X Synchronization Extension Protocol

X Consortium Standard

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X Synchronization Extension Protocol: X Consortium Standard

!
" #
$ % # ! &
$ ' (#
) # * '
" # " #
+,
) , # --* % # .'.
, # /'-
! © -00- 1 % # ! & $* $ $*
* $* ## ! # #*) #
! © 23-3 +,

* * $ 4* $ $ # ! # $ 4 # $ 5 ! 4 # ! $*
$ $! ! ! #' 1 * * * !) # * $ +,
6 # # ! # 4 # 4 ! 4 ! # $ ' ! # $
$ $ # # 5 ! 7 ## $ 5 '

! $* 4 4 ! * # 4 ! # # 4 5 $ ## $ $
4 # 8 ! 9: 4 5 9;* $! : 4 5 5 ! # * $ 5 ! ! ! #
* * $ 4* * #!* $ # *# # * $ # # 4 ! : 4 5 * $ #
5! ! : 4 5 # 4 #! $ $ # * # ! 4 5 $ #<

! ! $! # ## #! $ $ # # # # 4 !
: 4 5 '

= :1> (% : %1, ?: :@* (=1A (%% + B 1> +B C + *) % :: 1% & * + &A +
DA +1 & 1 = (%% + : 1> % = + D & B* > + :: >1% % A& % A% 1: +
+1+ +>% + +' + +1 , + := && =) 1+:1% A D & D& >1% +B & * : 1%
1 = % & D & B* (= = % + + 1+ 1> 1+ % * 1% 1% 1 = %(: * % : + >%1 * 1A 1>
1% + 1++ 1+ (= = :1> (% 1% = A: 1% 1 = % & + : + = :1> (% '

7 # $! # * ! 4 !) # #! # $ $ # ! 5 #
! # * # ! $ # ! # : 4 5 5 ! 5 ! E 4 !) # '

Table of Contents

-' : ! E '''''''

Chapter 1. Synchronization Protocol

!) 6# # ! $ 4 7 4
##4 $44 #'!# # ! # ! E 5 #
$! ## $ $ $ 5 6$
$ ' 4 ! 5# $# $ $4 # !# ! E *
! # 4 5 6 $ # $ $ # 5 ! # ! E
4 ! # $! $ 4 ! # ## !)# '

!) # 6# # ! 5! ! ##
7 $* 5! ! # ! #5 ! # # #
! ! !# ' # ! # # $ $
$ #5 ! ! ## $ 5 6 $ 44 # 4
! $4 $ ##! 6 ! $# # ! E$'

! # ! E 7 # $# # ! 5# ! E
5 # 6 5 ! !)# '!# #
$ $! 5 6 $ 6# ## # ! E # $44
!## $44 ## #'!# # 4 $
#*5! $ * $ * $!#$ # # # ! E$'!
7 # # $# #5 ! !)# 5! ! ##
! E$'!# 5## # $
5 ! $ ## $ 6# # # 4 44 5 ! ! *
5 6* $# '

Description

! ! # #$!# 7 # 4 # ! E 5 ! !)# #
6 ! ## 4 ##4 # 4 # ! E
$ #'(! ! $ #* ! # #$ $ ##
4 ## #' # 6 ! # $
! E ' * # 6 $
! # 4 6'

! 7 # $$# Counter*Alarm* $ Fence !# 4 # # $
! # ' !# FG ! #$ $ #$
! # ' 6 # $ 5
! 5 # 4 # 4# ! E $ #* $ % %#*
%A' # #5! # ! !
4 $ # ' 4 !# 5 ## # #< $ $ $'
! 4 ! 4 !# # #' 6 4
44 # # $ # $ 5 > #'>
$ # '

! CreateCounter # 5# Counter ! ! $
7 SetCounter $ ChangeCounter ##'!# #$
! E 5 $44 #'

! # #* $ System Counters* ! ! $! #
! ! ##'! 44 4 ! ##
! # !#4 #!$ ## ! #'
! 5 $#* ## # $ $! # 5 !

