

RIBF Data Format (RIDF)

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Version 1.5

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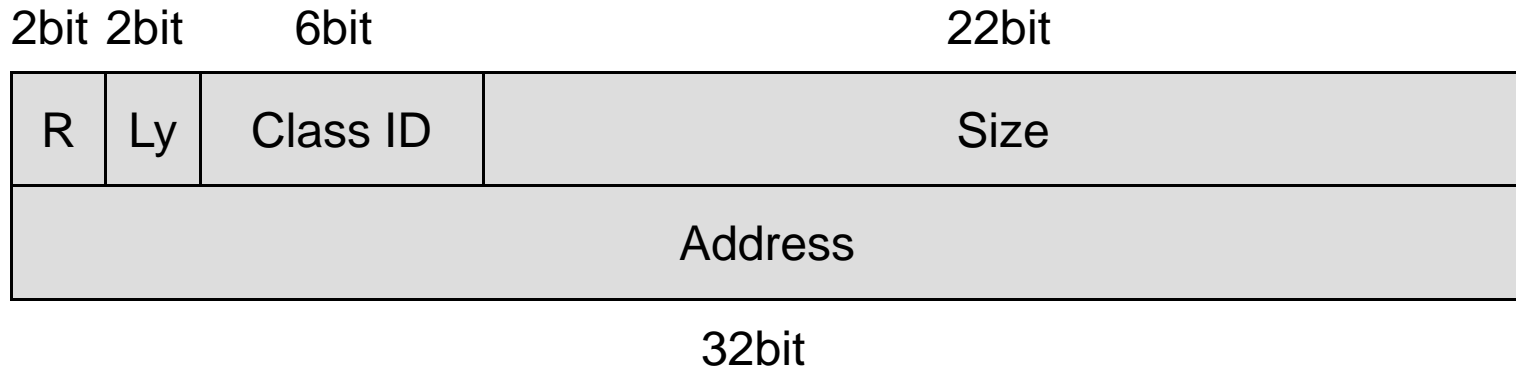
Version information

- ▶ 1.5 Status Data (with XML Comment)
- ▶ 1.4 Time stamp
- ▶ 1.3 Global block number
- ▶ 1.2 Global block ender
- ▶ 1.1 Definition of Segment ID
- ▶ 1.0 First version

Types of blocks

- ▶ Global block
 - ▶ Contains the following blocks
 - ▶ A delimiter of data
- ▶ Event block
 - ▶ Contains segment blocks and scaler blocks
- ▶ Segment block
 - ▶ Contains acquired raw data
- ▶ Scaler block
 - ▶ Contains acquired scaler data
- ▶ Status block
 - ▶ Contains status data
- ▶ Comment block
 - ▶ Contains comments such as run information

General rule (Header word)



- ▶ Every block has this header
- ▶ Revision : Revision bit (2bit=4), 0 = Version 1.x
- ▶ Layer : The layer depth of this block (2bit=4)
- ▶ Class ID : Definition of this block
 - ▶ Data format of this block is determined by Class ID
- ▶ Block Size : Size of this block including this header
 - ▶ Short word unit, 22 Bit = 4 M
 - ▶ The maximum size of 1 Block is 8 MB
 - ▶ Usual size = 128 KB max.
- ▶ Address : Identification of the generator of this block (32bit)
 - ▶ It will corresponds to Event Fragment ID
 - ▶ Usually, only lowest 8 bits are used.

For example, with event data

R	Ly	Class ID	Size
Address			

-	0	0	Block Size
Address			
-	1	3	Event Size
Address			
Event Number			
-	1	4	Segment Size
Address			
Segment ID			
Data			
⋮			

For example, with status data

-	0	0	Block Size
Address			
-	1	3	Event Size
Address			
Event Number			
-	2	4	Segment Size
Address			
Segment ID			
Data			
-	1	10	Status Size
Address			
Status ID			
Status Data			
⋮			

