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To: T10 Committee (SCSI)

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Subject: Defination of Well Known Logical Units

1 Overview

This proposal defines an extension to logical unit addressing that would allow definition of a logical unit that does specific functions. The commands these special logical units would be primary used for carrying out functions that are not contained within the boundaries of the logical unit. Any device that accepts a well known logical unit number would be required to support every command defined for that specific well known logical unit.

2 Terminology for SAM-2

2.0.1 Well known logical unit: A logical unit that only does specific functions. If a well known logical unit is supported within a SCSI target device then that logical unit shall support all the commands associated with it. Well known logical units allow an application client to issue requests to receive specific information usually relating to a SCSI target.

3 SPC-3 changes to REPORT LUNs command

One of two methods could be used for discovering well known logical units. The preferred method would be to access the well know logical unit that would accept the REPORT LUNs command. Another method would be to return the information on a REPORT LUNs command to LUN zero. In either case the REPORT LUNs command in SPC-3 needs to have a new field defined as follows:

Table 1 - REPORT LUNS command

Bit Byte	7	6	5	4	3	2	1	0
0	OPERATION CODE (0Ah)							
1	RESERVED						SELECT REPORT	
2	RESERVED							
3	RESERVED							
4	RESERVED							
5	RESERVED							
6	(MSB)							
7				ALLOCATION LENGTH				
8								
9								(LSB)
10	RESERVED							
11	CONTROL							

The SELECT REPORT field contains the information on which logical unit addresses shall be reported. See table 2 for the defined states.

Table 2 - SELECT REPORT

Codes	Description
00b	The list of logical units shall not contain any well known logical units
01b	The list of logical unit shall only contains well known logical units, if any.
10b	The list of logical units shall contain all logical units.
11b	Reserved

4 LUN structure on SAM-2

An application client selects a well known logical unit using LUN extended addressing LUN. See xxx for the LUN format.

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Table 3 - Format of addressing fields

Bit / Byte	7	6	5	4	3	2	1	0
n-1	ADDRESS METHOD		(MSB)					
n	ADDRESS METHOD SPECIFIC							(LSB)

The ADDRESS METHOD field defines the contents of the ADDRESS METHOD SPECIFIC field. See table 4 for the address methods defined for the ADDRESS METHOD field. The ADDRESS METHOD field only defines address methods for entities that are directly addressable by an application client.

Table 4 - ADDRESS METHOD field values

Code	Description	Clause
10b	Logical unit addressing method	xxx
00b	Peripheral device addressing method	xxx
01b	Device type specific	
11b	Extended addressing	xxx

4.1 Extended addressing

Extended addressing allows for more address methods to be defined for the 8 byte LUN. These may include additional 2 byte formats or formats that use more that 2 bytes. See table 5 for the format of the 2 byte EXTENDED ADDRESS METHOD field and table 6 for the format of the 8 byte EXTENDED ADDRESS METHOD field.

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Table 5 - Format of 2 byte extended addressing fields

Bit / Byte	7	6	5	4	3	2	1	0
n-1	1	1	LENGTH	EXTENDED ADDRESS METHOD				
n	EXTENDED ADDRESS METHOD SPECIFIC							

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Table 6 - Format of 8 byte extended addressing fields

Bit / Byte	7	6	5	4	3	2	1	0
0	1	1	LENGTH	EXTENDED ADDRESS METHOD				
1	EXTENDED ADDRESS METHOD SPECIFIC							
7								

A length (LENGTH) bit of zero indicates the EXTENDED ADDRESS METHOD SPECIFIC field is 1 byte in length. A LENGTH bit of one indicates the EXTENDED ADDRESS METHOD SPECIFIC field is 7 bytes in length.

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Table 7 - EXTENDED ADDRESS METHOD field values

LENGTH	Code	Description	Subclause
0 or 1	00000b	Reserved	
0	00001b	Well known logical unit	4.2
1	00001b	Reserved	
0 or 1	00010b - 11111b	Reserved	

4.2 Well known logical unit addressing

A SCSI target device may support zero or more W-LUNs however a single SCSI target device shall only support one instance of each supported well known logical unit regardless of the number of target ports allow access to the well know logical unit.

See table 8 for the definition of the EXTENDED ADDRESS METHOD SPECIFIC field used when the well know logical unit extended address method is selected.

Table 8 - SCSI target function

Bit Byte	7	6	5	4	3	2	1	0
n-1	1	1	0	WELL KNOWN LOGICAL UNIT(000001b)				
n	W-LUN							

The W-LUN field identifies well known logical unit to be addressed. See table 9 for a list of well know addresses.

Table 9 - W-LUN field values

W-LUN	Name	Subclause
00h	Reserved	
01h	REPORT LUNs	SPC-3
02h-FFh	Reserved	

4.3 REPORT LUNs for new SPC-3 command section

The REPORT LUNs W-LUN shall only process the REPORT LUNs command (see xxxx). The LUNs returned as the result of the REPORT LUNs command shall consist of a list of the requested logical units

addressable through the SCSI target port that received the REPORT LUNs command.

Supported commands:

Table 10 - REPORT LUNs W-LUN commands

Command Name	Operation code	Type	Subclause
INQUIRY (need a Peripheral device type for W-LUNs)	12h	M	SPC-3
REPORT LUNS	A0h	M	SPC-3
REQUEST SENSE	03h	M	SPC-2
TEST UNIT READY	00h	M	SPC-2
Key: M = Command implementation is mandatory.			

4.4 Other target function rules in SPC-3 section on W-LUNs

If a SCSI target device receives a W-LUN and that W-LUN is not exist, a task manager shall follow the SCSI rules for selection of invalid logical units as defined in the SCSI Primary Commands-2 standard.

Editors Note 1 - GOP: Where are the SCSI rules of selection of an invalid logical unit?

Protocols should define a method to allow notification of a change to any of the reported information (e.g., AER would be one method).