

DBUS

Sources: [Wikipedia](#), [D-Bus Specification](#), [Cardinal Peak](#)

D-BUS is an Inter-Process Communication (IPC) specification. Communication is possible via multiple [Transports](#) (e.g., Unix sockets, systemd, TCP sockets).

Default D-Bus message buses:

- System-wide instance / message bus (see `/usr/share/dbus-1/system.conf` or `dbus-monitor --system`)
- User-session-specific instance / message bus (see `/usr/share/dbus-1/session.conf` or `dbus-monitor --session`)

Monitor DBUS signals: `dbus-monitor`

DBUS Implementations

- GDBus (Gnome)
- QT/KDE D-Bus
- dbus-broker (default on Arch)

dbus-broker

Source: [dbus-broker package](#)

- Each dbus-broker instance provides a message bus
- Each dbus-broker instance gets started by a parent process (*Controller*) (e.g., [dbus-broker-launch](#))
- dbus-broker only implements message mediation (bus setup and external communication needs to be handled by the *Controller*).
- The *Controller* hands over a unix socket (as file descriptor *FD*) to the dbus-broker instance (`--controller=FD`)
- The unix socket is used by dbus-broker to accept control commands from the *Controller* and to create interfa

dbus-broker on Arch Linux

Source: [Arch Wiki](#)

During systemd installation, [dbus-broker-units](#) can be chosen as the *dbus-units* provider. This package provides the dbus-broker systemd service units.

Alternatively to dbus-broker, Arch also supports using the [D-BUS reference implementation](#) by installing the [dbus-daemon-units](#) instead of the dbus-broker service units.

Desktop Notifications

- Send desktop notification: `notify-send test`
- Send desktop notification with icon: `notify-send -i face-glasses "test"` (icons are located in `/usr/share/icons/`)
- Monitor DBUS desktop notifications: `dbus-monitor "interface='org.freedesktop.Notifications'"`

Desktop Notification Daemons

Primary source

Daemons:

- `dunst`: Lightweight, customizable, scriptable, minimalistic and provides features like rules, pausing, notification history
- `NotifyOSD` / `notify-osd`: Configurable, animations, sound, merging, overflow, flood prevention, do-not-disturb mode,

Depending on the Desktop Environment, notification daemons are built-in (Cinnamon, Gnome, KDE). Notification daemons can be started standalone for other environments (e.g. i3wm). Standalone is possible via XDG autostart or as DBUS service.

Typically, DBUS service files are shipped with notification daemons, e.g., `/usr/share/dbus-1/services/org.freedesktop.Notifications.service`

Troubleshooting

Tools:

- `Bustle`: Recording D-Bus communication, drawing sequence diagrams, inspecting communication
- `D-Spy`: Inspect buses/interfaces/properties/signals.methods, execute methods (e.g., send test desktop notifications)

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