Hierarchical structure

- ▶ Block header

 - ▶ Event data

 - ▶ Segment data

 - ▶ Analyzed segment data

 - ▶ Scaler data

 - ▶ Status data

 - ▶ Scaler data

 - ▶ Status data

 - ▶ Comment data

Class ID List

▶ 0	Event Fragment	▶ 14	
▶ 1	Event Assembly	▶ 15	
▶ 2	Event Assembly Fragment	▶ 16	Time Stamp Data
▶ 3	Event	▶ 17	
▶ 4	Segment	▶ 18	
▶ 5	Comment	▶ 19	
▶ 6	Event with Time Stamp	▶ 20	
▶ 7		▶ 21	Status Data
▶ 8	Block Number	▶ 22	
▶ 9	End of Block	▶ 23	
▶ 10		▶ 24	
▶ 11	Non Clear Scaler 24bit	▶ 25	
▶ 12	Clear Scaler 24bit	▶ 26	
▶ 13	Non clear Scaler 32bit	▶ 27	

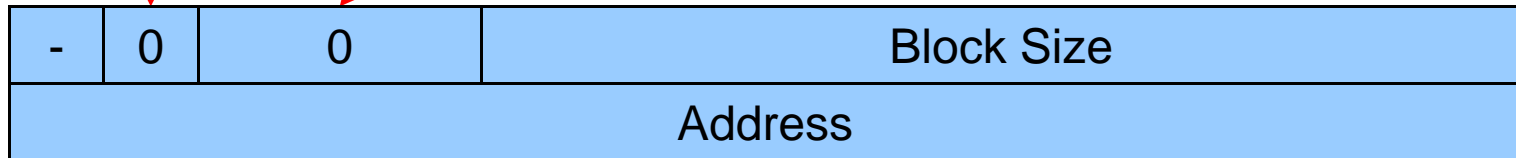
Global block header

Class ID = 0 : Event Fragment

