Visibility of Media in Element Discussion

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Discussion questions for T10 SMC-3 Working Group
Background

• Volumes located in elements have attributes that move with the volume

• A method is needed to report the volume attributes for applications

• Current proposals for reporting element attributes address by element number

• SMC-3 working group has expressed a desire to have similar commands for all commands that report attributes
Address Volumes By Element?

• Commands to report element attributes address the elements by an element number

• The volumes reside in elements

• Addressing by element is the most familiar method
  – Similar to proposed commands for element attributes
  – Similar to existing Read Element Status
  – Natural for firmware implementation in medium changers
Issues with Element Based Addressing

• Attributes move with the media.
  − If element based addressing is used it must be updated frequently or tracked

• Applications reference media using ‘Handles’
  − User applied names
  − User applied barcodes
  − Manufacturer or drive applied medium identifier
  − Application applied medium identifier

• Users reference media using ‘Handles’
• Element number is only needed for physical access
Addressing By Volume Handle

- Most medium changers support handles for the volumes.
- Handles have varying levels of uniqueness.
  - Medium Identifier may be world wide unique
  - Barcode may be unique for a given medium changer
- A command that allows addressing volumes could report a set of attributes that are fixed for the volume.
  - Only need to issue the command once
- May be similar to commands for reporting element attributes but use different addressing mechanism.
  - Could support addressing by element or handle
Similar to “Send Volume Tag”

• The closest other command in SMC-2 is the “Send Volume Tag” and “Request Volume Element Address” command pair
  − Elements are addressed by a barcode
  − Information about matching elements is returned in the Request Volume Element Address data

• The Send Volume Tag and Request Volume Element Address commands could be extended to report other attributes
Issues with extending Send Volume Tag

• Not at all similar to any known proposals for reporting element attributes

• Paired command requiring a “send” and “receive” is more complex to implement and use

• Request Volume Element Address return data uses existing “Read Element Status” pages
  − The existing RES pages are not sufficient to carry the information desired for this command
  − Return data format would need extensive modification or existing RES return data would need extended to carry additional attributes

• Working group has expressed a desire to not extend existing RES return data.
Issues With Creating a New Command

- Obvious handles (Barcode, Media ID) will not fit into a CDB
- Traditional solution would be a paired command set with some of the same issues as Send/Receive Volume Tag
  - Additional issues for multi-initiator environments
    - This command may be used frequently, possibly even for polling, so matching command and return data is necessary
    - No simple method to “link” the initial command and the command to retrieve the results
- Any handle solution would have to be unique within a device
  - Barcodes may not be unique
  - Some technologies do not support unique media identifiers
Possible New Short Handle

- The medium changer could generate a new handle that will be uniquely identify a volume within the medium changer.
- The handle could be made to fit in a CDB.
- New command similar to “Report Element Information” (06-272) could return the handle for a given element.
- Future commands could request the data for the volume by using the handle.
Questions

• Should the Send Volume Tag and Report Volume Element Address commands be extended or should a new command using page codes be proposed?

• Should a new command allow addressing by both element address and volume handle?
  – Requires “short” generated handle

• A new command using a handle may require a method to send one of the common handles and get back the medium changer handle
  – Possible extension to Send/Receive Volume Tag