

# Revisiting Extended Copy

Roger Cummings  
Symantec

# Changed Environment

- Growth in SAN complexity means that a copy manager's back-end storage much more likely now to be directly inaccessible to controlling Initiator
  - Different FC fabric (physical or virtual) or net
  - Different technologies now that we have SAS, iSCSI, FC, RDMA, 1394 etc. to choose from
- Exacerbates issues with discovery
  - Often only practical way is manual configuration
  - That's NOT good!

# Non-address Target Descriptors

- Alias target descriptor
  - Aliases are not widely implemented, not supported in many Name Servers
  - Some technologies also have aliases at the protocol level or below
- Identification descriptor target descriptor
  - Too many products still don't support truly unique identification descriptors in the Device Identification VPD page
    - Especially array controllers for short-lived volumes like snapshots

# Design Issue

- Copy Managers that support the non-address target descriptors often don't cache the address of the identified device
  - Do the same lookup for each Extended Copy command
  - Understandable because of limited memory...
  - But a major performance hit

# Proposal

- Create a new Target Descriptor that can identify a Target based on contents of a specific Mode Parameter, VPD parameter, or part of Inquiry Data
  - Including vendor-specific parameters and fields
- Create a new Segment Descriptor and Receive Copy Results Service Action that allows address of identified device(s) to be returned to the controlling initiator

# New Target Descriptor Type

Bit	7	6	5	4	3	2	1	0
Byte								
0 – 3	As per SPC-4 Table 64							
4	PAGE CODE							
5	START BYTE NUMBER							
6	MASK FOR FIRST BYTE OF MATCH VALUE							
7	NUMBER OF BYTES TO MATCH							
8 - n	MATCH VALUE							
n+1 - 27	reserved							

# New Segment Descriptor Type

Bit	7	6	5	4	3	2	1	0
Byte								
0 – 7	As per SPC-4 Table 73							
8	TYPE OF INFORMATION TO MATCH (Mode, VPD etc.)							
9 – 27	Reserved							

# New Receive Copy Results SA

Code	Name	Description	Returns DATA while EXTENDED COPY is in progress	Ref
xxh	TARGET ADDRESSES	Return protocol-specific addressing information for Target accessed by EXTENDED COPY command identified by the LIST IDENTIFIER field.	No	x



# Questions

- Any interest in working with Symantec on the details of this scheme?
- Would it be worth also supporting MAM attributes in the new Target Descriptor?