

NAME

XkbForceDeviceBell - Rings the bell on any keyboard, overriding user preference settings for audible bells

SYNOPSIS

Bool XkbForceDeviceBell (Display **display*, Window *window*, unsigned int *device_spec*, unsigned int *bell_class*, unsigned int *bell_id*, int *percent*);

ARGUMENTS

display

connection to the X server

window

event window, or None

device_spec

device ID, or XkbUseCoreKbd

bell_class

input extension class of the bell to be rung

bell_id

input extension ID of the bell to be rung

percent

relative volume, which can range from -100 to 100 inclusive

DESCRIPTION

The core X protocol allows only applications to explicitly sound the system bell with a given duration, pitch, and volume. Xkb extends this capability by allowing clients to attach symbolic names to bells, disable audible bells, and receive an event whenever the keyboard bell is rung. For the purposes of this document, the *audible* bell is defined to be the system bell, or the default keyboard bell, as opposed to any other audible sound generated elsewhere in the system. You can ask to receive XkbBellNotify events when any client rings any one of the following:

- ⊕ The default bell
- ⊕ Any bell on an input device that can be specified by a *bell_class* and *bell_id* pair

- ⊕ Any bell specified only by an arbitrary name. (This is, from the server's point of view, merely a name, and not connected with any physical sound-generating device. Some client application must generate the sound, or visual feedback, if any, that is associated with the name.)

You can also ask to receive `XkbBellNotify` events when the server rings the default bell or if any client has requested events only (without the bell sounding) for any of the bell types previously listed.

You can disable audible bells on a global basis. For example, a client that replaces the keyboard bell with some other audible cue might want to turn off the `AudibleBell` control to prevent the server from also generating a sound and avoid cacophony. If you disable audible bells and request to receive `XkbBellNotify` events, you can generate feedback different from the default bell.

You can, however, override the `AudibleBell` control by calling one of the functions that force the ringing of a bell in spite of the setting of the `AudibleBell` control - `XkbForceDeviceBell` or `XkbForceBell`. In this case the server does not generate a bell event.

Just as some keyboards can produce keyclicks to indicate when a key is pressed or repeating, Xkb can provide feedback for the controls by using special beep codes. The `AccessXFeedback` control is used to configure the specific types of operations that generate feedback.

Bell Names

You can associate a name to an act of ringing a bell by converting the name to an Atom and then using this name when you call the functions listed in this chapter. If an event is generated as a result, the name is then passed to all other clients interested in receiving `XkbBellNotify` events. Note that these are arbitrary names and that there is no binding to any sounds. Any sounds or other effects (such as visual bells on the screen) must be generated by a client application upon receipt of the bell event containing the name. There is no default name for the default keyboard bell. The server does generate some predefined bells for the `AccessX` controls. These named bells are shown in Table 1; the name is included in any bell event sent to clients that have requested to receive `XkbBellNotify` events.

Table 1 Predefined

Bells

Action

Named
Bell

Indicator turned

AX_IndicatorOn

on	
Indicator turned	AX_IndicatorOff
off	
More than one indicator changed	AX_IndicatorChange
state	
Control turned	AX_FeatureOn
on	
Control turned	AX_FeatureOff
off	
More than one control changed	AX_FeatureChange
state	
SlowKeys and BounceKeys about to be turned on or	AX_SlowKeysWarning
off	
SlowKeys key	AX_SlowKeyPress
pressed	
SlowKeys key	AX_SlowKeyAccept
accepted	
SlowKeys key	AX_SlowKeyReject
rejected	
Accepted SlowKeys key	AX_SlowKeyRelease
released	
BounceKeys key	AX_BounceKeyReject
rejected	
StickyKeys key	AX_StickyLatch
latched	
StickyKeys key	AX_StickyLock
locked	
StickyKeys key	AX_StickyUnlock
unlocked	

Audible Bells

Using Xkb you can generate bell events that do not necessarily ring the system bell. This is useful if you need to use an audio server instead of the system beep. For example, when an audio client starts, it could disable the audible bell (the system bell) and then listen for XkbBellNotify events. When it receives a XkbBellNotify event, the audio client could then send a request to an audio server to play a sound.