1 : Event Assembly

2 : Event Assembly Fragment

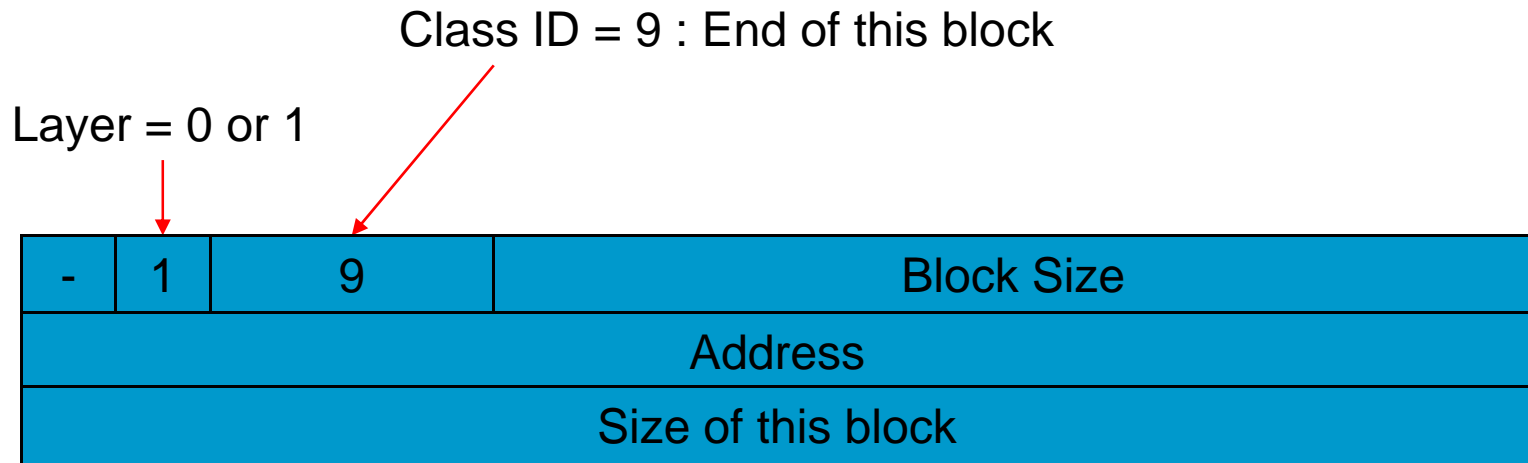
Layer = 0



▶ The delimiter of buffered data

Global block ender

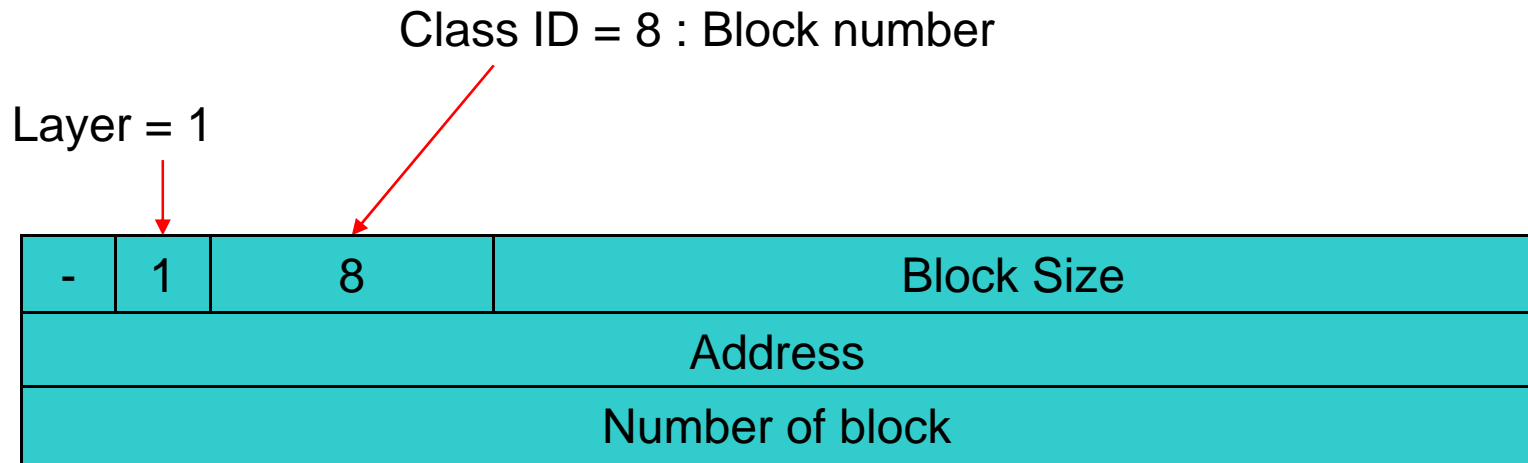
from version 1.2



- ▶ The delimiter of buffered data (optional)
 - ▶ To seek data from the end of file
 - ▶ “Block size” = 6
 - ▶ “Size of this block” equal to “Block size” of Global block header

Global block number

from version 1.3

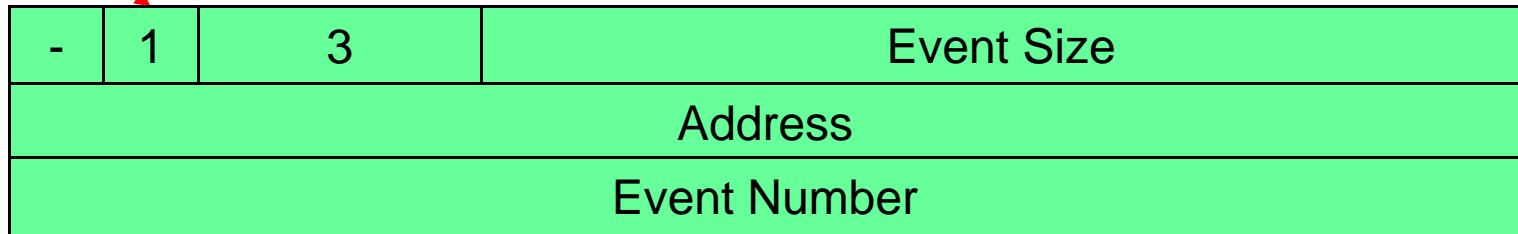


- ▶ Counter of the number of block (optional)
 - ▶ This header should insert the next of Global block header
 - ▶ The first block, which includes header comment only, does not have this header, usually

