HARDWARE CONSIDERATIONS

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TOPICS

- Certification Programs
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  - RoHS
  - Energy Star
    - Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients

- Servers
  - Blade Servers
  - Consolidation
  - Products

- Hardware Considerations
  - Planned Obsolescence, Packaging, Toxins, Other Factors

- Remote Desktop

CERTIFICATION PROGRAMS

CERTIFICATION PROGRAMS - EPEAT

- Electronic Product Environmental Assessment Tool

- evaluates electronic products according to three tiers of environmental performance: bronze, silver, and gold

- performance criteria includes 23 required criteria

- 28 optional criteria in eight categories

- Total 8 categories

- EPEAT maintains a listing of certified devices on its website.

- www.epeat.net

Certification Level	Requirements
Bronze	Product meets all required criteria.
Silver	Product meets all required criteria plus at least 50 percent of the optional criteria that apply to the product type being registered.
Gold	Product meets all required criteria plus at least 75 percent of the optional criteria that apply to the product type being registered.

The Three Levels of EPEAT Certification

RoHS

- Restriction of Hazardous Substances (RoHS)

- certification doesn't simply apply to products sold in the European Union

- companies tend to advertise the fact when their equipment is RoHS compliant, hence it is easy find RoHS compliant products.

- For example, Toshiba will build computers that are lead-free and meet other RoHS guidelines

ENERGY STAR

- program for certifying energy-efficient electronics in the United States

- It is of Environmental Protection Agency's (EPA's)

- Its standards are based on power consumption.

- It includes

  - Computers

  - Monitors

  - Printers, scanners , All in one

  - Thin clients

ENERGY STAR-COMPUTERS

Product Type	Tier 1 Requirements
Desktops, integrated computers, desktop-derived servers and gaming consoles	Standby (Off Mode): <= 2.0 W Sleep Mode: <= 4.0 W Idle State: Category A: <= 50.0 W Category B: <= 65.0 W Category C: <= 95.0 W
Notebooks and tablets	Standby (Off Mode): <= 1.0 W Sleep Mode: <= 1.7 W Idle State: Category A: <= 14.0 W Category B: <= 22.0 W
Workstations	TEC Power (P_{TEC}): <= 0.35 × [P_{Max} + (# HDDs × 5)] W **Note:** Where P_{max} is the maximum power drawn by the system, # HDDs is the number of installed hard drives in the system.
Efficient power supply requirements	Internal power supplies: 80 percent minimum efficiency at 20 percent, 50 percent, and 100 percent of rated output and minimum Power Factor 0.9. External power supplies: Either Energy Star qualified or meet the no-load and active mode efficiency levels provided in the Energy Star External Power Supply (EPS) specification.

TABLE 8-2   Tier 1 Energy Efficiency Requirements Effective July 20, 2007

ENERGY STAR-MONITORS

- Energy star certified monitors use 20 to 60 percent less electricity

- The Energy Star website contains a more thorough tool than our rough estimate.

- It is a Microsoft Excel tool that can help you calculate your cost savings.

- For example, if a monitor currently uses 199 kWh per year and you find a monitor that uses 105 kWh per year, your savings (based on 8.5 cents per kWh) is US$8 per year. That is not a huge amount of money—your lunch probably costs more. But if you multiply that by the number of monitors in your organization, you'll quickly realize the savings

- In order to achieve an Energy Star certification, monitors must meet the following criteria:
  - In On mode, the maximum allowed power varies based on the computer monitor's resolution.
  - In Sleep mode, computer monitor models must consume 2 watts or less.
  - In Off mode, computer monitor models must consume 1 watt or less

Your business will save money by using Energy Star–certified monitors. Consider the following issues:

- Electricity usage cut in half You'll save US$25 to US$75 per PC each year.

- Cooling loads reduced You'll also save US$5 to US$10 per PC per year in office cooling costs. That number increases to US$10 to US$25 in warm climates.

