Security Extension Specification

X Consortium Standard

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Security Extension Specification: X Consortium Standard

© !! "#

$%& '()$ * & +' , (+ & -*' +'. +$%(/$ * *0$1 () *01 2+0 & , &" (+3,4+& +0 4/ +05
6/$ 0($ 4+3+$& $($%& * *0$+&' () 3& %*0$*6+4+$1)+$0&")(* ,* $+ /4* ./ ,('& *0
0(0+0) +05&3&0$ +0 0(& &0$ '%*44 $%& (0'($+/3 6& 4+*64&)(*01 4*+3 *3*5&' (
($%& 4+*6+4+$1 %&$%& +0 *0 * $+(0 () (0$ * $ $($ (($%& +'& * +'+05) (3 (/$ ()
(+0 (00& $+(0 +$% $%& '()$ * & ($%& /'& (($%& &*4+05' +0 $%& '()$ * &

&78 8 8 # 9 "# " :
" ' 9 : : " : " ; 9 # "#

Table of Contents

+ "8 <
< =" <
' 8" >" <
' 8" 5 *" ; <
' 8" ? *" ; A
@ =" B
" 8 + / B
&7 ' 8"
2 ' 8"
+# ' 8"
, ' 8"
3 8 " ' 8"
A 0 : *" ; 3 !
B & 8
$
=" & 8
& & 8 <
*" ; 3 & 8 <
4 " 6 A

Chapter 1. Introduction

$ '8" 7 8 : 8 8
8" $ '8" 7 " 7 " " 8 C 9
:D

Chapter 2. Requests

SecurityQueryVersion

$ =" " # E # "# 9 7

' 8" >"

8 # E	*
8 #	*
FG	
# E	*
#	*

$ 8 # E 8 # "# 8 : 9
8 8 : # # $ # E
"# " 8 8 7 8
" " $ # =" 8 * # #
8 C " D " # #" " $
E # : 8 9 9" " 9
' 8" 8 # 8 + # E : "
8 # 9 8 # 8 # : " 8 # 9
" : 8 # 8 ' " 8 9
8"# : " # E 9 C D #
9 ; CHD

" ' 8" 7 #" " ' 8" >" ="
9 ' 8" =" 8 # 8 I
: 8 : " 9 C' 8" # # : ?D

SecurityGenerateAuthorization

$ =" 8 " 8 " : " ; : 8 9 8
8 8 8 8 " =" 8 8 " : " ;
: # 9 8 8 8 9 " ;

' 8" 5 *" ;

" ; 8 #	'$ +05
" ; 8	'$ +05
" # ?	6+$3*'2
"	4+'$ 9 *4/&
FG	
" ;	*/$%+
" ; "	'$ +05

& J AuthorizationProtocol Value Alloc

" ; 8 # # 9 " ; # 9 : 8
" : " ; " =" 8 8 " 8
8 +9 " ; 8 # "
9 " ; 8 # ? 9 " ;
8 # *" ; , 8 "

" ; 8 " ; # 8 9 8 8 "
: " ;

+ 9 7 " ; # ="
" K3+$3*5+ ((2+& K : # " 9 " ;
8 C 8 " D $ # " " ;
8 "8 9 # " "
; (" ; # 8 " : 9
" ; 8

$ " # ? " 8 9 " 9 " ;
7 8 ; $ " J

* "	$	9 "
# "	* @<	H
"	+ 0	0
"	L' 8" $ "	
	' 8" / " M	' 8" / "
# ?	' 8" *" ; ?	
	0	0

" # " 8 9 " ; * # " " 9
; # " ; : 7) ; # " " :
" 8 8 # " ;
9 8 8 " ; 9 : 8 8 "
" ; " # " ; " # 8 " C0
: " ; 8 9 8 8
" ; D '" =" 8 8 # " " ; : 9
$ 9 8 K9 9 K " 8 9 8

" 8 " + 9 * 8 5 " 7
0 * " : 8 " " " "
; 8 9 " ? 8 " ' 8"
? *" ; =" $ * 8 5 " 7 8
8 "

" : 8 " " ; " " "
+9 " 9 8 ' 8" $ " ' 8" /
" " "

? 9 : 8 8 9 "
" ; 7 ? 9 # ? 8 ' 8" *"
; ? ' 8" *" ; ? 8

$ '8" *" ; ? 8 9 : 9 J

)	$
" ;	*/$%+

: " ; 98 9 " ; : ?