Event data header

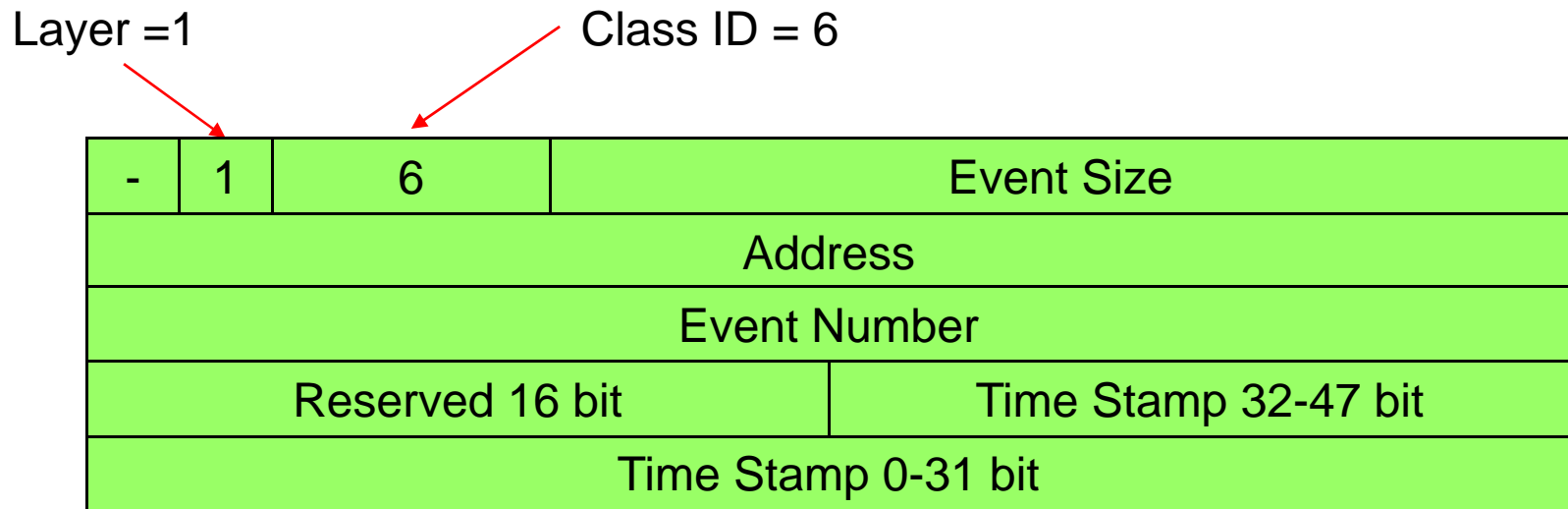
Layer = 1

Class ID = 3



Event data with Time stamp

from version 1.4

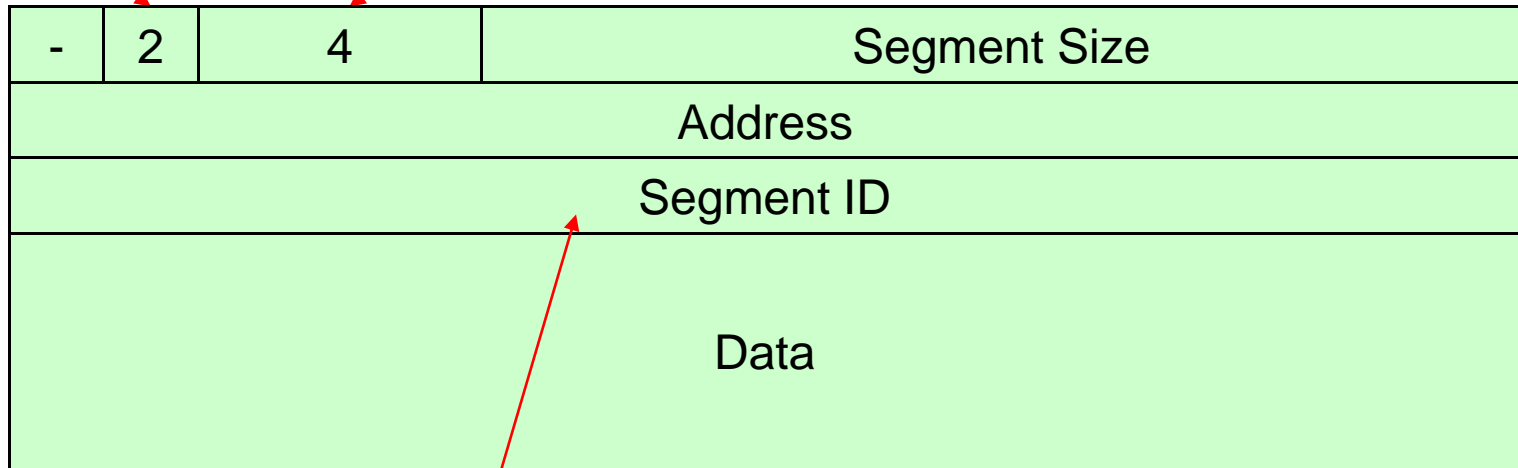


- ▶ The depth of time stamp is 48 bit
 - ▶ When you use a long long int variable for the time stamp in a structure with 64 bit CPU, take care the total size of the structure and the pointer of the time stamp variable.