- Reduction in peak load demand charges If your utility charges extra during peak demand times, this amount is lessened.

- Faster boot times Waiting for computers to boot is eliminated. Because the computers are already technically "on," you don't have to wait for them to boot up. They simply need to awaken from low-power mode, which is much faster than a bootup.

ENERGY STAR- PRINTERS, SCANNERS, ALL-IN-ONES

- For a laser printer to earn the Energy Star certification, it must:

- Use at least 25 percent less energy than regular printers.

- Be able to print on both sides of a page, thus saving paper.

- Run cooler and last longer, thus reducing the cost of air conditioning and maintenance.

ENERGY STAR-THIN CLIENT

- Rely/dependent on the server for processing activities

- used mainly for input and output between the server

- usually run web browsers or remote desktop software.

- Advantages include the following:

  - Lower administration costs

  - Security

  - Lower hardware (because they do not contain disk drives)

  - Easy hardware failure management

  - Hostile environments

  - Ease of upgrade

  - Less noise

SERVERS

SERVERS –BLADE SERVER

Benefits

- <u>Less space</u> needed Blades take up 35 to 45 percent less space than tower or rack-mounted servers.

- <u>Reduced power consumption</u> By consolidating power supplies into the blade chassis, you reduce the power supplies needed and you benefit from an overall reduction of power use.

- <u>Lower management cost</u> When you consolidate your servers, deployment, management, and administration are simplified and improved. This, of course, also manifests itself in cost savings and less headache for the IT staff.

- <u>Simplified cabling Rack-mounted</u> servers were a good way to consolidate hardware in fewer locations than tower servers. However, they also had a lot of cabling involved. Blade servers reduce cabling requirements by 70 percent. Why is this a big deal? Fewer cables means better airflow, which means lower cooling costs.

- The benefit of a blade system is that you can easily update the system if you discover you need more power.

- It's better to plan for future growth than to pay up front for power you don't need.

Server Type	Functionality	Usage
Single-function blade server	Bare-bones CPUs, sometimes with onboard storage or porting, and they run single applications.	Ideal for academic or office environments where blades can be assigned individual tasks, including web hosting, e-mail, and scheduling software.
Blade PCs	The central core of a thin-client setup. This server provides the processing and storage capacity for clients, which is then accessed by thin clients.	General office applications.
Enterprise-level blade server	Maximum power set in a small space. These systems generally use multiple racks and require compatibility with legacy systems, networks, and software.	These are most often used by digital production studios, high-level stockbrokers, and financial corporations.

TABLE 8-4   Different Types of Blade Servers

CONSOLIDATION

- For some functions, you may not even need to purchase new servers—you can just repurpose existing machines to serve those needs in your organization. Most organizations have several small servers that each perform the function of a single legacy application that cannot be removed because it is still used by some processes. These servers are excellent candidates for consolidation.

- If you consolidate the servers onto a single platform, you save the entire energy consumption of the original server and its cooling costs, and you also have better manageability.

- Virtualization is the practice of software creating the instance of a PC on a server. This way, multiple virtual servers can exist on one machine.

HARDWARE CONSIDERATION

HARDWARE CONSIDERATION

- Planned Obsolescence

- Packaging

PLANNED OBSOLESCENCE (DISCONTINUED)

- Lease and buy-back programs provide a good way to get rid of your computers if you plan on installing new ones. In addition to formal leasing companies, you can also find leasing programs through Dell and Gateway. Some manufacturers take back your old machines.

- Use hardware and operating systems that are readily upgradeable.

- Make sure spare parts, service, and support will be available in a few years. This is normally defined in "years available after production."

- Make sure the memory is easily expandable.

PACKAGING

The following are some tips you can employ when having new computers shipped to you:

- Ask for multiple computers to be packaged together for shipping, rather than being boxed individually.

- Require recycled-content materials and recyclable packaging.

- Require material types to be identified. Recyclers need to know material types, so require labeling to show what type of plastic is used.

