X Nonrectangular Window Shape Extension Protocol

X.Org Standard

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X Nonrectangular Window Shape Extension Protocol: X.Org Standard

! !

" # $ © %&% '(() * +# , #
" # $ © '((-

. $ $ # $ # /
. 0 1 / 12 / / $ / . $
. . $ # 3 # / # .
/ . / 4 / $ 5

* 6 # $ # . # #
/

* 7 +8*9: 7 + ;7; <: = 9 * +>* 9: :?*@ +8 :?@ ?; 7 7 + A B 7; ?"B>; ?,
C>* ?+* B A *7; *+ * 7 9: :?* 7 +8 A7 " :?*:C B *@ 8 *?7 8+ : : * ">B: > + 7 :?;
?+? ?8 ?,7A7?* ? ?+ 7 7?* :BB * 7 "+ @ , * +B;7 C7 B :CB7 8+ :?@ "B: A ;:A:,7
+ +* 7 B :C B *@ 9 7* 7 ? :? :"* +? +8 "+?* :"* *+ * + +* 7 9 7 : ?, 8 +A +>*
+8 + ? "+??7"* +? 9 * * 7 +8*9: 7 + * 7 > 7 + +* 7 ;7:B ?, ? * 7 +8*9: 7

7D # . # $ 6 $ /
. $ / / # / E . # $

Table of Contents

+6 6 /
' ; # '
F * # H
) G -
H 76 %
- 7 $ (
? / * # (
G (
76 F
,)

Chapter 1. Overview

* D # 6 / / # / #

* $ / / / # $.
.# . . 8 D .# .
/ / / # 1 # /II $ 6 F
. : D .# . $
/ J . $ # #
/ # 6 # # /
: D .# $
6 #

* D # 6 . . $ $ 6 6
# / / # 4 $. *
D ## . D $. # . #
/ D
/ # / / 8 D .# / / . $
$ $ # */
# # / / ## $ $ / /
# / /I $. # : D# 6
/ # $. D# #
/ / . $

Chapter 2. Description

7 / /06 / # # 2 $ 5
* $ $
# / / / // # 0 $ 2 * # $
$ $ 6 / / $ #
* / $ $ # $
/ / * # $ $ $
1 1 #

: # / // 6 $ $ $ # $
/ / $ J # $ / $ $
. 0 $ 2J # $ / . $
$.
8 / // E
/ $ # #
$ $ 0 6 / / $ 25

```
bounding.x = -bwidth
bounding.y = -bwidth
bounding.width = width + 2 * bwidth
bounding.height = height + 2 * bwidth

clip.x = 0
clip.y = 0
clip.width = width
clip.height = height

input.x = -bwidth
input.y = -bwidth
input.width = width + 2 * bwidth
input.height = height + 2 * bwidth
```

* D / . . $ #
# $ # $ / $. / $ *
/ $
* # 6 $ / /
/ 6 / / $ 0 $ 4 .
G / / / .6 2 * . . # $
$ # 6 5 $.# D $ $ #
$. / / * . # $ $ #
D # / 6 D

9 $ D $/ / # # # $ / #
$ / $

* / /
$ $ / $ $: #
$ $ $ $ /
6 $ $ * . / /
. $ 0 $ . . $ 2 $ / $
/ / / $

" 6 $ $. J $ $
. 6 $ $ $ $
D $ $ / /
$ 6 $ $ / $.
$ $

* / /
# $ / # $ $ $:
# # $ # $
$ $ / 6 # $

" 6 # $. J # $.
6 # $ # $ # D
$ / / $ $
$ 6 # $ / $.
# $ 6 $ $

* / / / 6
$ $ 6 # $ $.#
# $.# $
# D / / # # ? / //
E / / 6 / # $
/ / : E / # 6 / / . 6 $
. . $

: # / / 6 $ / / / ##
6 # $ * 6 . / /
6 $ $ / $ * / /I $ 0 $ #
$ $ / / # . 2
D $ $ # $

* / /
# $ / # $ $ $:
# # $ # $
$ $ / 6 # $

" 6 # $. J # $
. 6 # $ # $ #
D # $ / / $
$ $ 6 # $ / $.
# $ 6 $ $

: $ $ 6 $
$ # / /J / #
/ / # 6 / $ $
6 $ $ / 6 / // $
6 # 76 $ / //
6 / / 4 6 . $

: InputOnly / / 6 $ # $ Match
.# # $ InputOnly / / # #
$ G D

* 6 . # $ # # $ / /
6 # . $ G $ $ $
/ / 6 # $ $ $
$ $.# . #

Chapter 3. Types

* / $ # G 6 G

: 7K ?;5 L Bounding Clip Input M

: 7K+ 5 L Set Union Intersect Subtract Invert M

Set $ # D# G
/ $ Union
$ $ # /
$ Intersect $
$ # / $ Subtract
$. $ # /
$ Invert $.
$ # / $