+9 " # ? 89 " 88"

$ " " ; ; " " =" 9 "
; 9 " =" $ " 8 9 */$%+ ="
E 9 # " 8 9 8 "8 #
" ? # $ " "# 8 " # */$%+
9 7

" ; " 8 " " # " ;
898: # ? 8 8 : " ;) K3+$
3*5+ ((2+& K " ; " " " ;
8 8 8 " # + ="
" ; # " " ; " :

SecurityRevokeAuthorization

$ =" " ; 8 '8" 5 *" ;

'8" ?*" ;

	*/$%+

& J Authorization

+9 " ; # " ; *" ; 8
8" (: =" ? 8 8" 8 8 " "
; 89 " ; $ " ; 9 # N
9" " # 8 8 8: " ; : 9

Chapter 3. Changes to Core Requests

* " 7 # 9 9 # 8 ="
9 : :

Resource ID Usage

+9 " " 8 #? =" 89 "8 + :
" " 8 8 =" 8 8
89 "8 7 $ 9 : 78 *
" " 8 8 J

" >" $ 5 5 # $ =" : "
8

< " 8 # + " 9" 8 # 9 9 8 8
" 9 # 8 # ="

@ 89 : : J

: 9 9 ,7# 5 >" 6 ';

9 9 :

8 : :9 9 # 4 , 5 :* "

: : 8 9 9 95 ,

: :9 9/ 6"

9 9' & " 9 9 9 : " C$
8 8 + 3 89 : : :
D

$ 9 9' &)

$ #?9 9' & # '"8" 0 9
8 (9'" "8" 8 : '" "8" 0 9

$ /# 0 9 9 " =" 3

: :9 9 :* " " 9 "#?8
#? 8 " '"8" 0 9 ,
8 (9

+"/&J : : 78 9 O ,
:C D 8" : >" , C#8 D 5
3 &

Extension Security

$ 7 "8 9 8" 8" 7 * 8"
7 9 " " " 8 I
9 8 8" 8 8 ? : " " 8 8 " " #
9 9 " 8 $ 9 # 9 " 8 9"
9 7 8 # # # " ? K K
7 8 8" : ? * 7 8 8"
8 8" $ # # 9 : 7 9
8" 8" 8 9 8 9 8

ListExtensions: " # 9 8" 7 " " 8

+9 " " 8 " QueryExtension 8" 7
" : 9) #E 8
9 ; 8 7 "

+9 " " 8 "88 9" " #E 8 9 8" 7
7 8" =" : #E 8 : 9 :
="

Keyboard Security

$ 8 8 8 " "
8 9 # ? " : # 9 " 8
#9 # 9 : " 9 ?

$ 9 # ? =" # 9 :
8 " " 8 # 9 =" 7 8"
' 8 9 8 9 8 ? :
8" " 9 8" ? : :
8 9 ? :" " "
8 9 : 8 J

$ 8 "P : 9 ? "
QueryKeymap KeymapNotify ;

< 5 2 " " 9 * 5

@ SetInputFocus 0 # 5 *8 + "
3Q$*2&Q)(/' # 8 # 8 9 + 3 : : ? : "
" 8

A , 5 2 :" : 8
8

+9 " " 8 # " 9 9 : =" 9
9 8 8 8 *88 J ' 3 9 3 2
3 2

+9 + "(: : : " " 8 : "
8 # # : : : $ 8 " #

Image Security

Property Security

* GetProperty =" # 7
7 " 8

$ # 8 8 8 : : 9 #" "
8 < +9 #" 8 8 9"
8 $ # 9 " " 8 J

R $ " " ListProperties

R PropertyNotify " 9

R GetProperty " 7 C
" 0 9 # 9 ; " # D

) 8 " 8 8 #"
J

R $ " " ListProperties

R PropertyNotify " 9

R GetProperty " 7 C 9
D " " # C " 9 # "
K 9 " K 9 ; D

Miscellaneous Security

+9 " " 8 # " ChangeHosts ListHosts SetAccessCon-
trol 99 8 8 8 *88

+9 " " 8 # " ConvertSelection 8 : "
8 : : : ' 8 0 9
=" : 0

< $ "# # # 8" :

