

NAME

XkbGetMap – Allocate an XkbDescRec structure and populate it with the server’s keyboard client map and server map

SYNOPSIS

```
XkbDescPtr XkbGetMap (Display *display, unsigned int which, unsigned int device_spec);
```

ARGUMENTS

display connection to X server

which mask selecting subcomponents to populate

device_spec

device_id, or XkbUseCoreKbd

DESCRIPTION

Xkb provides two functions to obtain the keyboard mapping components from the server. The first function, *XkbGetMap*, allocates an XkbDescRec structure, retrieves mapping components from the server, and stores them in the XkbDescRec structure it just allocated. The second function, *XkbGetUpdatedMap*, retrieves mapping components from the server and stores them in an XkbDescRec structure that has previously been allocated.

To allocate an XkbDescRec structure and populate it with the server’s keyboard client map and server map, use *XkbGetMap*. *XkbGetMap* is similar to *XkbGetKeyboard*, but is used only for obtaining the address of an XkbDescRec structure that is populated with keyboard mapping components. It allows finer control over which substructures of the keyboard mapping components are to be populated. *XkbGetKeyboard* always returns fully populated components, while *XkbGetMap* can be instructed to return a partially populated component.

The *which mask* is a bitwise inclusive OR of the masks defined in Table 14.1. Only those portions of the keyboard server map and the keyboard client maps that are specified in *which* are allocated and populated.

In addition to allocating and obtaining the server map and the client map, *XkbGetMap* also sets the *device_spec*, the *min_key_code*, and *max_key_code* fields of the keyboard description.

XkbGetMap is synchronous; it queries the server for the desired information, waits for a reply, and then returns. If successful, *XkbGetMap* returns a pointer to the XkbDescRec structure it allocated. If unsuccessful, *XkbGetMap* returns NULL. When unsuccessful, one of the following protocol errors is also generated: BadAlloc (unable to allocate the XkbDescRec structure), BadValue (some mask bits in *which* are undefined), or BadImplementation (a compatible version of the Xkb extension is not available in the server). To free the returned data, use *XkbFreeKeyboard*.

Xkb also provides convenience functions to get partial component definitions from the server. These functions are specified in the "convenience functions" column in Table 1. Refer to the sections listed in the table for more information on these functions.

Table 1 Xkb Mapping Component Masks and Convenience Functions

Mask	Value	Map	Fields	Convenience Functions
XkbKeyTypesMask	(1<<0)	client	types size_types num_types	XkbGetKeyTypes XkbResizeKeyType XkbCopyKeyType XkbCopyKeyTypes

<i>XkbKeySymsMask</i>	(1<<1)	client	syms size_syms num_syms key_sym_map	<i>XkbGetKeySyms</i> <i>XkbResizeKeySyms</i> <i>XkbChangeTypesOfKey</i>
<i>XkbModifierMapMask</i>	(1<<2)	client	modmap	<i>XkbGetKeyModifierMap</i>
<i>XkbExplicitComponentsMask</i>	(1<<3)	server	explicit	<i>XkbGetKeyExplicitComp</i>
<i>XkbKeyActionsMask</i>	(1<<4)	server	key_acts acts num_acts size_acts	<i>XkbGetKeyActions</i> <i>XkbResizeKeyActions</i>
<i>XkbKeyBehaviorsMask</i>	(1<<5)	server	behaviors	<i>XkbGetKeyBehaviors</i>
<i>XkbVirtualModsMask</i>	(1<<6)	server	vmods	<i>XkbGetVirtualMods</i>
<i>XkbVirtualModMapMask</i>	(1<<7)	server	vmodmap	<i>XkbGetVirtualModMap</i>

Xkb defines combinations of these masks for convenience:

```
#define XkbResizableInfoMask (XkbKeyTypesMask)
#define XkbAllClientInfoMask (XkbKeyTypesMask | XkbKeySymsMask |
                             XkbModifierMapMask)
#define XkbAllServerInfoMask (XkbExplicitComponentsMask |
                              XkbKeyActionsMask |
                              XkbKeyBehaviorsMask |
                              XkbVirtualModsMask |
                              XkbVirtualModMapMask)
#define XkbAllMapComponentsMask XkbAllClientInfoMask |
                                 XkbAllServerInfoMask)
```

Key types, symbol maps, and actions are all interrelated: changes in one require changes in the others. The convenience functions make it easier to edit these components and handle the interdependencies.

STRUCTURES

The complete description of an Xkb keyboard is given by an XkbDescRec. The component structures in the XkbDescRec represent the major Xkb components.

```
typedef struct {
    struct _XDisplay * display; /* connection to X server */
    unsigned short flags; /* private to Xkb, do not modify */
    unsigned short device_spec; /* device of interest */
    KeyCode min_key_code; /* minimum keycode for device */
    KeyCode max_key_code; /* maximum keycode for device */
    XkbControlsPtr ctrls; /* controls */
    XkbServerMapPtr server; /* server keymap */
    XkbClientMapPtr map; /* client keymap */
    XkbIndicatorPtr indicators; /* indicator map */
    XkbNamesPtr names; /* names for all components */
    XkbCompatMapPtr compat; /* compatibility map */
    XkbGeometryPtr geom; /* physical geometry of keyboard */
} XkbDescRec, *XkbDescPtr;
```

The *display* field points to an X display structure. The *flags* field is private to the library: modifying *flags* may yield unpredictable results. The *device_spec* field specifies the device identifier of the keyboard input device, or XkbUseCoreKeyboard, which specifies the core keyboard device. The *min_key_code* and *max_key_code* fields specify the least and greatest keycode that can be returned by the keyboard.

Each structure component has a corresponding mask bit that is used in function calls to indicate that the structure should be manipulated in some manner, such as allocating it or freeing it. These masks and their relationships to the fields in the XkbDescRec are shown in Table 2.

Table 2 Mask Bits for XkbDescRec

Mask Bit	XkbDescRec Field	Value
XkbControlsMask	ctrls	(1L<<0)
XkbServerMapMask	server	(1L<<1)
XkbClientMapMask	map	(1L<<2)
XkbIndicatorMapMask	indicators	(1L<<3)
XkbNamesMask	names	(1L<<4)
XkbCompatMapMask	compat	(1L<<5)
XkbGeometryMask	geom	(1L<<6)

XkbAllComponentsMask All Fields (0x7f)

SEE ALSO

XkbChangeTypesOfKey(3), XkbCopyKeyType(3), XkbCopyKeyTypes(3), XkbFreeClientMap(3), XkbGetKeyActions(3), XkbGetKeyBehaviors(3), XkbGetKeyboard(3), XkbGetKeyExplicitComponents(3), XkbGetKeyModifierMap(3), XkbGetKeySyms(3), XkbGetKeyTypes(3), XkbGetUpdatedMap(3), XkbGetVirtualModMap(3), XkbGetVirtualMods(3), XkbResizeKeyActions(3), XkbResizeKeySyms(3), XkbResizeKeyType(3)