

# D-Bus

rohieb

Stratum 0 e. V.

May 14, 2015

# What is it?

- “Desktop Bus”
- typed inter-process communication
  - like pipes/FIFOs, (network|UNIX) sockets, shared memory
  - ... but with types (like int, string, arrays, dictionaries)
- used by many many many applications, like:
  - desktop notifications
  - media players
  - power management
  - udev
  - avahi
  - systemd
  - ...

# Features

- object-oriented approach
  - methods, properties, signals, objects (= “instances”)
  - introspection
- access control
  - system bus vs. desktop bus
- service activation
- network transparent

# Tools

- command line access: `dbus-monitor`, `dbus-send`
- introspection and debugging: `d-feet`
- bindings for your favourite programming language

# Tools

- command line access: `dbus-monitor`, `dbus-send`
- introspection and debugging: `d-feet`
- bindings for your favourite programming language

Demo Time!

# kdbus

- “D-Bus in the Linux kernel”
- actively developed, integration into Linux still unsure

# kdbus

- “D-Bus in the Linux kernel”
- actively developed, integration into Linux still unsure
- userspace:
  - high latency
  - low throughput  $\Rightarrow$  only control, no payload
  - each method call: 10 copies, 4 context switches
  - not available in early and late boot
  - kernel security frameworks need to have userspace interface

# kdbus

- “D-Bus in the Linux kernel”
- actively developed, integration into Linux still unsure
- userspace:
  - high latency
  - low throughput  $\Rightarrow$  only control, no payload
  - each method call: 10 copies, 4 context switches
  - not available in early and late boot
  - kernel security frameworks need to have userspace interface
- kdbus:
  - lower latency
  - higher throughput  $\Rightarrow$  send GiB of data!
  - each method call:  $\leq 2$  copies, 2 context switches
    - zero-copy if payload  $\leq 512$  kiB
  - available directly after boot
  - but: not network transparent
    - only used locally, use D-Bus for network stuff



# Sources



D-Bus Homepage: <http://www.freedesktop.org/Software/dbus>



Lennart Poettering: Anatomy of kdbus, FOSDEM 2014,  
[https://archive.fosdem.org/2014/schedule/event/  
anatomy\\_of\\_kdbus/](https://archive.fosdem.org/2014/schedule/event/anatomy_of_kdbus/)