Otherwise, the storage controller **104** may determine that the link is not ready and attempt to reenable the SAS/SATA link initialization in the process element **416**. If the SAS initialization is not making progress (i.e., process element **417**), then the storage controller **104** determines whether the Hotplug timer has expired, in the process element **422**. If not, the storage controller **104** may continue waiting for SAS initialization until the Hotplug timer expires. When the timer does indeed expire, the storage controller **104** returns to process element **402** to perform another receiver detection sequence (e.g., select another protocol stack, protocol detection scheme, quit detection altogether, etc.).

The above embodiments provide several advantages over current protocol detection schemes. For example, the above embodiments provide for dynamically or statically configuring protocol detections capable of detecting any of a variety of protocols. While two protocol stacks are illustrated, the invention is not to be limited to such. The storage controller **104** may be configured with a variety of protocol stacks that allow the storage controller to couple to and communicate with a variety target devices. The protocol detection schemes include cycling through protocols performing parallel protocol detection of OOB signaling of the SAS protocol, and passive protocol detection via hardware sensing electrical characteristics of the attached devices.

The invention can take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment containing both hardware and software elements. In one embodiment, the invention is implemented in software, which includes but is not limited to firmware, resident software, microcode, etc. FIG. **6** illustrates a computing system **500** in which a computer readable medium **506** may provide instructions for performing any of the methods disclosed herein.

Furthermore, the invention can take the form of a computer program product accessible from the computer readable medium **506** providing program code for use by or in connection with a computer or any instruction execution system. For the purposes of this description, the computer readable medium **506** can be any apparatus that can tangibly store the program for use by or in connection with the instruction execution system, apparatus, or device, including the computer system **500**.

The medium **506** can be any tangible electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system (or apparatus or device). Examples of a computer readable medium **506** include a semiconductor or solid state memory, magnetic tape, a removable computer diskette, a random access memory (RAM), a read-only memory (ROM), a rigid magnetic disk and an optical disk. Some examples of optical disks include compact disk-read only memory (CD-ROM), compact disk-read/write (CD-R/W) and DVD.

The computing system **500**, suitable for storing and/or executing program code, can include one or more processors **502** coupled directly or indirectly to memory **508** through a system bus **510**. The memory **508** can include local memory employed during actual execution of the program code, bulk storage, and cache memories which provide temporary storage of at least some program code in order to reduce the number of times code is retrieved from bulk storage during execution. Input/output or I/O devices **504** (including but not limited to keyboards, displays, pointing devices, etc.) can be coupled to the system either directly or through intervening I/O controllers. Network adapters may also be coupled to the system to enable the computing system **500** to become coupled to other data processing systems, such as through host systems interfaces **512**, or remote printers or storage devices through intervening private or public networks. Modems, cable modem and Ethernet cards are just a few of the currently available types of network adapters.

What is claimed is:

1. A storage controller, comprising:
an interface operable to communicatively couple to a storage device;
a processor operable to select between hardware protocol detection of the storage device and firmware protocol detection of the storage device, to detect a protocol of the storage device when the storage device communicatively couples to the interface according to the selected protocol detection, and to select a protocol to process input/output requests from a host based on the detected protocol of the storage device; and
a hardware detector that is operable to perform the hardware protocol detection by measuring a time domain reflectometry signal.

2. The storage controller of claim **1**, wherein:
the processor is further operable to perform a Serial Attached Small Computer System Interface protocol detection and a Peripheral Component Interconnect Express protocol detection at substantially the same time.

3. The storage controller claim **1**, wherein:
the hardware detector is further operable to determine that the storage device is disconnected from the interface based on the time domain reflectometry signal.

4. The storage controller claim **1**, wherein:
the processor is further operable to sample the time domain reflectometry signal, to determine a slope of the sampled time domain reflectometry signal, and to determine the protocol of the storage device based on the slope of the sampled time domain reflectometry signal.

5. The storage controller of claim **1**, further comprising:
a plurality of protocol stacks, each protocol stack being operable to process the input/output requests according to a unique storage protocol.

6. The storage controller of claim **5**, wherein:
the unique storage protocol is selected from a group consisting of: a Serial Attached Small Computer System Interface protocol; a Peripheral Component Interconnect Express protocol; a Serial AT Attachment protocol; a Fibre Channel over Internet Protocol protocol; an Enterprise Systems Connection; a Fibre Channel protocol; a Universal Serial Bus protocol; and an Internet Serial Attached Small Computer System Interface protocol.

7. The storage controller of claim **1**, wherein:
the interface is further operable to communicatively couple to the storage device through an expander; and
the processor is further operable to detect the protocol of the storage device through the expander.

8. The storage controller of claim **1**, wherein:
the processor is further operable to detect the protocol of the storage device by attempting to connect to the storage device with a last used protocol.

9. A method operable in a storage controller, the method comprising:
communicatively coupling the storage controller to a storage device;
selecting between hardware protocol detection of the storage device and firmware protocol detection of the storage device;
detecting a protocol of the storage device when the storage device communicatively couples to the interface according to the selected protocol detection;