- Require manufacturers or shippers to take back packaging for reuse or recycling.

- Ask for online manuals and preinstalled programs.

TOXINS

- You can manage how much toxic material is used by looking for hardware that has been created following these guidelines:

- Look for manufacturers who use low levels of toxic chemicals.

- Look for manufacturers who use lead-free solder.

- Look for manufacturers who use low-mercury and long-life lamps in flat-panel displays.

- Batteries should be removable, rechargeable, and recyclable.

OTHER FACTORS

- Are machines and parts designed so that they can be assembled and disassembled with universally available tools?

- Require that metal casings be readily recyclable. Metal casings are recyclable. Plastic casings require flame retardants and are not recyclable.

- Require recycled-content computers.

- When possible, use remanufactured or refurbished equipment—it's less expensive and saves another box from a landfill.

- Look for manufacturers who do what they can to lessen their products' toxicity in adhesives, labels, coatings, finishes, fasteners, and metallic paint.

- Machines should be Energy Star compliant for overall energy use as well as sleep modes. Require that Energy Star is active upon delivery.

- Require online or electronic documentation.

- Choose printers and copiers that use remanufactured toner cartridges.

- Think about air quality when selecting printers. Environment Canada requires a desktop printer's

REMOTE DESKTOP

REMOTE DESKTOP

- Remote Desktop is a feature that was initially rolled out with Windows XP.

- It allows the user to access their computer remotely

- There are two components to a Remote Desktop connection:

  - Server The remote computer to which you will be connecting. It could be your office desktop computer or a special computer set up for road warriors to access when they're out and about.

  - Client The computer you will use to form your connection with the server. It could be a PC at home, a road warrior's laptop, or even a coworker's PC in a neighboring cubicle.

- To configure remote desktop

  - 1. Select Start | Control Panel | System And Maintenance.

  - 2. Click the Allow remote access icon from the System portion of the dialog box.

  - 3. In the Remote Desktop portion of the dialog box are two selections you can make, based on your connection and security needs :

    - Allow connections from computers running any version of Remote Desktop (less secure)

    - Allow connections only from computers running Remote Desktop with Network Level Authentication (more secure).

  - 4. Click the Select Users button. This calls up the Remote Desktop Users dialog box in which you will add users who will be allowed to remotely access this computer. Administrative accounts are automatically given access.

  - 5. Click Add. This calls up the Select Users dialog box, as shown in Figure 8-6. User accounts have three identifying components: object type, location, and name.

  - 6. If you want to locate a user account from the Remote Desktop server, make sure the "Select this object type" option is set to Users. Then type an account name in the "Enter the object names to select" box. If you wish to enter a user from another computer on an Active Directory—based LAN, click the Locations button and select the domain. Then enter the user account name.

  - 7. Click Check Names. This gives Windows Vista a chance to enter the name in the computername\username format.

  - 8. Click OK. The user you just indicated will be added to the list of users permitted to remotely access your Remote Desktop server. To add more users, repeat steps 6 through 8.

  - 9. Click OK twice to exit all the dialog boxes.

REMOTE DESKTOP CLIENT

- Remote Desktop Client The Remote Desktop Connection tool is installed by default and is located by accessing

  - Start | All Programs | Accessories | Remote Desktop Connection.

ESTABLISHING A CONNECTION

- Next, start the Remote Desktop client using these steps:

- 1. Select Start | All Programs | Accessories | Remote Desktop Connection.

- 2. From the Computer drop-down list, pick the name of the server computer or enter its IP address. If the drop-down list does not contain any computer names, click Browse For More to see the available computers in your domain or workgroup. This list will only show computers that have been enabled for Remote Desktop.

- 3. Click Connect.

- 4. When Remote Desktop is done forming its connection with the remote computer, you'll see a Windows Vista–style splash screen. The screen contains icons for the users who have been authorized to remotely access the computer. Click your icon and then enter your password.

- 5. Click OK.

THANK YOU