7 4 ## ! ! $! 7 4 #' ! 7
$# ## ! $ #5 ! ! # #$4 $
! * $ # $ #! $ 5 ! ! 5 $
! ! ! ! % # # 4 #! $' 1 ! 7 # #
$! 5 7 # # 4 ## #'

! 7 # $# Alarm ! # ! 5# #
##5! # ! $'

! CreateFence # 5# Fence ! $
$ # # TriggerFence $ ResetFence ##* # ' CreateFence
6# $ 5 ! #5! !# ! 4 #! $ $
'! TriggerFence # ! # ! 4 H## 4 #
$ $# 44 # 5 $! 4 H## !
$'+ ! 5! 4 # $ # $! #
$$!# 7 # # # * ! 7 # #
$$ 4 $ # #$ 4 #' !
$ # #!# $4 ! # 44 #'

Types

4 !)-- # 4 # !#$
#! $! $ 4 # #$4 $! '

! 4 5 5 # #$! 7 # '

```
INT64:                  64-bit signed integer
COUNTER:                XID
VALUETYPE:              {Absolute,Relative};
TESTTYPE:               {PositiveTransition,NegativeTransition,
                         PositiveComparison,NegativeComparison}
TRIGGER:                [
                         counter:COUNTER,
                         value-type:VALUETYPE,
                         wait-value:INT64,
                         test-type:TESTTYPE
                        ]
WAITCONDITION:          [
                         trigger:TRIGGER,
                         event-threshold:INT64
                        ]
SYSTEMCOUNTER:          [
                         name:STRING8,
                         counter:COUNTER,
                         resolution:INT64
                        ]
ALARM:                  XID
ALARMSTATE:             {Active,Inactive,Destroyed}
FENCE:                  XID
```

! 1A+ % $4 # ! #$! $ # Counter' !
4 # +FG'

! % % $4 # # ! # ! %A >&:' !
4 ! # #$ $! 4 # * ! 4 !
* $! # 4 $ # '

! # 4 # $ # ! $5 4 $#
5! ! # E$' 4 ! 4 $ # 4 ! $,&
A B # #* ! # ! E$! 5 Value '
4 ! 4 $ # Absolute* ! # # ! 5 4 $'
4 ! 4 $ # Relative* ! # # $ $$! 5
4 $! 4 ! ' 4 ! # # 5 $ #$
! 4 +FG* ! # ! E$! 5 Value
' 4 # None $! # Relative* ! # ! E$
! 5 Match ' 4 # + $$ #
$ * # $'

4 ! # # PositiveTransition* ! # E$ >&:* $ 5
%A 5! ! ! #4 ## ! ! #
! ! # ' 4 ! # # NegativeTransition*
! # E >&:* $ 5 %A 5! ! ! #
4 ! ! # ## ! ! #
' 4 ! # # PositiveComparison* ! # %A 4 !
! ! # $>&: ! 5#' 4 ! #
NegativeComparison* ! # %A 4 ! # ## ! !
$>&: ! 5#' 4 ! # # 4 ! $: B
#* ! # ! E$! 5 , '
5 ! 4 None $ $ # # 5 # %A'

! (1+ 1+ ## 5 ! ## $! #! $'
! ! #! $ # #$! Await # $ $ 5! !
! 4 ! !# %A'D # !
! #! $ * # ## $! # 5!
Await # 5# ##$ 4 ! % % %A * 5! ! #
$ # ! ! # # ## ## #4# # ! 7 #'

! :B: 1A+ % $# ! 5 ! 4 System-
' ! 4 $ # ! 7 4 ! ! $ 4 # !
! ' ! 4 $ # ! #$! $! #! $ #$
! ' ! # 4 $ # ! 7 # #E
4 ! ## ' !# # ! ! ! ! 7 #
5 5 $ #5 ! # # ! $44 ## ! !## #E'
$ 6* 4 7 * $ # # 4 FG # $#*
#$!# 65 $! # 4 FG'