Chapter 4. New Authorization Method

$ 7 8 " : " ; # # K >/& 1'& / +
$1 K + " : 7 "8 9 : 7
: # 8 8" 8 : "
=" : " ; 9 $ # "
" 9 # # ? 8) 7 # 9 : 7 #
8 9 : 8 8 8 # 8

$ " " ; # 8 C 7 D K >/& 1'& / +
$1 K " ; 8 # 8 8 " #
$ " ; 8 # # # 8 8"
8 : +9 "88 9 9 N *" 8
" 8" 7 # 8 9
8" 8 + 8 8 " 8 8 "
" " " ; 8 # " "
" ; 8 8 +9 "88 9 9 N
*" 8 " 8" 7
C 8 # 9 # D 9 8" 8
8 9 : : *" 8 + 8
8 " 8 8 8

+9 " ; 8 : K >/& 1'& / +$1 K #
8 9 8" 8 9 8 8? 9 :

authorization-protocol-data

8 # ?	6+$3*'2
8	4+'$ 9'& / +$1,(4+ 1

$ 8 # ?9 8 (8 # 9 8 &7
' , 8) 8 8 # ? '& / +$1,(4+ 1 #
8 $ # 8 8 8 # ?
8 " ": 9 # H

SECURITYPOLICY

8	L : , # M
#	4+'$ 9'$

) '& / +$1,(4+ 1 8 8 # ? &7 9 8
: =" 8 8" 7
0 8 8 9 9 7 # +9 8
, # # 8 7 # 8" I
7 #" 8" +9 8 #
" " *" 8 "88 9 9 '
8 " # 8 8 9 " # &7
'& / +$1,(4+ lI 8 9 # # # 8 # 8 :
8 # 9 7 8" "

) '& / +$1,(4+ 1 8 8 # ?' , 8 8
: # #" 8 9 " : 9 8

, 8 , # # #" 8 9 "
: 9 8 # +9 8 #
" " *" 8 "88 9 9

' , 8 : 7 : 9 # 9 8" 9 #
8 " 8 # 9 :) 7 # "
9 " 8 8 8" 9 8 9 7 8
8 " 8 : 9 7 ' : 9 7 : "
8 9 : 7 : " 8 9 8 '& / +$1,(4+ 1
: 8 , #

Chapter 5. Encoding

, 9 , 8 & 8 8"# 8 " 8 8
8

$ # 9 7 K'& / +$1K

Types

*/$%+ J * @<

Request Encoding

' 8" >"

* # E 8
H # 8
< < ="
< * 8 # E
< * 8 #
FG

" "
< * =" 8 "#
A H
< * # E
< * #
<H " "

```
SecurityRevokeAuthorization
```

* # E 8
< # 8
< < ="
A */$%+ " ;

' 8" 5 *" ;

* # E 8
# 8
< @ S C#S S@DPA S ="
< * # "# 9 " ; 8 #
< * "# 9 " ;
'$ +05 " ; 8
'$ +05 " ; 8
" " F C#S D
A 6+$3*'2 " # ? C D
T7HHHHHHH # "
T7HHHHHHH< "

T7HHHHHHHA "
T7HHHHHHH # ?
A 4+'$ 9 *4/& "

*4/&'

A * @< # "
A "
H ' 8" $ "
' 8" / "
A + "
H 0
A * @< # ?
T7HHHHHHH ' 8" *" ; ?
FG

" "
< * =" 8 "#
A C=S@DPA
A */$%+ " ;
< *
" "
= '$ +05 " ; "
" " F C=D

Event Encoding

SecurityAuthorizationRevoked

HS 7 8
" "
< * =" 8 "#
A */$%+ " ;
<A " "

