

To: T10 Technical Committee  
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Subject: Method to determine Source of Change Primitive

### **Overview**

When a Change Primitive is sent out by an expander, the current SAS architecture requires a SMP request (Discover) be sent to each Phy on each expander to determine if a device has been added or deleted. The amount of time to do this may be significant in a large topology.

### **Proposal**

Require each expander to keep a 16-bit count of the number of times it has initiated a change primitive. Change Primitives that are simply forwarded on are not counted.

This count is obtained via a SMP Report General function.

When a change primitive is detected, a single SMP Report General is sent to each expander in the domain to determine the count value. If the count is unchanged from the previous count, then nothing has changed on that expander and no further SMP requests are needed for that device. If the count is different, then Discover requests to this expander device is needed to determine what device really changed.

### **Specification Changes**

Dependency: SAS Proposal 02-359r3

Change Section 9.4.4.2 Report General response format, bytes 4 & 5 to be EXPANDER CHANGE COUNT

Add following description below Table 87:

The EXPANDER CHANGE COUNT field contains the number of CHANGE primitives this expander has generated. This field is initialized to Zero upon power-on. This field is incremented whenever a configuration change has been detected by the Expander. This field does NOT count CHANGE primitives that have simply been received by the expander device and forwarded on. This field wraps around to zero after the maximum value has been reached.

Other sections that deal with discovery (ie. Level-order traversal) will need to be changed also, once 02-359r3 has been incorporated.