Chapter 4. Requests

ShapeQueryVersion

NO

. 4 5 ": ; -

. 5 ": ; -

* G 6 6 : 7 D
* . . 4 6 0 2 . 6
0 2

ShapeRectangles

5 9 ?;+9
5 : 7K ?;
5 : 7K+
5 ?* -
5 B * 7"*:?,B7
5 L UnSorted YSorted YXSorted YXBanded M
7 5 Window Length Match Value

* G # $ 6 $ / /
# # 0D+ + 2 $ $ * $
. 0 # # #2 / D $ $ 0 #
2 / / #
$ / / ? $.#
# $.# $ J . # $ None ShapeMask

/ $ $ #
$ $. * . # 6 # 6 * . $
$ 6 . # SetClipRectangles
G $ # 6 . $ Match
G $ $ #
7D # UnSorted , $ $
$ $ / UnSorted . $
YSorted . $ $
@ $ YXSorted YSorted $
/ G @ $ $ $ YXBanded
YXSorted G $ 6 # @ $
6 @ $ @ D

ShapeMask

5 9 ?;+9 5 : 7K ?; 5 : 7K+ 5 ?* - 5
A: None
7 5 Window Pixmap Match Value

* G # # D. # None . None ,
# $. 6 . / / $ 6 $
6 $ * ShapeNotify 6 $ G
G ShapeQueryExtents / # #
6 # D. # # 6 $ /
$ E D . /
/ $ # D+ + * $ $. 0
#2 / D $ $ 0 2
/ / # $
/ / * # D. # / /. 6
. Match

ShapeCombine

5 9 ?;+9
5 : 7K ?;
5 : 7K+
5 ?* -
5 9 ?;+9
5 : 7K ?;
7 5 Window Match Value

* $ / / .
/ / $ D+ + . / $
/ / * #
$ / / * / / .
. Match

ShapeOffset

5 9 ?;+9
5 : 7K ?;
5 ?* -
7 5 Window Match Value

* $. 6 6 #
. D+ +

ShapeQueryExtents

5 9 ?;+9

NO

$ # 5 C++B
# # 5 C++B
DC $ #5 ?* -
C $ #5 ?* -
/ C $ #5 ": ; -
$ C $ #5 ": ; -
D" # #5 ?* -
" # #5 ?* -
/ " # #5 ": ; -
$ " # #5 ": ; -
7 5 Window

* $ # # True # $
$ 6 # False .* D / $ 6
D $ / $ #
D # $ $ #

ShapeSelectInput

5 9 ?;+9
5 C++B
7 5 Window Value

$ True 6 G $ ShapeNo-
tify 6 / 6 $ # # $ # / /
$ False 6 # $
6

ShapeInputSelected

5 9 ?;+9
NO 5 C++B
7 5 Window

True ShapeNotify 6 / / $

ShapeGetRectangles

5 9 ?;+9
5 : 7K ?;
NO $ 5 B * 7"*:?,B7
$5 L UnSorted YSorted YXSorted YXBanded M
7 5 Window, Match

: $ $ $ $
$ * . $ $6 .
ShapeRectangles G

Chapter 5. Events

ShapeNotify

5 9 ?;+9

5 : 7K ?;

5 C++B

5 ?* -

5 ": ; -

5 * A7 *:A

9 6 $ # # # / / .
ShapeNotify 6 ShapeSelectInput G

/ $ 0 $ #2 . J #
True/ / / # # False/ / /
$ # # * D / $
D # 9 # False / D
$ * . .# 6 . / # /
$

Chapter 6. Encoding

7 $ . . 6

* . D 1 : 71

New Types

```
SHAPE_KIND
     0     Bounding
     1     Clip
     2     Input


SHAPE_OP
     0     Set
     1     Union
     2     Intersect
     3     Subtract
     4     Invert
```

