The Source of Linux: A Preview

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Agenda

- Why Does The Source Code Matter?
- When Are Linux Distributions Insufficient?
- Start With The Kernel
- Build Your Own Distribution

What Is Source Code?

What Is Source Code?

- Source code (also referred to as source or code) is the version of software as it is originally written (i.e., typed into a computer) by a human in plain text (i.e., human readable alphanumeric characters). - Linux Information Project
- For the purpose of clarity "source code" is taken to mean any fully executable description of a software system. It is therefore so construed as to include machine code, very high level languages and executable graphical representations of systems. - IEEE, “Source Code Analysis and Manipulation”

Why Care About Source Code?

- Intrinsic value of creativity
- Derived economic value
  - Software creates value (and revenue).
  - If someone uses your source code without your permission, they may be able to obtain value that might / should be yours to control.
  - Source code is controlled by copyright.
- What if your needs don’t coincide to what other people want (or need)?

Why Build A Custom Kernel?

- *“An oft-cited, but often wrong reason is that it will work faster. By customizing the compiler flags for the specific system, you could theoretically create better byte-code. But with modern compilers, this is not often the case.”*
- *“Change certain compile time flags. E.g.: To compile the kernel with debugging information included. Although this may not apply in your case.”*
- *“To remove unnecessary parts from the kernel. But as stated by @jordanm, these parts are almost always modules and may not matter. But in some cases, the difference may be significant.”*
- *“For academic purposes. Compiling your own kernel helps you learn a lot about the build process. Also, one gets to learn about the various configuration options.”*

Why Build A Custom Kernel?

- *“To replace certain modules. For example, to use the con kolivas patchset, real time patchset, etc.”*
- *“In certain situations, especially in embedded scenarios, one may add custom system calls to the kernel. These would require a custom compilation too.”*
- *“Some people like me, just love to tinker with the system. And will randomly change some configuration options to see how the final system responds to them. However such people are few and rare.”*

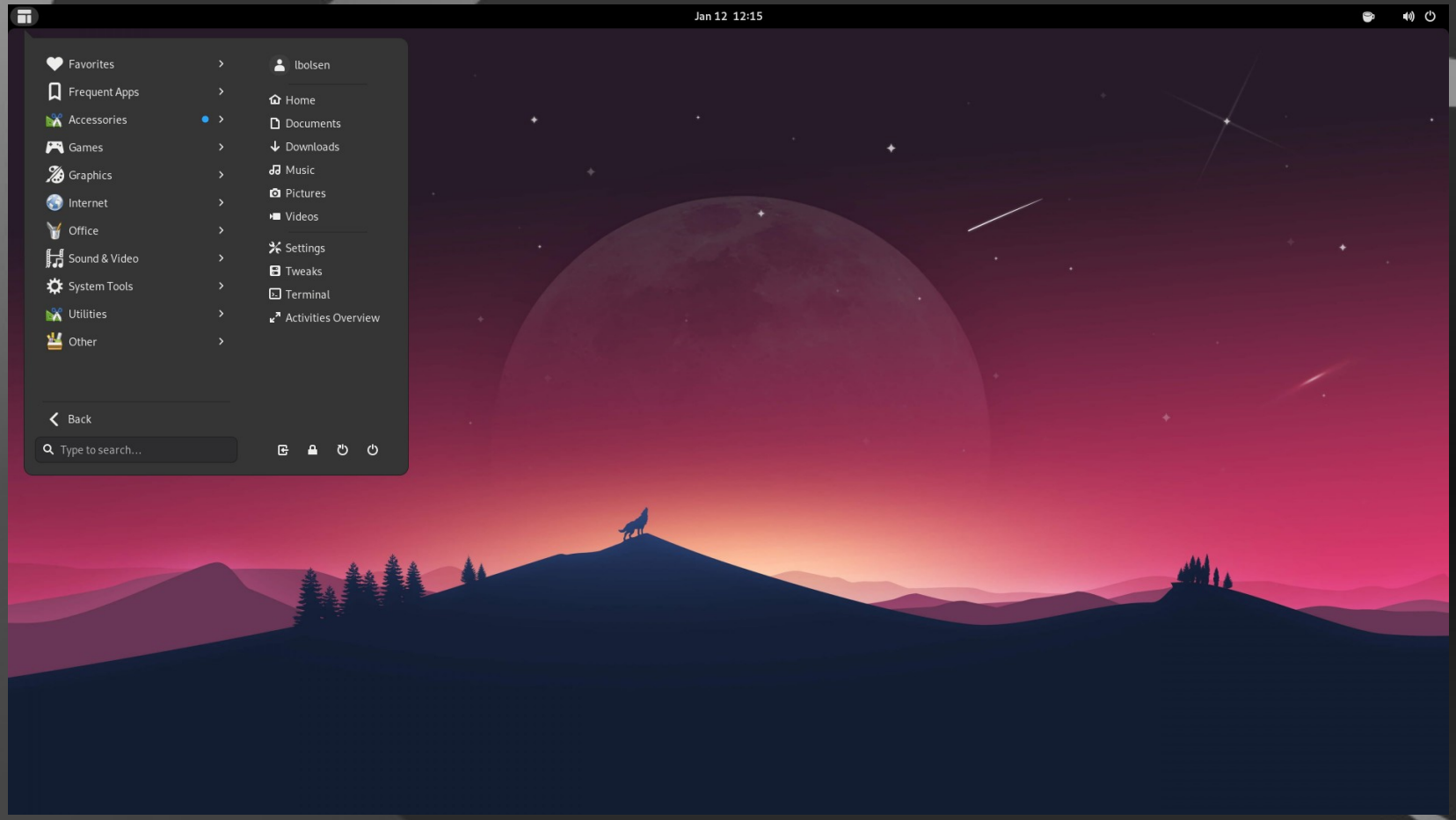
Custom Kernels

- Some distributions do provide mechanisms to build and use a different kernel
- Pre-built Custom Kernels
  - Xanmod
  - Zen
  - Licorix
- Build your own custom kernel

Why Build A Custom Distribution?

- *The same reason that you might want to build a custom kernel...*
- *Why not?*

Gentoo Demonstration



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