Segment data

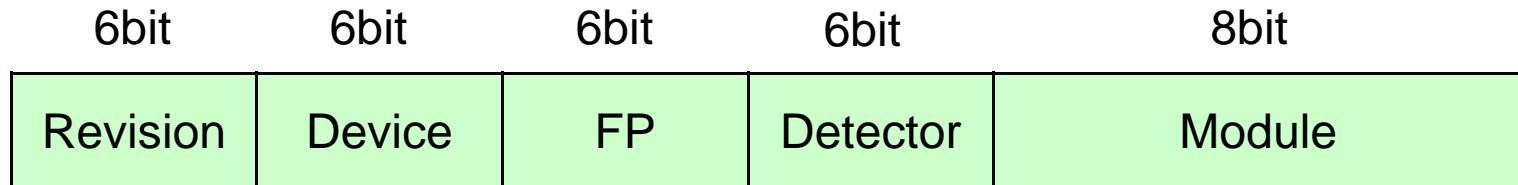
Layer = 2

Class ID = 4



Segment ID is used by analysis software
It should have a unique number
(please refer next page)

The rule of Segment ID



- ▶ Revision : Revision of Segment ID, 0 = Version 1
- ▶ Module : Unique number of ADC module
 - ▶ CAMAC 16bit=0, CAEN V785=21, ...
- ▶ Device : Indicates device
 - ▶ BigRIPS=0, ZDS=1, DALI=20 ...
- ▶ FP : ID of Focal Plane
 - ▶ F1=1, F2=2, F3=3, ...
- ▶ Detector : ID of detector
 - ▶ PPACQ=0, PPACT=1, PlasticQ=2, PlasticT=3,...