! ## ! # $ # # $:%,% *
5! ! # # $# 4 # # ' ! # # 4
/2 # 4 !# 6 ! 4 #$! # # $
% ##'1 ! ## # $$ $44 # 4
! 7 # ' !) # 5 # 4 ## #
$ # # ! # '

& % # ! #$! $ Alarm # '

! >+ $4 # ! #$! $ # Fence' 4
4 5 # #* # $ D11&' 4 ! # %A * ! 4 #
! $# '1 ! 5 # * ! 4 # ! $# '

Errors

! # # $ 4 ! 4 1A+ % #
$ # $ 4 $ 1A+ %'

! # # $ 4 ! 4 & % #
$ # $ 4 $ & % '

> ! # # $ 4 ! 4 > + #
$ # $ 4 $ > + '

Requests

E

```
version-major,version-minor: CARD8
=>
version-major,version-minor: CARD8
```

! # # # 7 $ 4 ! ##
4 ! # 7 # ' 4 # ! # * ! # # 4
:B+ ## ! ## # $ 4 $' ! #
6 # ! # 4 ! 7 # ! !
5 #! # # $ # ! #
$! 7 # 4 ! # ' ! 7 #
$ 44 # # $ $
4 ! # # $! ' ! # #
#! $ 7 $ 4 ! '

5 $ 44 # # 4 ! :B+ *
- $ 2* - # 5 ! 2 4 $ 4
-' # I J 2' # I $ -' # I
KJ 2' # I ' # ! ! 4
4 # $ $ 4 #! ! 5
#'

! # $ $ # # # /* # -
4 ! :B+ '

& # : # #

```
=>
system-counters: LISTofSYSTEMCOUNTER
Errors: Alloc
```

! # # # # 4 ! ## # !
! ! # # 7 $* 5! !
$ # ! ## # ! $! 7
# #' ! # $!# # ! #
# $ $ $ # $! 7 # #'

```
id: COUNTER
initial-value: INT64
Errors: IDChoice,Alloc
```

!# # # $ ## # ! # 4 $ $
' ! # E $! # 4 $
$! #5 ! '

#

counter: COUNTER
Errors: Counter,Access

!# # $ # ! $# # !
4 $# 4 # ! # 4 !# None'
#5 ! #$ $ Counter-
Notify 5 ! ! $ # $ 4 $ # %A # #
! 5 * $ ## 4 ! ! #! $'
4 ! Inactive $
AlarmNotify 5 ! # 4 $ 4 Inactive #
$' # $ # $ 5! !
! # # $ $ 5 4 ! # $ 5
$ # # ' Access # $ 4 #
' Counter # $ 4
$ # $ '

L

counter: COUNTER
=>
value: INT64
Errors: Counter

!# # # ! 4 !
4 $
$ '

5

wait-list: LISTofWAITCONDITION
Errors: Counter,Alloc,Value

(! !# # # 7 $* ! # ! 5 #
E $ # ! 5 $ 4 $#* #
$ # $! $ 4 4 % % ' ! ##
4 4 ! ## 4 ! # 6 $
4 ! # # %A' ! # !
$ * # # 4 ! E * # *
4 # # SetCounter* ChangeCounter
DestroyCounter #'

, # $ 4 5 # # '

(! ! # 6 $* ! # ! 6 $
$ 5! ! CounterNotify #! $
$' ! $ 44 5 ! $! #
$ # ! # 4 !
4 ! ' 4 ! # # PositiveTransition
PositiveComparison* CounterNotify # $
4 ! $ 44 # # ! #! $' 4 ! # #
NegativeTransition NegativeComparison* Counter-

Notify # $ 4 ! $ 44 # #
! #! $' 4 ! $ 44 # #$! 4
+ FG* # $'

