

X Generic Event Extension

Peter Hutterer

X Generic Event Extension

Peter Hutterer

X Version 11, Release 7.7

Version 1.0

Copyright © 2007 Peter Hutterer

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice (including the next paragraph) shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Table of Contents

1. Introduction	1
2. Extension Initialization	2
3. Events	3
4. Notes	4

Chapter 1. Introduction

X was designed to provide 64 event opcodes for all extensions. These events are limited to 32 bytes.

The Generic Event Extension provides a template event for extensions to re-use a single event opcode. GE only provide headers and the most basic functionality, leaving the extensions to interpret the events in their specific context.

GenericEvents may be longer than 32 bytes. If so, the number of 4 byte units following the initial 32 bytes must be specified in the length field of the event.

Chapter 2. Extension Initialization

The name of this extension is "Generic Event Extension"

```
GEQueryVersion
  client-major-version: CARD16
  client-minor-version: CARD16
==>
  major-version:          CARD16
  minor-version:          CARD16
```

The client sends the highest supported version to the server and the server sends the highest version it supports, but no higher than the requested version. Major versions changes can introduce incompatibilities in existing functionality, minor version changes introduce only backward compatible changes. It is the clients responsibility to ensure that the server supports a version which is compatible with its expectations.

As of version 1.0, no other requests are provided by this extension.

Chapter 3. Events

GE defines a single event, to be used by all extensions. The event's structure is similar to a reply. This is a core protocol event, ID 35, and is not itself an extension event.

```
GenericEvent
  type:          BYTE          always GenericEvent (35)
  extension:    CARD8          extension offset
  sequenceNumber: CARD16      low 16 bits of request seq. number
  length:       CARD32        length
  evtype:       CARD16        event type
```

The field 'extension' is to be set to the major opcode of the extension. The 'evtype' field is the actual opcode of the event. The length field specifies the number of 4-byte blocks after the initial 32 bytes. If length is 0, the event is 32 bytes long.

Chapter 4. Notes

Although the wire event is of arbitrary length, the actual size of an XEvent is restricted to `sizeof(XEvent)` [96 bytes, see `Xlib.h`]. If an extension converts a wire event to an XEvent > 96 bytes, it will overwrite the space allocated for the event. See struct `_XSQEvent` in `Xlibint.h` for details.

Extensions need to malloc additional data and fill the XEvent structure with pointers to the malloc'd data. The client then needs to free the data, only the XEvent structure will be released by Xlib.

The server must not send GenericEvents longer than 32 bytes until it has verified that the client is able to interpret these events. If a long event is sent to a client unable to process GenericEvents, future interpretation of replies and events by this client will fail.