X Transport Interface

X Consortium Standard

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X Transport Interface: X Consortium Standard

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© $$% $$& ' ( )

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# , , - - , - ' .
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' (/ 2 / 22 3 '4/5 3/46 57 (4 46/ 843 5 /' 2)(/'7 22 / +2/5(3 '4/5
8 5 6 '4 9/2/4: '(8/4'5 /' ' 5 5'4 6 22 ' 95 2/ 925 8 ': +5 / 2 /'(/ 5 4
' 5;)5'4/ 2 (75 ': (75 36 4 5 5 5)24/'7 8 2 8) 5 (4
+ 8/4 365465 /' ' 4/ ' 8 '4 4 '572/75' 5 465 4 4/) 4/ ' / /'7)4
8 /' "5 4/ ' 3/46 465) 5 +5 8 ' 5 8 46/ 843 5

< $$% $$& =""= 4 7

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, > ? , - @A , - - # - #
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- , - , C , - # D

4 * # ,
, -

465 843 5 / + /(5(? / @ 3/46)4 3 '4: 8 ': E/'(5 + 5 / +2/5(/' 2)(/'7
9)4 ' 4 2/ /45(4 465 3 '4/5 8 5 6 '4 9/2/4: 8/4'5 8 + 4/)2 +) + 5 '(
' '/'8 /'75 5'4 /' ' 5 5'4 6 22 465 +5' 7)+ 95 2/ 925 8 ': 2 / (75
465 2/ 9/2/4: 365465 /' ' 4/ ' 8 '4 4 4 4 465 3/ 5 / /'7 8)4 8
/' "5 4/ ' 3/46 465 843 5 465) 5 465 (5 2/'7 /' 465 843 5

51 , 4 7 * # -
, - - - F , 4 7

3 - . , 4 7 /

Table of Contents

4 4 / , *
+ 7
= * * - , / , =
% (, , , 8 %
& / (&
&
/ , H
G 51 4 / +/ !
/ , +/ !
) +/ "
H 4 (,
! 6 4 (+/ =
I , # G
$ 4 , (, H
" / ' !

The X Transport Interface

(# >' A - , > A

4 H >
, # A , -
, , * # -
, * *

Chapter 1. Purposes and Goals

4 4 / ,
,
4 +/
* , 3 -) , +/ -
, - , , - , - . #
1 4 / ,

4 , * , #ifdef TRANSPORT #ifdef
PLATFORM #

4 , * # , ,
8
(+

Chapter 2. Overview of the Interface

4 , * +/ , 4 , +/
, - . #
4 , +/ , ,
- , 4
, , 5 #
, , , # *

4 +/ * , select() poll() 4 ,
*
, ,
, / - , - „ ,

Chapter 3. Definition of Address Specification Format

, , - # 1

protocol/host:port

- *protocol* , , , , ,
, , #*

4 *host* , ,
' - . * + >' +A

4 *port* , , 4 * + >4 +A 4
, , 4 + , #
#, - ,

Chapter 4. Internal Data Structures

4 - C -
, ,

Xtransport

5 4
, 5 ,
4 , D

```
typedef struct _Xtransport {

    char *TransName;
    int  flags;

    XtransConnInfo (*OpenCOTSClient)(
    struct _Xtransport *,     /* transport */
    char     *,     /* protocol */
    char     *,     /* host */
    char     *      /* port */
    );

    XtransConnInfo (*OpenCOTSServer)(
    struct _Xtransport *,     /* transport */
    char *,     /* protocol */
    char *,     /* host */
    char *      /* port */
    );

    XtransConnInfo (*OpenCLTSClient)(
    struct _Xtransport *,     /* transport */
    char *,               /* protocol */
    char *,               /* host */
    char *               /* port */
    );

    XtransConnInfo (*OpenCLTSServer)(
     struct _Xtransport *,   /* transport */
     char *,     /* protocol */
     char *,     /* host */
     char *     /* port */
    );

    int     (*SetOption)(
     XtransConnInfo,          /* connection */
     int,               /* option */
     int               /* arg */
    );
```

```
int     (*CreateListener)(
 XtransConnInfo,          /* connection */
 char *,               /* port */
 int               /* flags */
);

int     (*ResetListener)(
 XtransConnInfo          /* connection */
);

XtransConnInfo (*Accept)(
 XtransConnInfo          /* connection */
);

int     (*Connect)(
 XtransConnInfo,          /* connection */
 char *,               /* host */
 char *               /* port */
);

int     (*BytesReadable)(
 XtransConnInfo,          /* connection */
 BytesReadable_t *     /* pend */
);

int     (*Read)(
 XtransConnInfo,          /* connection */
 char *,               /* buf */
 int               /* size */
);

int     (*Write)(
 XtransConnInfo,          /* connection */
 char *,               /* buf */
 int               /* size */
);

int     (*Readv)(
 XtransConnInfo,          /* connection */
 struct iovec *,          /* buf */
 int               /* size */
);

int     (*Writev)(
 XtransConnInfo,          /* connection */
 struct iovec *,          /* buf */
 int               /* size */
);

int     (*Disconnect)(
 XtransConnInfo          /* connection */
);

int     (*Close)(
```

```
     XtransConnInfo          /* connection */
    );

} Xtransport;
```

4 *flags*, , , - # .D

4 'J 2/ * #

4 'J2 2 2 2 "

4 'J 9 4 4 .