You can control the audible bells feature by passing the XkbAudibleBellMask to *XkbChangeEnabledControls*. If you set XkbAudibleBellMask on, the server rings the system bell

when a bell event occurs. This is the default. If you set `XkbAudibleBellMask` off and a bell event occurs, the server does not ring the system bell unless you call `XkbForceDeviceBell` or `XkbForceBell`.

Audible bells are also part of the per-client auto-reset controls.

Bell Functions

Use the functions described in this section to ring bells and to generate bell events.

The input extension has two types of feedbacks that can generate bells - bell feedback and keyboard feedback. Some of the functions in this section have `bell_class` and `bell_id` parameters; set them as follows: Set `bell_class` to `BellFeedbackClass` or `KbdFeedbackClass`. A device can have more than one feedback of each type; set `bell_id` to the particular bell feedback of `bell_class` type.

Table 2 shows the conditions that cause a bell to sound or an `XkbBellNotifyEvent` to be generated when a bell function is called.

Table 2 Bell Sounding and Bell Event

Generating

Function called	AudibleBellServer sounds a bell		Server sends an <code>XkbBellNotifyEvent</code>
<code>XkbDeviceBell</code>	On	Yes	Yes
<code>XkbDeviceBell</code>	Off	No	Yes
<code>XkbBell</code>	On	Yes	Yes
<code>XkbBell</code>	Off	No	Yes
<code>XkbDeviceBellEvent</code>	On or Off	No	Yes
<code>XkbBellEvent</code>	On or Off	No	Yes
<code>XkbDeviceForceBell</code>	On or Off	Yes	No
<code>XkbForceBell</code>	On or Off	Yes	No

If a compatible keyboard extension isn't present in the X server, `XkbForceDeviceBell` immediately

returns False. Otherwise, *XkbForceDeviceBell* rings the bell as specified for the display and keyboard device and returns True. Set *percent* to be the volume relative to the base volume for the keyboard as described for *XBell*.

There is no *name* parameter because *XkbForceDeviceBell* does not cause an *XkbBellNotify* event.

You can call *XkbBell* without first initializing the keyboard extension.

STRUCTURES

Xkb generates *XkbBellNotify* events for all bells except for those resulting from calls to *XkbForceDeviceBell* and *XkbForceBell*. To receive *XkbBellNotify* events under all possible conditions, pass *XkbBellNotifyMask* in both the *bits_to_change* and *values_for_bits* parameters to *XkbSelectEvents*.

The *XkbBellNotify* event has no event details. It is either selected or it is not. However, you can call *XkbSelectEventDetails* using *XkbBellNotify* as the *event_type* and specifying *XkbAllBellEventsMask* in *bits_to_change* and *values_for_bits*. This has the same effect as a call to *XkbSelectEvents*.

The structure for the *XkbBellNotify* event type contains:

```
typedef struct _XkbBellNotify {
    int      type;      /* Xkb extension base event code */
    unsigned long serial; /* X server serial number for event */
    Bool     send_event; /* True => synthetically generated */
    Display * display; /* server connection where event generated */
    Time     time;      /* server time when event generated */
    int      xkb_type; /* XkbBellNotify */
    unsigned int device; /* Xkb device ID, will not be XkbUseCoreKbd */
    int      percent; /* requested volume as % of max */
    int      pitch; /* requested pitch in Hz */
    int      duration; /* requested duration in microseconds */
    unsigned int bell_class; /* X input extension feedback class */
    unsigned int bell_id; /* X input extension feedback ID */
    Atom     name; /* "name" of requested bell */
    Window   window; /* window associated with event */
    Bool     event_only; /* False -> the server did not produce a beep */
} XkbBellNotifyEvent;
```

If your application needs to generate visual bell feedback on the screen when it receives a bell event, use the window ID in the *XkbBellNotifyEvent*, if present.

SEE ALSO

XBell(3), XkbBell(3), XkbBellNotify(3), XkbChangeEnabledControls(3), XkbDeviceBell(3), XkbForceBell(3), XkbForceDeviceBell(3), XkbSelectEventDetails(3), XkbSelectEvents(3)