

Queuing Control Proposal

To: T13 Technical Committee
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Date: 21 February 2005

1 Revision History

Revision	Notes
0	Initial Draft

2 Overview

This proposal creates a control mechanism to allow hosts to control the completion sequencing of queued commands to ATA devices. This would allow a host to block the device from completing any queued commands until such time as the host wishes to allow the device to begin completing commands that have been submitted to the device.

Usage model for this feature could include, but not be limited to, pre-loading the cache in an host-environment optimized manner, to allow a simplified embedded host to prevent certain unsolicited operations during critical program flow, and to allow the batching of certain read or write command sets for RAID volume initialization.

This proposal adds new SET FEATURES sub command codes to ATA8-ACS to control the flow of these commands.

3 ATA8-ACS Changes

3.1 *Supporting the Queuing Control Feature Set*

A new feature set is defined by this proposal and would be described in section 4 of ATA8-ACS.

Queuing Control Feature Set

This optional feature set allows hosts to control the completion of queued commands. A device that supports this feature set shall indicate support for the feature set in the data returned for the IDENTIFY DEVICE command. Packet devices shall not implement this feature set. A host uses the SET FEATURES command to prohibit the device from completing an accepted queued command.

If a device implements the queuing control feature set it shall implement the SET FEATURES command with additional subcommand codes of A0h and A1h. Normally issuing a SET FEATURES command would cause a device to abort any non-completed queued commands. A device supporting this feature set shall not abort a queued command if the SET FEATURES command is sent with the queuing control feature set subcommand codes. Any other command or SET FEATURES subcommand shall cause the device to abort the queued commands.

The device shall on power up or on reset default to completing queued commands normally according to the queued command protocol(s).

3.2 Changes to IDENTIFY DEVICE data

Table 15 in ATA8-ACS shall be revised as follows:

Word 86, bit 14 shall be changed from reserved to:
1 = Queuing Control Feature Set Supported

Section 7.17.6.43 to include the following statement:

If bit 14 of word 86 is set to one, the device supports the Queuing Control feature set.

3.3 Changes to SET FEATURES

Two new sub-command codes would be defined in the ATA8-ACS Table 41 as defined in table 1 from this document.

Table 1 Sub Command Code Changes

Value	
A0h	Disable completion of queued commands
A1h	Enable completion of queued commands

In addition a new subsection is created to describe the use of these sub command codes.

Enable / Disable Queue Command Completion

Subcommand code A0h disables the device from completing a queued command. The device shall accept new queued commands while in this state up to the limit of the number of outstanding commands that the device supports. Behavior of the device does not change if all available tags have been used. The behavior of the device shall not be changed if a non-queued command is transmitted to the device while in this state.

Subcommand code A1h shall cause the device to complete queued commands subject to the normal queued command protocol without restriction. If queued commands were submitted to the drive while in the queued command completion disabled state (subcommand A0h), the drive shall resume normal operation and complete the commands according to the queued protocol. This state shall be the default if the drive supports the queuing control feature set.