2.5.2 PC Maintenance Facts

One of the most important things you can do to keep computer systems running is create a proper environment. This lesson cover the following topics:

- HVAC, interference, and magnetic fields
- Computer cleaning
- Management tips

HVAC, Interference, and Magnetic Fields

<table>
<tr><th>Consideration</th><th colspan="2">Description</th></tr>
<tr><td>Heating, Ventilation, and Air Conditioning (HVAC)</td><td colspan="2">For computer components, design HVAC systems with the following in mind:
Keep temperature between 70 and 74 degrees to prevent components from overheating.
Keep humidity between 40 and 70 percent to prevent electrostatic discharge (ESD).
Make sure server rooms have separate ducting or HVAC systems from the rest of the building for better temperature control.
Use positive pressure systems. Positive pressure systems protect the air quality in the facility by causing air to be forced out through doors, windows, and other openings. Negative pressure systems draw air in, potentially bringing in airborne particles such as dust or smoke. Positive pressure systems are more energy effective.
In areas with heavy smoke or dust, add filters to air intake systems to filter out airborne particulates.</td></tr>
<tr><td rowspan="3">Interference</td><td colspan="2">Interference is a signal that corrupts or destroys regular signals. Interference affects signals used by two devices to communicate on a network. Listed below are two types of interference that affect computer networks:</td></tr>
<tr><td>Electromagnetic Interference (EMI)</td><td>EMI is interference that affects wired networking signals.
EMI is caused by motors, heavy machinery, and fluorescent lights.
Use shielded twisted pair cable to protect signals sent on Ethernet twisted pair cabling. If necessary, use fiber optic cables to eliminate the effects of interference.</td></tr>
<tr><td>Radio Frequency Interference (RFI)</td><td>RFI is interference on the radio channel used by wireless networking devices.
RFI can be caused by nearby wireless devices using the same channel, cordless phones, or microwave ovens.
Wireless networks that use the 2.4 GHz frequency range (801.11b and 802.11g) are susceptible to RFI.
You can reduce RFI by using a wireless networking standard that operates in the 5.75 GHz range or using a different channel for wireless devices.</td></tr>
<tr><td>Magnetic Fields</td><td colspan="2">Magnetic fields located close to a computer can cause undesired effects or even data loss.</td></tr>
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- Hard drives use magnetic charges to store data. While hard disks are shielded and protected from all but the strongest magnets, getting a magnet too close to these components could erase data.
- Speakers, motors, and generators contain magnets (keep sensitive components away from these devices).
- Solid state storage devices (such as RAM or flash drives) are not affected by magnetic fields.

Computer Cleaning

One of the best things you can do to keep your system running efficiently is to keep it clean. Be aware of the following facts about cleaning your computer:

- Common computer cleaning supplies include:
  - Lint-free cloth
  - Compressed air or an air compressor
  - Small anti-static vacuum
  - Denatured or isopropyl alcohol
- Regular cleaning gives you the chance to inspect all components. Look for worn or failed components. On electrical components, dark areas might indicate a burned-out component.
- Prior to cleaning computer components, power down and unplug components and let them sit for at least 30 minutes to cool.
- Use caution with liquid-based cleansers. Use small amounts and always apply cleaning solutions to cloths and cleaning instruments, never directly to component surfaces.
- Dust buildup inside a computer acts as an insulator for internal components, trapping heat and preventing adequate cooling of components. Use:
  - Compressed air to blow dust off.
  - A non-static vacuum to remove dust.
  - A natural bristle paintbrush to wipe components off.
- Use a small amount of denatured alcohol on a cotton swab to clean electrical connectors (such as those on expansion cards).
- For LCD screens, use a lint-free dry cloth or a small amount of isopropyl alcohol (do not use window cleaner, ammonium-based cleaners, paper towels). You can also use special monitor-cleaning solutions or pre-packaged wipes with monitor-safe solution.
- For a mouse with a roller ball, clean the ball and the roller contacts on a regular basis.
- For keyboards, use a vacuum or compressed air. For keys that stick, use a lint-free cloth and/or cleaning swabs, lightly dampened, to gently wipe each key.
- To clean a printer, use a damp or dry cloth.
  - On inkjet printers, use the printer's cleaning function to clean the print heads.
  - For laser printers, use an anti-static vacuum to remove excess toner.

    A regular vacuum will build up an electrostatic charge from the toner.

- On removable media devices, use:
  - Compressed air to blow dust and debris off of CD-ROM and DVD disc surfaces, out of drive bays, and off of drive heads.
  - Soft, dry lint-free cloths to wipe smudges off of CD-ROM and DVD disc media surfaces.

Management Tips

Be aware of the following tips for maintaining your computer:

- When receiving a new computer or component that has been shipped, let it sit for at least six hours (24 hours if it arrives in outside freezing conditions) before applying power. The rapid change in temperature can cause damage to components or can result in condensation within the computer.
- Perform regular backups. Backups protect your data if a hard disk fails.
- You can use covers and cases to protect some equipment from dust and liquid spills. Be sure to remove covers before use and replace after use.
- Keep cables organized. Route cables to prevent them from being kinked or stepped on. For best results, use cable ties to bind and organize cables.
- Verify that your system's cooling fans are blowing air through the system case in the correct directions. A fan blowing in the wrong direction can negate the airflow through the case and cause the system to overheat.