

NAME

XkbBell - Rings the bell on the default keyboard

SYNOPSIS

Bool XkbBell (Display **display*, Window *window*, int *percent*, Atom *name*);

ARGUMENTS

display

connection to the X server

window

event window, or None

percent

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

name

a bell name, or NULL

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 below; 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 on	AX_IndicatorOn
Indicator turned off	AX_IndicatorOff
More than one indicator changed state	AX_IndicatorChange
Control turned on	AX_FeatureOn
Control turned off	AX_FeatureOff

off	
More than one control changed	AX_FeatureChange
state	
SlowKeys and BounceKeys about to be turned on or off	AX_SlowKeysWarning
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	AudibleBellServer sounds a bellServer sends an called <i>XkbBellNotifyEvent</i>		
<i>XkbDeviceBell</i>	On	Yes	Yes
<i>XkbDeviceBell</i>	Off	No	Yes
<i>XkbBell</i>	On	Yes	Yes
<i>XkbBell</i>	Off	No	Yes
<i>XkbDeviceBellEvent</i>	On or Off	No	Yes
<i>XkbBellEvent</i>	On or Off	No	Yes
<i>XkbDeviceForceBell</i>	On or Off	Yes	No
<i>XkbForceBell</i>	On or Off	Yes	No

If a compatible keyboard extension isn't present in the X server, *XkbBell* calls *XBell* with the specified *display* and *percent*, and returns False. Otherwise, *XkbBell* calls *XkbDeviceBell* with the specified *display*, *window*, *percent*, and *name*, a *device_spec* of *XkbUseCoreKbd*, a *bell_class* of *XkbDfltXIClass*, and a *bell_id* of *XkbDfltXIId*, and returns True.

If you have disabled the audible bell, the server does not ring the system bell, although it does generate a *XkbBellNotify* event.

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

RETURN VALUES

FALSE The XkbBell function returns FALSE if XlibDisplayNoXkb is set.

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), XkbBellNotify(3), XkbChangeEnabledControls(3), XkbDeviceBell(3), XkbForceBell(3), XkbForceDeviceBell(3), XkbUseCoreKbd(3)