Scaler data

Layer = 1 or 2

If synchronize with event, Scaler ID will be 2

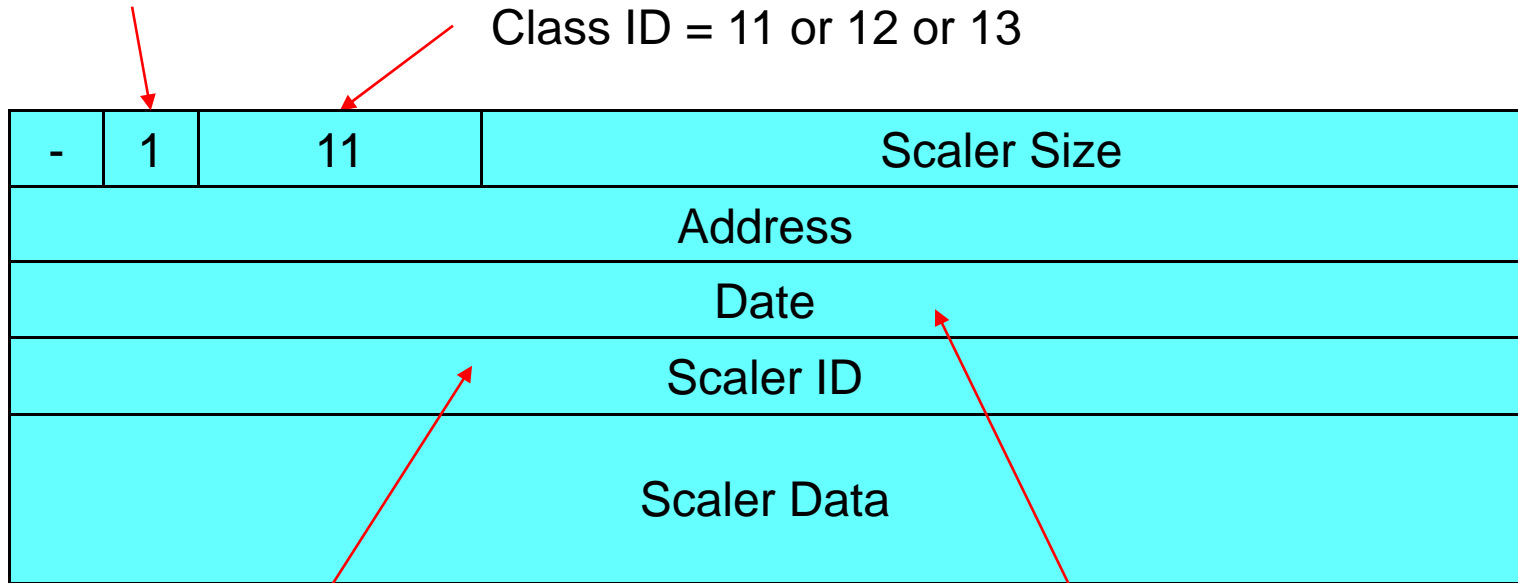
And followed by Event data header

Class ID 11 = no clear (24bit)

Class ID 12 = clear every buffer

Class ID 13 = no clear (32bit)

