which is not present, let me know.

I've built a bunch of snaps based on this script:
- **TrackMania Nations Forever** (downloads an installer)
- **Notepad ++** (ships a portable install version in the snap itself)
- **PhotoScape** (ships an installer in the snap)
- **Bridge Designer** (ships an installer in the snap)

The rest of this post is a small tutorial. See the **sommelier-core** repository for a complete reference.
Snap them all

Sommelier now applied to many WINE-based snaps

Taking community contributions to add new features and bug fixes
Sommelier deep-dive
Use the **TRICKS** environment variable

- **For example**
  - To install the corefonts...
    ```
    environment:
    TRICKS: corefonts
    ```
  - To install multiple tricks append them in order...
    ```
    environment:
    TRICKS: corefonts vcrun2015 dotnet452 win7
    ```

- **See what tricks you need at**
  - [https://appdb.winehq.org/](https://appdb.winehq.org/)
  - [https://www.protondb.com/](https://www.protondb.com/)
Customising Sommelier using hooks

- **Supported hooks:**
  - pre-install
  - post-install
  - pre-start
  - Post-stop

- **Copy scripts to** $SNAP/sommelier/hooks
Theming: added "Light" theme from Zhiyi Zhang

Without theme
(SOMMELIER_NO_THEME=1)

With theme
WINE content snaps

- Wine itself
  - wine-platform-5-stable (core18)
  - wine-platform-6-stable (core18)
  - wine-platform-7-stable-core20

- Dependencies
  - wine-platform-runtime (core18)
  - wine-platform-runtime-core20
Useful tools for creating WINE snaps
Universal Silent Switch Finder


snap install resourcehacker
app-name.wine regedit
Useful snap debugging tools
Rapidly iterating with `snap try`

- Build your snap with `snapcraft try`
- Install from your build tree with `snap try ./prime`
Starting a shell inside a snap’s environment

- Inspect the environment of your app
- Check what your app can access
- Experiment with launching your app while in the shell
- `snap run --shell [your-snap-name]`
Using devmode

- Same as sandboxed environment, but confinement not enforced
- **Install with** `snap install --devmode ./snap-name.snap`
- **snappy-debug** is useful to see what *would* be denied if sandbox is enforced
Thanks to everyone involved!

Q&A

Find us on the fediverse!

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Thanks!

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