Requests

```
ShapeQueryVersion
     1     CARD8               opcode
     1     0                   shape opcode
     2     1                   request length

=>
     1     1                   Reply
     1                         unused
     2     CARD16              sequence number
     4     0                   length
     2     CARD16              major version
     2     CARD16              minor version
     20                        unused


ShapeRectangles
     1     CARD8               opcode
     1     1                   shape opcode
     2     4+2n                request length
     1     SHAPE_OP            operation
     1     SHAPE_KIND          destination kind
     1                         ordering
           0     UnSorted
           1     YSorted
           2     YXSorted
           3     YXBanded
```

```
     1                       unused
     4     WINDOW            destination window
     2     INT16             x offset
     2     INT16             y offset
     8n    LISTofRECTANGLE   rectangles


ShapeMask
     1     CARD8             opcode
     1     2                 shape opcode
     2     5                 request length
     1     SHAPE_OP          operation
     1     SHAPE_KIND        destination kind
     2                       unused
     4     WINDOW            destination window
     2     INT16             x offset
     2     INT16             y offset
     4     PIXMAP            source bitmap
           0     None


ShapeCombine
     1     CARD8             opcode
     1     3                 shape opcode
     2     5                 request length
     1     SHAPE_OP          operation
     1     SHAPE_KIND        destination kind
     1     SHAPE_KIND        source kind
     1                       unused
     4     WINDOW            destination window
     2     INT16             x offset
     2     INT16             y offset
     4     WINDOW            source window


ShapeOffset
     1     CARD8             opcode
     1     4                 shape opcode
     2     4                 request length
     1     SHAPE_KIND        destination kind
     3                       unused
     4     WINDOW            destination window
     2     INT16             x offset
     2     INT16             y offset


ShapeQueryExtents
     1     CARD8             opcode
     1     5                 shape opcode
     2     2                 request length
     4     WINDOW            destination window

 =>
     1     1                 Reply
     1                       unused
```

```
     2     CARD16              sequence number
     4     0                   reply length
     1     BOOL                bounding shaped
     1     BOOL                clip shaped
     2                         unused
     2     INT16               bounding shape extents x
     2     INT16               bounding shape extents y
     2     CARD16              bounding shape extents width
     2     CARD16              bounding shape extents height
     2     INT16               clip shape extents x
     2     INT16               clip shape extents y
     2     CARD16              clip shape extents width
     2     CARD16              clip shape extents height
     4                         unused


ShapeSelectInput
     1     CARD8               opcode
     1     6                   shape opcode
     2     3                   request length
     4     WINDOW              destination window
     1     BOOL                enable
     3                         unused


ShapeInputSelected
     1     CARD8               opcode
     1     7                   shape opcode
     2     2                   request length
     4     WINDOW              destination window
 =>
     1     1                   Reply
     1     BOOL                enabled
     2     CARD16              sequence number
     4     0                   reply length
     24                        unused


ShapeGetRectangles
     1     CARD8               opcode
     1     8                   shape opcode
     2     3                   request length
     4     WINDOW              window
     1     SHAPE_KIND          source kind
     3                         unused
 =>
     1     1                   Reply
     1                         ordering
           0     UnSorted
           1     YSorted
           2     YXSorted
           3     YXBanded
     2     CARD16              sequence number
     4     2n                  reply length
```

```
      4     CARD32              nrects
      20                        unused
      8n    LISTofRECTANGLE     rectangles
```

Events

```
ShapeNotify
      1     CARD8               type (0 + extension event base)
      1     SHAPE_KIND          shape kind
      2     CARD16              sequence number
      4     WINDOW              affected window
      2     INT16               x value of extents
      2     INT16               y value of extents
      2     CARD16              width of extents
      2     CARD16              height of extents
      4     TIMESTAMP           server time
      1     BOOL                shaped
      11                        unused
```

Glossary

$ $ * # / / / // # *
6 / # 5

$ * / / $ $
* $ / # / /
/ $ / / / /
$ # # / / / # / /

$ * $ $ / PP II
#

$ $ * $ # / /
E 6 / /

$ * $ # / /
E 6 / / D

$ * $ # / /
E 6 / /

$ $ * $ / / / . 6
D / # ShapeBounding .* $
4 / $ $ #
6 $ $

$ * $ / / / . 6
D / # ShapeClip . * $
4 / # $
$ $ # 6 # $

$ * $ / / / . 6
D / # ShapeInput . * $
4 / # $
$ $ # 6 # $

6 $ * # / / $
$ 0 D $ 6 ## $ /
/ 2 9 / / $ $
6 $ $ $
$ $ $ + / 6
$ $. $ $

6 # $ * # / / 0 D
$ 6 ## $ / / 2 9 / /
# $ $ $ 6 #
$ # $ #
$ 0 2 $ $ 0 2 + /
6 # $. # $

6 # $ * # / / 0 D $
6 ## $ / / 2 / PP II #
9 / / # $ $

$ 6 # $
# $ # $ 0 2
$ $ 0 2 + / 6 # $
. # $