

TO: T10 Membership, SMC-3 Working Group  
FROM: Rod Wideman, ADIC; [rod.wideman@adic.com](mailto:rod.wideman@adic.com)  
DATE: March 5<sup>th</sup>, 2006  
SUBJECT: SMC-3 REQUEST DATA TRANSFER ELEMENT INQUIRY command  
(document T10/05-243r2)

Rev2 – Modified description of condition for which obtaining INQUIRY data is not supported; changed ASC/ASCQ used for case of RMC device server not able to process the INQUIRY request, added hardware error case; clarified mapping of service action fields to INQUIRY command.

Rev1 – Constrained to RMC device server; add definition of RMC device server; add case for not able to get INQUIRY data (i.e., need a way to indicate not supported by this DTE; a way to indicate this instance failed). Handling of check condition returned from drive – pass through with modification.

Rev0 – Initial draft.

## **Introduction**

This document proposes a change to SMC-3 that creates a new media changer command, REQUEST DATA TRANSFER ELEMENT INQUIRY.

## **Discussion**

The purpose of this command is to provide a better method for an application client that is common to both a media changer and one or more data transfer devices contained within the media changer to correlate the data transfer devices to the media changer.

Current practice is for an application client to request identification descriptor information from the data transfer devices via INQUIRY, then request device identifiers for the data transfer elements from the media changer via READ ELEMENT STATUS. This technique has become problematic in the consistency of the returned data from both sources, coupled with no flexibility with respect to which device identifiers are to be used.

This proposal attempts to address the problem by defining a command that allows an application client to “tunnel” the same INQUIRY command to the data transfer device as it sends directly to the same device. With this method, the media changer returns the response data unmodified, allowing the application client to use any of the data to perform the correlation (or obtain additional information from the media changer regarding the data transfer devices it contains).

The command is defined such that only a single data transfer element INQUIRY can be requested per command. This is due to the anticipated processing time required for each request and the potential amount of data to return.

**Proposed Changes to SMC-3**

*New sub-clause 3.1.25 (others shift down):*

**3.1.25 RMC device server:** A device server that supports a removable medium command set (e.g., SSC-2 or MMC-4). See ADC.

*Changes to 6.1:*

Table 3 has the following addition (the entire table is not reproduced here):

Command	Operation Code	Type	Reference
REQUEST DATA TRANSFER ELEMENT INQUIRY	A3h/06h <sup>a</sup>	O	6.11

*Changes to 6.3:*

Table 5 has the following addition (the entire table is not reproduced here):

REQUEST DATA TRANSFER ELEMENT INQUIRY	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
---------------------------------------	---------	---------	---------	---------	---------	---------

*New sub-clause 6.11:*

(Note: existing subclauses 6.11 through 6.13 shift to become 6.12 through 6.14 with the addition of this new subclause)

**6.11 REQUEST DATA TRANSFER ELEMENT INQUIRY command**

The REQUEST DATA TRANSFER ELEMENT INQUIRY command (see table X) requests that the device server return to the application client INQUIRY data (see SPC-3) from the data transfer element at the specified element address. This data shall be for the RMC device server of the data transfer device (see ADC) at the data transfer element address.

**Table X — REQUEST DATA TRANSFER ELEMENT INQUIRY command**

Bit Byte	7	6	5	4	3	2	1	0
0	OPERATION CODE (A3h)							
1	Reserved			SERVICE ACTION (06h)				
2	(MSB)	DATA TRANSFER ELEMENT ADDRESS						(LSB)
3	Reserved							EVPD
4	PAGE CODE							
5	(MSB)	ALLOCATION LENGTH						(LSB)
6	Reserved							
7	CONTROL							

See SPC-3 for a description of the OPERATION CODE byte and SERVICE ACTION field. This byte and field shall be set to the values shown in table X.

The DATA TRANSFER ELEMENT ADDRESS field specifies the data transfer element that is to be used in processing this command. If the address specified has not been assigned or has been assigned to an element other than a data transfer element, the device server shall return CHECK CONDITION status.

The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID ELEMENT ADDRESS.

If the DATA TRANSFER ELEMENT ADDRESS field specifies a data transfer element that has been disabled (see 6.10.4), the device server shall return CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to ELEMENT DISABLED.

*(Note: an ASC/ASCQ of ELEMENT DISABLED is not yet defined in SPC-x)*

If the device server does not support providing INQUIRY data for the data transfer device at the data transfer element address specified by the DATA TRANSFER ELEMENT ADDRESS field, the device server shall return CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID FIELD IN CDB.

*(Note: the above accounts for both the RMC device server not supporting the capability and the device server not fabricating it; obtaining INQUIRY data for this DTD is simply not supported)*

If the RMC device server of the data transfer device at the data transfer element address specified by the DATA TRANSFER ELEMENT ADDRESS field is not able to provide INQUIRY data to the device server for this request, the device server shall return CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to REMOTE DEVICE SERVER REQUEST ERROR. The sense key specific data (see SPC-3) shall be used as provided by the RMC device server. The FIELD POINTER field (see SPC-3) shall be modified as needed to reflect the relative position within the REQUEST DATA TRANSFER ELEMENT INQUIRY command.

*(Note: an ASC/ASCQ of REMOTE DEVICE SERVER REQUEST ERROR is not yet defined in SPC-x)*

If the device server is unable to obtain the INQUIRY data from the RMC device server of the data transfer device at the data transfer element address specified by the DATA TRANSFER ELEMENT ADDRESS field, the device server shall return CHECK CONDITION status. The sense key shall be set to HARDWARE ERROR and the additional sense code shall be set to REMOTE DEVICE SERVER REQUEST ERROR.

See SPC-3 for descriptions of the EVPD bit, PAGE CODE field, and ALLOCATION LENGTH field. This bit and these fields are used by the device server when requesting INQUIRY data from the data transfer element at the specified element address (i.e., they correspond to the same bit and fields as used in an INQUIRY command). Only the least significant two bytes (i.e., bytes 8 and 9) of the ALLOCATION LENGTH field are used when requesting INQUIRY data from the data transfer element at the specified element address (i.e., they correspond to the ALLOCATION LENGTH field of an INQUIRY command).

See SAM-3 for a description of the CONTROL byte. The CONTROL byte applies to the REQUEST DATA TRANSFER ELEMENT INQUIRY command.