

**Proposed  
Draft**

**Serial ATA  
International Organization**

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**Serial ATA Technical Proposal # 022  
Title : Required Link Power Management**

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### Document History

Version	Date	Comments
0.1	04/14/2009	Initial Draft
0.2	4/20/4009	Minor changes based on team feedback
0.3	5/11/2009	Editorial correction for HIPM and DIPM

## Introduction

### 1.1 Problem Statement

With the industry movement to conserve energy and move towards greener platforms, all areas of the PC must have some form of lower power operating modes when idle. In this regard Serial ATA devices and platforms have support for lowering their respective link layers to conserve power. Even though there has been wide spread adoption of this feature in mobile platforms, there has been slower adoption on desktop based platforms. This has been due to early interoperability issues among hosts and devices, and a strong drive for always ensuring maximum performance on desktop systems. This has led to desktop environments where devices do not claim support for link interface power management or hosts fail to enable them (due to previous interoperability concerns). Serial ATA has matured to the point where all devices and hosts properly handle link interface power management and there is no reason support should not be adopted for all platform configurations.

### 1.2 Solution Summary

Devices shall support some form of link interface power management. Devices shall report support for device-initiated interface power management or host-initiated interface power management, or both. This allows hosts to enable the feature regardless of platform configuration. While platforms are not required to enable these features, broad support of link power management by device vendors will allow systems to be tailored for energy conservation based on their needs.

## 2 Technical Specification Changes

[Editor's Note: The changes marked in red (and underlined/strikethrough) will be incorporated in section 13.2]

### 2.1.1 IDENTIFY DEVICE

#### 2.1.1.1 Word 76: Serial ATA capabilities

Bit 9 when set to one indicates that the Serial ATA device supports the Partial and Slumber interface power management states when initiated by the host.

Devices shall support either host-initiated interface power management or device-initiated interface power management. Thus, devices shall set this bit to one if Word 77 bit 3 is cleared to zero.

Comment [I1]: Should be 78

#### 2.1.1.2 Word 77: Serial ATA Additional capabilities

Bit 3 indicates whether the device supports initiating power management requests to the host. When set to one the device supports initiating interface power management requests and when cleared to zero the device does not support initiating power management requests. A device may support reception of power management requests initiated by the host as described in the definition of bit 9 of Word 76 without supporting initiating such power management requests as

Comment [I2]: Should be Word 78: Serial ATA features supported

indicated by this bit. Devices shall support either host-initiated interface power management or device-initiated interface power management. Thus, devices shall set this bit to one if Word 76 bit 9 is cleared to zero.

## 2.1.2 IDENTIFY PACKET DEVICE

### 2.1.3 Word 76: Serial ATA capabilities

Bit 9 when set to one indicates that the Serial ATA device supports the Partial and Slumber interface power management states when initiated by the host.

Devices shall support either host-initiated interface power management or device-initiated interface power management. Thus, devices shall set this bit to one if Word 77 bit 3 is cleared to zero.

Comment [I3]: Should be 78

### 2.1.4 Word 77: Serial ATA Additional capabilities

Bit 3 indicates whether the device supports initiating power management requests to the host. When set to one the device supports initiating interface power management requests and when cleared to zero the device does not support initiating power management requests. A device may support reception of power management requests initiated by the host as described in the definition of bit 9 of Word 76 without supporting initiating such power management requests as indicated by this bit. Devices shall support either host-initiated interface power management or device-initiated interface power management. Thus, devices shall set this bit to one if Word 76 bit 9 is cleared to zero.

Comment [I4]: Should be Word 78: Serial ATA features supported

## 3 Serial ATA Link Power Management Support

[Editor's Note: This section shall be added to the Serial ATA 3.x specification in section XXX (TBD)]

Devices shall support host-initiated interface power management or device-initiated interface power management, or both.