Class ID = 11 or 12 or 13



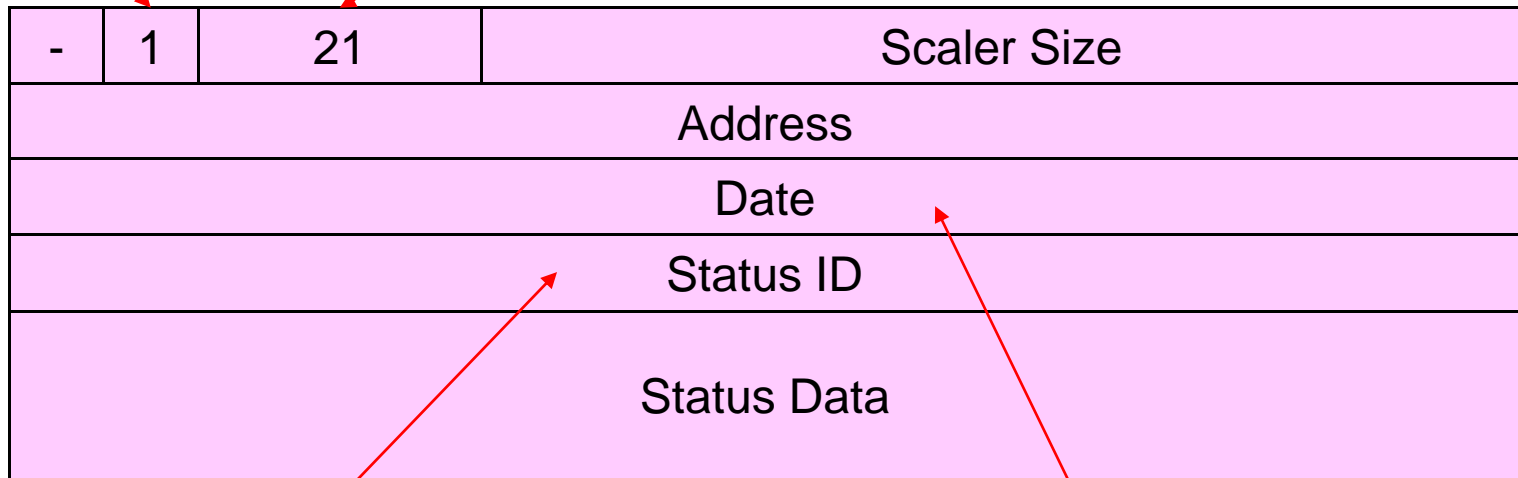
Scaler ID should be same as Address

Date is the time since 1970, measured in seconds

Status data

Layer = 1 or 2

Class ID = 21



Status ID

0 = Reserved

11 = Run start status by XML

12 = Run end status by XML

Date is the time since 1970,
measured in seconds

Status ID 11 and 12 are from version 1.5

Comment data

Layer = 1 or 2

Class ID = 5

-	1	5	Comment Size
Address			
Date			
Comment ID			
Comment Data			

Comment ID
0 = Header
1 = Ender
2 = Warning

Date is the time since 1970,
measured in seconds

Time stamp data

from version 1.4

Layer =2

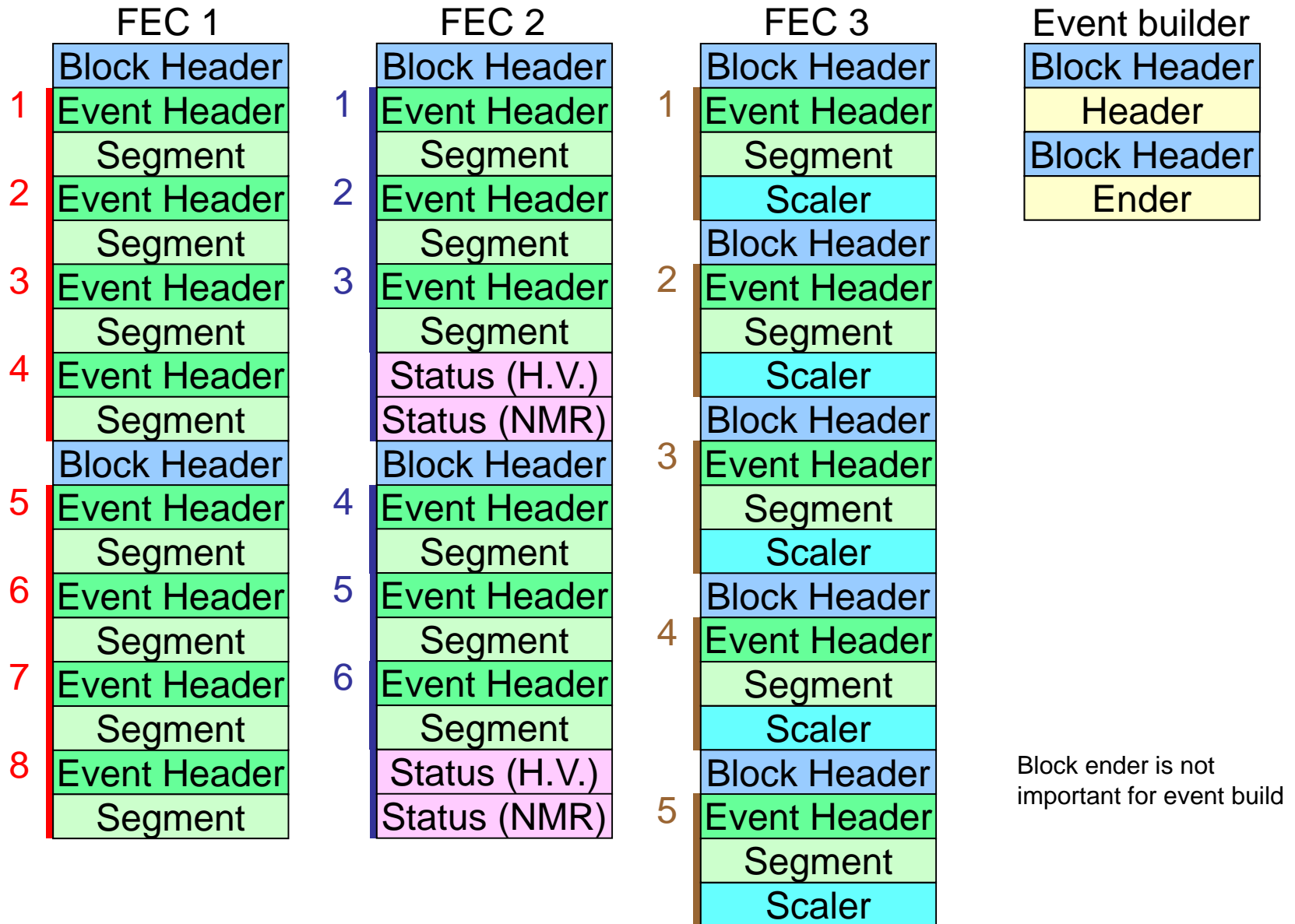
Class ID = 16

-	2	16	Time stamp data Size
Address			
EFN (8bit)	Rev (8bit)	Time Stamp 32-47 bit	
Time Stamp 0-31 bit			
EFN (8bit)	Rev (8bit)	Time Stamp 32-47 bit	
Time Stamp 0-31 bit			

⋮

- ▶ Meaning = This event is made of these time stamped data
 - ▶ EFN = only lowest 8bits
 - ▶ This header should be put the next of Event header

For example, event fragment



For example, event assembly

