SMART STORAGE

How SMARTCD™ Archive Differs From a Device Driver

In its simplest form, a device driver is utility software that allows access to a specific hardware component. Most peripherals usually require driver software in order to be accessed from a main CPU or host system. These peripherals may include printers, tape drives, scanners and optical storage devices. Device drivers can be very specific (like a DOS driver for an HP Laserjet printer), but they can also be generalized (like CorelSCSI) and provide access to a variety of devices in a threaded manner.

Device drivers are fine if basic functionality is all you need, but in a multi-user environment where the level of user sophistication varies, programs like SMARTCD Archive can make an immense difference. This is especially true for devices like CD-ROM jukeboxes, which typically occur in configurations of multiple jukeboxes and may store terabytes of information.

Device Driver Drawbacks

The drawbacks of device drivers are **specificity**, **stand-alone orientation** and **lack of flexibility**. To discuss these in detail:

- **Specificity:** The same hardware component may vary with the platform and operating system, thereby requiring a separate driver for each platform/operating system combination.

- **Stand-alone Orientation:** Device drivers are made largely for single-users, and not for use in a network environment.

- **Lack of Flexibility:** Device drivers allow very little configuration control and become cumbersome as a storage structure grows in complexity, such as mixing CD readers and jukeboxes on the same server.

SMARTCD Archive Advantages

.

- **Specificity:** SMARTCD Archive sidesteps the device driver issue by **keeping device management independent**, while retaining multi-platform access to all supported devices.

- **Stand-alone Orientation:** Attaching several devices compounds the problem, since **device drivers are not multi-threaded** or multi-tasking network resources like SMARTCD Archive.

- **Lack of Flexibility:** SMARTCD Archive is device independent, allowing any combination of CD jukeboxes and drives without difficulty. In fact, you can **mix as many as 196 SCSI devices** on a single server.

A Quick Comparison

The following table should make clear that SMARTCD Archive is much more than a device driver in all respects.

	SMARTCD Archive	Device Drivers
Software Required	• SMARTCD Archive and ASPI drivers for SCSI.	• CorelSCSI. • SCSI Express and MSCDEX and specific driver. • Optisys.
Data Access	• All CDs appear as a single online logical device with directory aggregation. • Option for push-down directory access. • Data appears as a virtual read-only hard disk, making data access straightforward and seamless. • CD loaded automatically if data is required for an application.	• Requires separate drives for each device/CD. • Data on CD must be loaded into a reader for identification before using; else a database must be maintained to locate correct drive and/or CD. • Most drivers incapable of handling more than 150 CDs.
Expansion Capability	• Easily expanded by attaching SCSI drives or jukeboxes and re-inventorying.	• Application control of data becomes a serious issue. • Limited to 18 GB per server in 27 or fewer CD-ROM drives. • Adding too many CDs requires dynamic re-mapping. • Dynamic re-mapping requirements cause breakdown in configurations of 100 or more CDs.
Multi-Tasking	• Allows asynchronous, multi-threaded, multi-tasked access to all SCSI storage devices.	• Single threading only. • Access limited to one device at a time. • Too many mapping elements restricts device access.
Moving from Stand-Alone to Network	• Network software requires a dedicated server with CD-ROM devices attached.	• Usually requires moving every CD to specialized hardware. • Requires purchase of third-party software. • Drive mapping issues become more complex.
Caching	• Optimized directory loading. • Data block caching. • Background read-ahead.	• No caching.
Summary	• SMARTCD Archive is a more technically and financially feasible	• Methodology requires expensive hardware investments.

	alternative to WORM, M-O and other storage alternatives.	• Extensive configuration manipulation needed whenever a CD or device is changed. • Not a feasible alternative to WORM except in situations with small storage requirements.

While SMARTCD Archive might appear to be a device driver, it is actually all of the following: a storage management system, a network service management system, a SCSI CD hardware configuration management system, an operating system optimized to handle CD-ROM devices and a device driver for some of the hardware in a CD-ROM based storage structure. It would be more accurate to call SMARTCD Archive a complete environment for managing CD-ROM and CD-R storage devices.

SMARTCD Archive is also the first product to integrate writing capabilities into CD jukebox systems. With this new functionality, (which is expected to eventually replace single-function CD readers and CD-Recorders) SMARTCD Archive will bring ease-of-use and expandability together with an eye toward the future of CD-Recordable.