, # *flags*, - #D

4 'J(/ 925(

4 'J' 2/ 45' * - #

4 'J')'2/'E . ,
.

XtransConnInfo

5 - * K /, C
, 4 , , 4
, D

```
typedef struct _XtransConnInfo *XtransConnInfo;

struct _XtransConnInfo {
    struct _Xtransport     *transptr;
    char     *priv;
    int          flags;
    int          fd;
    int          family;
    char     *addr;
    int          addrlen;
    char     *peeraddr;
    int          peeraddrlen;
};
```

Chapter 5. Exposed Transport Independent API

4 +/ * 4 +/
+/ , 4 ,
, 4 +/ - * ,
* , - , , * 4
, 1 * , ,
1 #

, , 4 '>, A K ,
- 8 1 - ,
4 '> 4 A _X11TransOpenCOTSClient

, ,
, / - * * , - * ,
#

Core Interface API

L / , 4 '> 4 A> M A

4 , 4 ,
4 *address* , , * -
- 4 , K
C ')22 ,

L / , 4 '> 4 * A> M A

4 , 4 ,
* 4 *address* , - *
- 4 , K C
')22 ,

L / , 4 '> 24 A> M A

4 , 2 4 ,
4 *address* , , * -
- 4 , K
C ')22 ,

L / , 4 '> 24 * A> M A

4 , 2 4 ,
* 4 *address* , - * -
4 , K C
')22 ,

L 4 '> A> / , #A

4 , - setsockopt() ioctl()
- . 4 *connection* - , J 4

M>A , 4 *option* -
4 * , , 4 *arg*
* K 4
, " ,

9 # , TRANS(GetOption)

L 4 '> 2 A> / , M , # A

4 , * , # 4 *connection* - , TRANS(OpenCOTSServer)()
TRANS(OpenCLTSServer)() 4 *port* , -
, # /, ')22
* 4 + , /,
, - , 4 *flags*
((J/'J) 5J 22 35(-
, , - 5 ((/') 5 -
TRANS(CreateListener) , , , 4 , "
,

L 4 '> 2 A> / , A

3 * 8 1
1 . , ,
/, 4 *connection*
- , TRANS(OpenCOTSServer)
() TRANS(CreateListener)() 4 , -
, , - # * D 4 ' J 5 54J' + 4 ' J 5 54J'53J8(
4 ' J 5 54J8 /2) 5

L / , 4 '> A> / , A

* ,
4 *connection* -
, TRANS(OpenCOTSServer)() TRANS(CreateListener)
() 4 , - - K C
')22 -

L 4 '> A> / , M A

4 , * 4 *connection*
- , TRANS(OpenCOTSClient)() 4 *address* ,
4 + - /,
- # 4 , "
,

L 4 '>9 A> / , 9 J M AN

4 , * , 9

L 4 '> A> / , M , F A

4 , - , K 4
- , K F ,
. 24

L 4 '>3 A> /, M , F A

4 , - - K , 4
- . , K F 24

L 4 '> *A> /, * M , F A

TRANS(Read)()

L 4 '>3 *A> /, * M , F A

TRANS(Write)()

L 4 '>(A> /, A

4 , - 4 , .
/ . , shutdown()

L 4 '> A> /, A

4 , , -
- /, TRANS(Disconnect) -

L 4 '>/2 A> /, A

4)5 ,

L 4 '>7 A> /, M, M
MM A

4 , getsockname() 4 , - ,
, ' - * *
4 ,
- Connect() Accept()

L 4 '>7 + A> /, M, M
MM A

4 , getpeername() 4 , - ,
, ' - * *
4 ,
- Connect() Accept()

