

# **Extended Visual Information Extension**

## **X Project Team Standard**

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# Extended Visual Information Extension: X Project Team Standard

by Peter Daifuku

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# Chapter 1. Introduction

EVI (Extended Visual Information extension) allows a client to determine information about core X visuals beyond what the core protocol provides.

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## Chapter 2. Goals

As the X Window System has evolved, it has become clear that the information returned by the core X protocol regarding Visuals is often insufficient for a client to determine which is the most appropriate visual for its needs. This extension allows clients to query the X server for additional visual information, specifically as regards colormaps and framebuffer levels.

This extension is meant to address the needs of pure X clients only. It is specifically and purposefully not designed to address the needs of X extensions. Extensions that have an impact on visual information should provide their own mechanisms for delivering that information. For example, the Double Buffering Extension (DBE) provides its own mechanism for determining which visuals support double-buffering.

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# Chapter 3. Requests

GetVersion

*client\_major\_version*: CARD8

*client\_minor\_version*: CARD8

=>

*server\_major\_version*: CARD8

*server\_minor\_version*: CARD8

If supplied, the *client\_major\_version* and *client\_minor\_version* indicate what version of the protocol the client wants the server to implement. The server version numbers returned indicate the protocol this extension actually supports. This might not equal the version sent by the client. An implementation can (but need not) support more than one version simultaneously. The *server\_major\_version* and the *server\_minor\_version* are a mechanism to support future revisions of the EVI protocol that may be necessary. In general, the major version would increment for incompatible changes, and the minor version would increment for small upward-compatible changes. Servers that support the protocol defined in this document will return a *server\_major\_version* of one (1), and a *server\_minor\_version* of zero (0).

GetVisualInfo

*visual\_list*: LISTofVISUALID

=>

*per\_visual\_info*: LISTofVISUALINFO

where:

VISUALINFO: [core\_visual\_id: VISUALID

screen: CARD8

level: INT8

transparency\_type: CARD8

unused: CARD8

transparency\_value: CARD32

min\_hw\_colormaps: CARD8

max\_hw\_colormaps: CARD8

num\_colormap\_conflicts: CARD16

colormap\_conflicts: LISTofVISUALID]

- level is 0 for normal planes, > 0 for overlays, < 0 for underlays.
- transparency\_type is 0 for none, 1 for transparent pixel, 2 for transparent mask.
- transparency\_value: value to get transparent pixel if transparency supported.
- min\_hw\_colormaps: minimum number of hardware colormaps backing up the visual.
- max\_hw\_colormaps: maximum number of hardware colormaps backing up the visual.

(architectures with static colormap allocation/reallocation would have min = max)

- `num_colormap_conflicts`: number of elements in `colormap_conflicts`.
- `colormap_conflicts`: list of visuals that may conflict with this one. For example, if a 12-bit colormap is overloaded to support 8-bit visuals, the 8-bit visuals would conflict with the 12-bit visuals.

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# Chapter 4. Events and Errors

No new events or errors are defined by this extension.



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## **Chapter 5. Changes to existing protocol.**

None.

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# Chapter 6. Encoding

The name of this extension is "Extended-Visual-Information".

The conventions used here are the same as those for the core X11 Protocol Encoding.

## GetVersion

|    |        |                      |
|----|--------|----------------------|
| 1  | CARD8  | opcode               |
| 1  | 0      | EVI opcode           |
| 2  | 2      | request length       |
| 2  | CARD16 | client_major_version |
| 2  | CARD16 | client_minor_version |
| => |        |                      |
| 1  | 1      | reply                |
| 1  |        | unused               |
| 2  | CARD16 | sequence number      |
| 4  | 0      | length               |
| 2  | CARD16 | server_major_version |
| 2  | CARD16 | server_minor_version |
| 20 |        | unused               |

## GetVisualInfo

|     |                  |                 |
|-----|------------------|-----------------|
| 1   | CARD8            | opcode          |
| 1   | 1                | EVI opcode      |
| 2   | 2+n              | request length  |
| 4   | CARD32           | n_visual        |
| 4n  | CARD32           | visual_ids      |
| =>  |                  |                 |
| 1   | 1                | reply           |
| 1   |                  | unused          |
| 2   | CARD16           | sequence number |
| 4   | n                | length          |
| 4   | CARD32           | n_info          |
| 4   | CARD32           | n_conflicts     |
| 16  |                  | unused          |
| 16n | LISTofVISUALINFO | items           |

## VISUALINFO

|   |          |                        |
|---|----------|------------------------|
| 4 | VisualID | core_visual_id         |
| 1 | INT8     | screen                 |
| 1 | INT8     | level                  |
| 1 | CARD8    | transparency_type      |
| 1 | CARD8    | unused                 |
| 4 | CARD32   | transparency_value     |
| 1 | CARD8    | min_hw_colormaps       |
| 1 | CARD8    | max_hw_colormaps       |
| 2 | CARD16   | num_colormap_conflicts |

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# Chapter 7. C Language Binding

The C functions provide direct access to the protocol and add no additional semantics. For complete details on the effects of these functions, refer to the appropriate protocol request, which can be derived by deleting Xevi at the start of the function. All functions that have return type Status will return nonzero for success and zero for failure.

The include file for this extension is: < X11/extensions/XEVI.h>.

```
Bool      XeviQueryVersion(      *display,      *major_version_return,
*minor_version_return);
```

|                             |  |
|-----------------------------|--|
| <i>display</i>              | Specifies the connection to the X server.          |
| <i>major_version_return</i> | Returns the major version supported by the server. |
| <i>minor_version_return</i> | Returns the minor version supported by the server. |

XeviQueryVersion sets *major\_version\_return* and *minor\_version\_return* to the major and minor EVI protocol version supported by the server. If the EVI library is compatible with the version returned by the server, it returns nonzero. If dpy does not support the EVI extension, or if there was an error during communication with the server, or if the server and library protocol versions are incompatible, it returns zero. No other Xevi functions may be called before this function. If a client violates this rule, the effects of all subsequent Xevi calls that it makes are undefined.

To get the extended information for any subset of visuals use XeviGetVisualInfo.

```
int  XeviGetVisualInfo( *display,  *visual,  n_visual,  **evi_return,
*n_info_return);
```

|                      |   |
|----------------------|---|
| <i>display</i>       | Specifies the connection to the X server.   |
| <i>visual</i>        | If NULL, then information for all visuals of all screens is returned. Otherwise, a pointer to a list of visuals for which extended visual information is desired. |
| <i>n_visual</i>      | If 0, then information for all visuals of all screens is returned. Otherwise, the number of elements in the array <i>visual</i> .                                 |
| <i>evi_return</i>    | Returns a pointer to a list of <i>ExtendedVisualInfo</i> . When done, the client should free the list using <i>XFree</i> .  |
| <i>n_info_return</i> | Returns the number of elements in the list of <i>ExtendedVisualInfo</i> .   |

XeviGetVisualInfo returns a list of *ExtendedVisualInfo* structures that describe visual information beyond that supported by the core protocol. This includes layer information relevant for systems supporting overlays and/or underlay planes, and information that allows applications better to determine the level of hardware support for multiple colormaps. XeviGetVisualInfo returns Success if successful, or an X error otherwise.