!# ! #! $! 6 # $ 4 ! ! #
$ CounterNotify # $ 4
4 5! ! ! ! 6 # $#' ! ! 6 4 CounterNotify
4 $ 4 4 ! # # %A 5!
! # # 4 # 7 $' + ! CounterNotify
$ 4 ! #>&: 4 !
# ! #' CounterNotify
5 ! ! $ # $ 4 # %A # 5 # $ 4
! 4 4 ! # # $ # $'

!

counter: COUNTER
amount: INT64
Errors: Counter,Access,Value

!# # ! # ! $$
! ' 4 ! ! !#
#4 # 4 5! ! #5 * !
6 $ $ CounterNotify #
$' 4 ! ! ! # #4 # !
4 * AlarmNotify # $ $!
$ $' Access # $ 4
' Counter # $ 4
$ # $ ' 4 ! # 4 !
5 $ #$! 4 + FG* Value
$ $! # ! $'

#! $ $! ! #5! # # #
#4 $!# ! 6 $* # !# #
#$ 7 # '

:

counter: COUNTER
value: INT64
Errors: Counter,Access

!# # # # ! 4 ! '!
44 # 7 ! !
! ! '
$ 4 # ## '
$ 4 $ # $
'

id: ALARM
values-mask: CARD32
values-list: LISTofVALUE
left">Errors: IDChoice,Counter,Match,Value,Alloc

!# # # $ ## # ! $ 4 $
'! # #6 $ # # # 4 ! #!

7 E$' ! # 4
$! $4 # <

	% %		+
O	O		#
O	O		3
O	O	#	#
			#
$	+ FG	-	
#	D11&	%A	

! # E$ # $# $! $4 4
% %* 5 ! $ 4 ## '

4 ! # None* ! # 4 ! ## Inac-
tive* # ## '

(! ! # %A * ! # #
4 !# # # ! # 4 SetCounter* Change-
Counter* DestroyCounter* ChangeAlarm #*
AlarmNotify # $ $! # $ $'
! # $ $ $ $$ $!
4 ! $ E # > &:'
4 !# $ 5 $ # 4 #$!
4 + FG* 4 ! # None* 4 ! $
3 $ # # PositiveComparison NegativeCom-
parison* ! # $ $! #
! $ Inactive 4 ! # $' +
4 ! # $ Inactive
ChangeAlarm DestroyAlarm # # 7 $'

4 ! # # PositiveComparison PositiveTran-
sition and $ # ## ! E * 4 ! # #
NegativeComparison NegativeTransition $ $ #
! E * Match # $'

! # # $# #$ 4 AlarmNoti-
fy # ! # ' ! 6 # #
4 4 ! # ! ! # #
#4 !# '

AlarmNotify # 5 # $ # 4
! 7 4 CreateAlarm #'!#5 !
$ 4 ! # %A * 5 !
5! ! # %A ! #$# $'

!

```
id: ALARM
values-mask: CARD32
values-list: LISTofVALUE
Errors: Alarm,Counter,Value,Match
```

!# # ! # ! # 4 ' 4 !
4 $ 4 ! CreateAlarm
! $ # !# #' ! # E$ $
AlarmNotify # $ 4 * # 7
$! $ # 4 ! CreateAlarm #'

! # ! # 4 44 ! $!
$ # $
$ # $ 4 $!
'

! $ 5! ! # 4 $ $ $ ##
$ $ ' 4 # $* # # 4 !
# ! $'

#

alarm: ALARM
Errors: Alarm

!# # $ # # ' #
$ # $ 5! ! # # $ $ 5 4 !
# $ 5 $ # Destroy' (! # $ # $*
AlarmNotify # $ 5 ! # 4 De-
stroyed'

L

alarm: ALARM
=>
trigger: TRIGGER
delta: INT64
events: ALARMEVENTMASK
state: ALARMSTATE
Errors: Alarm

!# # # ! #4 '

