To: T10 Technical Committee
From: Dennis Spicher (dennis.spicher@hp.com) and Rob Elliott, HP (elliott@hp.com)
Date: 18 July 2002
Subject: T10/02-251r1 SES-2 Enclosure Status element bypass status enhancement

Revision History
Revision 0 (27 June 2002) first revision
Revision 1 (18 July 2002) incorporated comments from July CAP WG – chose the simple option using all reserved bits, preserving semantics of the current bits.

Related Documents
ses2r00 – SCSI Enclosure Services - 2 revision 00
02-194r0 - SES-2 Protocol-specific device element information

Overview
A read-modify-write sequence is impossible using the Enclosure Status page and the Enclosure Control page to modify one of the control bits in a device element. It is not possible to reconstruct the previous state of the ENABLE BYP A and ENABLE BYP B control bits from the status bits available from the ENABLE BYP A, ENABLE BYP B, BYP A ENBLED, and BYP B ENBLED fields, since the latter two bits include three reasons the bypass may be enabled: application client, enclosure, and device but only uniquely identify one cause (the device).

One option is presented below:

1. Small modifications to the Enclosure Status page preserving current semantics

Suggested Changes
7.2.2 Device element defined for enclosure pages

. . .

The format of the STATUS INFORMATION field for a device element type in the Enclosure Status page is defined in table 28.
[byte 3 bits 1:0 renamed, bits 3:2 renamed]
[byte 2 bits 5:4 new, byte 2/3 bits 7 new]

Table 28 – Device element for Enclosure Status page

	7	6	5	4	3	2	1	0
0	COMMON STATUS							
1	SLOT ADDRESS							
2	~~RSVD~~ APP CLIENT BYPASSED A	DO NOT REMOVE	~~RSVD~~ ENCLOSURE BYPASSED A	~~RSVD~~ ENCLOSURE BYPASSED B	READY TO INSERT	RMV	IDENT	REPORT
3	~~RSVD~~ APP CLIENT BYPASSED B	FAULT SENSED	FAULT REQSTD	DEVICE OFF	~~ENABLE BYP A~~ BYPASSED A	~~ENABLE BYP B~~ BYPASSED B	~~BYP A ENBLED~~ DEVICE BYPASSED A	~~BYP B ENBLED~~ DEVICE BYPASSED B

. . .

The ~~enable~~ bypassed A bit (~~ENABLE BYP~~BYPASSED A) is set to indicate that Port A has been bypassed by request of the application client, the device, or the enclosure. The ~~ENABLE BYP~~BYPASSED A bit is cleared if the port bypass is disabled and the device is included on the device interface.

The ~~enable~~ bypassed B bit (~~ENABLE BYP~~BYPASSED B) is set to indicate that Port B has been bypassed by request of the application client, the device, or the enclosure. The ~~ENABLE BYP~~BYPASSED B bit is cleared if the port bypass is disabled and the device is included on the device interface.

The ENCLOSURE BYPASSED A bit is set to one to indicate that Port A has been bypassed by request of the enclosure services process and is set to zero to indicate that Port A is not being bypassed under control of the enclosure services process. The device may still be bypassed under control of the application client or device.

The ENCLOSURE BYPASSED B bit is set to one to indicate that Port B has been bypassed by request of the enclosure services process and is set to zero to indicate that Port B is not being bypassed under control of the enclosure services process. The device may still be bypassed under control of the application client or device.

The APP CLIENT BYPASSED A bit is set to one to indicate that Port A has been bypassed by request of an application client and is set to zero to indicate that Port A is not being bypassed under control of an application client. The device may still be bypassed under control of the enclosure services process or device.

The APP CLIENT BYPASSED B bit is set to one to indicate that Port B has been bypassed by request of an application client and is set to zero to indicate that Port B is not being bypassed under control of an application client. The device may still be bypassed under control of the enclosure services process or device.

~~The bypass A enabled bit (BYP A ENABLED) is set to indicate that port A of the device is bypassed under control of the device. The device may be removed, turned off, not operational, or controlling the bypass signals under control of the device server. The BYP A ENABLED bit is cleared to indicate that Port A is not being bypassed under control of the device. The device may still be bypassed under control of the enclosure services process.~~

~~The bypass B enabled bit (BYP B ENABLED) is set to indicate that port B of the device is bypassed under control of the device. The device may be removed, turned off, not operational, or controlling the bypass signals under control of the device server. The BYP B ENABLED bit is cleared to indicate that Port B is not being bypassed under control of the device. The device may still be bypassed under control of the enclosure services process.~~

The DEVICE BYPASSED A bit is set to one to indicate that Port A has been bypassed by request of the device and is set to zero to indicate that Port A is not being bypassed under control of the device. When set to one, the device may be removed, turned off, not operational, or controlling the bypass signals under control of the device server. When set to zero, the device may still be bypassed under control of the enclosure services process or device.

The DEVICE BYPASSED B bit is set to one to indicate that Port B has been bypassed by request of the device and is set to zero to indicate that Port B is not being bypassed under control of the device. When set to one, the device may be removed, turned off, not operational, or controlling the bypass signals under control of the device server. When set to zero, the device may still be bypassed under control of the enclosure services process or device.