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T10: T10 Technical Committee (SCSI)

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Subject: New Inquiry VPD Page - Management Network Address

Revision History

Revision 0 (May, 2003), first revision

Related Documents

SPC-3r12 – SCSI Primary Commands – 3, revision 12

Overview

Many storage devices are providing TCP/IP based services for management. These services may be embedded in the storage device, may be running on a separate management host bundled with the storage device, or may be running on a management host that provides a central point for management of multiple devices. Management software running elsewhere on the network needs to be able to locate these management services. This is a proposal for a VPD page that returns information about these management services.

The response format is loosely based on the T11 FC-GS Platform Management Address List, but provides a transport-independent interface, is available in FC configurations without switches, and fixes some limitations in the FC-GS definition.

Requirements:

- A storage device may have multiple network services available so we need to allow a list of management addresses.
- In some cases, certain services can be enabled/disabled by customers; the list returned should reflect the interfaces available at the time of the request.
- These services are typically available through a single network interface, but as devices grow more complex, we want to accommodate multiple IP addresses.
- The management services may be installed on a customer host that acts as a management “proxy”. The customer may have other network services installed and need to reassign the storage services to non-standard ports. So we cannot assume that the device's http service will always be on port 80 or 8080. Therefore, the management address must allow including the port number.

Proposed Page 0x85(?) response format

The response consists of a header and a list of data structures (Network Service Descriptors) that provide a URL of an available network service and some fields that supplement the URL. The format is inspired by the T11 FC-GS Platform Management Address List, but provides a transport-independent interface and fixes some limitations in

the FC-GS definition.

Table 1 - Management Services VPD Page

Byte \ Bit	7	6	5	4	3	2	1	0
0	Peripheral Qualifier			Device Type				
1	Page Code (85h)							
2	(MSB)	Page Length (n-3)						
3								(LSB)
	Network Services Descriptors							
4	Network Service Descriptor (first)							
m	Network Service Descriptor (second)							
	.							
	.							
	Network Service Descriptor (last)							
n								

Each Network Service Descriptor consists of a header with the length of the descriptor, a flag indicating whether the service is UDP or TCP based, a vendor-specific field, and a URL in text.

Table 2- Network Service Descriptor

Byte \ Bit	7	6	5	4	3	2	1	0
0	UDP	Reserved		Network Service Type				
1	Service Descriptor Length (n-2)							
	URL							
n								

The UDP bit is set to 1 for a UDP service or zero for a TCP service. A storage device could expose separate UDP and TCP network services on the same port number. In strict URL usage, only TCP ports are considered. Extending this notation to UDP protocols like SNMP requires a flag to differentiate TCP and UDP.

The Network service type field allows differentiation of multiple services with the same protocol running at different port numbers or paths. For example, a storage device may provide separate HTTP services for configuration and diagnostics. One of these services can use the standard HTTP port 80 and the other service needs to use a non-HTTP port. The Network service type field can be used to let a client find the diagnostics HTTP service – even if it not running on port 80.

Table 3 has a suggested list of values that includes a few generic service types and a range of values for vendors to specify services that don't fit in the generic list.

Table 3 - Network services type

0	Unspecified
1	Storage Configuration Service
2	Diagnostics
3	Local Copy Services
4	Remote Copy Services
5-15	Reserved
16-31	Vendor-Specific

The service descriptor length specifies the length of the rest of the descriptor (the URL).

The standard URL is based on the IETF URL format. It includes a protocol (e.g. http), a host-name or IP address, an optional TCP port number, and optional context specific information:

```
protocol://protocol-specific-address/context-specific-information
```

As in FC-GS, the protocol field includes the standard WWW protocols (http, https, ftp), but is extended to include other services common to storage devices (ssh, snmp, cim). The protocol-specific-address is typically a host name or IP address and the context-specific-information is typically a path relative to the protocol server.

Other Comments

The standard does not describe how these management addresses are registered with the device.

If the storage product provides a mechanism to change the services that are available (for example, disable the HTTP ports), the arrays should return the current valid services, not the superset of all possible services.