PCMCIA:
- Personal Computer Memory card International Association
- Credit-card sized
- Parallel PC card:
  - 16-bit on Card Bus
  - 2 functions max
  - 68-pin
- CardBus
  - 32-bit
  - Up to 8 functions
  - 68-pin

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Width</th>
<th>Thickness</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>85.6mm</td>
<td>54.0mm</td>
<td>3.3mm</td>
<td>Flash Memory</td>
</tr>
<tr>
<td>Type II</td>
<td>85.6mm</td>
<td>54.0mm</td>
<td>5.0mm</td>
<td>I/O (modem,NIC,..)</td>
</tr>
<tr>
<td>Type III</td>
<td>85.6mm</td>
<td>54.0mm</td>
<td>10.5mm</td>
<td>Hard Drives</td>
</tr>
</tbody>
</table>

ExpressCard:
- High-performance serial version of the PC Card
- 2 widths (34mm / 54mm)
- USB 2.0 bus / PCIe bus

<table>
<thead>
<tr>
<th>Standard</th>
<th>Maximum Theoretical Throughput</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Card on 16-bit bus</td>
<td>160 Mbps</td>
</tr>
<tr>
<td>CardBus PC Card on PCI bus</td>
<td>1056 Mbps</td>
</tr>
<tr>
<td>ExpressCard on USB 2.0</td>
<td>480 Mbps</td>
</tr>
<tr>
<td>ExpressCard on PCIe</td>
<td>2.5 Gbps</td>
</tr>
</tbody>
</table>

Port Replicator:
- Offers uncommon and common PC ports

Docking Station:
- Offer legacy and modern single and multi function ports
- Proprietary connection
Batteries:
- Nickel-Cadmium (Ni-Ca):
  - “memory effect”
- Nickel-metal Hydride:
  - Heat generator
  - Overcharging
- Lithium:
  - No “memory” problems
  - Shorter lifespan

Power Management
- SMM (System Management Mode)
  - CPU stopping or slowing down, without data loss
  - Special BIOS and OS required
- APM (Advanced Power Management) / ACPI (Advanced Configuration and Power Interface)
  - Requires:
    - SMM capable CPU
    - APM-compliant BIOS
  - Energy Star devices → they can shut off when not used
- Levels:
  - Full On: Everything running on full power
  - APM Enabled: CPU and RAM full power, unused devices might shut down
  - APM Standby: CPU is stopped, RAM stores all programs, all peripherals shutdown
  - APM Suspend: Everything shut down for lowest power use, hibernation.
ACPI global (G) and sleeping (S) system power state:
- **G0 (S0)** Working State
- **G1** Sleeping state mode. Divided in:
  - **S1** CPU stops processing, power maintained to CPU and RAM
  - **S2** CPU powered down
  - **S3** Sleep or Standby mode. Power to RAM on
  - **S4** Hibernation mode. RAM stored to nonvolatile memory or drive and powered off
- **G2 (S5)** Soft power off mode. Some devices can wake system
- **G3** Mechanical off mode. Everything but Real Time clock (RTC) powered down

**Laptop Disassembling**:
- Document and label cable and screw locations
- Organize parts

**References**:
- Mike Meyers - CompTIA A+ Certification All-In-One Exam Guide 8th edition
- Images:
  - Lenovo Docking Station:
    [http://www.bhphotovideo.com/images/images2500x2500/lenovo_40a20090us Ultra Dock 90W 1011945.jpg](http://www.bhphotovideo.com/images/images2500x2500/lenovo_40a20090us Ultra Dock 90W 1011945.jpg)