:

client-resource: XID
priority: INT32
Errors: Match

!# # ! # ! #!$ 4 !
! $ # ' 4 # # None* !
! 4 ! 6 ! # # ! $'
Match # $ 4 # # None $
$ # 7 # # ! # ' >
5 #* $ D* # ! ! 4 $
4 # ! D'

! 4 ## 3 5! !
$'

! 44 4 $ 44 # $ $# !
4 ! 7 # * $ # ##
! 44 '= 5 * ! # !

```
! !        #5  !  !    ## 7  $
4  !# 4 5        #'

>  #          #*  #$#    !
     #                  #' !#
   # ! #  ! ## 4 !        $$#
 'D  #  #   #4          #
  #*   ##    ##4  ! ! !#         !
 7 #  4   ! #*  #     !      !
         E ! 5!  #  *# ! #
   !   $ #     #    #4# #    5 !
       * #     5  !  ! ! !   '


client-resource: XID
=>
priority: INT32
Errors: Match

!#   #    # ! #!$        4 !
!    $    #  ' 4    #   #                  None* !
!     4  !     6  !   # #   $'
Match    #    $ 4    #   #                  None  $
$ #      7#   #    ! #  '

>
drawable: DRAWABLE
id: FENCE
initially-triggered: BOOL
Errors: IDChoice,Alloc

!#   #    #  4    ! #   ##   $5 !
$ 5   $ ## # ! #  4 $ $   ' ! 4   #
!    $#   44        $ # %A' !
    #5     ! 4  '

>
fence: FENCE
Errors: Fence

!#   #  # !   4    !    $#   4
   $   4     #   ## !  44  # #  #
 5 $   ! 4  H# #   !#    $' !#   $#
  ##4   !    # 4 !#   ##!    $#
  !$' !#   # !#   #   44  # 4 ! 4   5#
  $   !    $#  '             Fence    #    $ 4
4  $ #       $4  '

+  !  !    4  H# #   #    ##   $
  $4 $   !#   #' ! #   !    $
  $      4  !    $  $   !#
 $'   # #! $  6        ##   ! 4   5
    !    $ #    # #      ##* # ! #
 !# !       !    4    $  '                      Await-
```

Fence#! $4 # ## $ 4# # ##
! 4 ! $# '

% # >

```
fence: FENCE
Errors: Fence,Match
```

!# # $ #! 4 !
$# ' Match # $ 4 ! 4 #
! $# ' Fence # $ 44 $ #
$4 '

: ! 5 # $ TriggerFenceH#$ $
44 ' * TriggerFence # $
4 5$ ResetFence # # 6 #
Match ' AwaitFence # #! $ ## $
5 ! 5'

>

```
fence: FENCE
Errors: Fence
```

!# # $# #! 4 ' #5
!#4 #$' 4 #$# $
5! ! ! ! $! 4 #
#$ 4 ! # $5 $ # DestroyAll' Fence
$ 44 $ # $4 '

L >

```
fence: FENCE
=>
triggered: BOOL
Errors: Fence
```

!# # # %A 4 ! 4 # $*
>&: 4 # $' Fence # $ 4
4 $ # $4 '

5 >

```
fence-list: LISTofFENCE
Errors: Fence,Alloc
```

(! !# # # 7 $* ! ## 4 4 !
##4 ! # 6$ 4 !
4 # 4 # !# ! $# '4 4 !
4 # $! $# * # ##
$ ' Fence # $ 4
44 # $ # $4 '

Events

+ 4

```
counter: COUNTER
wait-value: INT64
counter-value: INT64
```

```
time: TIME
count: CARD16
destroyed: BOOL

CounterNotify   #       $ 5!        #
   6 $ 4          Await   # !#     ##$' ! 5
    # !      5  $ 4 *  $       # !
     4 !      !    !    5 #    $' !
$ #   $ 4   # %A  4 !#   # 5 #    $ # !  #
 4 ! $ #     4 !      $ > &:   ! 5 #' !
 # ! #       5! ! !    5 #    $'

(!      #    6 $*   !              CounterNotify   # 4  !
 5     #       $     # ' 4    # 3* !
       #  4  5 4  !#   #' 4    # * !
   #       #  4  5
```