Authorization Method Encoding

) " ; 8 # K >/& 1'& / +$1 K " ;
8 9 : J

authorization-protocol-data

6+$3*'2 8 # ?
T7HHHHHHH &7
T7HHHHHHH< ' , 8
4+'$ 9'& / +$1,(4+ 1 8

SECURITYPOLICY

H , #
:
* "# 9 '$ #
4+'$ 9'$ #

4+'$ 9'$ # 8 8 J 8 '$
9 : # 8 8 #
: '$

Chapter 6. C Language Binding

$ 9 7 U P 7 P 8" G * 9 #
: '8"

* 9"8 " ' " : " ; 9 "88 ;
9 9 "

Status **XSecurityQueryExtension**(*dpy, *major_version_return, *minor_version_return);

XSecurityQueryExtension #E Q Q " # Q Q "
#E # '8" 8 " +9 '8"
8# : " " ;
+9 " '8" 7 9 : "
8##" 8 : 9 8
8# " ; 0 '8" 9"8 # 8 9
9"8 +9 8 " 99 8 9 " =" '8"
8 #? " 9

Xauth ***XSecurityAllocXauth**(*void*);

+ 9 9" " " " "8" " "
" ; : 8 8 #

XSecurityAllocXauth #" " 8 " "8"
XSecurityGenerateAuthorization

) " 9 '8" 7 " "8" 9 :
9 J

$	) #	8
"	#Q	"# 9 #
8 V	#	" ; 8 #
"	Q	"# 9
8 V		" ; 8

$ " "8" " 9"8 ; 9 :J #Q
Q ; # 0/44

void **XSecurityFreeXauth**(*auth);

XSecurityFreeXauth #" " 9 " "8" 8 XSecurityAllocXauth " XSecurityGenerateAuthorization +
8 N 9 # 9 9 " "8" 8
: XSecurityAllocXauth 9"8 : # 9 # + 8
8 : " "8" " 9 # XSecurityGenerateAuthorization: 9 9"8 8" # 9

Bool **XSecurityRevokeAuthorization**(*dpy, auth_id);

XSecurityRevokeAuthorization " ; 8 9 " Q
: 8 #" " " " Q Q " # 9 XSecurity-
GenerateAuthorization * 8 8 8 : " ;
? '" =" 8 # 8 8 " " ; :
9"

Xauth *__XSecurityGenerateAuthorization__(*dpy, *auth_in, valuemask, *attributes, *auth_id_return);

XSecurityGenerateAuthorization 8 : " ; : 8 9
" $ " Q "# #" 8 XSecurityAllocXauth $
Q 9 9 " Q " ; " ;
8 # 8 8 8 +9 " ;
Q 9 9 " Q " ;
8 8 8 $ "# #
" # $ " Q "# #" 9 : XSecu-
rityFreeXauth

$ '8" *" ; * " "8 " 9 : 9 J

$	) #	3 ?
"	" Q	'8" $ " 4
"	# "	'8" $ # "
+	"	'8" 5 "
	Q# ?	'8" & 3 ?

$ 8 " # " " # ? 8
'8" 5 *" ; 8 =" $ 8 8 9 " 9
" 9 " $ "# ? "# #" : (9
3 ? 8 "# 9 " " $ Q# ?
" 8 0 '8" *" ; ? 3 ? '8" * &
3 ? + 9 8 8 9 8 '8" * & 3 ?
=" '8" *" ; ? 3 ? +9 8
8 9 " " "# 8 0/44 "# ?
"# #" ;

+9 9" 8 9 0/44 " " Q Q " 9 : ; (
: " "8 " " $ # # Q
9 9 " " "8 " : 8 9 # :
Q 9 : " ;
" $ 8 " "# # "
+9 " ; : "
Q 9 : 0/44 ; 8 $ " "
"8 " #" 9 : XSecurityFreeXauthI 8 " "
9 "8 " 9 8 # $ " Q Q " "
: 9 : ; " ; 9 8 " ;

$ '8" *" ; ? & "8 " 9 : 9 J

$	) #	8
		S '8" *" ; ?

"		T 9 =" 8
6	Q	" 9 8# 9 # ' &
V		: 9 #
'8" *" ;	" Q	? " ;