

06-042r0 ZONE BROADCAST FRAME

Tim Symons
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www.pmc-sierra.com

Broadcast frames

- BROADCAST FRAME allows a broadcast notification to be distributed only to devices accessible to the zone of the phy that originated the notification. This reduces infrastructure traffic, and provides event isolation between zones.
- Original proposal defined BROADCAST FRAME based on the defined 32-byte address frame format.
- At the November meeting the working group requested support for a shorter BROADCAST FRAME.
- 06-019r1 includes provision for an 8-byte BROADCAST FRAME.
- For compatibility with existing systems, the IDENTIFY frame provides report fields for the broadcast method supported by a zoning device.

IDENTIFY

Zoning Expander devices shall identify the type of zoning BROADCAST FRAME that it supports in the IDENTIFY address frame for the device.

Table 7- IDENTIFY address frame format

Byte/Bit	7	6	5	4	3	2	1	0
0	Restricted (for OPEN address frame)		DEVICE TYPE		ADDRESS FRAME TYPE (0h)			
1	Restricted (for OPEN address frame)							
2	Reserved				SSP INITIATOR PORT	STP INITIATOR PORT	SMP INITIATOR PORT	Restricted (for OPEN address frame)
3	Reserved				SSP TARGET PORT	STP TARGET PORT	SMP TARGET PORT	Restricted (for OPEN address frame)
4	Restricted (for OPEN address frame)							
11	Restricted (for OPEN address frame)							
12	SAS ADDRESS							
19	SAS ADDRESS							
20	PHY IDENTIFIER							
21	Reserved				ZONE DEVICE	ZONE BROADCAST METHOD		
22	Reserved							
27	Reserved							
28	(MSB)	CRC						(LSB)
31	CRC							

Table 8- Zone broadcast address frame support

ZONE BROADCAST METHOD field	Description
000	A zoning device that only supports BROADCAST primitives.
001	A zoning device that supports 32-byte ZONE BROADCAST address frames
010	A zoning device that supports both 32-byte ZONE BROADCAST address frames and 8-byte SHORT ZONE BROADCAST address frames
All others	Reserved

DISCOVER response

Table 16 - DISCOVER response

Byte/Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (41h)							
1	FUNCTION (10h)							
2	FUNCTION RESULT							
3	RESPONSE LENGTH (0Ch)							
4	Reserved							
8	Reserved							
9	PHY IDENTIFIER							
10	Reserved							
11	Reserved							
12	Reserved	ATTACHED DEVICE TYPE			Reserved			
13	Reserved			NEGOTIATED PHYSICAL LINK RATE				
14	Reserved			ATTACHED SSP INITIATOR	ATTACHED STP INITIATOR	ATTACHED SMP INITIATOR	ATTACHED SATA HOST	
15	ATTACHED SATA PORT SELECTOR	Reserved			ATTACHED SSP TARGET	ATTACHED STP TARGET	ATTACHED SMP TARGET	ATTACHED SATA DEVICE
16	SAS ADDRESS							
23	SAS ADDRESS							
24	ATTACHED SAS ADDRESS							
31	ATTACHED SAS ADDRESS							
32	ATTACHED PHY IDENTIFIER							
33	Reserved			ATTACHED ZONE DEVICE	ATTACHED ZONE BROADCAST METHOD			
34	Reserved							
39	Reserved							
40	PROGRAMMED MINIMUM PHYSICAL LINK RATE				HARDWARE MINIMUM PHYSICAL LINK RATE			
41	PROGRAMMED MAXIMUM PHYSICAL LINK RATE				HARDWARE MAXIMUM PHYSICAL LINK RATE			
42	PHY CHANGE COUNT							
43	VIRTUAL PHY	Reserved			PARTIAL PATHWAY TIMEOUT VALUE			
44	Reserved			ROUTING ATTRIBUTE				
45	Reserved	CONNECTOR TYPE						
46	CONNECTOR ELEMENT INDEX							
47	CONNECTOR PHYSICAL LINK							
48	Reserved	ZONE VIOLATION	ZONE PARTICIPATING	ZONE SUPERVISING PRIORITY				
49	Reserved	ZONE GROUP						
50	(MSB)	Vendor Specific						(LSB)
51	(MSB)	CRC						(LSB)
52	(MSB)	CRC						(LSB)
55	(MSB)	CRC						(LSB)

The DISCOVER response indicates the BROADCAST FRAME type supported by the device attached to each phy.

BROADCAST FRAME

Each BROADCAST FRAME has a broadcast type and address frame type identifier

Table 12 – Zone broadcast type

Code	BROADCAST Primitive Represented (see section 7.2.5.4)
0h	BROADCAST (CHANGE)
1h	BROADCAST (SES)
2h	BROADCAST (RESERVED1)
3h	BROADCAST (RESERVED 2)
4h	BROADCAST (RESERVED 3)
5h	BROADCAST (RESERVED 4)
6h	BROADCAST (RESERVED CHANGE 0)
7h	BROADCAST (RESERVED CHANGE 1)

Table 6 – Table 91 – ADDRESS FRAME TYPE field

Code	Frame Type	Description
0h	IDENTIFY	Identification sequence
1h	OPEN	Connection request
2h	BROADCAST	32-byte zone broadcasts within zones
3h	SHORT BROADCAST	8-byte zone broadcasts within zones
All others	Reserved	

Table 11 – Zone broadcast address frame format

Byte/Bit	7	6	5	4	3	2	1	0
0	Reserved	ZONE BROADCAST TYPE		ADDRESS FRAME TYPE (2h)				
1	Reserved							
2								
3	Reserved	SOURCE ZONE GROUP						
4	Reserved							
27								
28								
31								

Table 13 - Short zone broadcast address frame format

Byte/Bit	7	6	5	4	3	2	1	0
0	Reserved	ZONE BROADCAST TYPE		ADDRESS FRAME TYPE (3h)				
1	Reserved							
2								
3	Reserved	SOURCE ZONE GROUP						
4	(MSB)	CRC						(LSB)
7								

Broadcast frame rules

The type of broadcast used for each phy connection is defined by the following prioritized rules:

- 1) if either the source or the target device only supports primitives then the broadcast primitive shall be used;
- 2) if both the source and the target devices only support 32-byte zone broadcast frames then 32-byte broadcast frames shall be used; and
- 3) if both the source and the target devices support 8-byte zone broadcast frames then 8-byte broadcast frames shall be used.