+ 4

```
alarm: ALARM
counter-value: INT64
alarm-value: INT64
state: ALARMSTATE
time: TIME

   AlarmNotify    #    $ 5!      #    $'
      # !  #    4 !       !    5!
5 #    $*       # !    4 !     !
  $ !    *  $    # ! #       5! ! !
5 #    $' ! #   # !  5 #   4 !   ' 4 #   #
Inactive*       # 5       $   !#
ChangeAlarm   #  # 7   $* !    # $ #   $*   !
    4  !    # $ #   $'
```

Chapter 2. Encoding

4 !)-- $ $ #!##
#!$! $ 4 # #$4 $!'

! 4!#7 # #9:B+9'

Encoding New Types

!4 5 5 # #$!7 #'

```
ALARM: CARD32
ALARMSTATE:
       0         Active
       1         Inactive
       2         Destroyed
COUNTER: CARD32
INT64: 64-bit signed integer
SYSTEMCOUNTER:
       4         COUNTER                 counter
       8         INT64                   resolution
       2         n                       length of name in bytes
       n         STRING8                 name
       p                                 pad,p=pad(n+2)
TESTTYPE:
       0         PositiveTransition
       1         NegativeTransition
       2         PositiveComparison
       3         NegativeComparison
TRIGGER:
       4         COUNTER                 counter
       4         VALUETYPE               wait-type
       8         INT64                   wait-value
       4         TESTTYPE                test-type  VALUETYPE:
       0         Absolute
       1         Relative
WAITCONDITION:
       20        TRIGGER                 trigger
       8         INT64                   event threshold
FENCE: CARD32
```

+FG # $$ N #5!! ## 4 G #4#4 5$!
4 G #'(! !#G #*! $ $ $
$ # ##$'

Encoding Errors

```
Counter
        1    0           Error
        1    Base + 0    code
        2    CARD16      sequence number
```

```
        4    CARD32       bad counter
        2    CARD16       minor opcode
        1    CARD8        major opcode
        21                unused
Alarm
        1    0            Error
        1    Base + 1     code
        2    CARD16       sequence number
        4    CARD32       bad alarm
        2    CARD16       minor opcode
        1    CARD8        major opcode
        21                unused
Fence
        1    0            Error
        1    Base + 2     code
        2    CARD16       sequence number
        4    CARD32       bad fence
        2    CARD16       minor opcode
        1    CARD8        major opcode
        21                unused
```

Encoding Requests

```
Initialize
        1    CARD8        major opcode
        1    0            minor opcode
        2    2            request length
        1    CARD8        major version
        1    CARD8        minor version
        2                 unused
=>
        1    1            Reply
        1                 unused
        2    CARD16       sequence number
        4    0            reply length
        1    CARD8        major version
        1    CARD8        minor version
        2                 unused
        20                unused

ListSystemCounters
        1    CARD8                  major opcode
        1    1                      minor opcode
        2    1                      request length
=>
        1    1                      Reply
        1                           unused
        2    CARD16                 sequence number
        4    0                      reply length
        4    INT32                  list length
        20                          unused
        4n   list of SYSTEMCOUNTER  system counters
```

```
CreateCounter
        1    CARD8                  major opcode
        1    2                      minor opcode
        2    4                      request length
        4    COUNTER                id
        8    INT64                  initial value

DestroyCounter
        1    CARD8                  major opcode
        1    6                      minor opcode-
        2    2                      request length
        4    COUNTER                counter
=>
        1    1                      Reply
        1                           unused
        2    CARD16                 sequence number
        4    0                      reply length
        8    INT64                  counter value
        16                          unused

Await
        1    CARD8                  major opcode
        1    7                      minor opcode2
        2    1 + 7*n                request length
        28n  LISTofWAITCONDITION    wait conditions

ChangeCounter
        1    CARD8                  major opcode
        1    4                      minor opcode/
        2    4                      request length
        4    COUNTER                counter
        8    INT64                  amount

SetCounter
        1    CARD8                  major opcode
        1    3                      minor opcodeG
        2    4                      request length
        4    COUNTER                counter
        8    INT64                  value

CreateAlarm
        1    CARD8                  major opcode
        1    8                      minor opcode
        2    3+n                    request length
        4    ALARM                  id
        4    BITMASK                values mask

             #x00000001             counter
```

