The Myriad of Peripherals that are supported on Pocket PCs, Notebooks and PDAs

Introduction

When I think of Mobility and using my Pocket PC or Notebook PC, I also think of how I can use these devices to communicate and store information. I want to be able to easily share information with other PCs via the internet or an internal network as well as transfer large amounts of information using memory card. This article describes the different form factors that storage and peripherals take with the average Notebook PC or Pocket PC. Also, I will focus on describing the different capabilities of these peripherals and how they may affect your mobile use on a day-to-day basis.

What’s Out There for me to use?

Right now there are 5 major standards for storage and peripherals that you can use with your Notebook PC or PDA.

- The first form factor that most people think of with mobility and Notebook PCs is the PC Card.
- CompactFlash, commonly abbreviated CF, is commonly used in digital photography as well as Pocket PCs.
- SmartMedia cards were designed to offer storage for digital cameras.
- Secure Digital cards, commonly abbreviated SD cards are a smaller design, which is supported, in smaller digital cameras and Pocket PCs as well as Palm handhelds.
- The last common form factor is really vendor specific. It is called the Memory Stick and it is commonly found in Sony products.

PC Card – The King of the Notebook PC

PC Cards originally started out as PCMCIA cards. They provide the ability to store information on the cards in ATA FAT (like a regular hard disk) format so you can use them on your PC as well as your Pocket PC without reformatting the data. The PC Cards are the same size as a credit card but they are thicker. PC Cards support 2 different designs – the original 16 bit design and a new 32 bit design called CardBus. Cardbus enabled devices support both 16 bit cards and 32 bit cards. Most Notebook PCs now support CardBus while only Pocket PCs support the original PC Card standard. There are PC Card flash memory cards as large as 1 GB.

CompactFlash – PC Card Features but Smaller

CompactFlash cards use the same electrical connection as the original PC Card does but they are much smaller. If you placed 2 CompactFlash cards end to end, they would still be smaller than existing PC Cards. Also, you can use a CompactFlash card with a PC Card adapter in a standard PC Card slot. This allows you to read and write storage information on the cards as well as use peripherals with your Notebook PC.
SmartMedia Cards

SmartMedia cards are a little larger than the CompactFlash cards. They are used for storing information for devices like digital cameras and MP3 players. This form factor has not significantly changed since it’s introduction. It is limited to supporting 128MB for storage.

Secure Digital and MultiMedia Cards

Secure Digital Cards are the smallest of all the storage devices available today. They are just a little larger than a postage stamp! The current design allows for multiple speeds for reading and writing depending on the device you plug them into. Also the Secure Digital cards can support storage and peripherals. The Secure Digital card has 2 unique features. It includes a memory protection switch which makes the card read only. Also, the Secure Digital card supports encryption of all data stored on the card as an option, however the hardware manufacturer of the device you are using it with has to support this as well for your data to be encrypted. A close cousin of the Secure Digital cards is the Multimedia Card, which does not support multiple read and write speeds. The Multimedia Card is fading in favor of the Secure Digital card in the marketplace. There are Secure Digital cards as large as 512 MB while the largest MMC card is 128 MB.

Memory Stick

In between the size of the PC Card and the Secure Digital cards lies a format called the Memory Stick. It is commonly available in Sony 8mm digital video cameras as well as their Vaio line of notebook PCs. Originally designed by Sony for storage, the Memory Stick is now used for some peripherals as well.

Transferring Data

With the PC Card, CompactFlash card, Secure Digital Card and Memory Stick you can purchase a USB adapter to read and write storage cards for these form factors. Most USB adapters are designed to allow you to use only one type of card at a time. These adapters are really designed to travel with you. They are very small and can easily fit into an accessory bag.

Adapters

There are a variety of adapters so users can use Secure Digital, MultiMedia Cards, Memory Stick and SmartMedia cards in PC Card slots and CompactFlash slots.

Peripherals - Different Ways to Communicate

Peripherals in these different form factors are really designed to allow Notebook PCs, Pocket PCs or other PDAs to communicate. Probably the most common peripheral is either the PC Card Modem or Ethernet card since most earlier generation of notebook PCs did not have these built in. The PC Card format has the widest range of supported peripherals including Wi-Fi 802.11b, Bluetooth, GPRS/GSM, CDPD, Ethernet, Serial and Modem. The PC Card slots also support CompactFlash peripherals with an inexpensive adapter so you can use the same peripheral with your Notebook PC.
The CompactFlash cards include Wi-Fi 802.11b, Bluetooth, CDPD, GPS, Ethernet, Serial and Modem. The small size of the CompactFlash form factor usually leads to a design with some portions of the peripheral external in either a box or a dongle.

Here is a table of different vendors and the types of peripherals that they offer:

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Sandisk</th>
<th>Kingston</th>
<th>Socket Communications</th>
<th>Pretec</th>
<th>IBM</th>
<th>Toshiba</th>
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<tbody>
<tr>
<td>Peripherals</td>
<td>PC Card, CompactFlash, SecureDigital Card, MultiMedia Card, Memory Stick</td>
<td>PC Card, CompactFlash, SecureDigital Card, MultiMedia Card, Memory Stick</td>
<td>CompactFlash – Ethernet, Modem, Barcode Reader, Bluetooth, WiFi</td>
<td>CompactFlash – Ethernet, Modem, Bluetooth, WiFi</td>
<td>CompactFlash Hard Disk</td>
<td>PC Card Hard Disk</td>
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<tr>
<td>Comment</td>
<td>Original designer of the CompactFlash card and Multimedia Card</td>
<td>Offers the widest range of CompactFlash solutions available.</td>
<td>Original designer of the CompactFlash hard disk</td>
<td>Provides the largest PC Card Hard Disk solutions available today</td>
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**Peripherals – Other Specialized Devices**

Some of the other peripherals that are available in the PC Card and CompactFlash card form factor are specialized for specific purposes. For example vendors like Symbol Technologies and Socket Communications offer 1D and 2D barcode scanners for inventory applications. Also, mainstream vendors like HP offer peripherals like CompactFlash camera cards for Pocket PCs as well. There are a myriad of specialty devices that are available to meet special needs like smart card readers, and credit card readers. Also, there are adapters to allow CompactFlash slots to use PC Card peripherals that are low voltage and have driver.

**Securing your Data**

Most of these form factors for storage do not support encryption in their hardware design. The one exception is the Secure Digital (SD) card. The SD card does support built in encryption however there is one major caveat to using it. The devices you use the SD card in need to support encryption as well. Right now the Pocket PC 2002 does not support the hardware based encryption of the SD card. For all other storage devices, I suggest using software based encryption for the specific platform you are using it with. You should be aware that you will need to have desktop software that supports encryption if you want to interoperate with your desktop.