L 4 '>7 ' A> /, A

, -

L 4 '> . 4 * 2 A> M M J
M J /, MM J A

4 , * / - 4 *
, *partial_ret*-

4 , - . *count_ret* ,
connections_ret ,

L 4 '> . 24 * 2 A> M M J
M J / , MM J A

4 , * / - 24 *
, *partial_ret* -
4 , - . *count_ret* ,
connections_ret ,

Utility API

4 , - , , * ,
/ , +/ 4 , # * *

L 4 '> * A> M, M M A

4 , * . F
> 8J/'54 8J)'/ , > 8 / 8
2 AA

Chapter 6. Transport Option Definition

4 , - # , , TRANS(SetOption)() , /, , - #

L 4 ' J' '92 E/'7

4 . # , /, # - . # /, # " - . #

L 4 ' J 2 5 '5 5

4 - - - 1 /, # - - 1 /, # " - - 1

Chapter 7. Hidden Transport Dependent API

4 ,
4 , 51 4 / +/
, * # „ „ . #ifdef
SUNSYSV ,

L /, M 4 > J M M
M M A

4 , 4 4 *thistrans*
4 *protocol*
host *port* # # # ,
- TRANS(OpenCOTSClient)() 4 ,
F , /,
, 4 , -
, 4 , /, -
, ,

L /, M 4 * > J M M
M M A

4 , 4 4 *thistrans*
4 *protocol*
host *port* # # # ,
- TRANS(OpenCOTSClient)() 4 ,
F , /,
, 4 , -

L /, M 24 > J M M
M M A

4 , 2 4 4 *thistrans*
4 *protocol*
host *port* # # # ,
- TRANS(OpenCOTSClient)() 4 ,
F , /,
, 4 , -
, 4 , /, -
, ,

L /, M 24 * > J M M
M M A

4 , 2 4 4 *thistrans*
4 *protocol*
host *port* # # # ,
- TRANS(OpenCOTSClient)() 4 ,
F , /,
, 4 , -

L > J M #A

4 , * - , #
, 4 / , / ,
, , ,
4 , - * , „
,

L 2 > J M M , # A

4 , . , *
, # K 4 *port*
, - , 4 *flags*
((J/'J) 5J 22 35(, #
-
, # " 4 /+*H - .
/+*H /+*& 4 , -
, ,
, / , 4 -
, # K

L 2 > J M A

4 , , #

L /, > J M A

4 , - , #
K 4 *thistrans* - ,
* 4 - O
/, # -
, ,

L > J M M M A

4 , * 4 *host* *port*
* - 4
- `Read()` `Write()`

L 9 > J M 9 J M A

4 , `BytesReadable()` 4 -
* O - , # -

L > J M M , F A

4 , F , ,

L 3 > J M M , F A

4 , - F , ,

L *> J M * M , F A

4 , , `readv()`

L 3 *> J M * M , F A

4 , , `writev()`

L (> J M A

4 , - , /,
-
, - * ,,

L > J M A

4 , - .

Chapter 8. Configuration

4 , , , / 1
1 # 4 + ")'/ " 2 2 "
4 5 "- - , # ,

/ H -, # - 8 #
vendor.cf site.def ,#,

/ ! , # - # configure
- XTRANS_CONNECTION_FLAGS , xtrans.m4

#define			
4 + "	--enable-tcp-transport	5	/'54 >/+*&A (.
/+*H	--enable-ipv6	51	4 + " /+*H .
)'/ "	--enable-unix-transport	5	)'/ (.
4 5 "		5	42/
2 2 "	--enable-local-transport	5	: 2
('54 "		5	(5

Chapter 9. Transport Specific Definitions

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(5		, (5	# # , C 51 D 0 P "0
'54-	1	, '54-	' , ,
/		, /	' , ,
2		> # A	# # 01 * "0 0, * "0

Chapter 10. Implementation Notes

4 , # *
- 4 ,
, - # *

/ H , , , - xc/lib/xtrans

/ ! , , , * * lib/libxtrans
.#, # *${prefix}*/X11/Xtrans
, -

, , , TRANS(func)() 4 TRANS()
,

```
#if (__STDC__ && !defined(UNIXCPP)) || defined(ANSICPP)
#define TRANS(func) _PROTOCOLTrans##func
#else
#define TRANS(func) _PROTOCOLTrans/**/func
#endif
```

+ 4 2- K , -
+ 4 2- , ,
* 8 /5

* 4 / , * -,
*TRANSPORT*trans.c 4 , - ,#
, # * configure 9 - 1 xfstrans.c
, , *

```
#include "config.h"

#define FONT_t 1
#define TRANS_REOPEN 1
#define TRANS_SERVER 1

#include <X11/Xtrans/transport.c>
```

4 , , , -

Xtrans.h 8 , , 4 /
+/

Xtransint.h) ,

Xtranssock.c . , 4 (+/

Xtranstli.c 42/ , 4 (+/

Xtransdnet.c (5 , 4 (+/

Xtranslocal.c / , 4 (+/, : 2

Xtrans.c 51 4 / +/8

Xtransutil.c ,) , 4 / ,

4 , Xtransint.h , - *
Xlibint.h Xlibnet.h 4 - . , * ,
4 K *