-	# # 4 !#$	$
2	# # 4 !#$	$'
/	# # 4 !#$	$'
G	# # 4 !#$	$'

```
                #x00000002              value-type
                #x00000004              value
                #x00000008              test-type
                #x00000010              delta
                #x00000020              events

          4n    LISTofVALUE             values

    VALUES
          4     COUNTER                 counter
          4     VALUETYPE               value-type
          8     INT64                   value
          4     TESTTYPE                test-type
          8     INT64                   delta
          4     BOOL                    events

    ChangeAlarm
          1     CARD8                   major opcode
          1     9                       minor opcode
          2     3+n                     request length
          4     ALARM                   id
          4     BITMASK                 values mask
                encodings as for CreateAlarm
          4n    LISTofVALUE             values
                encodings as for CreateAlarm

    DestroyAlarm
          1     CARD8         major opcode
          1     11            minor opcode[M]
          2     2             request length
          4     ALARM         alarm

    QueryAlarm
          1     CARD8         major opcode
          1     10            minor opcode[F]
          2     2             request length
          4     ALARM         alarm
    =>
          1     1             Reply
          1                   unused
          2     CARD16        sequence number
          4     2             reply length
          20    TRIGGER       trigger
          8     INT64         delta
          1     BOOL          events
          1     ALARMSTATE    state
          2                   unused

    SetPriority
          1     CARD8         major opcode
          1     12            minor opcode
```

[M] # # 4 !#$ $'
[F] # # 4 !#$ $'

```
        2       3               request length
        4       CARD32          id
        4       INT32           priority

GetPriority
        1       CARD8           major opcode
        1       13              minor opcode
        2       1               request length
        4       CARD32          id
=>
        1       1               Reply
        1                       unused
        2       CARD16          sequence number
        4       0               reply length
        4       INT32           priority
        20                      unused

CreateFence
        1       CARD8           major opcode
        1       14              minor opcode
        2       4               request length
        4       DRAWABLE        drawable
        4       FENCE           id
        1       BOOL            initially triggered
        3                       unused

TriggerFence
        1       CARD8           major opcode
        1       15              minor opcode
        2       2               request length
        4       FENCE           id

ResetFence
        1       CARD8           major opcode
        1       16              minor opcode
        2       2               request length
        4       FENCE           id

DestroyFence
        1       CARD8           major opcode
        1       17              minor opcode
        2       2               request length
        4       FENCE           id

QueryFence
        1       CARD8           major opcode
        1       18              minor opcode
        2       2               request length
        4       FENCE           id
=>
        1       1               Reply
        1                       unused
        2       CARD16          sequence number
        4       0               reply length
```

```
        1    BOOL         triggered
        23                unused

AwaitFence
        1    CARD8        major opcode
        1    19           minor opcode
        2    1 + n        request length
        4*n  LISTofFENCE  wait conditions
```

Encoding Events

```
CounterNotify
        1    Base + 0     code
        1    0            kind
        2    CARD16       sequence number
        4    COUNTER      counter
        8    INT64        wait value
        8    INT64        counter value
        4    TIME         timestamp
        2    CARD16       count
        1    BOOL         destroyed
        1                 unused

AlarmNotify
        1    Base + 1     code
        1    1            kind
        2    CARD16       sequence number
        4    ALARM        alarm
        8    INT64        counter value
        8    INT64        alarm value
        4    TIME         timestamp
        1    ALARMSTATE   state
        3                 unused
```